



MAY 12, 2011

FEDERAL EFFORTS TO PROTECT PUBLIC HEALTH BY REDUCING DIESEL EMISSIONS

UNITED STATES SENATE, COMMITTEE ON ENVIRONMENT & PUBLIC WORKS,
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR SAFETY

ONE HUNDRED AND TWELFTH CONGRESS, FIRST SESSION

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Hearings

Statement of Thomas R. Carper
Hearing: Subcommittee on Clean Air and Nuclear Safety hearing entitled, "Federal Efforts to Protect Public Health by Reducing Diesel Emissions."
Thursday, May 12, 2011

My colleagues and I were sent to Washington to govern and to find common-sense solutions to the challenges facing our nation. I don't believe Americans are especially interested in Democratic ideas or Republican ideas. They want us to come up with ideas that will work and we can all agree on to make our country even better.

Cleaning up dirty diesel emissions provides us an opportunity to work across the aisle, something we do too rarely these days. Our nation relies heavily on diesel power to transport commuters, harvest our crops, and build our infrastructure.

The good thing about diesel engines is that they last a long time, and the bad thing about diesel engines is that they last a long time. Clean diesel engines made today are reaching near zero emissions, but that does nothing for the millions of engines already in use and will be in use for the next 20 years

Despite new engine standards, the EPA estimates there are 11 million diesel engines in America lacking the latest pollution control technology. These older diesel engines emit black carbon and toxic particles, which we will hear today, cause significant harm to the environment and to our health. Retrofitting or replacing older diesel engines with American made technology can dramatically reduce diesel emissions.

Unfortunately, there are few direct economic incentives for vehicle and equipment owners to retrofit or replace their old engines. Programs like the Diesel Emissions Reduction Act (DERA) help provide the right incentives to clean up our existing diesel fleet.

An idea that came from my friend Sen. Voinovich, DERA is one of the most cost-effective clean air federal programs, averaging more than \$13 in health and economic benefits for every \$1 in funding. Through voluntary grants and loans, DERA has reduced deadly emissions, saved lives and employed thousands of workers who manufacture, sell or repair diesel vehicles and their components in each state. It is a true win-win-win.

Last Congress, we reauthorized the DERA program through 2016 and made some changes to try to improve DERA's effectiveness. Unfortunately, the President's budget for fiscal year 2012 zeroed out DERA funding.

Although I appreciate dedication to reducing the federal deficit, cutting such a successful program doesn't make sense. I will continue to work with my colleagues to ensure this program continues to be funded.

Although a great success, DERA has not been able to greatly reduce emissions from our nation's construction equipment. The bulldozers, diggers, and backhoes that build our nation's infrastructure produce 25 percent of America's mobile diesel emissions.

At risk are children who live near construction sites, commuters stuck in traffic, and workers who operate construction machinery. In fact, heavy equipment operators who are exposed to diesel

exhaust are 47 percent more likely to die from a heart attack.

To better address this problem, today I am introducing the Clean Construction Act of 2011. This common-sense approach is simple: in areas of poor air quality, federal transportation projects should reduce, not increase, deadly diesel emissions.

The Clean Construction Act accomplishes this goal by requiring that one percent of the cost of a transportation project in a particulate matter nonattainment area is used to upgrade dirty diesel equipment. The bill applies solely to particulate matter nonattainment areas, where significant air quality problems already exist.

Some will criticize this bill as a diversion of transportation dollars. However, I ask my colleagues to recognize that one percent of the cost of a small set of projects is a reasonable price to ensure fewer Americans die from diesel soot.

In closing, I look forward to hearing from our witnesses today about the health impacts of diesel emissions and ways to get greater diesel emission reductions. I also look forward to working with my colleagues to reduce toxic diesel emissions that threaten our communities and our children.

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Hearings

Statement of James M. Inhofe
Hearing: Subcommittee on Clean Air and Nuclear Safety hearing entitled, "Federal Efforts to Protect Public Health by Reducing Diesel Emissions."
Thursday, May 12, 2011

Senator Carper, thank you for holding this hearing.

Today's hearing touches on one of the few EPA programs that has bipartisan support. The Diesel Emissions Reduction Act, a voluntary grant and loan program designed to reduce diesel emissions from our nation's "legacy fleet," was first passed as part of the Energy Policy Act of 2005 and was reauthorized last Congress by voice vote in both chambers. The President signed legislation reauthorizing DERA in the last days of the 111th Congress.

In this context there is great irony in the President's call to strip the program of all funding for the upcoming fiscal year. This is a classic bait-and-switch—a tactic which this President and this EPA are making routine practice. You see, the President knows that Congress will restore the funding. So the move allows him to appear fiscally responsible, knowing full well that the program will continue.

But this move also diverts attention from the other, more problematic programs and regulations where EPA is aggressively moving forward – and with no regard for our nation's fiscal and economic well-being.

Senator Carper, it is in these other areas that this Committee should focus its time.

Take, for example, what's happening with greenhouse gas regulation. Implementation of EPA's cap-and-trade agenda will have ruinous consequences for our economy, with some estimates as high as \$400 Billion in lost GDP. These costs come despite the fact that, as Administrator Jackson has confirmed, these rules by themselves will have no impact on reducing global greenhouse gas concentrations. Yet despite what's at stake, this committee has had no oversight hearings on the design or implementation of EPA's GHG rules since they took effect this year.

Another area of great concern is EPA's torrent of rules covering the electric

power sector. EPA is set to roll out a suite of rules that will significantly affect the price and availability of electricity for citizens across the U.S., including, among others, its Maximum Achievable Control Technology (MACT) rule, the Transport Rule, and new requirements for fly ash and cooling water. These rules, taken together with the agency's greenhouse gas requirements, could cost families and businesses over \$300 Billion by 2015 according to a recent analysis by ICF International and the Edison Electric Institute.

But even with an estimated 60 to 100 GW of our nation's coal-fired electric generating capacity on the line, and reports that the agency's MACT proposal is fraught with technical errors and miscalculations, this committee has called no oversight hearings.

EPA's recently finalized rules governing emissions from industrial and commercial boilers (Boiler MACT) are an example of an agency making a complete debacle of the rulemaking process. In this case, the agency has finalized rules that directly threaten both small and large businesses—as well as municipalities, universities and federal facilities—due to impractical, costly regulatory requirements. An analysis from Global Insight estimates the rule could put up to 798,250 jobs at risk and reduce U.S. GDP by as much as \$1.2 billion. To date, this committee has had no hearings on these rules.

Indeed, the enormous amount of energy that EPA expended in 2010 jamming through its cap-and-trade agenda—a program that was not statutorily required by the CAA and was discretionary on EPA's part—left the agency with insufficient resources to accomplish its main statutorily required tasks. For example, had the agency not tried to do too much at once, it would have had time to correct errors in its Utility MACT proposal that reportedly resulted in proposed standards that are off by a factor of 1000.

Other examples of an agency out of control include the ozone NAAQS reconsideration: a potentially \$670 billion hit to GDP; the Cement MACT: \$3.4 billion in compliance costs and the potential to shut down 17 plants across the country. These and a variety of other rules in the pipeline – widely and aptly acknowledged as the “EPA Train Wreck” – all point to an agency in pursuit of an ideological agenda with little regard for the costs and practical complications of its rules.

I do appreciate today's hearing. But today I call on you, Senator Carper, and Senator Boxer, to fulfill this committee's oversight obligations by taking an in-depth look at EPA's “Train Wreck” and what it will mean for jobs, energy security, consumers, manufacturers, small businesses, and economic growth.

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Testimony of

Robert O'Keefe, Vice President
Health Effects Institute

On

Health Impacts of Exposure to Diesel Exhaust: Current Challenges and New Opportunities

Before the:

Senate Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Safety

May 12, 2011

Chairman Carper, Ranking Member Barrasso and members of the Committee, thank you for the opportunity to testify before you today on the health effects of exposure to diesel exhaust. I come before you as the Vice President of the Health Effects Institute, a non-profit, independent research institute funded jointly and equally by the US EPA and industry to provide high-quality, impartial science on the health effects of air pollution. For over two decades, we have conducted targeted research on the full range of emissions and health effects from sources in the environment, including extensive research on diesel exhaust, and I am pleased to summarize our understanding for you today.

I would like to briefly highlight three topics of direct relevance to the current discussion of Federal efforts to improve public health by reducing diesel emissions, they are:

- Sources of and exposure to diesel exhaust,
- Population health effects of diesel exhaust, and
- The remarkable improvements in new diesel technology and emissions.

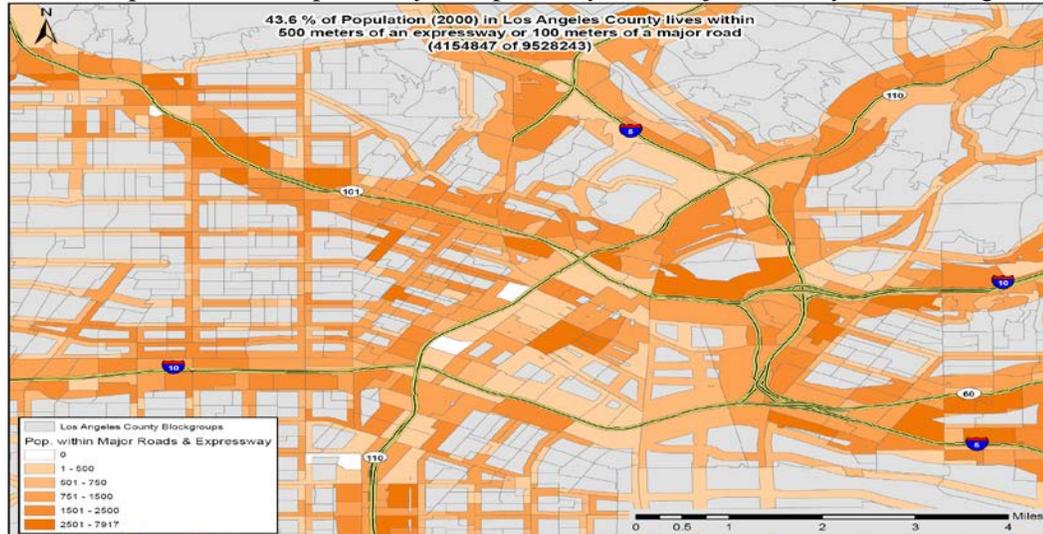
Sources and Exposure

Diesel engines are used extensively in transportation and construction in the United States, especially in heavy duty applications due to their power, durability and efficiency. Sources of diesel are pervasive in many parts of the country and include light duty and heavy duty trucks, busses, and a modest number of light duty vehicles all of which travel the nation's highways. There are also numerous off road vehicles used in agriculture and construction, as well as rail and shipping.

Given the numerous sources of diesel exhaust, population exposure can be widespread.

HEI's 2010 Review *Traffic Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure and Health Effects* found that those living within 300-500 meters of a major roadway are most likely to be exposed to traffic related air pollution. The review assessed the percentage of the population living within this zone of likely exposure and found that between 38% and 45% of the population in cities studied in the US and Canada lived within this higher exposure zone. The following map illustrates Los Angeles, where population density and numerous major roadways result in a high exposure for 44% of the population. Urban industrial areas, including truck and bus depots, and some rail yards, ports and construction sites typically have higher concentrations.

44% of Population live in proximity to expressways and major roadways in Los Angeles



(Jerrett and Beckerman et al, HEI Review 2010)

Population Health Effects

Diesel exhaust from the older engines on the road today is a complex mixture of fine particles, including black carbon, and thousands of organic and inorganic components, some 40 of which have been identified as hazardous air pollutants by the USEPA. It has been associated with health effects including a range of respiratory symptoms, premature mortality from particulate matter, and designated as a likely human carcinogen by several prominent domestic and international governmental bodies. Today I will briefly touch on three examples.

Asthma Exacerbation

Diesel exhaust from older engines has been shown to exacerbate asthma in children and adults. HEI's study "Health Effects of Real-World Exposure to Diesel Exhaust in Persons with Asthma" led by Dr. Jim Zhang of the School of Medicine and Dentistry New Jersey, measured symptoms, airway function and cardiovascular responses of 60 study participants with asthma who walked on London's busy Oxford Street along which only predominantly diesel powered taxis and busses are allowed. The researchers then compared the responses of the same individuals after having them walk through nearby Hyde Park, where they were exposed to more general urban background air pollution. They found reductions in lung function that resulted from the short term exposure to the atmosphere on Oxford Street.

In an earlier study, a team led by HEI Review Committee member Bert Brunekreef found

that children attending schools near roads with heavy diesel truck traffic had significantly higher incidence of wheeze and other respiratory ailments. This and other evidence led HEI's Traffic Review expert panel to find a causal connection between exposure to traffic related air pollution and asthma exacerbation in children and adults.

Premature Mortality from PM

Diesel exhaust is a significant contributor to the mixture of fine particles (PM_{2.5}) and black carbon in the ambient air, especially in heavily traveled urban areas. Epidemiological and other studies conducted over the last decade and earlier have reported associations between both long and short term exposure to PM and increases in illness and mortality. The most recent comprehensive study, HEI's *Extended Analysis of the American Cancer Society Study of Particulate Air Pollution and Mortality* (following a key population of over 360,000 Americans for 18 years), found continued associations of premature mortality, and especially associations of PM with much higher mortality from heart disease. This broad evidence led USEPA to conclude in the current Integrated Science Assessment for the PM National Ambient Air Quality Standard that PM_{2.5} is causally related to cardiovascular mortality and morbidity. Based on HEI studies, EPA estimated that over 20,000 annual premature deaths could be avoided by replacing older technology diesel on-road and non-road engines with new clean ones.

Lung Cancer

Diesel exhaust from older diesel engines and its possible association with cancer has been extensively studied in a range of toxicological, animal and human epidemiological studies. While study results have varied, HEI's *Diesel Exhaust: A Special Report* found a small but consistent increase in lung cancer risk for workers exposed to these older engines, and a number of national and international government agencies have concluded that diesel is likely carcinogenic in humans, though to varying degrees. These include:

- International Agency for Research on Cancer 1989: "*Probable human carcinogen*"
- National Toxicology Program 2005: "*Reasonably anticipated to be a human carcinogen*"
- USEPA 2002: "*Likely to be carcinogenic in humans*"

Thus there is an extensive body of literature suggesting that particle (including black carbon) and other exhaust from older technology diesel engines can have significant effects on the lung and heart. Having said that, with the advent of cleaner low sulfur fuels now required and dramatic advances in new clean diesel technology, especially the advent of the particle trap, the way forward for diesel is exceptionally promising.

Improvements in New Diesel Technology and Emissions

In response to the significant health concerns posed by exposure to diesel engines currently on the road, the U.S. Environmental Protection Agency promulgated the Heavy-Duty On-Highway Diesel Emissions Rule of 2001. This rule required significant reductions fuel sulfur (to 15 PPM) and companion reductions in two key pollutants, particles and nitrogen dioxide (also an important ozone precursor) in "on road" heavy duty engines. Subsequently, these rules were extended to apply to a host of non-road construction, and agricultural equipment as well.

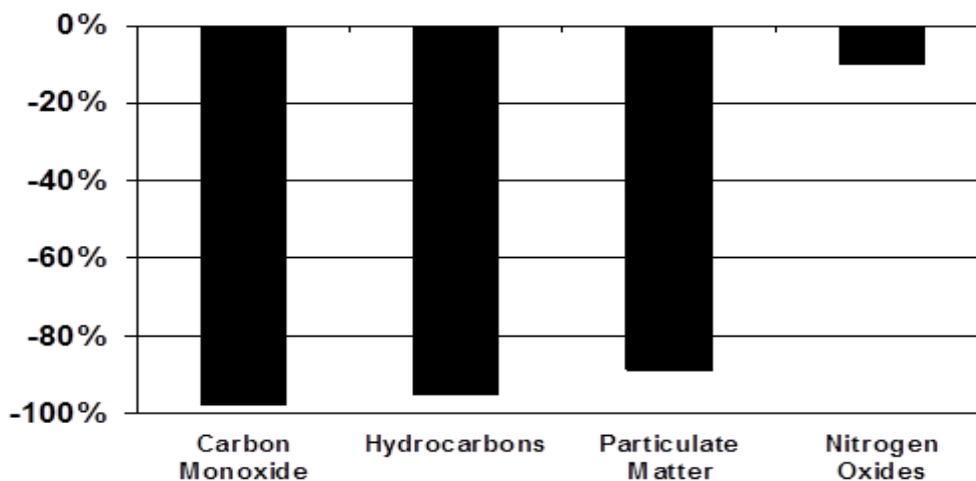
In order to comply with this new regulation, and as you will hear from others on this panel, industry developed advanced diesel engine and aftertreatment technology, including the use of new particle filters and NO_x controls. At the same time, as part of a broader product stewardship initiative, government, including DOE, EPA and California, the diesel industry and

others came together to initiate at HEI and the Coordinating Research Council the Advanced Collaborative Emissions Study, the most rigorous emission testing ever done of new heavy duty engines - which power virtually every large truck and bus sold in the United States. The results of testing the emissions of these new diesel engines have been nothing short of dramatic.

The study, the comprehensive Phase 1 Report of ACES¹, found that emissions of fine particulate matter (PM) – a pollutant of significant public health concern – were approximately 99% lower than the PM emission levels allowed from 2004 technology heavy-duty diesel engines and nearly 90% lower than even the new 2007 national emissions standards for heavy-duty diesel vehicles (See Figure 1 below). This substantial over compliance with the stringent EPA standards is a remarkable achievement, and one that can be expected to make a significant contribution to improving the public health as the older engines are replaced.

Emissions of carbon monoxide, hydrocarbons, and a number of unregulated, so-called air toxics were also more than 90% lower than the 2004 levels and substantially below required levels. In addition, emissions of nitrogen oxides – which can have direct effects and contribute to the formation of smog – were approximately 70% lower than in the past and 10% below required levels. Another approximately 80% reduction in those emissions is required for engines sold after January 1, 2010.

Figure 1. Percent Below Required 2007 Levels



Unfinished Business

In summary, I have highlighted the negative health consequences of exposure to older technology diesel exhaust and the dramatic progress that has been made in producing new, cleaner diesel engines with particulate traps and advanced NOx controls that, over time, will

¹ The Phase 1 ACES study was conducted by the Southwest Research Institute in San Antonio, Texas under the oversight of the CRC. Investigators tested heavy duty diesel engines from the four major manufacturers of these engines, and subjected them to well-established federal test procedures, and to a much more rigorous 16 hour operation cycle designed especially for ACES. The engines were tested on multiple iterations of these cycles, and measurements of over 300 regulated and unregulated air pollutants were made in accordance with the highest laboratory standards.

penetrate the marketplace and result in cleaner air and improved health. As noted, diesel is also widely used in agricultural, construction, shipping and other enterprises and many of these (i.e. construction and farm equipment) will be subject to the new emission standards during the course of this decade. And the particle traps can and have been applied as retrofits to existing vehicles, with similar reductions in the mass of PM emitted.

There is a challenge however: diesel engines are exceptionally durable with a long life expectancy which will moderate the pace of fleet replacement and corresponding emissions reduction. Through natural replacement, US EPA did not expect full fleet turnover for heavy duty onroad engines until 2030; this will take even longer for nonroad engines. Given the evidence of effects from older diesel technology, and the fact that particle traps and companion technologies have been successfully applied as retrofits to existing vehicles, with similar reductions in PM mass, can action be taken to accelerate this transition? Such an acceleration will help protect the current generation of Americans from the emissions of the legacy fleet of older diesels that will continue to operate on the nation's highways, and in its fields and workplaces for years to come.

Clearly the technology to reduce emissions exists, and the public health benefits of those reductions, in terms of avoided mortality and respiratory health impacts can be expected to be significant.

TESTIMONY OF

**TODD T. PARFITT
DEPUTY DIRECTOR
DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE OF WYOMING**

BEFORE THE

**SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR SAFETY**

THOMAS R. CARPER, CHAIRMAN

**AT ITS HEARING ENTITLED
"FEDERAL EFFORTS TO PROTECT PUBLIC HEALTH
BY REDUCING DIESEL EMISSIONS"**

MAY 12, 2011

Good afternoon Mr. Chairman. My name is Todd Parfitt and I am the Deputy Director of the Wyoming Department of Environmental Quality. Also here with me today is Jennifer Frazier, an air quality engineer with the Department of Environmental Quality. I wish to thank Chairman Carper, Senator Barrasso and the members of this Subcommittee for inviting the State of Wyoming to testify at this hearing today.

Today I will speak briefly on Wyoming's perspective of the benefits of the Diesel Emissions Reduction Act, DERA, in reducing diesel emissions and improving public health.

Wyoming is a state rich in natural resource reserves that provide a significant amount of the nation's energy. As such, Wyoming's economy is largely dependent on and driven by the mineral exploration and extraction industry. Wyoming recognizes and places great value on the protection of its natural resources (air, water and land). The mission of the Wyoming Department of Environmental Quality is, "to protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations." As we carry out our mission, we do so with the understanding that it must be done in a balanced manner, protecting our natural resources while maintaining the State's economic strength and stability.

Oftentimes, new environmental regulations fail to adequately recognize the impacts created for industry and for the state agencies that are ultimately charged with their implementation. This is not the case with DERA. Through DERA Wyoming has successfully implemented voluntary programs that achieve reductions in diesel emissions from sources that are not covered under existing regulations. Wyoming has participated in the DERA State Grant program since 2008 and the DERA National Grant program since 2009.

Voluntary programs like DERA are far less costly for the state to implement than traditional regulatory programs or standards. This voluntary program has achieved desired reductions in air pollution without the negative implementation costs to both the regulators and the regulated community. The DERA program has been efficiently run by both EPA and the State with little negative impact on state resources. Whereas, new

regulations often increase workload and require the State to augment staff, draft new rules and regulations; conduct public hearings, and increase inspection, compliance, monitoring and enforcement efforts.

Wyoming has implemented four (4) projects through DERA that will reduce diesel emissions and yield public health benefits. These projects include:

- The purchase of two hybrid electric diesel powered school buses, put in to use in Southwest Wyoming. This project includes an evaluation of the benefits of hybrid diesel buses in rural and urban settings;
- The replacement of heavy equipment utilized at landfills. This project was possible because economic incentives to local governments were available through DERA at a time when budgets would not allow equipment upgrades;
- The replacement of 15 and retrofit of 153 school buses. By working with the Wyoming Department of Education this project brought 65% of the bus fleet up to 2010 emission standards; and
- The implementation of emission control solutions for non-road construction equipment used by industry servicing the natural gas fields in Sublette County, Wyoming. Using the EPA Diesel Emissions Quantifier tool we estimate that this project resulted in the reduction of 744 tons per year of air pollutants. Through a combination of DERA funds and industry contributions non-regulated emissions reductions were successfully achieved as a result of engine retrofits.

Diesel-fired engines were built to last and that is exactly what they are doing. All of the Wyoming projects implemented under DERA have resulted in the replacement or retrofit of older engines, some dating back to the 1980's. The outcome is a reduction of air contaminant emissions, including precursors to ozone pollution. All of this results in cleaner air and health benefits to the citizens of Wyoming.

The public is exposed to pollutants associated with emissions from many sources. The emissions reductions resulting from implementation of DERA projects plays an

important role in improving the quality of air people breathe. This has clearly been an effective program in Wyoming with voluntary participation and significant contributions by both industry and local governments.

The Wyoming Department of Environmental Quality supports the EPA initiative to conduct a retrospective review of existing regulations to weed out unnecessary and unproductive rules and programs. DERA is not one of those programs. We believe that EPA and the States would benefit from slowing the pace of new rules to allow for a more thorough evaluation of costs and impacts of implementation on the states and industry. There are 99 new or revised rules under consideration by EPA in this year alone. EPA initiatives should strive to strike a balance between environmental protections and economic stability. By providing programs with state flexibility, environmental protections can be maximized while minimizing impacts to industrial growth and state budgets. DERA is a program that meets this criterion.

When EPA publishes its new ozone standard, which is likely to be reduced from the current 75 ppb, many more areas in the West will be considered in non-attainment of the standard. DERA provides needed assistance in reducing one of the key ozone precursors, NOx. This is an excellent example of a program that leads directly to pollution reduction and provides an important piece of the solution to meeting a new standard.

In conclusion, Wyoming wishes to thank Chairman Carper and this subcommittee for the opportunity to testify today.



Testimony of Bob Lanham
on behalf of
The Associated General Contractors of America

Presented to the
Subcommittee on Clean Air and Nuclear Safety
of the
Environment and Public Works Committee

United States Senate

on the topic of

Reducing Diesel Engine Air Emissions

May 12, 2011

Testimony of Bob Lanham, Williams Brothers Construction Company

On Behalf of the Associated General Contractors of America

To the Environment and Public Works Subcommittee on Clean Air and Nuclear Safety

United States Senate

May 12, 2011

Mr. Chairman and Members of the Committee thank you for the opportunity to present some of the construction industry's perspective on plans for "Reducing Diesel Engine Air Emissions." I am Bob Lanham, Vice President of Williams Brothers Construction Company located in Houston, Texas, and I am here today representing the Associated General Contractors of America. I have been both the chairman of AGC's highway division and the chairman of the association's environmental committee. I am also proud to report that the U.S. Environmental Protection Agency (EPA) awarded me the National Clean Diesel Campaign Pioneer Award for "exemplary efforts and early support of the National Clean Diesel Campaign – noting that my work has inspired other contractors to become involved and to unite behind the common goal of reducing diesel emissions." EPA has also singled out my company, Williams Brothers Construction Company, as a national model on how to proactively embrace innovative measures for reducing diesel emissions. In fact, the agency currently showcases my company's voluntary diesel retrofit efforts as a "case study" on its website.

AGC is the leading construction association in the country representing contractors that build all forms of infrastructure, including: highways, bridges, transit systems, railways, airport terminals and runways, water and wastewater treatment facilities, underground utilities, public buildings, multi-family housing, office buildings, military facilities, water resource projects, energy production and conservation facilities, and the many other structures that are the backbone of the U.S. economy and provide and ensure U.S. citizens' quality of life.

AGC has worked side-by-side with EPA in advancing every major federal "clean diesel" initiative intended to improve air quality and simultaneously protect the construction industry from serious disruption. These initiatives have sought (1) to identify appropriate incentives for the retrofit of diesel equipment, (2) to secure federal funding for diesel retrofit, (3) to inform AGC Chapters and fleet owners that they may qualify for government grants to retrofit existing fleets of construction equipment, and (4) to enact a federal tax incentive for diesel retrofit.

IDENTIFY APPROPRIATE INCENTIVES FOR THE RETROFIT OF DIESEL EQUIPMENT

AGC serves as the co-chair of a federal advisory "Non-road Construction Workgroup" that is charged with providing guidance and recommendations to EPA on the best strategies for

reducing emissions from construction equipment that is currently in use. In addition, under the last Administration, AGC served as the construction industry's representative to EPA's exclusive "Sector Strategies Program" and collaborated with EPA to develop reports and recommendations on positive incentives for diesel retrofit in the construction industry (see e.g., *Cleaner Diesels: Low Cost Ways to Reduce Diesel Emissions from Construction Equipment* (March 2007) and *Emission Reduction Incentives for Off-Road Diesel Equipment Used in the Port and Construction Sectors* (May 2005) – <http://www.epa.gov/sectors/construction/#emissions>).

AGC has played an active role in EPA's National Clean Diesel Campaign since its inception in 2000. At EPA's request, AGC helped to plan and moderate the "[Non-road Track](#)" at Clean Diesel 10 -- a significant event held late last year to celebrate the 10-year anniversary of EPA's National Clean Diesel Campaign -- and also served on the VIP Steering Committee for the conference. During the event, Gina McCarthy, assistant administrator U.S. EPA Office of Air and Radiation, thanked AGC for its "partnership" and "significant contribution to the clean diesel program." AGC of America remains an active partner in many regional Clean Diesel Collaboratives and we provide the association's 95 Chapters and nearly 33,000 members with the information they need to make the voluntary program work at the state and local levels.

SECURE FEDERAL FUNDING FOR DIESEL RETROFIT

AGC has long advocated for increased government investment in, and support for, the retrofit of off-road diesel construction equipment. AGC was an original supporter of the Diesel Emissions Reduction Act (DERA) dating back to 2005 and played a key role in the development and passage of that Act, which became part of the Energy Policy Act of 2005. As the bill was originally written, it did not ensure that qualified private fleets could apply for the public funds set aside for retrofitting equipment. Thanks to AGC's efforts, over the past five years, our Chapters and members have joined forces with other industry partners to voluntarily apply for federal grants under the EPA National Clean Diesel Funding Assistance Program. Notwithstanding the extremely fierce competition, several AGC Chapters have won significant grant awards and leveraged millions of dollars (in matching and in-kind contributions) to help their members afford the high cost of reducing emissions from construction equipment that is currently out in the field.

Today, AGC continues to lobby Congress for full funding of DERA. The association is proud of the role it played in securing reauthorization of federal DERA grants through 2016 and to amend certain provisions of the bill to help Chapters and members compete for federal aid under the EPA National Funding Assistance Program. AGC was pleased that the new legislation made two significant changes that will make the grants even more accessible to private industry. First the bill eliminates a requirement that 50 percent of the funds be made eligible only for public sector vehicles. Much of that fleet is newer and will amount to little in the way of clean up value for the dollar. The second change allows individual companies under contract with public agencies to apply directly for the grants rather than through a third party non-profit organization or government agency. This makes the process for applying much simpler for the recipients. These changes will make the program easier to navigate and more effective.

AGC also was very active in pushing diesel retrofit initiatives in SAFETEA-LU. AGC worked closely with Senators Inhofe and Clinton to craft Section 1808 of SAFETEA-LU, which allows states (and other recipients of federal-aid highway funding) to use CMAQ funds to pay for the retrofit of off-road diesel equipment needed to construct projects funded under Title 23 of the United States Code. Specifically, SAFETEA-LU added a new requirement that states and MPOs must give priority – in distributing CMAQ funds – to diesel retrofits, particularly where necessary to facilitate contract compliance, plus other cost effective congestion mitigation activities providing air quality benefits. The bill made money available for outreach and education on diesel retrofit technologies and helped to advance the introduction of new devices into the marketplace.

These changes in the law were supported by a Transportation Research Board findings in Special Report 264, the *CMAQ Improvement Program, Assessing 10 Years of Experience*. The report concluded that “...strategies directly targeting emission reduction have generally been more cost-effective than attempts under CMAQ to change travel behavior.” It recommended re-authorization of the CMAQ Program with modifications to improve its cost-effectiveness and to enhance its performance in improving air quality. In addition, a report for the Emission Control Technology Association that builds on this TRB report and other data reaches similar conclusions about the cost-effectiveness of diesel retrofits

ENACT A FEDERAL TAX INCENTIVE FOR DIESEL RETROFIT

In addition, AGC seeks to modify the federal tax code to provide other financial incentives for contractors to retrofit their existing diesel equipment.

We were very involved in the recent changes to the California Air Resources Board (CARB) diesel reduction regulations. We helped CARB better understand the construction industry and the data used to create its emission models. By improving that data we also helped the state adopt a more effective emission reduction strategy based on the actual inventory of construction equipment in the state and the use of that equipment on a day-to-day basis. Together we created a more accurate model of the emissions in the state. Both the regulated and the regulators learned a lot about each other, and the final regulations provide a much more realistic and effective program than the program originally adopted by CARB.

AGC works hard to educate policy makers at the national and state level on the business of construction and on the potential pitfalls that come with manipulating the standard bidding process. AGC continues to explain that construction companies are worth the equipment they own and that any move that would render a company’s fleet obsolete would wipe their balance sheet to zero overnight. Recognizing industry concerns, EPA and many states outside of California have aggressively pursued voluntary partnerships and programs aimed at cleaning up the legacy fleet.

Highway and transit contractors own large fleets of off-road construction equipment that is essential to their businesses. Off-road equipment is extremely costly, and small pieces of equipment, such as a backhoe, easily costs tens of thousands of dollars. Larger pieces of equipment, such as bull dozers, scrapers and excavators can cost \$1 million dollars or more.

Transportation construction companies tend to self-perform as much of the work as they are allowed and therefore are highly reliant on their equipment. Even a very small highway construction company can have a majority of their net worth tied up in equipment.

Contractors are very careful with their equipment. It is often a significant portion of what contractors pledge to their bonding companies when they bid on public work. Emission reduction strategies for construction equipment are not cookie cutter add-ons. The appropriate emission reduction strategy for a piece of equipment may become inappropriate in certain circumstances. During the CARB debate, we heard about cookie cutter proposals that worked on one piece of equipment but created a hazard for the operator on another piece. We strongly believe that the goal of emission reduction strategy should be to reduce emissions without compromising safety or performance of the equipment. A flexible retrofit model will help improve the effectiveness of any retrofit program and help preserve the value of the equipment owned by the contractors.

CLEAN CONSTRUCTION PRINCIPLES

AGC has worked over the past several years with the Clean Air Task Force (CATF), the leading environmental group in the field of diesel pollution, to develop the “Clean Construction Principles.” As a result of much communication and collaboration, we are in agreement that states should respect the competitive bid system and the public should bear the cost of retrofitting equipment already in use. Our hope in working cooperatively with CATF was to establish a workable solution for reducing diesel emissions without adversely impacting the construction industry or undermining our national efforts to address transportation infrastructure needs. We believe that the principles largely achieve these objectives, and AGC is pleased that these principles became the basis for Chairman Carper’s Clean Construction Act of 2011.

The legislation would allow states to require that on and off road diesel equipment used on highway or transit construction projects in PM2.5 non-attainment areas use diesel emission control technology, but further requires the state to pay for the cost of installing the technology. The total payment is limited to 1 percent of the project cost. An important factor for the construction industry is that the requirement does not undermine the competitive bidding process. Instead, it allows the successful low bidder to receive payment for upgrading the emissions technology through a change order procedure. CMAQ funding, which already makes diesel retrofit a funding priority, can be used by states to meet this requirement.

While AGC is supportive of the legislation, we believe some additional adjustments would make the legislation more workable. First, we believe that states should receive State Implementation Plan credit for the emissions reductions that result from taking these steps towards meeting their Clean Air Act mandates. Second, we believe there should be a de minimus exemption from implementing these requirements for projects that are of short duration or of minimum dollar value. Third, we believe that the additional step of submitting a list of subcontractor equipment is burdensome on state DOTs and contractors and provides minimal increased emissions reductions.

LOOKING TO THE FUTURE

Great strides have been made in diesel engine technology over the past ten years. Equipment manufacturers have been meeting or exceeding Clean Air Act mandates. Diesel powered engines for off-road construction equipment are being produced right now for Tier 4 compliance. These machines will reduce particulate matter (PM) emissions by ninety percent. Over the next year, additional Tier 4 equipment will become available that will result in additional PM reductions from larger pieces of off-road equipment. Eventually these technology improvements will become the norm in the construction industry as contractors retire and replace their existing fleets of equipment the new technology is more widely used.

In the meantime, AGC understands there is a public good derived from speeding up the existing emissions reduction effort. We also know that there are constantly evolving advancements in after market technologies that can reduce particulate matter emissions from diesel engines. While installing emissions control technology on the existing inventory of equipment may in some cases increase the maintenance costs of construction equipment, AGC and its members have embraced proposals that balance local, state and national air quality goals with safety, reliability and value – the goals of every construction business. At a time when the construction industry is experiencing depression like conditions, with construction put in place at an 11-year low and unemployment in the industry over 17 percent, more than twice the rate of unemployment for the entire economy, now is a very difficult time to sell the idea of a new diesel retrofit mandate to our members. Nevertheless, AGC has embraced the clean construction proposal sponsored by Senator Carper because it strikes a careful balance between helping to pay for the initial installation (contractors will pay for the long term maintenance) and allowing states to apply a value based judgment that will see the dirtiest equipment cleaned up first. We believe that the application of this program on a case-by-case basis will allow construction project owners to both clean up equipment working on public jobs and to do it in a way that will allow the best possible deal for the taxpayers.

We believe that the flexibility of this proposal will be the key to its success. This diesel emissions reduction initiative applies to a huge variety of construction equipment. Unlike trucks or other on-road vehicles, construction equipment comes in myriad sizes, shapes and configurations. The equipment may have tracks, rubber wheels or other means of motive power, depending on the nature of the terrain that it has to traverse. Much of this equipment has “arms” that it must extend and move in unique ways to stabilize equipment and to extend its range. The operators of this equipment are skilled professionals well aware of the damage that it can cause and the injuries that it can inflict. There is no “one size fits all” technology available that will result in desired emissions reduction because compatibility for attachments and components for engine compartments and transmissions varies from one piece of equipment to another.

In producing its rule, CARB identified 19 different “equipment types” in the “construction and mining” category. We believe the product differentiation is much broader than that. To better understand the different types of equipment and their wide variety, we encourage you to visit the web sites of leading auctioneers of construction equipment, such as Ritchie Brothers, online at www.rbauction.com. On January 17, 2010, this website featured 99 different classes of construction equipment, including 38 classes that appeared to be subject to the Rule. The

website also identified an average of 10 different manufacturers of the equipment in each of these 38 classes.

As new technologies are developed, it should be pointed out that what is possible under experimental conditions is not always possible under real world working conditions. This is especially true when you consider the wide variety of equipment used in construction and the often extreme conditions in which they are used. It is not enough to show that verified diesel emission reduction technology reduces emissions under laboratory conditions, or that new or rebuilt engines have lower emissions than engines already in use. Since diesel emissions reduction requirements apply to equipment already in the field, technology must be proven feasible in the field. We support the “Clean Construction Act of 2011” as introduced by Chairman Carper because it marries specific pieces of equipment with specific modifications that are feasible, safe and effective and that are verified on EPA or CARB lists.

It also gives state transportation officials the authority and funding to promote the use of the most effective clean construction equipment strategies on federally-funded transportation projects in PM non-attainment areas.

AGC believes that the “Clean Construction Act of 2011” sets the roadmap for improving air quality without creating a potential barrier to competition for federal and federal aid construction projects. The key to providing a value to the taxpayer is that it is not a blanket mandate, but a selective mandate that allows flexibility to identify and clean up the dirtiest equipment that will be operating on the project for at least 80 hours over the life of the project. The government administers the program through a fully funded change order process. By preserving the competitive bid process, the principles ensure that smaller firms that are the least able to invest in retrofits are not shut out of bidding for public projects, thereby making sure that some of the dirtiest equipment in service is eligible for clean up.

As the workhorse of our economy, diesel engines, especially those used in off-road construction equipment, will continue to play a major role in building our communities. AGC is pleased to support the “Clean Construction Act of 2011” and looks forward to working with this committee to move the bill through the legislative process.

Federal Efforts to Protect Public Health by Reducing Diesel Emissions

Statement of the
Diesel Technology Forum
Allen Schaeffer, Executive Director



Before the

United States Senate

Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Safety
May 12, 2011

INTRODUCTION

Good Afternoon. My name is Allen Schaeffer and I serve as Executive Director of the Diesel Technology Forum, a not for profit educational group representing the nation's leading diesel engine, vehicle and equipment manufacturers, fuel refiners and suppliers, and those that manufacture emissions control technology, and allied organizations. We appreciate the opportunity to appear today before the Subcommittee on the issue of Federal Efforts to Improve Public Health by Reducing Diesel Emissions.

Because of its unmatched combination of power, performance and energy efficiency, diesel technology is the workhorse of the US and global economy, powering over 90 percent of commercial trucks, more than three-fourths of all transit buses, 100 percent of freight locomotives and marine work boats and two-thirds of all farm and construction equipment. Diesel engines are also found in back up emergency electrical generators, stationary pumps and other industrial equipment. Diesel powered cars and SUVs also make up a growing percentage of new passenger vehicles sold nationwide in all 50 states. In fact, economical clean diesel is making a bigger contribution toward reducing oil consumption and greenhouse gases more than any other affordable drive technology today.

Our testimony will focus on two areas; traditional regulatory approaches for new engines, fuels and vehicles; and those approaches that have involved non-traditional voluntary incentive based approaches. The main focus of my remarks here today will be on the efforts to reduce emissions from the existing fleet of diesel engines and equipment.

II. NEW CLEAN DIESEL ENGINE TECHNOLOGY IS NEAR ZERO EMISSIONS

In 2000, EPA established a regulatory pathway for highway diesel engines to reach near zero emissions in a ten year period. In 2004, regulations were also established for the many categories of off-road diesel engines and equipment setting forward a similar set of emissions

goals. A graphical depiction of the changes in emissions levels for both highway vehicles and one category of off-road engines are found in the Appendix to this testimony. These last 10 years have been called the decade of clean diesel: a system of cleaner engines, low-sulfur fuels, and advanced emissions control technologies ultimately deployed for all ranges and types of diesel powered vehicles, equipment and machines.

The results are clear. New highway diesel truck engines have near zero emissions of particulate matter and oxides of nitrogen (NOx) -- 98 percent less than 1988 models. It is noteworthy that truck and engine manufacturers are not only producing near-zero level emissions vehicles, but these vehicles are consuming on average of 5 percent less fuel. Thanks to these advancements, in some US cities, the air coming out of a class 8 heavy-duty clean diesel truck is cleaner than the air going into it.

Similar reductions in emissions of particulates and oxides of nitrogen are now beginning to fall in place over the next 3 years (2011-2014) for the wide range of off-road engines found in everything from small construction equipment and farm machinery to freight locomotives, marine vessels, work boats and very large off-road machines and mining equipment. In fact, this year 2011 marks the debut of a number of the “fourth generation” or Tier 4 emissions level machines in off-road applications.

The new generation of clean diesel technology is not only meeting its emissions reduction targets but is also exceeding them. A jointly funded government and industry research efforts known as the Advanced Combustion Emissions Study (ACES) carried out through the Health Effects Institute and Coordinating Research Council are evaluating performance of the 2007 generation clean diesel heavy-duty engines. Phase I results released in 2009 showed emissions levels to be as much as 90 percent lower than 2004 generation technology.

Finally in the category of reducing diesel emissions from new technology, truck and engine makers are working with EPA and NHTSA on the first-ever regulation of greenhouse gas and fuel consumption standards for medium- and heavy-duty commercial vehicles, expected to be finalized this July. This final rule will establish standards for these classes of vehicles over the next decade that will lead to further improvements in diesel engine efficiency as well as vehicle attributes such as aerodynamics and tires. An overall reduction in fuel consumption typically translates into lower overall vehicle emissions.

Today, new diesel buses, trucks and other engines are more than 90 percent cleaner. These new diesel engines operate smoke-free, have created thousands of new jobs in the hard-hit engine manufacturing sector and elsewhere, and are helping to save escalating fuel costs by operating more efficiently. This national clean diesel effort has historically enjoyed broad, bipartisan support. How broad and bi-partisan? President William J. Clinton signed the first regulation to clean up diesel trucks and buses in 2001, and President George W. Bush signed the next regulation to clean up diesel construction and farm equipment in 2004, and President Barack Obama initiated the rule for reducing GHG emissions from medium and heavy duty trucks.

III. MODERNIZING AND UPGRADING EXISTING ENGINES AND EQUIPMENT: CLEAN DIESEL RETROFIT AND THE IMPORTANCE OF RETAINING THE DIESEL EMISSIONS REDUCTION ACT (DERA).

Diesel engines are known for their durability and reliability. Customers who purchase these technologies value these traits and it is not unusual to see 10 or 15 year old construction machines, agricultural equipment or commercial trucks. In the course of developing cleaner diesel engines and fuels it became clear that some technologies could be deployed on existing vehicles and equipment which would enable current truck, bus or machine owners to improve the environmental footprint of their equipment while enhancing its overall value.

“Diesel retrofit” has become a term of art reflecting a number of strategies and choices for modernizing and upgrading existing diesel engines. These primarily include retrofitting with an emissions control device; repowering, or replacing, an older engine with a new one; rebuilding an older engine to a higher emissions tier level; refueling with cleaner fuels; or replacing an entire vehicle or machine with a newer one.

Senator Carper, you and other Congressional leaders recognized as early as April 2004 the value and potential of clean diesel technology and the opportunity for upgrading existing engines. You brought together an unusual array of 32 groups to provide input on what was to become the Diesel Emissions Reduction Act (DERA) in 2005, not directing EPA toward a regulatory mandate—but instead a voluntary incentive based program authorizing up to \$200 million annually. Over 600 groups and organizations have signed on in support of this program.

DERA has improved America’s air quality by modernizing older diesel engines and equipment through engine replacements and retrofits. DERA addresses all of the “big E’s – environment, energy and economy. In its first year alone DERA resulted in 46,000 less tons of NOx; 464,000 less tons of CO₂ as well as saving 3.2 Million gallons of diesel fuel, resulting in an economic gain of \$8 million to the economy.

Every dollar invested in diesel retrofits and replacements yields at least \$13 in environmental and public health benefits. Plus, DERA has provided federal funds in a competitive process that encourages state, local, or private funding matches. By doing so, DERA has been able to leverage roughly three dollars in state, local, or private funding for every federal dollar. It’s hard to find a better investment in public health.

The DERA Program has benefitted every state including those represented by the 11 members of this Subcommittee. For example, in **Delaware**, DERA funds have gone to upgrading equipment at the Port of Wilmington, local school bus fleets and municipal vehicles as well as off road and construction equipment.

In Sublette County **Wyoming**, the WY DEQ used a combination of funds including a \$1.1M EPA grant as part of a \$2.3M project that involved 11 non-road construction companies and 34 pieces of equipment. The project involved machine repowers and engine upgrades in construction equipment in the infrastructure serving the Pinedale natural gas fields.

Despite DERA’s reauthorization for an additional 5 years in the 111th Congress, this highly successful voluntary incentive based program was proposed for termination in the Administration’s FY2012 budget proposal. This came as a shock to the legions of industry, environmental, health, labor and governmental organizations that continue to support it. There is strong support in House evidenced by the fact that they voted 372 to 52 in Dec. 2010 not to reallocate DERA money to other EPA programs.

This proposed termination report from OMB is in our view based on inaccurate information and misinterpretation of the program. For example, with regards to continued need, by the end of 2011, it is estimated that roughly only 50,000 diesel engines out of the 11 million that exist will have been replaced or retrofitted with DERA funds (*note this does not include FY09/FY10 funds*). For the reasons stated previously, the recession has substantially impacted the acquisition of new lower emitting technology into the marketplace, and will substantially delay the benefits of using the new technology.

This proposed termination language in the OMB Budget document is inconsistent with the public statements by the Administration. In March 2nd testimony before the full Senate Environment and Public Works Committee, EPA Administration Jackson acknowledged continued need for the DERA program.

DERA's continuation is important because it provides the seed funding for thousands of fleet owners, farmers, and other diesel users to buy the new engines, retrofits, and technologies. In turn, this is unlocking the potential of America's engine makers and equipment innovators. U.S. engine companies are producing the most durable, efficient, and cleanest diesel engines in the world and other clean diesel manufacturers are making the catalysts and filters that can make older diesel engines much, much cleaner during the years of service that they have left.

DERA IS A PROGRAM THAT WORKS. It works because it:

- enjoys bipartisan support in Congress and a uniquely broad-based coalition of followers and supporters numbering over 500 organizations;
- Is voluntary and incentive based, offering carrots --- instead of sticks --- to interested parties to participate.
- Allows owners to choose verified technology that works best for their circumstances; not all technologies work on all equipment;
- gives states the flexibility to apply DERA funding based on local emissions inventories to improve air quality;
- provides for a results oriented, competitive process to ensure the greatest level of success;
- Greater understanding of the practical issues at the intersection of environmental goals and real-world business decisions; making distinctions between what is technologically possible and economically practicable.
- Encourages private and local investment through the provision of matching funds to leverage the federal incentive dollars by as much as 3 to 1.
- Rewards the American public with a substantial return on its investment - as much as \$13 dollars in benefits for every dollar invested, and as the National Academies of Science have said is among the most cost-effective air quality projects.

There is a well-established and Continuing Need for DERA

The recent recession has substantially altered the economic landscape of many large and small businesses in industries that are highly dependent on diesel technology as the tools of their trade. In addition to the thousands of construction and trucking companies that simply went out of business, those that survived delayed their normal cycle for capital investments. New truck sales declined dramatically, construction machine sales fell to their lowest levels in years and the age of the existing fleet grew. According to 2010 data from R.L.Polk, over the last 5 years the average age of a class 8 tractor trailer has increased by 1.7 years. As a result, the need for upgrading existing diesel engines and equipment is more important today than five years ago.

Voluntary Incentive-based programs are especially important policy tools for the future.

While signs of an economic recovery are more apparent today, many owners and operators of diesel equipment in the construction, agriculture and transportation industries are still not benefitting from these small gains, thus their new equipment acquisition and retention cycles may be extended for the foreseeable future. A continuing commitment to the voluntary, incentive-based DERA program would promote the realization of continued progress and shared investment towards clean air goals across all sectors of our economy.

Manufacturers of diesel engines and equipment recognize and respect the significant value that contractors, truckers and other diesel equipment owners place in their equipment, and the factors influencing their fleet management decisions. Equipment managers want the ability to manage their business in a way which enables them to be good employers, efficient producers and good stewards of the environment, and a voluntary incentive-based program has proven to be the best way to achieve those mutual goals.

CONCLUSIONS

Diesel engines are the workhorse of our economy for today, tomorrow and the foreseeable future. The new generation of clean diesel technology – cleaner fuel, advanced engines and emissions control systems – is now near zero levels of emissions. End users that have acquired the new technology are finding it to meet or exceed their expectations with performance, fuel economy and low emissions. Every category of stationary and mobile diesel engines – with the exception of ocean going container vessels – is now on a regulatory path to cleaner diesel fuel and low emissions diesel engine technology.

There are continued opportunities and clearly identified need for voluntary incentive based programs to modernize and upgrade existing engines and equipment. Economic conditions today that began over the last 3 years in the construction and trucking sector have had a substantial negative impact on the ability of many businesses to upgrade their existing fleet of technology, increasing the average age of fleet equipment, and increasing the prospect that older engines and equipment will be used for even longer than before.

Congress has played a visionary role in establishing and funding a voluntary-incentive based program – the Diesel Emissions Reduction Act (DERA) to encourage the modernizing and upgrading of existing engines and equipment.

Although DERA funds have leveraged other dollars in support of additional retrofits, there is no question that the number of engines retrofitted or replaced to date represents only the tip of the iceberg. Now, as the recession keeps diesel engines on the road and jobsite longer and longer, it's even more important to help fund programs to retrofit and clean up those older engines. If ever a program made sense and had the support of environmental, labor, public health and industry groups, this is the one.

Since 2005, DERA has been a smart budget choice and a successful program to clean up diesel school buses, trucks, construction equipment and farm engines across the nation. With 11 million older diesel engines still on our roads, construction sites, and farms, Congress needs to

continue funding DERA.

Thank you for the opportunity to appear today and I would be happy to answer any questions.

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Figure 1: Reductions of Nitrogen Oxides and Particulate Matter Emissions from heavy-duty diesel trucks.

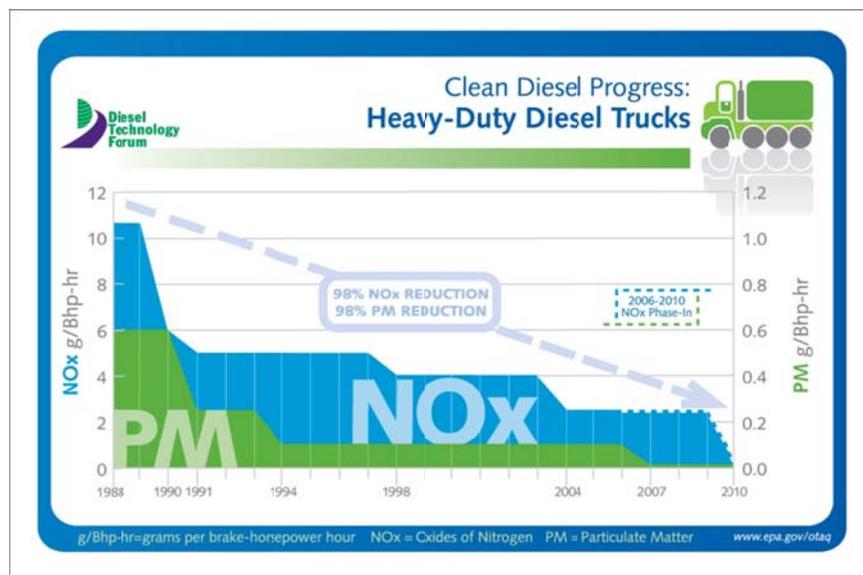
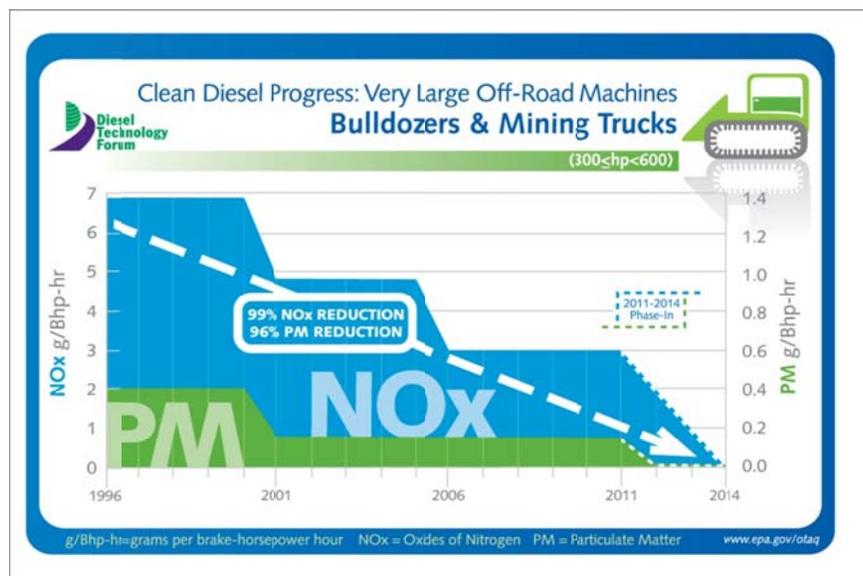


Figure 2: Reductions in emissions of nitrogen oxides and particulate matter in large off-road machines (bulldozers and mining trucks 300hp - 600hp)



**BEFORE THE
CLEAN AIR SUBCOMMITTEE OF
THE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
UNITED STATES SENATE**

**FEDERAL EFFORTS TO PROTECT PUBLIC HEALTH BY
REDUCING DIESEL EMISSIONS**

**TESTIMONY OF CONRAD G. SCHNEIDER
ADVOCACY DIRECTOR, CLEAN AIR TASK FORCE**

May 12, 2011

Summary of Testimony

Mr. Chairman, ranking member Barrasso, members of the Clean Air Subcommittee of the Senate Environment and Public Works Committee, good afternoon. My name is Conrad Schneider, Advocacy Director of the Clean Air Task Force. I appreciate the opportunity to speak to you today. Based in Boston, the Clean Air Task Force is a national non-profit, environmental advocacy organization whose mission includes reducing the adverse health and environmental impacts of diesel engines. Our staff and consultants include scientists, economists, MBA's, engineers, and attorneys dedicated to reducing atmospheric pollution through research, advocacy, and private sector collaboration.

Today I would like to talk about two ways the federal government can reduce the threats posed by diesel exhaust: (1) fund the Diesel Emission Reduction Act (DERA); and (2) enact the Clean Construction Act of 2011 as part of the next Transportation reauthorization bill. DERA is a highly successful program and enjoys broad bi-partisan support. Clean Construction, which has been endorsed by the Clean Air Task Force and Associated General Contractors, provides a unique opportunity to integrate and streamline clean air measures into the project delivery process while providing support for contractors to clean up dirty equipment and protect public health. We believe that devoting up to one percent of the cost of transportation projects to clean air is not too much to help protect the health of our citizens.

The Threat Posed By Diesel Pollution

Fine particle pollution produced by diesel engines causes 21,000 deaths a year, according to our 2005 report *Diesel and Health in America: The Lingering Threat*. Diesel engines are known for their durability, but older engines emit a toxic mixture of particles, metals, and gases, including over 40 "hazardous air pollutants" as classified by EPA. Nationally, diesel exhaust poses a cancer risk that is 3 times higher than the risk from all other air toxics tracked by EPA *combined*. Premature death, lung cancer, heart attack, stroke, diabetes, respiratory distress and lost days from school and work have all been tied to diesel pollution, and reducing this risk is a win for everyone. Estimates show that for every dollar spent on reducing particulate matter pollution from diesel engines, \$13 would be avoided in health damages.

Moreover, as a global warming pollutant, black carbon in diesel pollution is about 2000 times more potent than carbon dioxide (CO₂). Diesels account for over half of the US black carbon emissions. Retrofitting diesel engines with filters is one of the few actions that will have immediate climate benefits, complementing long-term efforts to reduce CO₂ emissions.

Diesel exhaust is a toxic mixture of tiny fine and ultrafine carbon soot particles and gases from the burning of diesel fuel and lubricating oil. These microscopic carbon soot particles absorb metals and toxic gases in the exhaust and deliver them to your lungs. At highest risk are commuters and people living or working in proximity to truck traffic, construction and other heavy equipment.

The Diesel Emissions Reduction Act

While the U.S. EPA has mandated tighter emissions rules on new diesel engines, emissions from most of the current fleet of 11 million heavy-duty diesel engines remain uncontrolled. CATF's diesel advocacy focuses on cleaning up this existing fleet of diesel engines, which are expected to remain in operation for decades to come. As the Diesel Technology Forum has noted, the rate of turnover of the fleet to new, cleaner engines has been slowed by the recession as sales of new diesels have plummeted. As a result, older, dirtier diesels will be with us for even longer than expected. More years and more miles by older, dirtier trucks will mean more pollution, so we need tools to deal with pollution from the existing fleet.

In 2005, Congress and the Administration sought to provide states and localities with new tools for meeting National Ambient Air Quality Standards (NAAQS) and reducing human exposure to harmful diesel emissions. Passed with overwhelming support from government, industry and environmental organizations as part of the Energy Policy Act of 2005, the Diesel Emissions Reduction Act (DERA) established a federally sponsored voluntary retrofit initiative to reduce emissions generated by America's aging diesel fleet.

The program was authorized for \$200 million/year for 5 years or \$1 billion. Since that time, \$469.2 million has been appropriated to the Diesel Emissions Reduction Program (DERP), \$169.2 million in annual appropriations and \$300 million through the American Recovery and Reinvestment Act. For FY2011, \$50 million has been appropriated for DERA, however, the President's FY2012 budget has proposed to zero out the program. That would be a mistake.

Since its inception, EPA estimates that the federal appropriations for DERA (\$469.2M) has cleaned up 50,000 diesel vehicles, resulted in the reduction of thousands of tons of fine particulate matter, and created nearly 9,000 jobs.

The continued need for DERA has recently been acknowledged by the Obama Administration. In her May 9, 2011 letter to Senator Carper, EPA's Assistant Administrator for Air and Radiation, Regina McCarthy, admitted that continuing DERA would provide a cost-effective way to address the existing fleet of heavy-duty diesel engines and will deliver immediate public health benefits. EPA Administrator Jackson recently testified similarly in answer to questions before the full EPW committee.

Throughout the program's history, DERA has enjoyed strong bipartisan support most recently demonstrated in December 2010 when Congress took the extraordinary step of reauthorizing DERA during the "lame duck" session.

DERA is backed by a uniquely broad coalition of environmental, science-based, public health, industry, labor and state and local government groups. States and localities and environmental, health, user and industry groups all support funding for diesel retrofits and clean air agencies because it is sound environmental, health and budgetary policy. It is our hope that Congress will continue to provide leadership on this issue and we urge you to allocate \$50 million for DERA in Fiscal Year (FY) 2012 (equal to FY 2008 levels). The DERA Coalition has also requested that Congress support the President's budget request of \$305.5 million for state and local air quality grants in FY 2012 to support state and local air quality agencies in carrying out their responsibilities such as attaining and maintaining National Ambient Air Quality Standards, implementing clean air rules, and addressing toxic air pollutants.

Clean Construction in the Transportation Bill

One sector that has been underserved by DERA and other existing programs is the construction sector. Construction contractors are not always well positioned to take advantage of these programs, which have required a competitive grant application process. There is a better way: Clean Construction as part of project delivery.

Modern pollution control equipment is being used across the country in building clean transportation projects to ensure that no harm is done to the air quality in communities during infrastructure projects. Originating with the "Big Dig" and the Lower Manhattan Reconstruction after 9/11, today Clean Construction contract specifications have been adopted by New York City and New York State, Illinois and Rhode Island, and most recently by Mayor Daley in the City of Chicago and by Governor Christie in New Jersey.

Taking the lead from these states and working with the contractors and environmental community, Senator Carper has crafted the Clean Construction Act of 2011, which will reduce the amount of harmful particulate matter emissions emitted by older diesel on- and off-road construction equipment working on federally-funded transportation infrastructure projects located in areas with poor air quality. The bill accomplishes this by ensuring that diesel construction equipment employs modern engine and pollution reduction technology through a requirement and funding. As a policy roadmap, the Clean Air Task Force (CATF) and the Associated General Contractors (AGC) distilled a set of Clean Construction Principles based on our experiences with state efforts that are embodied in the Clean Construction Act of 2011. Both our organizations endorse the Clean Construction Act and we congratulate Senator Carper on the introduction of the bill today. We recommend that Congress adopt this approach

as part of the Transportation Bill re-authorization. The bill provides funding to retrofit, repower and upgrade equipment to provide the maximum achievable reduction of diesel particulate emissions as an eligible project expense.

The bill would achieve this through a funded requirement for the installation of emission control technology in PM2.5 designated non-attainment and maintenance areas an eligible project expense through a change order, a process that both State DOT's and contractors are familiar with and utilize. The goal is to streamline a process that integrates clean air benefits into project delivery.

To maintain strict cost controls, the bill requires that no more than one percent of a transportation project's cost must be used by States to upgrade dirty equipment. CATF has commissioned case studies on ten projects, five that have been completed utilizing Clean Construction and five that have projected the use of Clean Construction on projects. The results have consistently shown that project equipment can be cleaned up for no more than one to one and one-half percent of project cost. This provision is expected to allocate approximately \$200 million per year for clean equipment. CATF estimates that the bill will eliminate 9,000 tons of PM2.5 emissions and avoid nearly 1,000 premature deaths and other adverse health effects.

Thank you for the opportunity to testify in support of clean diesel in two important federal statutes. I look forward to working with the subcommittee in securing funding for DERA and including Clean Construction in our nation's next Surface Transportation Reauthorization Bill.

Mr. Chairman, ranking member Barrasso, members of the Clean Air Subcommittee of the Senate Environment and Public Works Committee, good afternoon. My name is Conrad Schneider, Advocacy Director of the Clean Air Task Force. I appreciate the opportunity to speak to you today. Based in Boston, the Clean Air Task Force is a national non-profit, environmental advocacy organization whose mission includes reducing the adverse health and environmental impacts of diesel engines. Our staff and consultants include scientists, economists, MBA's, engineers, and attorneys dedicated to reducing atmospheric pollution through research, advocacy, and private sector collaboration.

Today I would like to talk about two ways the federal government can reduce the threats posed by diesel exhaust: (1) fund the Diesel Emission Reduction Act (DERA); and (2) enact the Clean Construction Act of 2011 as part of the next Transportation reauthorization bill. DERA is a successful program and enjoys broad bi-partisan support. Clean Construction, which has been endorsed by the Clean Air Task Force and Associated General Contractors, provides a unique opportunity to integrate and streamline clean air measures into the project delivery process while providing support for contractors to clean up dirty equipment and protect public health. We believe that devoting up to one percent of the cost of transportation projects to clean air is not too much to help protect the health of our citizens.

1. The Risk Posed by Diesel Exhaust

Fine particle pollution produced by diesel engines causes 21,000 deaths a year, according to our 2005 report *Diesel and Health in America: The Lingering Threat*. Diesel engines are known for their durability, but older engines emit a toxic mixture of particles, metals, and gases, including over 40 "hazardous air pollutants" as classified by EPA. Nationally, diesel exhaust poses a cancer risk that is 3 times higher than the risk from all other air toxics tracked by EPA *combined*. Premature death, lung cancer, heart attack, stroke, diabetes, respiratory distress and lost days from school and work have all been tied to diesel pollution, and reducing this risk is a win for everyone. Estimates show that for every dollar spent on reducing particulate matter pollution from diesel engines, \$13 would be avoided in health damages.

Moreover, as a global warming pollutant, black carbon in diesel pollution is about 2000 times more potent than carbon dioxide (CO₂). Diesels account for over half of the US black carbon emissions. Retrofitting diesel engines with filters is one of the few actions that will have immediate climate benefits, complementing long-term efforts to reduce CO₂ emissions.

What is Diesel Exhaust?

Diesel exhaust is a toxic mixture of tiny fine and ultrafine carbon soot particles and gases from the burning of diesel fuel and lubricating oil. These microscopic

carbon soot particles absorb metals and toxic gases in the exhaust and deliver them to your lungs. At highest risk are commuters and people living or working in proximity to truck traffic, construction and other heavy equipment.

Diesel Pollution Kills

Using EPA's approved methodology, my organization has estimated that diesel particulate matter soot kills an estimated 21,000 Americans every year.¹ Medical researchers are just beginning to understand how combustion particles can cause fatal diseases such as cancer, stroke, and heart attacks. When inhaled, these tiny, poison-laden particles may be capable of directly triggering a response from the cardiovascular system or crossing the blood-barrier from lungs into the bloodstream, delivering them to internal organs.

- Exposure to particles is a well-known cause of premature death as documented in the two largest long-term air pollution studies ever conducted, the Harvard Six Cities Study and the 150-city American Cancer Society study.²
- The 90-city National Morbidity and Mortality Air Pollution Study associated daily exposures of particles with premature death.³

Heart Disease

The largest fraction of particulate matter-related premature deaths in the U.S. are believed to be from heart disease. Doctors have long known the relationship of inflammation and heart disease and particles may have a fatal inflammatory effect on the heart. Other factors include atherosclerosis (hardening of the arteries) and cardiac arrhythmias that may be precursors to sudden death or stroke. Research also suggests that particles have the ability to directly alter heart rate function and cause myocardio infarction or "MI"-- a potentially fatal blockage of blood supply to the heart.

- A 2007 Harvard study of 54,000 workers in the trucking industry found a higher risk in heart disease in the trucking industry compared to the general U.S. population: a 49 % higher risk in drivers, a 32% higher risk in dock workers, and a 34% higher risk in shop workers.⁴
- A 2004 study of highway patrolmen exposed over a shift, particulate matter was linked to irregular heartbeats and increases in blood inflammatory markers.⁵
- A 2004 study found that heavy equipment operators exposed to diesel exhaust have a 47 percent increased risk of death due to ischemic heart disease (congestive heart failure/heart attacks).⁶
- Researchers documented a 24% increase in risk of women having a cardiovascular event and an overall 76% increase in risk of death from cardiovascular disease for each 10 ug/m³ of PM_{2.5} in the ambient air. Within-city risks were higher than the risk between cities suggesting the importance of local sources of particles, such as diesel vehicles.⁷

- Ultrafine particles in fresh diesel exhaust (tiny particles under 0.1 microns in size), can lead to systemic acute inflammation and exacerbation of cardiovascular disease and atherosclerosis according to recent studies.^{8,9}
- A 2007 study of 700 heart attack survivors shows that they were most likely to have been in heavy traffic the hour before they suffered the heart attack, whether in cars, streetcars or buses.¹⁰ Studies find that traffic-related health risks are better correlated to truck rather than car volume and therefore may be more strongly related to diesel engine exhaust.
- A link between exposure to particles and vascular inflammation/atherosclerosis is suggested by animal studies and could explain how particles are linked to heart attacks.¹¹

Cancer

Researchers repeatedly find associations between exposure to diesel exhaust and cancers. Approximately three-dozen occupational studies conducted over the past three decades link diesel exhaust exposure to lung cancer, posing an increased cancer mortality risk of 10-40%. In the laboratory, scientists have observed DNA damage and cell mutations that could be an indicator of the ability of particles to trigger cancer.

Based on EPA's 2005 National Air Toxic Assessment released in 2011, CATF estimates that the lung cancer risk from particles is approximately three times the combined risk of the 80 air toxics modeled by EPA.

- Over 30 epidemiological studies link diesel particulate matter to lung cancers.^{12,13,14,15,16,17,18}
- Risk of lung cancer death was linked to fine particles in a study that tracked a million people over a decade and a half in 150 U.S. metropolitan areas¹⁹
- Diesel soot is identified as a carcinogen U.S. EPA, the State of California and the International Agency for Research on Cancer (IARC).^{20,21,22} Other compounds in diesel exhaust, other than soot are also known carcinogens such as polycyclic aromatic hydrocarbons, and formaldehyde.
- Operators of heavy machines in ground and road construction exposed to diesel exhaust are at risk of death from cancers of the digestive system, intestines, lung, liver, bladder and stomach.²³
- CATF estimates that, based on EPA's 2005 NATA data released in 2011, the lung cancer risk from exposure to diesel particles is 159 times greater than the EPA's "acceptable" risk of 1 cancer in a million.
- In a study of 55,000 railroad workers over 38 years, Harvard researchers found an overall 40% increased risk of lung cancer for workers in 30 job categories.^{24,25}
- The NIOSH Teamsters (truckers) study concluded that the lifetime excess risk for truckers was 10 times higher than the 1/1000 excess risk allowed by OSHA in occupational settings.²⁶

- A 2007 Harvard study of 54,000 truckers from 1985-2000 found a 10 % higher risk for lung cancer in drivers and dock workers compared to the general U.S. population.
- Recent studies link particulate matter exposure to DNA damage.²⁷

Respiratory Health Impacts

Researchers have long associated diesel exhaust, particulate matter and traffic with reduced lung function and lung growth, asthma attacks, asthma sensitization, and in one study, emphysema.

- Multiple studies link asthma and allergic sensitization and particles.^{28, 29,30,31,32,33} An East Bronx NY study suggests children exposed to higher levels of heavy-duty diesel exhaust have higher incidences of asthma.³⁴
- A 2009 field study found that short-term exposure of asthmatics to urban roadside diesel traffic led to consistent and significant reductions in lung function, airway acidification and inflammation. A study from the Netherlands links asthma diagnosed before 1 year of age to traffic.³⁵ In a California study, asthma and bronchitis was found to be 7 percent higher among children attending school in high-traffic areas, compared with schools along quieter streets.³⁶
- Heavy equipment operators exposed to diesel exhaust have a significantly elevated risk of death from emphysema.³⁷
- Deficits in lung function growth were found in southern California 18 year olds exposed to PM2.5 and black carbon.³⁸ The number of children with lung function deficits was 5 times greater in communities with the highest levels of PM2.5 compared to communities with the lowest levels of PM2.5.

Exposure to diesel exhaust, and proximity to traffic poses a risk of other serious disease including stroke, diabetes, slowed fetal growth, infant mortality and possibly autism.

- Diabetes: A 2010 study links particulate matter air pollution to diabetes in the U.S. (<http://care.diabetesjournals.org/content/33/10/2196>). The study found that counties with higher levels of particulate matter had increased prevalence of diabetes, even where counties were in attainment with the EPA's National Ambient Air Quality Standard for fine particles (PM_{2.5}). Elevated circulatory and cardiovascular disease risk was found in another study based on 24-hour exposures to particles.³⁹
- Nervous system impairment. A study of railroad workers exposed to diesel exhaust concluded: "crews may be unable to operate trains safely."⁴⁰
- Stroke. Diesel exhaust particles may raise the risk of blood clots and stroke.⁴¹ Risk more than doubled within 2 hours of exposure to high levels of fine particles in a Japanese study.⁴² Formation of blood clots (thromboses), have been documented in laboratory animals exposed to diesel particles.⁴³
- Autism A 2010 study correlates prenatal freeway traffic proximity in California and incidence of autism. The risk of autism is nearly double (86% increase)

- inside 1,000 feet. Diesel exhaust could be a risk factor.⁴⁴
- Slowed fetal growth as a result of maternal exposure during pregnancy⁴⁵ and infant mortality.^{46, 47}

2. Diesel Emissions Reduction Act (DERA)

While the U.S. EPA has mandated tighter emissions rules on new diesel engines, emissions from most of the current fleet of 11 million heavy-duty diesel engines remain uncontrolled. CATF's diesel advocacy focuses on cleaning up this existing fleet of diesel engines, which are expected to remain in operation for decades to come. As the Diesel Technology Forum has noted, the rate of turnover of the fleet to new, cleaner engines has been slowed by the recession as sales of new diesels have plummeted. As a result, older, dirtier diesels will be with us for even longer than expected. More years and more miles by older, dirtier trucks will mean more pollution, so we need tools to deal with pollution from the existing fleet.

In 2005, Congress and the Administration sought to provide states and localities with new tools for meeting National Ambient Air Quality Standards (NAAQS) and reducing human exposure to harmful diesel emissions. Passed with overwhelming support from government, industry and environmental organizations as part of the Energy Policy Act of 2005, the Diesel Emissions Reduction Act (DERA) established a federally sponsored voluntary retrofit initiative to reduce emissions generated by America's aging diesel fleet. Under the Clean Air Act, states must develop State Implementation Plans (SIPs) to address fine particulate and ozone emission reductions to meet the new air quality standards. DERA offered states and communities a tool and resources to enhance their own air quality programs.

The original program was authorized for \$200 million/year for 5 years or \$1 billion. Since that time, \$469.2 million has been appropriated to EPA's Diesel Emissions Reduction Program (DERP), \$169.2million in annual appropriations and \$300 million through the American Recovery and Reinvestment Act. For FY2011, \$50 million has been appropriated for DERA, however, the President's FY2012 budget has proposed to zero out the program. That would be a mistake.

Since its enactment, the Diesel Emissions Reduction Act (DERA) has been successful in addressing this problem from an economic, environmental and public health perspective. The DERA program has been responsible for the creation and retention of local U.S. jobs that involve manufacturing, installation and servicing of emissions related technologies. In its statutorily mandated report to Congress on the performance of the FY2008 program, EPA estimated that for every dollar spent on the DERA program, an average of more than \$13 in health benefits are generated. The program is oversubscribed; EPA receives \$5 in applications for every \$1 appropriated for awards. EPA found that for that one fiscal year DERA had funded 119 projects affecting more than 14,000 diesel-

powered vehicles/equipment across the country. It created new state clean diesel grant programs in all 50 states and attracted \$61.4 million in matching funds. That first-year investment resulted in the elimination of 46,000 tons of NOx and 2,200 tons of PM emissions. EPA estimated that this resulted in \$580 million to \$1.4 billion in public health benefits. In addition, fuel saving measures resulted in 464,400 tons of CO2 emission reductions, which meant 3.2 million gallons of fuel saved per year for a cost savings of more than \$8 million per year. The federal investment in DERA that year generated more than \$61M in matching or leveraged funds. In total, in FY 2008, investment in DERA created or sustained approximately 2,150 jobs.

As part of the American Recovery and Reinvestment Act (ARRA), DERA was funded at the \$300 million level. EPA received more than 600 applications amounting to \$2 billion in project proposal requests were received in 2008 and more than \$2 billion in matching funds offered. Nearly 400 applications were received in 2009 for the \$84 million available in FY2009 and FY2010 (not including \$36 million for state programs). Approximately \$570 million in funding was requested and more than \$1 billion in matching funds offered. EPA estimates that more than \$1 billion in qualified, unfunded project proposals were received.

To date, the federal appropriations for DERA (\$469.2M) has created or sustained nearly 9,000 jobs since 2008.

Throughout the program's history, DERA has enjoyed strong bipartisan support most recently demonstrated in December 2010 when Congress took the extraordinary step of reauthorizing DERA during the "lame duck" session. Additionally, a broad coalition of more than 530 industry, labor, environmental, public health and state and local government groups sent a letter to Congress in November 2010 supporting the reauthorization of the program. A similarly broadly signed letter was sent to Appropriators on March 28, 2011 in support of FY2012 funding.

DERA is now authorized from FY2012 through FY2016 at \$100M per year. It authorizes the use of grant, rebates and loans to achieve significant reductions in diesel emissions and improves upon the original authorization by focusing the program on the most beneficial solutions and streamlining implementation. The program now also makes it easier for EPA to leverage DERA funds through loans and by soliciting larger project proposals. DERA provides that 70 percent of funds are distributed by EPA (with 5% for emerging technologies); allocates 30 percent of funds to states and but will now require that only EPA or CARB verified and certified technologies be funded. DERA includes an incentive for states to partially match federal funding to increase overall size of funds and now requires that EPA give the highest priority to projects that meet the Congressional established criteria for ranking and evaluating projects, which emphasize cost-effectiveness and health benefits.

The continued need for DERA has recently been acknowledged by the Obama Administration. In her May 9, 2011 letter to Senator Carper, EPA's Assistant Administrator for Air and Radiation, Regina McCarthy, admitted that continuing DERA would provide a cost-effective way to address the existing fleet and deliver immediate public health benefits. EPA Administrator Jackson recently testified similarly in answer to questions before the full EPW committee.

DERA is backed by a uniquely broad coalition of environmental, science-based, public health, industry, labor and state and local government groups. States and localities and environmental, health, user and industry groups all support funding for diesel retrofits and clean air agencies because it is sound environmental, health and budgetary policy. It is our hope that Congress will continue to provide leadership on this issue and we urge you to allocate \$50 million for DERA in Fiscal Year (FY) 2012 (equal to FY 2008 levels).

The DERA Coalition has also requested that Congress support the President's budget request of \$305.5 million for state and local air quality grants in FY 2012. This level of funding is critical because state and local air quality agencies are under-funded and face increasing responsibilities – such as attaining and maintaining National Ambient Air Quality Standards, implementing clean air rules, and addressing toxic air pollutants.

3. Clean Construction in the Transportation Bill

One sector that has been underserved by DERA and other existing programs (like the Congestion Mitigation Air Quality program under the current Transportation Bill) is the construction sector. Construction contractors are not always well positioned to take advantage of these programs, which have required a competitive grant application process. There is a better way: Clean Construction.

What is Clean Construction?

Taking the lead from several states and municipalities around the country that have adopted Clean Construction specifications and working with the contractors and the environmental community, Senator Carper has crafted the Clean Construction Act of 2011, which will reduce the amount of harmful particulate matter emissions emitted by older diesel on- and off-road construction vehicles working on federally-funded transportation infrastructure projects located in areas with poor air quality. This will be accomplished by ensuring that diesel construction equipment employs modern engine and pollution reduction technology through a requirement and funding. As a policy roadmap, the Clean Air Task Force (CATF) and the Associated General Contractors (AGC) negotiated a set of Clean Construction Principles that are embodied in the Clean

Construction Act of 2011. Both our organizations endorse the Clean Construction Act and we congratulate Senator Carper on the introduction of the bill today.

The bill spells out a process for cleaning up construction equipment and vehicles used on a federally funded transportation infrastructure projects located in PM2.5 designated non-attainment and maintenance areas. These engines can be retrofitted cost effectively with best available emission control technologies that can reduce harmful emissions of PM2.5 by up to 85 percent.

The funding to purchase and install the emission control technology would come directly from the project costs as an eligible project expense through the change order process. The cost of the diesel emissions control technologies is capped at no more than one percent of project cost.

Why We Need Clean Construction

The Clean Air Act Advisory Committee (CAAAC) estimates that over 37 percent of land-based particulate matter comes from construction equipment.⁴⁸ Nationwide, there are over 2 million pieces of construction equipment and most lack modern particulate pollution controls. Pollution from diesel equipment has the potential to affect citizens in all parts of the country. Over 88 million Americans live in counties that violate federal health standards for particulate pollution.

The equipment that would utilize emission control technology are strong, well-built machines that last upwards of thirty years. While recognizing the important function and the positive work these vehicles provide to owners and communities alike, technology is available to make these vehicles cleaner and the communities in which they operate healthier.

Technology is Available

Fortunately, affordable emission control technology is available to address emissions from construction equipment. This technology is feasible to install and installation is accessible throughout the country. The U.S. EPA estimates that retrofitting 10,000 engines would eliminate roughly 15,000 tons of harmful pollution each year. Achieving emissions reductions from in-use diesels is needed because older engines pollute at much higher rates than newer ones and remain on the road for decades. The U.S. EPA believes that in-use diesel emission control programs can help states meet their immediate nonattainment goals and other Clean Air Act requirements such as conformity, as well as address ongoing public complaints and concerns about dirty diesels.

There are currently several available emission control technologies that address the emission challenges facing on- and off- road construction equipment. These technologies include: retrofitting with Diesel Particulate Filters (DPF), repowering

and/or rebuilding older engines, and the use of idle reduction technologies, all of which must be verified by EPA or the California Air Resources Board to ensure their effectiveness. Especially in combination, these technologies can reduce fine particulate matter emissions from construction equipment by 85 percent or more.

The tons of PM2.5 reduced by the Clean Construction Act of 2011 will be available to states to help write the State Implementation Plans (SIPs) to meet National Ambient Air Quality Standards (NAAQS), as credits for transportation conformity, and/or as credits for project conformity at the discretion of the states.

State and Local Clean Construction Initiatives

Modern pollution control equipment is being used across the country to build clean transportation projects to ensure that no harm is done to the air quality in communities during infrastructure projects. Clean Construction was employed on the Big Dig project in Boston as far back as the 1990's, but most notably was used in the reconstruction of lower Manhattan after the 9/11 attacks.

After the success of the lower Manhattan project, the rest of the boroughs of New York wanted Clean Construction and the New York City Council passed Local Law 77, which requires it on all projects in the City. Soon thereafter, the New York Legislature passed the New York Diesel Emissions Reduction Act (NY DERA), which required clean diesel on all state owned fleets and on projects performed by private contractors working for the state.

Meanwhile, in Illinois, Cook County, the county comprising the City of Chicago, adopted an ordinance requiring Clean Construction. The Governor of Illinois followed suit with an Executive Order requiring Clean Construction on all state-funded projects in nonattainment areas. And, as one of his last acts in office, Chicago Mayor Daley introduced and the Chicago City Council unanimously passed a Clean Construction ordinance for the City.

Last year, Rhode Island, following action by the City of Providence, passed legislation with the support of the contractors requiring Clean Construction. And just last month, Governor Christie of New Jersey issued an Executive Order requiring Clean Construction. The City Council of Pittsburgh is holding a hearing next month to consider a Clean Construction ordinance.

History of Diesel Retrofits in the Transportation Reauthorization Bill

During the Reauthorization of SAFETEA-LU, a significant effort was made to include Diesel Retrofits as a priority in the Congestion Mitigation Air Quality (CMAQ) program. Securing the CMAQ priority language was successful, but the implementation of this policy was less so.

Without clear guidance, states were reluctant to utilize the diesel retrofit language. Contractors who were in most need of the funding for retrofits found the process of going through CMAQ cumbersome. In short, the CMAQ priority language did not accomplish what it had set out to do: provide a resource for contractors and states to utilize emission control technology in the areas with the most impacted air quality.

A New Approach

As a new approach, we recommend that Congress adopt the approach embodied in the Clean Construction Act of 2011 as part of the Transportation Bill re-authorization. The bill requires that federally funded transportation projects in non-attainment areas phase in the use of clean construction equipment – such as front-end loaders, diggers, and earthmovers. The bill provides funding to retrofit, repower and upgrade equipment to provide the maximum achievable reduction of diesel particulate emissions as an eligible project expense.

The bill would achieve this through a funded requirement for emission control technology in PM2.5 designated non-attainment and maintenance areas an eligible project expense through a change order, a process that both State DOT's and contractors are familiar with and utilize. The goal is to streamline a process that integrates clean air benefits into project delivery.

Also important with respect to the competitive bid process is that contract awards should be blind to whether a firm already has clean construction equipment in its fleet. This will ensure that smaller firms that have not invested in retrofits are not shut out of the bidding for projects, thereby making sure that some of the dirtiest equipment in service is eligible for clean up.

To maintain strict cost controls, the bill requires that no more than one percent of a transportation project's cost must be used by States to upgrade dirty equipment. We have commissioned case studies on ten projects, five that have been completed utilizing Clean Construction and five that have projected the use of Clean Construction on projects. The results have consistently shown that project equipment can be cleaned up for no more than one to one and one-half percent of project cost. This provision is expected to allocate approximately \$200 million per year for clean equipment. CATF estimates that the bill will eliminate 9,000 tons of PM2.5 emissions and avoid nearly 1,000 premature deaths plus many more adverse health effects.

Thank you for the opportunity to testify in support of clean diesel in two important federal statutes. I look forward to working with the subcommittee in securing funding for DERA and including Clean Construction in our nation's next Surface Transportation Reauthorization Bill.

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