Associated General Contractors of America
National Association of Home Builders

COMMENTS ON EPA'S CONTROL OF EMISSIONS OF AIR POLLUTION FROM NONROAD DIESEL ENGINES AND FUEL; PROPOSED RULE (68 FR 28328-28596, MAY 23, 2003)

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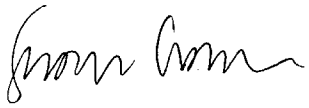

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Introduction

The Associated General Contractors of America (AGC) and the National Association of Home Builders (NAHB) respectfully submit the following comments in response to the U.S. Environmental Protection Agency's (EPA) proposed rule, *Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel; Proposed Rule*, as published in the *Federal Register* on May 23, 2003 (68 FR 28328-28596).

AGC is the largest and most diverse trade association in the construction industry. The association's 35,000 member companies include 7,500 of the nation's leading general construction contractors. They are engaged in the construction of highways, bridges, tunnels, airport runways and terminals, buildings, factories, warehouses, shopping centers, and both water and wastewater treatment facilities.

NAHB represents more than 211,000 builders and associate members organized in approximately 850 affiliated state and local associations in all fifty states, the District of Columbia, and Puerto Rico. NAHB members include people and firms that construct and supply not only single family homes, but also apartments, condominiums, and commercial and industrial facilities, as well as land developers and remodelers.

Diesel-powered construction equipment is needed to maintain the quality of life that we enjoy today. AGC and NAHB members rely on nonroad (sometimes called "offroad" or "off-highway") diesel equipment and vehicles powered by diesel fuel to complete their construction jobs. In light of the importance of diesel systems to the construction industry, AGC and NAHB appreciate the opportunity to express the construction and development industry's views on the future regulation of nonroad diesel engines and fuel, and to provide comments on today's proposal.

I. BACKGROUND

Overview

The construction industry includes more than 700,000 businesses employing 6.6 million workers, plus 2.0 million firms (mainly sole proprietorships) without employees.[1] Small businesses dominate: in 2000 all but 1,006 firms had fewer than 500 employees, and 90% of the businesses had fewer than 20 employees. In 2002 the value of construction put in place exceeded $860 billion[2] and shipments of construction machinery totaled $20 billion.[3] Nationwide, diesel systems—engines and fuel—power the majority of the nonroad equipment that constructs and repairs America's roads, bridges, homes, and factories. As reported by the Diesel Technology

[1] Source: U.S. Census Bureau data from *Statistics of U.S. Business, 2000, and Nonemployer Businesses: 2000,* posted by U.S. Small Business Administration, Office of Advocacy at www.sba.gov/advo/stats/data.html#us.
[2] Source: U.S. Census Bureau, Value of Construction Put in Place, www.census.gov/const/C30/Total.pdf.
[3] Source: U.S. Census Bureau, *Manufacturers Shipments, Orders, and Inventories: 1992-2002* www.census.gov/indicator/www/m3/bench/m3-1(02).pdf.

Forum (DTF), the construction industry depends on almost $17 billion worth of existing diesel-powered equipment.

The construction industry relies on diesel technology for many reasons:

- Diesel fuel contains more energy per unit volume than gasoline;
- Diesel is a safer fuel than gasoline because it is less volatile and has a lower flash point, making it far less likely to ignite or explode if spilled or released;
- Diesel fuel costs less to refine than gasoline, and diesel engines are more fuel efficient;
- Diesel engines have much more torque, or pulling power at low speeds, enabling equipment to carry or tow heavier loads than gasoline-powered engines; and
- Diesel engines are more durable and reliable, with lifetimes of 250,000 miles or more for highway engines.

To date, there is no substitute for diesel power. In addition, new diesel engines are friendlier to the environment than gasoline engines, when judged by emissions of carbon dioxide and smog-contributing hydrocarbons. Because of the greater efficiency of diesel engines and the significant fuel economy advantage, diesel engines emit 30 to 35 percent fewer carbon emissions than gasoline engines. They clearly provide advantages and they must remain available for future use.

Nonroad Emissions Regulations – Rate of Progress

In an effort to ensure the continued use and viability of diesel engines while improving air quality, EPA has taken several significant steps over the past 10 years. Separate from highway diesel emissions standards, federal emissions standards have been established for almost every subcategory of nonroad diesel engines manufactured in the United States. EPA has promulgated these rules—with different emissions standards phased in on different model year schedules called "tiers"—under two separate rulemakings published in 1994 and 1998 (59 FR 31306, June 17, 1994; 63 FR 56968, October 23, 1998). The 1994 rule set the Tier 1 standards for most nonroad diesel engines greater than 50 horsepower (hp) such as bulldozers. The 1998 rule set the Tier 1 and 2 standards for smaller (less than 50 hp) engine categories, along with Tier 2 and 3 standards for larger engines sizes. EPA's Tier 1 and Tier 2 rules were implemented in 1996 and 2001, respectively. The Tier 1 standards became fully implemented in 2000. The Tier 2 phase-in will continue until 2006, when the Tier 3 standards will begin to take effect. Tier 3 will be fully implemented by 2008.

Although nonroad emissions regulations are relatively recent (in comparison to highway diesel standards), the rate of nonroad emissions reduction has been dramatic. According DTF, for heavy-duty diesel engines in the 175 to 750 hp range (also referred to as a "powerband"), particulate matter emissions (PM) have been reduced by 85 percent since the first set of EPA regulations went into effect in 1996 (compared to pre-regulation engines of that size). Similarly, nitrogen oxide (NOx) emissions have been reduced by 70 percent in that same timeframe, and will be reduced another 40 percent by 2006, under current regulations; resulting in a total NOx reduction of 82 percent. Clearly, the existing regulations have been effective in substantially decreasing air quality problems associated with nonroad diesel equipment.

Today's Proposed Nonroad Diesel Engine Emissions Standards and Fuel Specifications

Despite the above mentioned gains, EPA's proposed rule would require new nonroad diesel engines, including those used in construction equipment, to slash their emission of pollutants by another 90 percent by 2014. The amount of sulfur in their fuel would also have to drop by 99 percent by 2010. EPA expects these reductions to occur as a result of engine manufacturers transferring technology from highway to nonroad engines.

The proposed emissions standards, depending on the horsepower range of the engine, would apply only to 2008 and later model-year diesel engines. Engines in older equipment would not be regulated. (EPA's proposed rule would mark the first time advanced emissions control technologies would be incorporated into nonroad equipment.) However, as explained above, nonroad diesel engines built since 1996 already have had to comply with "three tiers" of emissions standards, with the focus on reducing NOx emissions. The new rule would be considered Tier 4 of the nonroad regulation and would allow small manufacturers of engines an additional one to three years to meet the emissions standards.

Low-sulfur fuel is necessary for the advanced emissions control technologies to be effective. The sulfur content of nonroad diesel fuel currently is unregulated and is at a level of 3,500 parts per million (ppm). To meet the targeted engine emissions reductions, nonroad diesel equipment would have to use diesel fuel with lower sulfur content: 500 ppm (which highway diesels currently use) beginning in 2007, and 15 ppm (which highway diesels will begin using in 2007) in 2010. Small refiners would be allowed two to three additional years to comply with the 2010 deadline for 15 ppm.

EPA is primarily relying on technology transfer from highway to nonroad diesels to achieve the intended emissions reductions. Highway engine makers have faced successive emissions reduction regulations, including 1990 highway emissions standards, the "2004 Highway Standards" (62 FR 54694, October 21, 1997), and the "2007 Highway Standards" (66 FR 5001, January 18, 2001). Engine makers met the challenge of Tier 1 and 2 nonroad standards by making engine modifications that already were being used in highway engines, under 1990 highway emissions standards (e.g., electronic and high-pressure fuel injection, turbo charging, and improved combustion chamber configurations). Similarly, the Tier 3 nonroad standards, which begin phase-in in 2006, were developed with the hope and expectation that nonroad engines could use the types of technologies that will be developed for the 2004 Highway Standards (e.g., cooled exhaust gas recirculation and advanced electronic fuel injection).

This rulemaking (Tier 4) marks the first time advanced emissions control technologies would be incorporated into nonroad equipment. EPA's proposal is relying on the next generation of diesel emissions control technologies, which is the basis of the recent 2007 Highway Standards, to meet future Tier 4 nonroad standards. The 2007 Highway Standards call for advanced exhaust aftertreatment technology, coupled with substantial reduction in the sulfur content of highway diesel. It is important to note that the prior highway and nonroad emissions standards have required reductions that could be achieved from modification to the engines alone, without additional exhaust aftertreatment. EPA's Tier 4 nonroad proposal would require a system-based

approach to emissions reductions, including refinements to the diesel-powered system as a whole, which includes the engine, the equipment shell, the diesel fuel, and the use of aftertreatment devices.

It also is important to note that although nonroad emissions regulations are relatively recent—in comparison to highway diesel standards first published in 1974—the rate of nonroad emissions reduction has been much more dramatic. By the year 2006, nonroad engines will achieve substantial emissions reductions equivalent to those achieved 30 years after the first highway standards took effect. Thus, today's proposal seeks to address the last 15 and 18 percent of PM and NOx emissions, respectively.

Clean Air and Construction

It is against a backdrop of complex and influential air quality regulations that EPA's nonroad emissions control proposal is introduced. Nonroad diesel engines (used in construction equipment) emit pollutants that are controlled by EPA regulations. If a geographic area does not meet EPA's air quality standards, the state may directly impose requirements on the users of diesel engines to reduce pollution. For example, states could impose idling or operating restrictions on the use of construction equipment; require the early retirement and replacement of older diesel equipment; or mandate the retrofit of old nonroad engines via contract specifications or bid preferences that favor contractors who own cleaner-burning equipment. Potentially more troubling, however, is the influence of diesel emissions to the Clean Air Act (CAA) "transportation conformity" provisions, which can result in the denial of federal highway funding. The conformity provisions state that federal departments and agencies may not approve, permit, or provide financial support to most highway and transit projects in areas that have not attained air quality standards, unless such projects conform to the state plan for achieving air quality. A transportation conformity "lapse" can result in the freezing of federal transportation funds and the halting of much needed transportation infrastructure projects.

The consequences of not meeting air standards have long been a problem for construction, but the problem is about to get worse. In 1997, EPA strengthened the ozone (smog) and particulate matter (dust/soot) standards. EPA delayed implementing these standards, because it was tied up in lawsuits. In 2001, the U.S. Supreme Court upheld EPA's authority to issue the standards. The ozone and particulate matter designations of attainment and nonattainment areas are expected to take place in April to December 2004.

As states prepare to meet tougher air quality standards, EPA has come under increased pressure to develop strict nationwide rules to cut emissions from nonroad construction equipment, as well as the sulfur levels in nonroad diesel fuel. This push takes into account the fact that the CAA vests the federal government with near-exclusive authority to impose emissions control standards on new nonroad engines used in construction equipment (California is the one exception) and provides the backdrop of today's proposal.

II. SUMMARY OF CONSTRUCTION INDUSTRY CONCERNS

AGC and NAHB support the objective of clean air and recognize the pressure the agency is under to reduce nonroad emissions. EPA is proposing an ambitious, "technology forcing" program and has tied the fuel and engine standards to each other because the emissions standards would not be feasible without a fuel change. This approach is similar to other rulemakings covering highway engines. In summary, AGC and NAHB are greatly concerned that EPA is requiring the development and demonstration of technologies that currently do not exist in order to meet the proposed emissions levels. We accept the use of a systems approach to setting future nonroad fuel and engine standards, as we recognize that engines and fuel are both part of an integrated diesel power system but question the extent to which this approach can be transferred from highway to nonroad equipment. However, we oppose any new nonroad engine emissions standards or low-sulfur fuel requirements that would disrupt power output, durability, ease of maintenance, safety, cost, or other factors important to users of nonroad diesel systems. AGC's and NAHB's concerns relating to the availability and cost of implementing emissions reduction technologies, as well as issues associated with fuel availability and increased price, are summarize below and explained in detail in the following pages.

Future Nonroad Engine Emissions Standards

EPA must recognize in developing this rule that nonroad construction equipment demands superior performance and a source of power that is efficient, economical, durable, and reliable to meet the requirements of the job. The diverse array of nonroad construction equipment requires a wider range of engine sizes, power ratings, configurations, and mechanical capabilities than the more narrow range of highway diesel sizes and designs.

Because of issues associated with the diversity of the nonroad equipment fleet, the challenging conditions in which they operate, space constraints, and the lack of existing technology, AGC and NAHB urge EPA not to require further reductions in nonroad diesel engine emissions unless (or until) it demonstrates that the necessary technology (emissions control devices) and accompanying low-sulfur fuel is available and will work effectively in all nonroad applications. In addition, AGC and NAHB ask that emissions control devices be available in nonroad engine markets several years prior to implementation of a new standard for nonroad engines.

It is equally important to the construction industry that the costs of meeting a new engine emissions standard do not dramatically increase the purchase price of typical new nonroad diesel equipment. Section III of these comments contains a thorough explanation of our concerns as they relate to the feasibility and cost of this rulemaking.

Furthermore, EPA has indicated that as a part of the rulemaking process it intends to hold a Technical Review Study ("Tech Review") in 2007 to ascertain the technological feasibility of introducing further emissions control technologies on those engines less than 56 kW (75 hp) for nonroad applications. The intended purpose of the proposed Tech Review is to review the progress of the aftertreatment technology and its appropriateness for adoption on the smaller machines. AGC and NAHB believe the scope of the Tech Review proposed by the agency is far

too limited given the unknowns associated with this rulemaking. We strenuously urge EPA to conduct a rigorous and more comprehensive review of the technology of emissions reduction strategies in 2007 and prior to the full implementation of the standards proposed by this rule.

Nonroad Diesel Fuel—Supply Disturbances and Price Volatility

EPA currently does not regulate diesel fuel that is not intended for use in highway engines. Specifically, diesel fuel sold for use in most nonroad applications such as construction equipment has sulfur on the order of 3,500 ppm. In comparison, current standards for fuel used in highway diesel engines limit sulfur concentrations to a maximum of 500 ppm and the cap will drop even lower to 15 ppm in June 2006.

Desulfurization of diesel fuel to very low levels involves substantial capital investments and added operating expenses by petroleum refiners. AGC and NAHB are of the opinion that refiners are the best equipped to evaluate the potential cost and supply impact of a proposal to lower sulfur in nonroad diesel fuel. However, we urge EPA to appropriately sequence, with minimum overlap, the fuel specification changes to mitigate the potential for major disruptions in supply and resulting significant price variation.

AGC and NAHB recognize that EPA's ability to achieve more stringent standards for nonroad engines may be limited by the high sulfur levels in nonroad diesel fuel. However, we are concerned about the ability of refiners to provide high quality nonroad fuel immediately after large sulfur reductions for gasoline and highway diesel fuel are mandated. Our concerns related to the diesel fuel components of this rulemaking are further described in Section IV of these comments.

III. ENGINE EMISSIONS REDUCTIONS: TECHNOLOGY CHALLENGES AND COST CONSIDERATIONS

EPA acknowledges this proposed rule is "technology forcing," meaning there are gaps in existing technology (i.e., engine enhancements/modifications and exhaust aftertreatment systems) that must be bridged to meet the proposed nonroad emissions standards. Attainment of the proposed nonroad standards would require the close cooperation of engine manufacturers, equipment manufacturers, aftertreatment manufacturers, and fuel refiners. Even though many emissions control technologies already have been (or will be) developed to meet required highway diesel emissions reductions by 2006, nearly all affected stakeholders have strenuously raised concerns that nonroad emissions reductions certainly will require additional technology solutions that have yet to be identified or developed. Therefore, it is impossible to project the realistic costs associated with the implementation of this proposed rule.

As end-users of nonroad construction equipment and vehicles, AGC and NAHB believe that the engine, equipment, and aftertreatment manufacturers and fuel refiners are the best equipped to evaluate the potential cost and supply impact of this proposal. We have met with the key

stakeholder groups[4] to ascertain the concerns of those entities directly affected by the rulemaking. Following is a synopsis of the main feasibility and cost concerns that are most likely to have the greatest impact on the construction and development industry and, thus, AGC and NAHB members.

Technical Issues Associated with Emissions Reductions

Nonroad Engine Enhancements/Modifications

The construction industry relies on nonroad equipment to successfully perform under harsh conditions, which are typical to construction jobsites. These conditions present a variety of challenges and may impede the successful implementation of many engine enhancement technologies (e.g., exhaust gas recirculation (EGR), advanced electronic fuel injection, and turbo charging). As outlined in a recent study published by DTF,[5] the challenging environment in which construction equipment is operated includes:

- Elevated dust levels;
- High vibration and shock levels;
- High operating temperatures;
- Variations in engine output demands (i.e., the amount of power required to perform the operation of the equipment);
- Variations in duty cycles (i.e., the amount of time the equipment is in operation); and
- Tight access, maneuvering spaces, and clearances.

In response to these obstacles, contractors and developers demand equipment that is highly reliable and durable.

The conditions outlined above also present challenges to the application of aftertreatment systems. For example, as described by DTF, diesel particulate filters (DPFs) and diesel oxidation catalysts (DOCs) often necessitate a narrow temperature window to ensure maximum efficiency, a temperature window that cannot often be ensured in conditions associated with construction applications. Similarly, NOx absorbers have both high- and low-temperature requirements, with efficiency decreasing with lower temperatures. These engine emissions reduction strategies also can require optimal tuning and a restricted range of power output conditions, which can be exacerbated by site and conditions extremes.

AGC and NAHB share the engine and equipment manufacturers' concern that the harsh conditions under which construction equipment must operate may prevent many highway emissions technologies from being suitable for many nonroad applications, and urge EPA to take

[4] These groups include the Diesel Technology Forum (DTF), the Association of Equipment Manufacturers (AEM), the Engine Manufacturers Association (EMA), and the Manufacturers of Equipment Controls Association (MECA).
[5] Diesel Technology Forum, *Diesel-Powered Machines and Equipment: Essential Uses, Economic Importance and Environmental Performance* (Frederick, MD: 2003).

technological gaps into consideration when determining the scope of the Tier 4 emissions reduction standards.

Aftertreatment Systems -- PM Emissions Reduction Technologies

The majority of industry groups are concerned that EPA is too heavily relying on PM emissions reduction technologies that are still under development for highway applications. As these groups have warned EPA, those technologies may not be readily transferable to nonroad applications. AGC and NAHB share these fears and suggest that EPA consider delaying compliance deadlines until PM emissions reduction technologies have been demonstrated to be effective and available for several years.

While the Manufacturers of Equipment Controls Association (MECA) has been quick to point out that technology to reduce diesel PM emissions currently is available, and reports that PM technology, including DOCs and DPFs, have been used for both onroad and offroad applications for years, and the technologies can be employed in a cost-effective manner in the engines ranging from 25 to 750 hp, AGC and NAHB worry that MECA's statements lack completeness. The vast majority of PM emissions solutions have been employed on engines within the 75 to 600 hp range only; the range of those commonly found in highway applications. The nonroad diesel proposal would demand PM reductions from a much larger range of engine sizes (i.e., engines ranging in size from 8 to 3000 hp). Therefore, PM (as well as NOx – see below) aftertreatment could require costly electronic components that currently are not included in the engine or equipment design in the smaller powerbands. These electronics could affect engine performance, reduce fuel economy, reduce engine durability, and ultimately substantially increase the price of the equipment. In addition, as described below, nonroad applications entail vastly different physical conditions, under which existing highway technologies may not be appropriate. Therefore, the agency must proceed with caution.

Aftertreatment Systems -- NOx Emissions Reduction Technologies

AGC and NAHB are alarmed that EPA is proceeding with an aggressive NOx emissions reduction program in the absence of existing NOx emissions reduction technology. MECA has stated that NOx technology will be readily available in the future. This premise is based on the fact that selective catalyst reduction (SCR) technology has been used on stationary sources and some mobile sources. MECA believes that NOx absorbers can be transferable to nonroad applications. We are not convinced.

This theory is in opposition to a chorus of industry groups that have raised conflicting concerns. For example, the Association of Equipment Manufacturers (AEM) remains concerned that emissions reduction technologies that will be effective in reducing PM and NOx emissions in the large and small engine powerbands have not yet been identified. As stated previously, it is not a foregone conclusion that highway technology can be seamlessly applied to nonroad applications. In addition, NOx emissions reduction technologies also will face challenging nonroad application conditions.

EPA has yet to fully investigate the effectiveness of aftertreatment technologies in nonroad applications. AGC and NAHB urge EPA to resist basing a significant regulatory program on a single industry group's crystal ball without adequate assurances that such technologies will be available, effective, and affordable. Given that engine and equipment manufacturers could be held to emissions reduction standards that are not technologically feasible, at a minimum, EPA must include a comprehensive technological review within the proposed rule and be prepared to delay compliance deadlines until technology is available.

Space Constraints in Engine Compartments

In addition to the above challenges associated with nonroad application conditions, AEM, DTF, and the Engine Manufacturers Association (EMA) have raised concerns over space constraints in nonroad engine compartments. Both engine modifications and exhaust aftertreatment technologies (which would be required to meet the proposed emissions reductions) would have to be applied to diesel engines installed in diesel equipment that generally has very little available space within the engine compartment. AGC and NAHB share these concerns.

Though MECA offers reassurance that there is 25 years of experience in designing and implementing emissions reduction technology, no one can foresee how extensive and complex the redesign of product lines will have to be to accommodate the required emissions reduction technology. EGR systems can take up substantial space, and PM and NOx strategies may require new electronic infrastructure.

In addition to engine compartment redesign issues, nonroad equipment has safety, visibility, and functionality requirements that will have to be accommodated with the addition of any additional technology. Equipment designs must comply with Occupational Safety and Health (OSHA) and other worksite safety standards for visibility, rollover protection, stability, engine lockouts, and other requirements. EPA must include all of these considerations in its deliberations, and allow sufficient time for redesign, manufacture, and approvals.

Cost Issues Associated with Emissions Reductions

As stated above, the emissions reduction requirements of the proposed rule will represent an additional cost burden to engine and equipment manufacturers and ultimately the equipment purchaser. These additional costs will be associated with technology development, along with the costs of engine and equipment redesign, enhancement (i.e., the addition of previously nonexistent electronic systems), and manufacture. AEM, EMA, and DTF have stated that the ultimate extent of these costs is exceedingly difficult to quantify. Because of the added level of complexity in the nonroad marketplace, it is likely that these costs will be more expensive for the nonroad industry than EPA's previous history with highway requirements. Some industry sources suggest the cost increases to the equipment users will be from 2 to 35 percent, with the greatest impact being felt by those purchasers and users of machines less than 100 hp.

The Diversity of the Nonroad Industry

The highway diesel industry consists of a relatively small number of heavy-duty diesel engine makers providing engines to a relatively small number of heavy-duty highway vehicle manufacturers (the minority of which produce the vast majority of vehicles). In comparison (as described by DTF) the number of nonroad diesel engines is nearly four times the number of highway engines and more than 1,700 equipment manufacturers are involved. Because of the diversity in the marketplace, the emissions reduction solutions (i.e., resolving space issues and maintaining suitable temperature ranges) will have to be specifically engineered for a large number of equipment designs and uses. It is possible that each specific engine could require a complex redesign for each specific equipment application.

EPA's nonroad proposal relies on the "swapping" of highway emissions reduction technology and applying it to nonroad applications. Even if highway technology is applicable, there are nonroad equipment manufacturers that are not involved in highway equipment production and simply will have nothing to "swap," resulting in an increased economic burden as they are forced to either build a program from the ground up or purchase emissions reduction technology outright. Further compounding the economic impact of this proposed rule is the fact that nonroad equipment is often sold in relatively lower volumes as compared to highway equipment. EMA points out that the costly and complex redesigns that this rule will require will be amortized over a very small number of units, likely resulting in capital expenses being pushed onto the end user in the form of hikes in equipment prices. AGC and NAHB urge EPA to move forward with those flexibility provisions that they have included in this rulemaking as a means of lessening the economic burden that this rule will represent as proposed.

Unintended Consequences of an Additional Cost Burden

Though the magnitude is difficult to quantify, there is no question that the proposed rule will result in costly redesigns for a diverse universe of equipment product lines. According to EPA, the cost of nonroad equipment will increase on the "average" of between 1 to 2 percent of the retail cost for the vast majority of equipment. EPA also notes, however, that these costs could range higher for some types of equipment. It is likely that these higher costs will be in the lower powerbands and could potentially represent considerable percentage increases in cost, though the level of unknowns described above prevent an accurate cost projection. In light of this, EPA should conduct a cost-benefit analysis of requiring costly emissions reduction technology development and product redesign for the lower powerband and consider an exemption, because the cost per ton of reductions could be far more expensive than those reductions gained in the larger powerbands. Regardless, both DTF and AEM warn that this increase in cost from emissions reduction technology requirements could result in the unintended consequences of retarding emissions reductions. The increase in cost of nonroad diesel equipment could slow fleet turnover and consequently slow improvements in air quality.

Implementation Recommendations

In light of the technological feasibility and economic concerns raised by AGC and NAHB, as well as other industry groups directly affected by the agency's proposed nonroad rule, we urge EPA to move forward only after rigorously researching and carefully considering its implementation plan. As described below, AGC and NAHB are concerned with EPA's planned Tech Review and urge the agency to consider appropriate timing of the regulatory requirements. In addition, we support the agency's provisions for implementation and compliance flexibility.

Technological Review

In light of the "technology forcing" nature of the proposed rule and the issues raised above, AGC and NAHB are very concerned that EPA has decided not to conduct a comprehensive technology review to evaluate progress in developing and demonstrating technologies that will be used to reduce nonroad engine exhaust emissions and to lower the sulfur level of nonroad diesel fuel (in accordance with the dates proposed in the nonroad rule). As proposed, it is entirely possible that engine and equipment manufacturers could be held to standards that are simply impossible to attain due to technological gaps that have not been filled. Because of this possibility, it is irresponsible for EPA to not include a comprehensive technological review as part of this rule.

We strongly urge EPA to assess the progress of (1) manufacturers of diesel engines and emissions control systems in developing technology to reduce exhaust pollutants from all horsepower ranges, and (2) the fuels industry in developing and demonstrating technologies to effectively lower the sulfur level of highway diesel fuel in order to assess the appropriateness of emissions reduction standards and prior to moving ahead with the advanced phases of the rulemaking. An essential element of the Tech Review should be the creation of an government/industry sponsored Pilot Program to field test a sample piece of equipment from every power category that complies to final Tier 4 emissions limits to gather information on technology transfer, performance, and incremental costs.

Timing of Regulatory Requirements

AGC and NAHB repeat EMA's concern that proper timing of the regulatory requirements that this rule proposes is essential. This proposed rule would mandate costly redesign activities that will be required in addition to redesign activities already imposed by existing regulations. Tier 3 nonroad diesel standards (described above) will be phased in starting in 2006 and will represent an economic burden for engine makers and equipment manufacturers. These groups need a stable time period in which to recapture those expenditures through engine and equipment sales before Tier 4 standards force them back into the costly redesign process. Further, the NOx emissions reductions required by this rule need to coincide with the availability of diesel fuel with sulfur levels at 15 ppm. EPA must ensure that engine makers and equipment manufacturers have adequate time to recoup the investments made in from the first design process.

Beyond timing issues related to economic considerations, AGC and NAHB urge EPA to consider the availability of appropriate technology for emissions reductions. We urge EPA to refrain from implementing emissions standards until emissions reduction technology has been developed and has been demonstrated to be adequately effective with low-sulfur diesel fuels in all nonroad applications. AGC and NAHB would prefer to have adequate emissions control technology available in the marketplace for several years prior to emissions standards taking effect, thereby accommodating practical experience with implementation and ensuring an adequate supply of emissions reduction products.

Support for Regulatory Flexibility

The flexibility provisions EPA is proposing for engine makers and equipment manufacturers are encouraging. Such provisions, in light of the timing issues as well as the technological feasibility and economic impact concerns, can lead to easing the burden on the nonroad diesel industry, promote compliance, and ultimately result in air quality gains.

Inasmuch as EPA promotes flexibility for engine and equipment manufacturers (and allow affected parties some decision making role in activities that are required to meet emissions reduction standards), AGC and NAHB support both revisions to the Averaging, Banking, and Trading Program. Similarly, AGC and NAHB support EPA's proposed Transition Provisions, including:

- Percent-of-Production Allowance;
- Small Volume Allowance;
- Hardship Relief Provision; and
- Existing Inventory Allowance.

IV. FUEL ISSUES AND CONCERNS

Nearly 100 percent of nonroad construction equipment—almost $17 billion worth—is diesel-powered. It is our understanding that low-sulfur diesel fuel will be required to run the next generation of nonroad diesel equipment. Equipment manufacturers maintain that the emissions systems in Tier 4 engines would not perform properly, and may even require repairs or replacement, if high-sulfur fuel were to be used in new Tier 4 engines. AGC and NAHB share the concerns of equipment and engine manufacturers that low-sulfur diesel fuel will not be available throughout the nonroad sector. AGC and NAHB support EPA's efforts to assure the implementation of the new standards and low-sulfur fuel as a systems approach. Furthermore, we also support certain requests of the oil industry that will keep low-sulfur fuel readily available to the nonroad market and perhaps help to keep costs down.

Two-Step Approach – Low-Sulfur Fuel Specifications

AGC and NAHB believe the two-step approach for the phase-in of low-sulfur diesel fuel will keep nonroad diesel fuel costs down and better ensure its widespread availability. This approach

calls for the introduction of 500 ppm sulfur fuel in 2006 followed by the changeover to 15 ppm ultra-low sulfur diesel (ULSD) in 2010. This approach would provide significant emissions reductions while minimizing any further pressure on diesel fuel supplies, according to the American Petroleum Institute (API). Railroad and marine diesel fuel would remain at 500 ppm until such time as the agency promulgates emissions standards for these sectors, which also require advanced emissions control equipment.

The two-step approach yields greater emissions reductions earlier than a single step approach and results in roughly equivalent aggregate benefits over time, according to API. Furthermore, this approach avoids significant overlap with the 2007 Highway Standards that EPA already has promulgated, thereby allowing for a more efficient use of capital. Consumers would benefit from this approach, as less pressure on ULSD supply should assure better diesel fuel availability for all markets. This is particularly important with the tight fuel markets the U.S. faces domestically and worldwide. For these reasons, AGC and NAHB fully support the two-step approach.

Alternative Approach

In the proposed rule, EPA suggests an alternative to the two-step introduction of low-sulfur diesel fuel and EPA requests comment on an alternative program option that calls for introducing 15 ppm fuel in one step by 2006 across the board.

Refiners have warned EPA about potentially requiring the 15 ppm standard earlier than 2010. Requiring ultra-low sulfur diesel fuel for both highway and nonroad engines at the same time would potentially impact supply and distribution. Setting the fuel standards in a two-phase approach would ease these concerns, but not eliminate them.

Although AGC and NAHB understand the rationale for introducing lower sulfur fuels as soon as possible, we find the two-step low-sulfur fuel introduction to be more appropriate. The phased-in approach will help to ensure an adequate supply to all the nonroad markets and keep fuel costs lower.

Co-mingling Highway Diesel with Nonroad Diesel

Refiners have asked EPA to allow the co-mingling of any on-highway diesel fuel over the 15 ppm cap with nonroad diesel fuel as fungible equivalents. The EPA proposal as written forces the producers to re-refine any downgraded highway diesel found slightly over the 15 ppm cap, or sell it at a substantial loss as heating fuel, rather than to allow it to be sold into the nonroad fuel market. We believe EPA should allow off-specification highway diesel fuel to be co-mingled with the Step 1 (500 ppm) nonroad diesel pool for sale to the nonroad segment.

Revising this position would preserve efficiencies in the refined product transport and storage system, thereby helping to keep costs down, while providing a superior fuel to the off-highway market at a reasonable cost. This allowance would serve to lower the overall sulfur content in the total off-highway pool, thereby effectively reducing sulfate-derived particulates being

emitted by the off-road fleet. AGC and NAHB support the oil industry's request to allow co-mingling of the off-specification highway diesel fuel with the fuel being sold in the nonroad market.

Impact of ULSD on Engine Performance and Longevity

Some contractors have questioned whether the use of ULSD will result in reduced fuel economy. According to the DTF, as refiners remove sulfur from diesel, fuel can have a slightly lower energy content. The impact likely will vary from refinery to refinery and from tank to tank, based on refinery operating conditions, equipment, feedstocks, and blendstocks. Nonetheless, this remains a valid concern of the construction industry and AGC and NAHB are concerned about the long-term impact of ULSD on nonroad engine performance and longevity.

In addition, DTF has noted that as refiners remove sulfur from diesel, the lubricating properties tend to degrade. This is a well-known issue that the refining industry has been trying to address through the use of lubricity additives. Currently there is no lubricity standard for diesel fuels and this concerns AGC and NAHB as well.

Finally, the use of ULSD may cause certain types of fuel system seals to leak. This is due to the fact that certain properties of low-sulfur fuel formulations are incompatible with the rubber and elastomer seals and hoses used in older nonroad engines. The cause of this problem is now understood and has been addressed for most engines newer than 1993. However, contractors and builders who own and operate equipment with pre-1994 engines may not be able to use ULSD because it is not compatible with certain engine components. This may pose a problem for the construction industry if ULSD enters the market too quickly and contractors make the switch without consulting with their original equipment manufacturers. EPA should urge engine manufactures and fuel refiners to agree on lubricity standards before ULSD enters the market, as well as considering the influence of ULSD on seals as they move ahead with the proposed rule.

V. EXISTING FLEET REQUIREMENTS

AGC and NAHB would additionally like to raise our support of the continued prohibition on federal retrofitting requirements. Though not included in the current rulemaking, AGC and NAHB would like to take this opportunity to reiterate our opposition to further controls on nonroad diesel engines that would apply to existing construction equipment. Only equipment with engines built after a rule's implementation date should be regulated under a new standard. Although EPA sets and enforces emissions standards for new diesel engines, the agency lacks the statutory authority to retroactively strengthen the standards for existing engines. Congress limited EPA's authority in this regard because it would cause extreme hardship to require either equipment owners/operators or engine manufacturers to conduct engine enhancements on millions of in-use vehicles across the nation. To this end, it would be impractical, as well as illegal, for EPA to enforce such a retroactive requirement.

EPA has recently come under pressure to implement mandatory federal and local retrofit programs, instead of waiting for the next generation of equipment to replace existing machines. While EPA cannot require owners and operators of diesel fleets to reduce emissions from their existing engines, there are several strategies that can be used to encourage voluntary emissions reduction projects. These strategies include targeted subsidies, tax incentives, federal/state grant programs, and emissions credit trading programs. Recognizing that older construction equipment is a good candidate for retrofit, AGC and NAHB are committed to supporting these voluntary initiatives and providing their members with the information they need to make the program work wherever there is local interest. However, we oppose certain government tactics—specifically contract specifications and bid preferences—that favor certain contractors, depending on whether or not they retrofit.

VI. CONCLUSION

AGC and NAHB support the objective of clean air and recognize the pressure the agency is under to reduce nonroad emissions. Nevertheless, we are greatly concerned that EPA is requiring the development and demonstration of technologies that currently do not exist in order to meet the proposed emissions levels. Because of issues associated with the diversity of the nonroad equipment fleet, the challenging conditions in which they operate, space constraints, and the lack of existing technology, AGC and NAHB urge EPA not to require further reductions in nonroad diesel engine emissions unless (or until) it demonstrates that the necessary technology—and accompanying low-sulfur fuel—is available and will work effectively in all nonroad applications. In addition, we urge EPA to appropriately sequence, with minimum overlap, the fuel specification changes to mitigate the potential for major disruptions in supply and resulting significant price variation.

In conclusion, AGC and NAHB oppose any new nonroad engine emissions standards or low-sulfur fuel requirements that would disrupt power output, durability, ease of maintenance, safety, cost, or other factors important to users of nonroad diesel systems. It is equally important to the industry that the costs of meeting a new engine emissions standard do not dramatically increase the purchase price of typical new nonroad diesel equipment.

Thank you for your consideration of these comments. If you have any questions, or if you would like to discuss our comments or recommendations, please do not hesitate to contact our organizations. Questions or comments for AGC can be forwarded to Leah Wood at (703) 837-5332. Questions or comments for NAHB can be forwarded to Susan Asmus at (202) 266-8538 or Chandler C. Morse at (202) 266-8327.