CARB’S PROPOSED OFF ROAD DIESEL REGULATIONS & CONSTRUCTION IN CALIFORNIA

• Construction businesses are dedicated to playing an active role in improving the state’s air quality. Over the past five years in Southern California alone, we have replaced more than 1,000 high polluting machines resulting in a reduction of over 3,787 tons of pollution every year.

• We are committed to working with CARB, environmental organizations, the Legislature and other stakeholders to find a feasible solution that achieves the state’s air quality goals while allowing contractors to meet the standards in a reasonable timeframe. We are asking the Board to level the playing field by maintaining its original timeline for implementation of these rules so that the economy, workforce, small businesses, California’s infrastructure and the environment all win.

• Within its currently proposed timeframe CARB’s rule is not viable from an economic or technological perspective. The Board’s original plan called an 18-year timeline to meet the state’s goals of reducing particulate matter emissions only. Due to delays in developing these rules that timeline has been reduced to 13 years. In addition, the regulation of NOx emissions has been added to the rule – which significantly alters the technology needed and available for companies to be in compliance.

• There is no “Toyota Prius” version of the backhoe or bulldozer available on the market today. In fact, the technology to retrofit or replace approximately 165,000 off-road vehicles to meet the proposed standards is not currently available, and in some cases won’t be, for another seven years. Restoring five years to the implementation timeframe will equip manufacturers with the time to catch-up with California’s progressive air quality standards and distribute the massive expense of purchasing new equipment out over a longer period.

• This proposal would have a devastating impact on construction companies that employ nearly one million Californians. The total cost of implementing these rules under the current timeframe will be at least $9 billion. As a result, many construction businesses will be forced to either significantly reduce their workforce to be in compliance or go completely out of business – which means the loss of many high-wage union jobs.

• These rules will also significantly reduce the buying power of the historic $43 billion infrastructure bonds the people of California approved in November. If these regulations are put into place in their current form, fewer roads, schools, housing and levees will be built and the pace at which these projects can be completed will be significantly slowed.
THE FACTS: CARB’S PROPOSAL & OUR COMMITMENT

The construction industry has been keenly aware of the concern over PM, NOx and visible emissions from construction equipment for many years. In an effort to become a part of the clean air solution, the construction industry joined together to create the Construction Industry Air Quality Coalition (CIAQC).

The public wants cleaner burning off-road construction equipment just as much as they want to rebuild our crumbling infrastructure. We do too. That’s why we have replaced over 1,000 high emission machines over the past five years resulting in a reduction of over 3,787 tons of pollution every year. And that’s also why we worked to help pass the California Infrastructure Bonds last year. We know we can do better. Our goal is to work with regulators, stakeholders and environmental leaders to realistically address these issues as we build a better, cleaner California.

California’s Construction Industry: Reaching a Clean Air Solution Together:

The California Air Resources Board (CARB) recently announced new regulations designed to reduce Particulate Matter (PM) from all diesel fueled engines in California by 75% by 2010, and by 85% by 2020. CARB also later decided to seek accelerated reductions in NOx from off-road engines at the same time. These accelerated targets will have a profound effect upon California’s construction industry – an industry that has already heavily invested in cleaning up the air. Not only will they drive companies out of business, result in job losses, and delay and increase the costs of construction, these new regulations, as written, are simply not viable because:

• The financial resources don’t exist. It will cost at least $9 billion to meet these targets.
• The technology doesn’t exist. Manufacturers cannot yet produce the engines needed to meet the targets.
• There is not enough time to meet these targets. Even if the technology existed, the demand for 165,000 new pieces of equipment would still far exceed the supply.

In addition, the regulations would have a detrimental impact upon the cost and timing of new construction authorized by the voters in the infrastructure bonds approved last November.

California’s Construction Industry: Part of the Clean Air Solution

The Construction Industry has proposed a more realistic approach to meet our clean air goals:

• Time - Adopting the original 18-year timeline to meet the 85% reductions originally proposed by CARB, rather than the reduced 13-year schedule.
• Turnover – Correctly estimating the natural equipment turnover rate.
• Tender – Maintain incentive funding, like the Carl Moyer program, to promote faster turnover.
• Technology – Since there is currently no device that will reduce both NOx and PM emissions, we must fix the technology conflicts between PM and NOx reduction strategies.

The Construction Industry is dedicated to playing an active role in improving the state’s air quality. Contractors are already pursuing an aggressive engine re-powering program to clean up the air through the Carl Moyer Program and have endorsed CARB’s new diesel fuel standards and engine standards for newly manufactured engines.

*The Coalition to Build a Cleaner California is dedicated to improving California’s air quality while maximizing the historic infrastructure investment approved by California voters in November 2006. The Coalition’s members include the construction industry, its workers and infrastructure stakeholders.*
Quick Facts about the Construction Industry

The construction industry has played a powerful role in sustaining economic growth, in addition to producing structures that add to productivity and quality of life.

- **Construction is a significant source of jobs.** The industry provides jobs for 7.7 million employees—more than 5% of the total nonfarm workforce. Even as homebuilding has declined recently, nonresidential construction has added 185,000 jobs in the past year—nearly 9% of all new net jobs.

- **Construction jobs are good-paying jobs.** In January 2007, seasonally adjusted hourly earnings in construction averaged $20.51, 20% higher than the average for all private industry nonsupervisory workers, according to BLS.

- **Construction makes a disproportionately large contribution to GDP.** The value of construction put in place in 2006 totaled $1.2 trillion, 9% of gross domestic product (GDP). Residential spending totaled $639 billion; nonresidential, $559 billion.

- **Construction is a substantial purchaser of U.S. manufactured products.** In 2006, shipments of construction materials and supplies topped $500 billion—nearly 11% of total U.S. manufacturers’ shipments. Shipments of construction machinery totaled $36 billion—11% of all U.S. machinery.

- **Materials costs are a major problem.** In the past three years, the producer price index for construction materials and components jumped 22%, more than double the 9% rise in the consumer price index.

- The typical construction **firm size** is very small. In 2005, there were 831,000 construction establishments with 6.8 million paid employees, plus more than two million firms without paid employees—mainly self-employed individuals but also partnerships and holding companies. Thus, average employment was only eight per establishment. (An establishment is a permanent business location. Most construction firms have only one establishment.)

- **Small business** is big in construction. In 2005, 91% of construction establishments had fewer than 20 employees. Only 1% had 100 or more.

- Construction is a **low-margin** industry. Internal Revenue Service data for 2003 shows that the 676,000 corporations in construction had net income (less deficit) of $32 billion, or 2.8% of total receipts of $1.1 trillion. That was barely half of the all-industry average margin of 5.5%.

- Construction is a **high-turnover** industry in terms of entering and exiting firms. Census data prepared for the Office of Advocacy of the U.S. Small Business Administration shows that 87,000 of 600,000 construction firms with employees in 2003 (14%) had no workers in 2002, while 78,000 firms closed.

- The 2006 Construction Industry Annual Financial Survey, conducted by the Construction Financial Management Assn. (www.cfma.org), included responses from 495 companies. **Net earnings** before income taxes in the most recent fiscal year averaged 2.4%. The median **return on assets** was 6.4%.
OUR MEMBERS

The Coalition to Build a Cleaner California is dedicated to improving California's air quality while maximizing the historic infrastructure investment approved by California voters in November 2006. The Coalition’s members include the construction industry, its workers and infrastructure stakeholders. A current list of our membership is below.

Construction Industry Air Quality Coalition Members

Associated General Contractors of California
Associated General Contractors of San Diego
Building Industry Association of Southern California
California Construction and Industrial Materials Association
Engineering Contractors Association
Engineering & Utility Contractors Association
Engineering and General Contractors Association
Mobile Crane Operators Group
Southern California Contractors Association
The California Rental Association

Labor Organizations

California Conference of Carpenters
Operating Engineers Local Union Nos. 3 & 12
Southern California Cement Masons Local 600
Southern California District Council of Laborers

Individual Construction Contractors

SKANSKA Construction
T.B. Penick & Sons, Inc.
Valley Contractors Exchange

Coalition Partners

AGC America
American Road and Transportation Builders Association
Associated Builders and Contractors
California Alliance for Jobs
California Building Industry Association
WHITE PAPER:
AN INDUSTRY PERSPECTIVE ON THE CALIFORNIA AIR RESOURCES BOARD PROPOSED OFF-ROAD DIESEL REGULATIONS

OVERVIEW & HISTORY

The California Air Resources Board (CARB) is currently considering regulations to reduce Particulate Matter (PM) and NOx emissions from off-road diesel equipment operated by the construction and many other industries in the state.

The Board first announced its intention to promulgate these regulations in 2000. The Board’s original plan called for an 18-year timeline to meet the state’s goals of reducing particulate matter emissions only. Now, after seven years of delays in developing these rules, that timeline has been reduced to 13 years. In addition, the regulation of NOx emissions has been added to the rule – which significantly alters the technology needed for companies to be in compliance.

Throughout this process, the construction industry voluntarily has begun to retrofit and replace older, high-polluting equipment with new, cleaner burning engines. In addition, the industry has demonstrated a willingness to work with CARB to develop a fair regulation that achieves the state’s air quality goals while providing contractors adequate time to meet the standards. Despite these efforts, the rules before the Board in their current form are not viable from an economic or technological perspective and cut off access to critical funding for retrofitting older equipment under the Carl Moyer Program. In addition, they threaten to seriously reduce the buying power of the $43 billion in bonds to build roads, schools, housing and improve the state’s flood control system approved by voters in November.

The industry maintains its commitment to working with CARB, environmental organizations, the Legislature and other stakeholders to find a feasible solution that achieves the state’s air quality goals while allowing contractors to meet the standards in a reasonable timeframe. By maintaining the original 18-year timeline for implementation of these rules, we have the opportunity to ensure California’s economy, workforce, businesses, infrastructure and environment all win.
**MOVING TOWARD THE GOAL**

The Construction Industry Air Quality Coalition (CIAQC) has been keenly aware of the concern over PM, NOx and visible emissions from construction equipment for many years. The public has also expressed a desire for cleaner burning, heavy duty, off-road construction equipment working in their neighborhoods.

The industry shares this concern and has taken action to proactively replace or retrofit older, higher-polluting off-road diesel equipment with cleaner models. A critical part of the industry’s efforts is funding available through the state’s Carl Moyer program for re-powering older construction engines.

The equipment most suitable for re-power includes scrapers, haul trucks, bulldozers, loaders, water pulls, water trucks, excavators, motor graders and trucks that transport cranes. Replacement engines for smaller equipment such as skid steers, backhoes and a host of other lower horsepower units are simply not available.

Since these funds became available, CIAQC has been encouraging construction companies to pursue an aggressive engine re-powering program. Over the past six years, twenty construction companies in the South Coast and San Diego Districts have re-powered 1,020 machines at a cost of $89 million. Carl Moyer Program provided $71.0 million with the remaining $18 million being provided by the machine owners themselves.

This single industry effort is the largest voluntary emission reduction program in the history of California and represents about 30 percent of the total funding statewide and about 10 percent of the total engines modified. It has resulted in a reduction of 3,797 tons per year of NOx and 126 tons per year of PM emissions. This accounts for 25 percent of the PM and 20 percent of the NOx program emissions reduced statewide.

The Legislature has recently committed $140 million a year, for the next five years, to continue the Carl Moyer Program. Under CARB’s proposed rule, however the industry would loose access to these funds almost immediately. While these funds will not make a significant dent (the 1,020 engines re-powered in Southern California accounted for just one-half of one percent of all the engines in the state construction fleet) in meeting the fleet emission targets under the proposed rules, they are nonetheless an important and essential tool in improving air quality.

**CONSTRUCTION-RELATED OFF-ROAD DIESEL EMISSIONS**

Before discussing the specifics of these regulations, it is important to note both the air quality goals CARB has set for the state and the level of construction related off-road diesel emissions.
These proposed regulations are part of CARB’s strategy to reach its overall goal of reducing PM from all diesel fueled engines in California by 75 percent by year 2010, and by 85 percent by year 2020.

Construction-related of-road diesel emissions in California represent 24 percent of the total PM emissions from mobile sources across the state. They represent less than one percent of total man-made PM emissions from all sources.

NOx emissions from construction engines represent about 19 percent of all emissions from off-road sources. They are about 9 percent of all man-made NOx emissions statewide.

**Fleet Technology & Size**

Estimating the exact number of off-road diesel construction vehicles in operation in California today is difficult because this type of equipment is built to last for decades and there is no vehicle registration program for this machinery. CARB estimates that there are approximately 165,000 pieces of heavy-duty off-road construction equipment in California. CIAQC believes the number may actually exceed 200,000. Whatever the exact number, it is likely that the total fleet will expand over the next decade as the state begins to issue contracts for the transportation, school, housing, and flood protection bonds approved by voters in November.

There are four levels of diesel engines in operation in California today, from the oldest and highest polluting Tier 0 engines to the newer and cleaner Tier 3 models. Cleaner burning Tier 4 engines – which will be the only engines that meet both NOx and PM requirements under CARB’s proposed rules - are not expected to come online in significant numbers until 2014. Based on a sampling of a cross-section of construction firms, CIAQC believes that 55 to 65 percent of the statewide fleet are Tier 0 engines (which are responsible for up to 70 percent of all PM emissions), 35 to 40 percent are Tier 1, approximately 7 percent are Tier 2 and less than 1 percent are Tier 3.

**The Economics of Retrofitting, Re-Powering & Replacing**

Currently there are five possible ways to modify the emission level of engines to achieve CARB’s goals by 2020:

- Institute updated engine standards for newly manufactured equipment
- Require the use of cleaner burning diesel fuel
- Retrofit existing engines with emission control devices
- Re-power older machines with new lower-emitting engines
- Retire old equipment and reduce fleet size and workforce

The first two of these options are already in effect in California, the technology is in development for the third and the fourth is possible for certain categories of equipment.
New engine standards for newly manufactured equipment and new fuel standards have already been adopted and agreed to by the engine manufacturers (Tier 4 engines represent the cleanest version of these). Ultra-low sulfur fuel was mandated for use in California beginning in June 2006. Research and development is underway to build particulate filters and catalysts called Verified Diesel Emission Control Systems (VDECS), which can be used to retrofit existing engines, but only one model is certified for use today. Finally, for long lasting heavy-duty off-road equipment the option of re-powering with new engines rather than rebuilding an old engine can be economically feasible.

In order to achieve the emission reduction goals established by CARB, 77 percent of all Tier 0 equipment (approximately 75,000 engines) would have to be re-powered to Tier 3 by 2010 and 90 percent by 2020. The cost of re-powering a single engine averages about $300 per horsepower. This means a duel engine, 1000-hp scraper will cost $300,000 to re-power with Tier 3 engines. In addition, nearly all of this equipment will also require after-treatment (retrofitting) with VDECS in order to meet the 2020 goal. The cost for retrofitting with a certified VDECS device is approximately $100 per horsepower, or more than $50,000 for a 500-hp engine, not including the cost of expensive ongoing maintenance costs and ash disposal.

It also appears unlikely that most existing equipment can be re-powered with Tier 3 engines due to the sophistication of the technology and challenges with integrating the transmission and hydraulic systems with the engine. If a Tier 2 re-power is used instead of a Tier 3, level 3 VDECS must also be used in order to meet the year 2020 standard. This would require an additional expenditure of $25,000 to $50,000 per engine.

Replacing the equipment altogether is also very expensive, with a new scraper costing in excess of $1,000,000. In addition, Tier 4 engines are the clear choice for contractors replacing their equipment, but they will not be available in significant numbers until 2014.

CIAQC believes the full cost to achieve the targets under the current timeframe set by CARB through replacing, re-powering and retrofitting would be at least $9 billion.

In addition, this equipment is the primary asset-base of most construction companies, and is often used as collateral in financing the start-up of construction contracts. Therefore, regulations requiring early retirement of the equipment by a date certain, or a prohibition on resale, can reduce the value of the equipment and severely impact company finances and borrowing ability. As companies struggle to replace their primary assets, many will be forced to downsize or cease to operate altogether, which means the significant loss of high-wage construction jobs.
THE LIMITS OF TECHNOLOGY

In addition to the enormous financial burden the Board’s proposed regulations will place on contractors, there are also several significant technological barriers to meeting the standards. First, there are currently no devices on the market to reduce both PM and NOx emissions that meet CARB’s standards. This means construction companies will have to invest in and “touch” many pieces of equipment twice with costly retrofits to comply with the rule.

The annual emission goals established by CARB in would also require the use of level 3 VDECS to retrofit virtually every piece of equipment. Most manufacturers have not developed a device to reduce emissions to that level. In fact, there is currently only one level 3 VDECS available for retrofitting heavy-duty off-road construction equipment and no certainty that it will ever be work reliably for many engine families. This system is also “active,” requiring a burner to achieve the proper exhaust temperature and special handling to dispose of the ash material created by the PM filter. And, its cost exceeds the assumption used by CARB in evaluating the economic impact of their proposed rule.

In addition, the Board’s process for VDECS certification is lengthy and costly. Some engine families may simply not be large enough to warrant the investment in producing an effective VDECS. Those engines would be unable to meet the new standards even if they are the newest available models.

Another challenge is the availability of a sufficient number of engines to re-power or replace the state’s existing fleet and meet the goal. Not only are not enough engines or equipment in existence, the capacity to produce them does not exist. To compound the situation, most new engines are used in the production of new equipment. The equipment manufacturers have been clear that they are interested in selling new equipment, not new engines – which will seriously diminish the opportunities for contractors to re-power their machines.

Given these facts, CIAQC has proposed several alternatives for consideration by CARB. First, by implementing this rule based on an 18-year timeline, as it originally said it would, CARB would allow technology and manufacturing to meet the demands for cleaner engine production.

Second, building on the success of the Carl Moyer program, CIAQC has offered a “fleet averaging” formula that would provide an incentive to every contractor to achieve emission reductions as quickly as possible. A fleet average would allow contractors to operate older specialty equipment by reducing emissions from other equipment ahead of schedule. A project based fleet average calculation would also accommodate the needs of smaller contractors who may be unable to meet vigorous compliance schedules.

Since most contractors know the size of their year 2000 fleets, each would be able to calculate their own baseline for purposes of establishing an 85 percent emission reduction
target. It would offer each contractor maximum flexibility in re-powering, retrofitting or replacing equipment to meet the goal.

A critical part of making this alternative work also involves allowing contractors to use actual emission levels in determining compliance. Under the proposed rules, CARB requires the use of “certified” levels set by the Board which can be two to three times higher than actual levels.

THE CRITICAL ISSUES

Put simply, the rules CARB has put forward are not viable or achievable. There are five primary reasons for this – unattainable annual limits, inadequate clean engine supply, limited clean engine technology, prohibitive cost and the fact that construction is a low-margin business.

Unattainable Annual Limits
Given the available resources and technology, the annual emission limits in the draft proposal released by CARB cannot be achieved by the contractors in the State of California. Even the most progressive firms, who have been re-powering and updating their fleets in anticipation of the regulation, cannot meet the annual goals set forward in the draft rule.

Inadequate Clean Engine Supply
There is an inadequate supply of engines or new equipment to meet the demand these regulations would place on the market. These rules require the purchase of more than 165,000 new pieces of equipment by 2020. Virtually all Tier 0 and Tier 1 engines will need to be replaced with Tier 2, 3 and 4 engines in 13 years. The Board consumed valuable and necessary time when they waited seven years to develop these rules and now the market is not able to meet the equipment demands. To put this into perspective, currently 10,000 new pieces of equipment are sold in California every year. Under these regulations, that number would have to grow to 15,000 each year for the next 13 years.

Limited Clean Engine Technology
The addition of NOx reductions to the proposed rule will force companies to re-power more engines (a very costly alternative), and make PM reductions a low priority. First, no retrofit device is available to achieve the NOx emission reduction requirements. This means companies will be forced to re-power or replace equipment – which significantly increased costs. The NOx requirement also makes it impossible for contractors to qualify for the Carl Moyer funding that has propelled the significant voluntary emissions reductions already achieved by the construction industry.

Prohibitive Cost
CARB has significantly underestimated cost of these rules. By assuming an unrealistic “natural” turnover for construction fleets and a lower number of machines covered under this rule, CARB’s economic analysis of its proposal does not accurately reflect the real burden of this proposal. In effect, CARB has inaccurately assumed that the construction
industry will spend billions on repowering, replacing and retrofitting equipment in the next 13 years without any new regulation. CARB estimates that the cost of the draft rule is only $3 billion dollars. CIAQC estimates the total real cost to the industry to be at least $9 billion. These costs are likely to be passed on to consumers, including the state as it contracts to build the roads, schools, housing and flood control systems voters authorized $43 billion in bonds to construct.

**Construction Is A Low-Margin Business**
Contractors do not have the financial resources to fund the program. Construction is a fiercely competitive business and contracts can be won or lost by only a few thousand dollars. Most contractors hope to achieve a profit of 2.5 percent to 7 percent and can on average, do so in three out of five years. After labor, materials, insurance, fuel and overhead, a very small portion of the $60 billion spent on construction every year in California is available for fleet upgrades. To meet these requirements, many businesses will need to downsize, which means construction workers will be laid off and capacity to build projects will decrease.

**WORKING TOGETHER TO IMPROVE AIR QUALITY**
The industry is committed to working with CARB to develop a solution to this to ensure the state’s air quality standards are achieved through the implementation of a viable and achievable rule. By making critical changes related to time, turnover, tender and technology, the Board can make it possible for the construction industry to meet its emissions reduction targets.

**TIME: Restoring CARB’S Original Implementation Timeline**
CARB’s original plan called for an 18-year timeline to meet the 85 percent PM reductions. Delays by the Board in developing a rule have reduced that schedule to 13 years. By adopting a strategy that virtually eliminates Tier 0 and Tier 1 equipment from the fleet, and relies heavily on a Tier 4 inventory, that will not become available from the manufacturers until 2014 for the higher horsepower equipment, there is simply not enough time or Tier 4 equipment before 2020, to replace the existing fleet.

**TURNOVER: Lower CARB’s Turnover Estimate to Realistic Levels**
CIAQC estimates the statewide fleet natural turnover at between 2 and 3 percent, significantly below CARB’s estimate. To achieve the CARB 2020 fleet makeup, approximately 140,000 pieces of equipment have to be repowered, retrofitted or replaced. That’s means more than 1,000 pieces of equipment, every month, for the next 13 years, that will need to be repowered, retrofitted or replaced. There is not enough manufacturing capacity for that much new equipment or engines for the California market. The major supplier of construction equipment, Caterpillar, ships less than 2,000 pieces of new construction equipment to California each year. Without that new equipment and engines it will be impossible to meet the NOx reductions required by this proposal.
TENDER: Help Alleviate the Cost Burden to Construction Companies
This proposal not only will inflict a $9 billion cost on the construction industry, but it will also end the availability of Carl Moyer funding for re-powering existing equipment. These funds have been an extremely important tool for accelerating the turnover of this equipment and without it many contractors will simply be unable to afford to retrofit or replace their equipment. These tremendous costs will lead many companies to downsize or go out of business completely which means the significant loss of high wage jobs for construction workers and increased costs for all construction projects, including to state and local government for building infrastructure.

TECHNOLOGY: Re-evaluate the Conflict Between NOx and PM Reduction
There is no retrofit device that will reduce both NOx and PM. As a consequence, the strategies proposed by CARB inherently conflict with any rational decisions that would be made by a construction company. Since most of the current fleet will have to be eliminated, no one wants to invest more money in equipment that they will have to dispose of before its useful life is completed. Having to repower one year, and retrofit two years later, and then replace completely five years after that simply makes no economic sense. As a result, it is likely that many small companies will disappear, many large companies will shrink their fleets and the overall ability of the construction industry to meet construction demand will diminish. That means higher prices, longer construction periods and fewer companies to keep prices competitive.

CIAQC believes it is possible to resolve these issues in a way that satisfies CARB’s air quality improvement strategy while keeping the industry economically viable, ensuring construction jobs are not lost and making certain the state’s historic $40 billion in infrastructure improvement bears as many roads, schools, houses and levees as possible. We look forward to working together to protect our environment and to build a better future for the people of California.

This white paper was prepared by the members of the Construction Industry Air Quality Coalition’s Task Force on Off-Road Regulation. Members of the task force include:

AGC America
American Road and Transportation Builders Association
Associated General Contractors of California
Associated General Contractors of San Diego
Building Industry Association of Southern California
California Alliance for Jobs
California Building Industry Association
California Construction and Industrial Materials Association
Engineering Contractors Association
Engineering & Utility Contractors Association
Engineering and General Contractors Association
Mobile Crane Operators Group
Southern California Contractors Association
The California Rental Association
For Immediate Release:
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Contact: Mike Lewis
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(626) 858-4611

Contractors, Construction Workers and Infrastructure Advocates To Off-Road Equipment Manufacturers:
“Pick up the Pace: Design and Build Clean Equipment!”

Sacramento, CA – As the Diesel Technology Forum showcases prototypes of cleaner burning off-road diesel construction equipment today in Sacramento, the Coalition to Build a Cleaner California called on equipment manufacturers to bring these engines to market fast enough to simultaneously build the state’s crumbling infrastructure and meet California’s air quality improvement goals.

The California Air Resources Board is currently considering the adoption of new off-road diesel engine regulations to reduce Particulate Matter and NOx emissions. These proposed rules will require the retrofit, re-powering or replacement of more than 160,000 pieces of equipment over the next 12 years. Under current estimates, however, this equipment will not be available in supply large enough to meet the demands under the timeline outlined in CARB’s regulations.

“My company has invested millions of dollars to retrofit or replace our off-road diesel equipment, but if these rules are put into place, we still will come nowhere close to meeting these standards because our new equipment -- the best of what’s currently available on the market -- already falls short of these requirements,” said Mike Ortiz of Sukut Construction.

“We’re asking the equipment manufactures to jumpstart efforts to design and build the engines that will allow us to meet clean air standards and get them in production so that we can buy the right engine the first time.”

Due to the lack of a retrofit device to curb NOx emissions, these proposed regulations require the inclusion of Tier 4 engines into fleets across the state, but these engines have not yet been developed and aren’t expected to be available for purchase until 2014. In addition, presently only 10,000 pieces of new equipment are sold in California each year. To meet CARB’s emission requirements within their 10 year window, manufacturers would have to increase their inventory and sales to accommodate more than 15,000 a year.

“We can’t retrofit and repower our way to meet CARB’s goals. We need the next generation of clean diesel equipment to reduce both NOx and PM to meet the standards and we can’t do that if the equipment won’t be available for another 7 years, at least,” said Mike Lewis, senior vice president of the Construction Industry Air Quality Coalition (CIAQC).
“Many companies won’t have the resources to repower and retrofit today only to have to replace their entire fleet once these new engines become available. For many the choice will be to downsize their fleet or in some cases go out of business altogether. This means lost wages and lost jobs,” said Guy Prescott, Director of Safety, Operating Engineers Local #3. “We want cleaner construction sites for our workers but we also want to make sure they keep their jobs. Today we’re calling on the equipment manufacturers to redouble their efforts to make sure we can do both.”

Over the past five years in Southern California alone, the construction industry has voluntarily replaced more than 1,000 high polluting engines, resulting in a reduction of more than 3,787 tons of pollution every year using the Carl Moyer program. Under these new regulations however, even this newer, cleaner burning equipment is inadequate.

“The construction industry wants to meet these standards for the health of our state and our workers. But without the availability and adequate supply of clean burning diesel equipment it simply won’t be possible to meet them,” said Gary Rohman of ECCO Equipment.

Attached is additional information regarding the availability of off-road diesel equipment and technology and a letter from Caterpillar regarding its capacity to meet the tremendous demand CARB’s proposal would place on equipment manufacturers.

*The Coalition to Build a Cleaner California is dedicated to improving California’s air quality while maximizing the historic infrastructure investment approved by California voters in November 2006. The Coalition’s members include the construction industry, its workers and infrastructure stakeholders.*

-30-
Mr. Gary Rohman  
ECCO Equipment Corporation  
30243 Kelsey Street  
Visalia, CA 93291

Dear Gary:

Thank you for taking the time to summarize this important issue in your letter. I traveled to California several weeks ago and heard from our dealers and customers about the concerns they have with the new regulations. Your recognition of our efforts to increase the availability of Tier 2 and 3 repower solutions is also appreciated. We have significantly increased the staffing of the Caterpillar Emissions Solutions group under Ken Katch, who I understand has been part of a panel discussion on this subject with you at the AGC meetings. The increase in Repower offerings and the development of aftertreatment solutions is a direct result of this team’s efforts.

When forecasting future product needs, the Caterpillar practice is to study regional market trends and then work closely with our production sources to satisfy customer demand. We collaborate with our dealer network, evaluating legislative or regulatory impacts, and using modeling tools that take into account economic forecasts and business cycle impacts. This process was implemented very successfully for the off-road Tier 2 and Tier 3 compliant machines and engines, allowing us to introduce these products sooner than other manufacturers. And, we agree some supply and availability issues occurred in 2005 and 2006, but those were primarily driven by record levels of worldwide demand in all markets and industries. To address those issues, Caterpillar is aggressively working the supply chain constraints, and we are seeing signs of improvement.

Unfortunately, sweeping regulatory initiatives like the California in-use off-road diesel vehicle rule are outside the scope of our standard forecasting models. To forecast the product needs of California customers in this situation, we would need to know:

- Every model in a given fleet
- Every engine tier level and horsepower rating in the fleet
- Every Repower and aftertreatment option available for each machine
- Customer purchasing cycles for new equipment
- Customer desired solutions mix for achieving compliance
- Capital and financing available to fund the options
At this stage, for Caterpillar -- or any manufacturer -- to guarantee they will have all of the products and service capacity to perform the work without the certainty of finalized regulatory language and the benefit of extensive research is unrealistic. In fact, until the proposed rule is finalized, it will remain a moving target, as demonstrated by the addition of NOx and the recent change to the definition of a medium fleet and the implementation schedule.

Currently, Caterpillar is undertaking a data-driven process using 6 Sigma methodology to:

- Analyze the California machine population
- Prioritize the retrofit needs of customers
- Examine the service capacity of its dealers network and parts flow velocity
- Analyze the introduction of new equipment into the California market

Caterpillar will continue to develop reliable, durable, and economically justified emissions solutions. To date, we have provided Repower solutions for thousands of earthmoving machines delivering a technology upgrade and improving the emissions of our legacy fleet. Caterpillar will leverage our ACERT technologies to develop and verify new and even better retrofit technologies. But the reality remains that even with all of this technology and timely introduction of new products, there are thousands of earthmoving machines in California that must be sold, re-powered and/or retrofitted in the short time window of this pending regulation.

There is risk that the proposed rule, if implemented as currently conceived, will not provide sufficient lead-time for manufacturers to fully support California customers. Should this happen, it won't be an issue of technology being unavailable. Caterpillar remains committed to work diligently with our customers to support their needs under this rulemaking, but the uncertainties underlying this complicated forecasting process make more definitive supply commitments impossible at this time. We will continue to work with our dealer network in California to support the needs of our customers as they work through this challenging regulatory compliance process.

Sincerely,

Bill Springer
Marketing & Product Support Division
Telephone: 309/675-4008
Facsimile: 309/675-1899
Repowering the Fleet

Contractors face growing public demand to scrap old diesel engines
Regulators Want Old Diesel Engines To
Clean Up...
Or Clear Out

On May 1, the thick morning fog began to lift off the San Fernando Valley, leaving a smoggy haze in its place. Two mechanics dressed in jeans and tee-shirts were preparing to drop a new 15-liter diesel engine into a 30-year-old scraping machine. Repowering old, polluting construction machinery is becoming a common practice in California as air quality districts place local restrictions on projects.

One thing about this scene was unusual, though. The operation was taking place not in a maintenance shop, but in the middle of a large jobsite. The 14.7-million-cu-yd earthmoving project in Porter Ranch, a development of new homes north of Los Angeles, has about a dozen scrapers gouging the earth there every day. Some have black plumes of smoke billowing out of them; some don’t.

A crane gently lowered the engine into the modified scraper frame. Putting in the new motor is part of a project to clean up emissions in the contractor’s fleet. Doing it in the field takes mechanics about a week rather than weeks at a dealership. “If we really push it, we can do it in three days with a lot of overtime,” says Eric Schmidt, a consultant in charge of the contractor’s program.

Fresh Air
Fixing up old machines is not required by law, at least not yet. But Sukut Construction Inc., the general contractor that owns this fleet, has been repowering large earthmovers for about five years. Dealers needed weeks to do the work, so the company decided to engineer retrofits faster on its own. It hopes to get a step ahead of the competition should the public’s growing demand to cut diesel fumes escalate into a statewide mandate. The
smoke signals are pointing in that direction, with California Air Resources Board, the state's air quality regulator, on the case. It is in the middle of drafting a watershed ruling that scares contractors.

The rule calls for a ban on machinery that is more than 10 years old. It could render many millions of dollars of capital equipment worthless unless it is fitted with emission controls or repowered. Losing the asset value could put firms' bonding in jeopardy, block financing and drive up construction costs. Regulators “could put the majority of contractors in California out of business,” says Mike Crawford, CEO of Santa Ana-based Sukut.

Builders are confused, partly because rule drafts are sprawling and complex. Many “do not fully understand the implications of the regulations as they are currently proposed,” says Tom Hols-

man, CEO of the Associated General Contractors of California.

Suppliers stand to gain from the new rule. New equipment sales are likely to soar, and the $70-million-a-year diesel retrofit market in North America is expected to quadruple by 2010. Time is a factor. Users who buy new, clean diesels may have to wait years to get them. Producers “can’t make them fast enough,” says Crawford.

Contractors question the ability of aftermarket suppliers to keep up, and price is a big issue. Retrofit devices are a low-cost solution to clean air but only eight devices meet U.S. and California standards for off-road diesels. Many exist for on-road trucks “but in terms of off-road, high-horsepower, there really isn’t anything suit-

able,” says Rick McCourt, Sukut’s safety director. CARB ranks devices by their level of effectiveness in reducing emissions, and only one device at CARB’s highest level is approved for more than one brand of construction machines.

Several new devices are being tested for verification, but suppliers have been slow to shell out $500,000 or more to do testing until they are sure of a market for their equipment, suppliers say.

California’s rule would open up the market. Air regulators acknowledge the dearth of emission controls but are confident that more are coming. “We are seeing a lot more on the horizon,” says Jim Blaubaugh, manager of EPAs National Clean

Clearly Different. Visible fumes spew from the scraper on the right, which has original 1980 engine. The scraper on the left was repowered last year. CARB issued letter (above) to 79,000 contractors.
OFF-ROAD RETROFIT DEVICES

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>SUPPLIER</th>
<th>TYPE OF DEVICE</th>
<th>ENGINE MODELS</th>
<th>PM REDUCTION</th>
<th>NOx REDUCTION</th>
<th>FUEL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>LUBRIZOL CORP.</td>
<td>FUEL EMULSION</td>
<td>ALL</td>
<td>17%-23%</td>
<td>17%-20%</td>
<td>500 PPM DIESEL</td>
</tr>
<tr>
<td>1</td>
<td>LUBRIZOL CORP.</td>
<td>DIESEL OXIDATION CATALYTIC (DOC)</td>
<td>1996-2002 (LIMITED BRANDS)</td>
<td>25</td>
<td>NA</td>
<td>15 PPM DIESEL</td>
</tr>
<tr>
<td>1</td>
<td>DONALDSON CO. INC.</td>
<td>DOC</td>
<td>1996-2003 (PORT EQUIPMENT)</td>
<td>25</td>
<td>NA</td>
<td>15 PPM OR CARB DIESEL</td>
</tr>
<tr>
<td>1</td>
<td>EXTENGINE TRANSPORT SYSTEMS LLC</td>
<td>DOC + SELECTIVE CATALYTIC REDUCTION (SCR)</td>
<td>1991-1995 (CUMMINS 5.9-LITER ONLY)</td>
<td>25</td>
<td>80</td>
<td>15 PPM/CARB</td>
</tr>
<tr>
<td>2</td>
<td>LUBRIZOL CORP.</td>
<td>DOC</td>
<td>1996-2002 (LIMITED BRANDS)</td>
<td>50</td>
<td>20</td>
<td>EMULIFIED</td>
</tr>
<tr>
<td>3</td>
<td>LUBRIZOL CORP.</td>
<td>DIESEL PARTICULATE FILTER (DPF)</td>
<td>1996-2004</td>
<td>85</td>
<td>NA</td>
<td>15 PPM/CARB</td>
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<tr>
<td>3</td>
<td>CLEAIRE ADVANCED EMISSION CONTROLS LLC</td>
<td>DPF</td>
<td>1996-2003 (EMERGENCY GENERATORS ONLY)</td>
<td>85</td>
<td>NA</td>
<td>15 PPM</td>
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<tr>
<td>3</td>
<td>CATERPILLAR INC.</td>
<td>DPF</td>
<td>1996-2005 (CATERPILLAR 175-300 HP ONLY)</td>
<td>89</td>
<td>NA</td>
<td>15 PPM</td>
</tr>
</tbody>
</table>

SOURCE: EPA, CARB. ALL DEVICES VERIFIED TO MEET FEDERAL AND CALIFORNIA STANDARDS.

Diesel Campaign. Beyond logistics, some question the legality of a mandate on in-use equipment.

Vague Legislation?
While the U.S. Environmental Protection Agency regulates new engines, it says it has little authority to regulate existing, “in-use” engines. But states may be able to mandate cleanup as long as their regulations are constitutional and federal officials sign off on them, says EPA.

“Our attorneys have spent a lot of time with this issue and they are confident that regulating in-use equipment is legally defensible and justified,” says Ron Nunes, a CARB engineer. Others think the proposed law is too vague. “I’m not sure that has been evaluated in the courts or clearly by EPA,” says Allen Schaeffer, executive director of the Diesel Technology Forum, a trade group in Frederick, Md.

Industry insiders say they may try to block the rule if it is problematic. So far, no challengers have come forward. In the meantime, California regulators have held workshops with contractors to gather input. “CARB has been working cooperatively with us,” says AGC’s Holsman. “There is no sign at this time that we are intended to take any kind of legal action.”

If the air agency issues the regulation next year as expected, it would be the first mandate of its kind in the U.S. Contractors would need to upgrade existing fleets to match EPA standards for engines manufactured in 2015, a deadline commonly known as “Tier 4.” A phase-in period would begin as early as 2008 and continue through 2020.

New retrofit devices, engines or both would be added every few years as cleaner ones become available. Owners also could meet “fleet averaging” standards, where some older machines could operate without retrofits, but it would be illegal to buy or sell them.

Diesel’s Dirty Legacy
Nationwide, there are fewer construction machines in operation than the millions of diesel trucks, buses and other vehicles combined, according to EPA. But today’s two million construction diesels make up a hefty share of toxic air pollutants around the country—about one-third—because many were built before EPA regulations. In California, construction
emits about half of the off-road diesel toxins in the state, with about 160,000 vehicles in use, according to estimates.

Some jurisdictions across the U.S. are tackling the problem by writing air-quality requirements into contract specifications. “They are all pushing us that way,” says John Robinson, an estimator at Kenny Construction Co. in Wheeling, Ill. New York City has a new law requiring clean fuels and retrofits on city contracts. In the Midwest, the $6.6-billion O’Hare Modernization Program in Chicago is requiring cleaner, ultra-low-sulfur diesel fuel (ULSD) and diesel oxidation catalysts (DOCs) on mobile equipment.

State agencies, such as the Illinois Dept. of Transportation, also are having contractors fill up with clean fuel, such as on the $600-million Dan Ryan expressway reconstruction in Chicago. “There are five to six schools immediately adjacent to the project,” says IDOT Secretary Tim Martin. “We wanted to make it an environmentally superb contract.” The lungs of children are especially vulnerable to diesel fumes, scientists say.

Domestic diesel cleanup generally lags Europe. In Switzerland, more than 6,000 construction machines have been retrofitted with particle traps and diesel particulate filters (DPFs) since the country issued a retrofit ordinance in 1998.

In the U.S., the retrofit movement has bubbled up slowly over the past 10 years. One of the first major projects to use controls was the Central Artery/Tunnel in Boston, where contractors installed more than 100 DOCs in the 1990s. Some machines ran on emulsified fuel, which has a water mix to lower combustion temperatures. Catalysts and additives cut nitrogen oxide pollution (NOx), an ozone contributor and lung irritant.

Federal regulations for off-road machinery are focused on NOx reductions and diesel particulate matter (PM). But construction machines have much longer life spans than cars and trucks. The benefits of federal rules probably won’t come to fruition until 2030, according to environmentalists, who want PM cuts to happen faster.

Hands On. A mechanic welds a bumper after installing a Tier 3 engine into a 1978 scraper.

California says diesel PM is a carcinogen and plans to cut it down by 85% in 2020. Regulators want to “reduce diesel PM emissions by the greatest amount as we can in the most reasonable amount of time,” Nunes says. Construction firms say they need cash to do it.

Shaking the Money Tree
Voluntary retrofit programs are flourishing nationwide, enticing construction firms to apply for grants. For Sukut’s single-engine scrapers, the cost to repower tops out at $120,000. It receives money from a state agency that kicks in $96,000. “They are picking up almost two-thirds of the cost of repowering a machine,” says Mike Ortiz, president of Sukut Equipment Inc., the contractor’s in-house rental fleet. “A lot of times, we’re the spoonful of sugar that helps the medicine go down,” says Raymond Gorski, an advisor for the Mobile Source Air Pollution Reduction Review Committee (MSRC), which distributes grants to Los Angeles contractors, including Sukut, from motor vehicle registration fees. Many such programs are active around the country. There is one drawback to grant programs, however: Once retrofits and repowers are required by law, grant money no longer is available.

For now, repowers are one of the most cost-effective ways to reduce particle emissions. “It is emerging as being one of the prime strategies,” says EPA’s Blubaugh. Many contractors believe the work is worth the trouble because the new engines are easier to service. But the up-front costs are still frightening. “We are using as much capital as we can afford to upgrade our engines,” says Crawford. He adds: “That is going to be the price of admission to stay in this business.”
MIKE CRAWFORD Gains Worldwide Recognition for Advances in Construction Industry

05-JAN-07 – Mike Crawford, CEO of Sukut Construction Inc., California’s largest mass excavation and grading contracting firm, has been selected as one of the top 25 newsmakers for 2006 by Engineering News-Record. This is the world’s most revered industry publication.

The honor recognizes Crawford for innovations and achievements that serve the best interest of the construction industry in general.

In particular, the editors applauded Crawford for taking the lead in reducing air pollution from the company’s large fleet of earthmovers well in advance of new state regulations on off-road vehicles, and proving that contractors can profit from cleaner air.

Starting in 2000, when cleaner Tier One engines became available, Crawford made the decision to stop rebuilding old engines and instead replace them with the new model.

Crawford also set loose his team to create innovative “field kits,” which allow Sukut engineers to replace engines in three days right at the job site rather than hauling equipment to a dealership where costly downtime would run into months. To pay for the overhaul, Crawford tapped into state grant programs and spent millions of the company’s own profits over the past six years so that by end of 2007, he expects Sukut’s 250-vehicle fleet will be run on an average of Tier One or better quality engines.

Crawford’s foresight has put the company in one of the best positions to meet California’s forthcoming rules to reduce off-road diesel emissions by 85 percent.

"Crawford’s firm has set a positive example for contractors around the country, by keeping a step ahead of regulators and helping to rid California of harmful emissions," ENR editors said.

Crawford will be honored March 28 at the Marriott Marquis Hotel in New York City. One of the selected 25 top newsmakers also will receive the Award of Excellence, ENR’s highest honor, and will be featured on its April 2 cover.

Sukut Construction is nationally known for its work on residential developments, golf courses, storm water drainage systems, landfill construction, environmental cleanups, land stabilization and heavy highway construction. It moves 150 million cubic yards of earth yearly. With 600 employees and 30 major projects, Sukut earned more than $250 million in 2006 and ranks as the 224th largest construction firm in the U.S. For almost 40 years, the company has won more than 30 industry awards, including Contractor of the Year and Best Company to Work For. It is headquartered in Santa Ana with offices in Oceanside and Los Angeles.