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THE AMERICAN ENERGY INITIATIVE, PART 21: A FOCUS ON THE NEW PROPOSAL BY THE ENVIRONMENTAL PROTECTION AGENCY TO TIGHTEN NATIONAL STANDARDS FOR FINE PARTICULATE MATTER IN THE AMBIENT AIR

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND POWER

OF THE

COMMITTEE ON ENERGY AND COMMERCE
HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

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THE AMERICAN ENERGY INITIATIVE, PART 21: A FOCUS ON THE NEW PROPOSAL BY THE ENVIRONMENTAL PROTECTION AGENCY TO TIGHTEN NATIONAL STANDARDS FOR FINE PARTICULATE MATTER IN THE AMBIENT AIR

THURSDAY, JUNE 28, 2012

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 9:02 a.m., in room 2123 of the Rayburn House Office Building, Hon. Ed Whitfield (chairman of the subcommittee) presiding.

Members present: Representatives Whitfield, Bilbray, McKinley, Griffith, and Rush.

Staff present: Anita Bradley, Senior Policy Advisor to Chairman Emeritus; Maryam Brown, Chief Counsel, Energy and Power; Allison Busbee, Legislative Clerk; Andy Duberstein, Deputy Press Secretary; Cory Hicks, Policy Coordinator, Energy and Power; Heidi King, Chief Economist; Mary Neumayr, Senior Energy Counsel; Alison Cassady, Democratic Senior Professional Staff Member; Caitlin Haberman, Democratic Policy Analyst; and Alexandra Teitz, Democratic Senior Counsel, Environment and Energy.

OPENING STATEMENT OF HON. ED WHITFIELD, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF KENTUCKY

Mr. WHITFIELD. I would like to call this hearing to order this morning. We are on our 21st day of hearings on the American Energy Initiative. Over the course of this hearing we have heard expert testimony on a wide variety of issues and also problematic EPA rules. Many of these new and proposed measures we believe threaten to impose high costs and possible job losses on the American people.

Quite a few are part of EPA's, in my view, bias against coal. Each new rule adds to the unknown cumulative impact of the multitude of rules that have come out of EPA, many of which are the result of litigation and settlement agreements, and I personally do not believe that is the way to develop environmental policy through litigation and settlement agreements.

However, today we are going to be discussing the proposed National Ambient Air Quality Standards for Fine Particulate Matter. Specifically, EPA's proposal calls for ratcheting down the already stringent annual standard for fine particulate matter set in 2006.

The new 2006 standard hasn't even been fully implemented yet. Indeed, this committee recommended in a recent letter to EPA and requested that the agency consider retaining the current standard, but they, I think, have ignored this suggestion.

I might add that particulate matter has many natural sources as you well know, such as forest fires, windblown dust, volcanoes, and even sea spray. Even the EPA admits that background levels can approach the agency's existing standards and on occasion exceed them.

Among the manmade sources of fine particulate matter are a wide variety of activities such as driving a car, running a factory or power plant, farming, and even household fireplaces and backyard barbeques. And it is precisely because fine particulate matter comes from so many different sources and activities that EPA's proposed rules would be costly and intrusive.

In fact, in order to achieve earlier particulate matter standards, the agency even issued standards, for example, for wood stoves. One could only imagine how many different activities would be impacted by the more-stringent proposed rule.

It is also important to note that when we are talking about the cost of the proposed Fine Particulate Matter Standard it is not just a matter of dollars and cents. The cost can also be measured in terms of damage to public health and safety. For example, roadwork is a source of particulate matter emissions, and EPA's proposal can make it harder to undertake the kind of projects that make our roads and highways safer, and we all know that we have a dire infrastructure problem in America today, and we need to be improving our public infrastructure needs.

And, of course, we are also talking about regulations with the potential to be an obstacle to job creation, and we need to take into account the very serious adverse health implications of unemployment.

As costly as the new Fine Particulate Matter Standard would be in isolation, we also must be mindful of all the other new and proposed rules that will also apply to many of the same sources and activities. In other words, the cumulative impact of the multitude of rules coming out.

Whether it is a domestic manufacturer struggling to remain globally competitive or a coal-fired power plant owner facing costly upgrades in order to remain in compliance, we have to consider the cost of EPA's Fine Particulate Matter Proposal in the context of Utility MACT, Cross-State Air Pollution Rule, Boiler MACT, ozone standards, greenhouse gas regulations, and all others.

I should note that reductions in air pollution are an environmental success story. We all are proud of the fact that we have a much cleaner air today than we have had in the past, but I think realistically we also need to ask the question at what point do you get to a point of diminishing returns.

We have a great panel with us today, and you all have great expertise in this area, so we look forward to your testimony and your thoughts on this subject as well.

[The prepared statement of Mr. Whitfield follows:]

STATEMENT OF Chairman ED WHITFIELD
Hearing on the American Energy Initiative, Day 21
EPA Proposed NAAQS for Particulate Matter
June 28, 2012

This morning is the twenty-first day of our hearing on the American Energy Initiative. Over the course of this hearing, we have heard expert testimony on a number of very problematic EPA rules.

Many of these new and proposed measures threaten to impose high costs and job losses. Quite a few are part of EPA's unjustified war on coal.

Each new rule adds to the train wreck of rules coming out of EPA many of which are the result of litigation and settlement agreements, which I believe is not the way major policy decisions should be made.

But today, we will discuss the proposed National Ambient Air Quality Standard for fine particulate matter.

Specifically, EPA's proposal calls for ratcheting down the already-stringent annual standard for fine particulate matter set in 2006. The new 2006 standard hasn't even been fully implemented yet.

Indeed, this Committee recommended in a recent letter to EPA that the agency consider retention of the current standard, but this suggestion was ignored.

I might add that particulate matter has many natural sources, such as forest fires, windblown dust, volcanoes, and even sea spray. Even EPA admits that background levels can approach the agency's existing standards, and on occasion exceed them.

Among the man-made sources of fine particulate matter are a wide variety of activities - such as driving a car, running a factory or power plant, farming, and even household fireplaces and backyard barbeques. And it is precisely because

fine particulate matter comes from so many different sources and activities that EPA's proposed rule would be costly and intrusive.

In fact, in order to achieve earlier particulate matter standards, the agency even issued standards for wood stoves. One can only imagine how many different activities would be impacted by the more stringent proposed rule.

It is also important to note that when we are talking about the costs of the proposed fine particulate matter standard, it is not just a matter of dollars and cents. The costs can also be measured in terms of damage to public health and safety.

For example, roadwork is a source of particulate matter emissions, and EPA's proposal could make it harder to undertake the kinds of projects that make our roads and highways safer. So when we discuss the claimed public health benefits of the rule, we need to consider all sides of the issue.

And of course, when we are talking about regulations with the potential to destroy jobs, we need to take into account the very serious adverse health implications of unemployment.

As costly as the new fine particulate matter standard would be in isolation, we also must be mindful of all the other new and proposed rules that will also apply to many of the same sources and activities.

Whether it's a domestic manufacturer struggling to remain globally competitive or a coal-fired power plant owner facing costly upgrades in order to remain in compliance, we have to consider the costs of EPA's fine particulate matter proposal in the context of Utility MACT, Cross-State Air Pollution Rule, Boiler MACT, ozone standards, greenhouse gas regulations, and all the others.

I should note that reductions in air pollution are an environmental success story. These emissions were addressed by the 1970 Clean Air Act, and the standards have been tightened several times since then.

And the reduction in emissions over the past 4 decades has been remarkable. But that also means that we very well may have reached the point where yet another new standard would do more harm than good.

That is why we need to look before we leap on new regulations. Thank you.

Mr. WHITFIELD. And at this time I would like to recognize the gentleman from Illinois, Mr. Rush, for a 5-minute opening statement.

OPENING STATEMENT OF HON. BOBBY L. RUSH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. RUSH. I want to thank you, Mr. Chairman. We are here today to discuss the EPA's proposal to revise the National Ambient Air Quality Standards for Fine Particulate Matter. As have been the routine since the beginning of this Congress, the majority side has invited witnesses who will testify on the burdens associated with implementation of the proposed revised standards, while the minority side has invited guests to speak on the health impacts associated with particulate matter and why the science informs us that these standards are necessary to protect our most vulnerable constituents.

Of course, this hearing is taking place amongst the backdrop of today's—of Tuesdays' unanimous DC Circuit Court of Appeals decision to uphold four greenhouse gas regulations which delivered a huge moral and practical victory for the EPA and its actions. We will dig much deeper into the impacts of the Court's decisions on that case tomorrow when we will have the EPA Assistant Administrator for Air and Radiation, Gina McCarthy, testify before the subcommittee.

But, Mr. Chairman, as far as today's hearing it is important to recognize how we got to this point. Mr. Chairman, we know that in mid-June the EPA released a proposal for lowering the fine particulate standards from 15 micrograms per cubic meter average over a year to between 12 and 13 micrograms, while retaining the current daily standard and the same standards for core particulate particles. EPA did not choose to address this proposal in a willy-nilly fashion or without cause, but Mr. Chairman, I must remind you that that were legally forced to issue this proposal after several States and public health groups challenged the agency for missing an October, 2011, deadline for releasing the new standards. That lawsuit came about after a Federal Court threw out the 2006, standards on the grounds that they were insufficient for protecting the public health.

Let me repeat. They threw out the 2006 standards on the grounds that they were insufficient for protecting the public health. In fact, Mr. Chairman, the science is clear that the EPA must strengthen the national air quality standards for particle pollution, which is made up of microscopic specks of soot, metals, acid, dirt, pollen, mold, and aerosols that are tiny enough to inhale and lodge deep in the lungs where they can cause serious damage. And the American Lung Association informs us breathing these particles can trigger asthma attacks, increase the risk of heart attacks and strokes, damage lung tissue and airways, increase hospital visits for respiratory and cardiovascular problems, and even cause death.

The science also informs us that children, teens, senior citizens, people with low incomes, and people with chronic lung disease such as asthma, chronic bronchitis, and emphysema are especially at risk for being sickened by these particles.

Mr. Chairman, the Court ruled that EPA must propose a standard by June 14 and gave the agency until December 14 to finalize the rule after first holding public hearings which are set to begin in July.

So, Mr. Chairman, we are here today in a very familiar position, where the majority and industry representatives arguing that these rules are too burdensome on industry and will cause jobs, while the minority side will stand by the science and those who argue that these rules will protect our most vulnerable citizens and will save lives.

Mr. Chairman, we acknowledge that you are the majority. However, Mr. Chairman, the majority does not possess the power to hold back the night. You cannot delay or deny the inevitable.

With that, Mr. Chairman, I yield back the balance of my time.

Mr. WHITFIELD. Thank you, Mr. Rush, and at this time I would like to introduce the members of the panel. We once again appreciate all of you being here, and we look forward to your testimony. We have with us today Mr. Mark Herbst, who is Executive Director of the Long Island Contractors Association, who is testifying on behalf of the American Road and Transportation Builders' Association. We have Mr. Bradford Muller, who is Vice President of Marketing for the Charlotte Pipe and Foundry Company. We have Dr. Tee Guidotti, who is a Medical Advisory Services Inc., he is with them, and he is testifying on behalf of the American Thoracic Society. We have Dr. Peter Valberg, who is Principal in Environmental Health for—at the Gradient Corporation. We have Mr. Collin O'Mara, who is Secretary for the Department of NREC for the State of Delaware. We have Dr. Anne Smith, who is Senior Vice President of NERA Economic Consulting, and then we have Mr. Jeffrey Holmstead, who is a partner with Bracewell and Giuliani.

So welcome once again to all of you, and I am going to recognize each one of you for a 5-minute opening statement, and at the end of that time then we will have some questions for you, and I would just note that on the table there are two little boxes, and when your time has expired, the little red light will come on, and we are not going to cut you off immediately, but if you go to 8 or 9 minutes, we might. So, anyway, thank you for being with us, and Mr. Herbst, you are recognized for a 5-minute opening statement.

STATEMENTS OF MARK HERBST, EXECUTIVE DIRECTOR, LONG ISLAND CONTRACTORS ASSOCIATION, INC., ON BEHALF OF AMERICAN ROAD AND TRANSPORTATION BUILDERS ASSOCIATION; BRAD MULLER, VICE PRESIDENT OF MARKETING, CHARLOTTE PIPE AND FOUNDRY COMPANY; TEE LAMONT GUIDOTTI, MEDICAL ADVISORY SERVICES, INC., ON BEHALF OF AMERICAN THORACIC SOCIETY; PETER A. VALBERG, PRINCIPAL, GRADIENT CORPORATION; COLLIN O'MARA, SECRETARY, DEPARTMENT OF NREC, STATE OF DELAWARE; ANNE E. SMITH, SENIOR VICE PRESIDENT, NERA ECONOMIC CONSULTING; AND JEFFREY R. HOLMSTEAD, PARTNER, BRACEWELL AND GIULIANI, LLP

STATEMENT OF MARK HERBST

Mr. HERBST. Thank you, Mr. Chairman, Chairman Whitfield, Representative Rush, members of the subcommittee. I am Mark Herbst, Executive Director of the Long Island Contractors' Association, and I am here today on behalf of the American Road and Transportation Builders' Association, where I serve as the Chairman of the State Council of Executives.

ARTBA, now in its 110th year of service, provides Federal representation for more than 5,000 members drawn from all business sectors of the U.S. transportation construction industry, public and private. Our industry generates more than $200 billion annually in U.S. economic activity and sustains more than 2.2 million American jobs.

We appreciate this opportunity to discuss the Environmental Protection Agency's recent decision to recommend tightening the Federal Clean Air Act standards for particulate matter. At the outset please know that we share your interest in assuring that all Americans can both breathe clean air and are able to be part of a sound and stable economy.

With this in mind it is essential that all parties involved in this proposal recognize any tightening of the PM standard would increase the number of counties that do not comply with Federal standards.

As a result, Federal highway funds could be withheld from these communities. This reality creates a counterproductive cycle where new standards delay needed improvements to the Nation's highway and bridge network, which has already reached critical mass in terms of being able to serve the needs of our citizens and the economy.

In many cases the projects put on hold or canceled are intended to alleviate traffic congestion, a major cause of mobile-source emissions. The stated goal of the PM standards is in part to improve public health. Policymakers, however, must be cognizant of the impact more stringent PM standards would have on other Federal objectives.

Nearly 32,000 people die on U.S. highways each year and many Federal aid highway improvements are intended to address safety issues. As such, EPA's recommendation to tighten PM standards clearly emphasizes one public health threat over another. States and counties need predictability and time to develop transportation plans which achieve PM reduction and create jobs. Adding a new

layer of requirements on top of the existing standards that have not been fully implemented only complicates these ongoing efforts.

Specifically, existing projects need to be in compliance with the Clean Air Act when first undertaken and could be thrown out of compliance if new standards are approved, exposing project owners to costly, time-consuming litigation.

It should be noted that the committee's examination of EPA's proposed PM standards is particularly well timed as it coincides with efforts to complete the long overdue reauthorization of the Federal Surface Transportation Program. With House and Senate conferees presently meeting around the clock on the Transportation Bill, all sides are characterizing it as a jobs bill.

Allowing this much-needed legislation to be followed by implementation of EPA's recommended PM standards is at best two steps forward, one step back. Providing resources and important policy reforms to help States deliver critical transportation improvements, while at the same time allowing EPA to greatly reduce the areas where transportation projects can move forward actually undermines the goal behind the Surface Transportation Bill.

It is ironic that members of both chambers and parties have made streamlining the environmental review and approval process for transportation projects a priority of the Transportation bill yet few talk about the EPA's PM proposal, which will severely disrupt the very process they are trying to make more effective. Essentially while any streamlining reforms in the reauthorization bill could save years during the project delivery process, the EPA's proposed PM standards will severely restrict the opportunities States have to take advantage of these reforms.

Rather than implement tighter PM standards, EPA should focus on fully implementing the current standards that are already producing improvements in U.S. air quality.

Mr. Chairman, Ranking Member Rush, members of the subcommittee, ARTBA deeply appreciates this opportunity to present testimony to you on this important issue. I look forward to answering any questions you may have.

Thank you.

[The prepared statement of Mr. Herbst follows:]

The American Energy Initiative: A Focus on the New Proposal to Tighten National Standards for Fine Particulate Matter

Testimony of
Marc Herbst, Executive Director,
Long Island Contractors Association
On Behalf of the
American Road and Transportation Builders Association

Submitted to the
United States House of Representatives
Energy and Commerce Committee
Subcommittee on Energy and Power

June 28, 2012

My name is Marc Herbst. I currently serve as the Executive Director of the Long Island Contractors Association. On behalf of the American Road and Transportation Builders Association (ARTBA) and its 5,000 member firms and public agencies nationwide, the association would like to thank Chairman Upton, Ranking Member Waxman, Subcommittee Chairman Whitfield and Subcommittee Ranking member Rush for reviewing the United States Environmental Protection Agency's (EPA's) recently proposed revision to the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM).

ARTBA's membership own, plan, design, supply and construct transportation projects throughout the country which are directly impacted by the federal Clean Air Act (CAA) and EPA's NAAQS process. Federal highway funding for projects built by ARTBA members is contingent upon conformity with the CAA and its standards. The industry we represent generates more than $200 billion annually in U.S. economic activity and sustains more than 2.5 million American jobs. This statement represents the collective view of our member companies and organizations.

Transportation infrastructure development and environmental protection have long been intertwined in modern society. The quality of life, level of personal freedom and choice, and

economic growth and stability any nation offers its citizens are closely related to the scope, quality and efficiency of its transportation infrastructure network. And clean air is obviously essential to human health and well-being.

Of course, building the physical infrastructure that facilitates our personal mobility—access to jobs, shopping, recreation, worship, family and friends—and shipments of materials and finished goods, inherently involves disrupting the natural environment where it is sited. And the personal and business use our transportation infrastructure makes possible also usually involves the use of powered machines that also impact our natural environment. These are truisms whether we are talking about streets, roads, highways, bridges, public transit systems, intercity and freight rail, airports, waterways or ports.

The EPA's proposed recommendation, announced June 14, would tighten the federal PM standard. Any tightening of the PM standard would increase the number of counties that do not comply with CAA standards. As a result, federal highway funds can be withheld from these communities. This reality creates a counterproductive cycle where new NAAQS standards delay needed improvements to the nation's infrastructure network which has already reached "critical mass" in terms of being able to serve the needs of our citizens and economy. In many cases, the projects put on hold or cancelled would have alleviated traffic congestion that is a major cause of mobile source emissions.

The stated goal of the PM NAAQS is in part to improve public health. This is a commendable objective and one shared by ARTBA. EPA, however, must be cognizant of the impact more stringent PM standards would have on other federal initiatives. Nearly 32,000 people die on U.S. highways each year and many federally-funded highway improvements are designed specifically to address safety issues. As such, imposing new PM standards that threaten future highway improvements could be counterproductive to improving public health. As such, EPA's recommendation to tighten PM standards ignores one public health threat and favors another.

When considering PM standards, and any possible changes, it is important to note the EPA's own reports have consistently indicated an overall decline in PM emissions over the past 10 years. Any tightening of the PM NAAQS by the EPA would greatly increase the stringency of PM regulation at a time when existing standards are already resulting in noticeable progress. According to the EPA's own data, concentrations of fine particulate matter have declined by 24 percent (national standards) and 28 percent (24-hour standard) between 2001 and 2010[1]. This decline in emissions becomes more remarkable when compared to additional EPA data explaining that since 1980, gross domestic product increased by 127 percent, vehicle miles travelled increased by 96 percent, population increased by 36 percent and energy consumption increased by 19 percent. Indeed, since 1980, the overall amount of aggregate emissions, including PM, has decreased by 67 percent[2]. This progress has occurred both prior to and since the implementation of the existing PM NAAQS. Furthermore, this continuing improvement indicates the current regulations are having their desired effect.

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[1] United States Environmental Protection Agency, Our Nation's Air, Status and Trends through 2010, p. 12, available at: http://www.epa.gov/airtrends/2011/index.html.

[2] U.S. EPA, Comparison of Growth Areas and Emissions, 1980-2010, available at: http://www.epa.gov/airtrends/aqtrends.html#comparison. The six principal or "criteria" air pollutants referred to by the EPA are nitrogen dioxide, ozone, sulfur dioxide, particulate matter, carbon monoxide and lead.

Specifically, the Federal Highway Administration (FHWA) has documented a 50 percent reduction in PM emissions from on-road vehicle travel since 1990.[3] Today's average motor vehicle produces 80 to 90 percent less emissions than it did in 1967.[4] Clearly, the transportation community is playing a vital role in reducing PM levels and is continuing to take steps, independent of the NAAQS, to build on this success by further reducing all forms of air pollution. As better motor vehicle and fuel technologies develop, vehicle emissions will continue to decrease, even as automobile usage increases.

Illustrating this point, major automobile manufacturers announced in 2005 a new generation of vehicles that will be 99 percent cleaner than vehicles produced 30 years ago. This reduction in emissions comes from a four-part strategy that includes cleaning up the fuel as it goes into the vehicle, burning the fuel more precisely in the engine, removing undesirable emissions with a catalyst, and monitoring all of these systems to ensure minimal emission levels. As these and other new technologies are integrated into both on and off road vehicles, emissions levels in all areas (including PM) should continue to decline.

Counties need some sense of predictability in order to develop long-range transportation plans to most effectively achieve PM reduction. Adding a new layer of requirements on top of existing standards that have not been fully implemented complicates these efforts. Specifically, existing projects deemed to be in compliance with the Clean Air Act when first undertaken could be thrown out of compliance once new standards are approved, exposing them to costly, time-consuming litigation.

To fully understand the effects of increasing the PM NAAQS on the transportation sector and the problems counties face when the standards are tightened, the transportation conformity process as a whole also needs to be examined. The problem with the existing conformity process is caused by the fact that some have tried to turn conformity into an exact science, when it is not. Rather, conformity findings are based on assumptions and "modeling of future events," not often reflecting reality. Very few conformity lapses occur because a region has a major clean air problem. They occur because one of the parties involved cannot meet a particular deadline. Thus, the conformity process has become a top-heavy bureaucratic exercise that puts more emphasis on "crossing the t's and dotting the i's" than on engaging the public in true transportation planning that is good for the environment and the mobility of a region's population.

The problems with the conformity process are amplified by transportation plans and the State Implementation Plans (SIPs) with which they are intended to conform often being out of sync with one another. Largely, this is due to transportation plans having very long planning horizons requiring frequent updates, while most air quality plans have very short planning horizons and are updated infrequently. As a result, many of the planning assumptions used for conformity determinations of transportation plans and programs are not consistent with the assumptions used in the air quality planning process to establish emissions budgets and determine appropriate control measures.

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[3] United States Department of Transportation, "Transportation Air Quality Selected Facts and Figures" p.28 (2006).
[4] United States Department of Transportation, "Transportation Air Quality Selected Facts and Figures." (1999).

In other words, because transportation plans must use the most recent air quality data, a perceived increase in emissions and possible conformity lapses can occur simply because the numbers of models relied on in the transportation plan differ from those in the air quality plan—not because an area's air quality has changed. The more EPA changes the NAAQS, the greater the conformity problems become. Changes in the NAAQS, on a completely different timeline than conformity schedules, can set off a chain reaction forcing counties to re-examine deadlines which had been set years prior and result in significant additional regulatory requirements. These types of complications need to be weighed against the potential gains of increasing air quality standards.

ARTBA is also concerned by EPA's proposal to place PM monitors in "near roadway" locations. The monitors, which determine PM compliance for counties, must be placed in areas where they can get a reading indicative of PM levels for the area as a whole. Emissions are naturally going to be higher in some areas of a county and lower in others. For example, a monitor placed by the side of a well-travelled highway is most likely going to get a higher reading for PM emissions than one placed by a little used residential street. Also, when taking readings from PM monitors, it should be realized that the monitors cannot account for the aforementioned PM reductions due to take place in the near future, such as reductions from newer, cleaner trucks and busses being placed on-line. Thus, even if there is a violation, the steps to remedy it are already underway.

A major key to further emissions reductions is to deal directly with traffic congestion. Additional emissions reductions from the transportation sector will be achieved by relieving congestion through greater production of transportation improvements across all modal sectors. Currently, according to a study published last year by the Harvard Center for Risk Analysis fine particulate matter emissions that can be traced back to traffic congestion in the nation's 83 largest urban areas lead to more than 2,200 premature deaths in the U.S. in 2010. The related public health cost, researchers say, was, conservatively, at least $18 billion[5].

Vehicles operating at highway speeds unimpeded by congestion are far more efficient—and therefore generally emit far less—than vehicles caught in stop-and-go traffic. This is particularly true for PM emissions, which are greater at lower speeds and when a vehicle is stopping and starting as opposed to travelling in an uncongested lane[6]. Thus, the worse traffic congestion becomes, the worse the PM emissions from on-road vehicles will be.

The simple fact is that if America is to meet its mobility and environmental challenges during this century, we must invest in a host of transportation solutions, including new capacity for both highways and mass transit systems. And not create a false choice between needed investment in both areas.

Unfortunately, traffic congestion has grown drastically during the past quarter-century, as vehicle travel has greatly outpaced new highway capacity, which has only increased six percent

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[5] The Public Health Costs of Traffic Congestion (June 2011). Available at: http://www.transportationconstructioncoalition.org/Docs/TCC-Harvard-Traffic-Congestion-Report-Final.pdf.

[6] Project-Level Mitigation What Affects Diesel Particulate Matter Emissions, UC Davis/CalTrans, p. 8, 12 (November 20, 2008), available at: http://dn.engr.ucdavis.edu/images/AQMit-Report1.pdf.

in the last 30 years. Failure to alleviate congested areas already produces specific bottlenecks that cause 50 percent of total congestion on the nation's freeways. In 2004, a study of the nation's most severely congested highways highlighted the reality that significant reductions in emissions require a reduction in vehicle time traveled, not vehicle miles traveled. The study concluded that modest improvements to traffic flow at 233 bottlenecks would reduce carbon dioxide emissions by as much as 77 percent and conserve more than 40 billion gallons of fuel over a 20-year period.[7] These fuel savings translate directly into lower emissions.

While the proponents of a modal conflict will argue the solution to this national dilemma is to get people out of their cars, there is no evidence that this approach is either achievable or even desired by the American public. The preferred alternative should be to advance all modes of transportation. In a nation as large as ours, different areas will require different transportation strategies.

Certainly new roadway capacity is not a viable solution in some communities, but for others it is appropriate. Given the nation's vast transportation challenges, federal policy should not constrain potential solutions available to communities. To do so would have serious economic consequences. For example, the truck traffic statistics cited earlier do not represent discretionary decisions—the fact of the matter is that for certain products, locations and time schedules, frequent shipments by truck are the only feasible alternative.

It should be noted that Committee's examination of EPA's proposed PM standards is particularly well-timed as it coincides with efforts to complete the long-overdue reauthorization of the federal surface transportation program. As the House and Senate conferees presently are meeting around the clock, members of both parties claim the measure they are working to produce is a "jobs bill." Allowing this much needed legislation to be followed by implementation of EPA's recommended PM standards is at best two steps forward and one step back. Providing resources and important policy reforms to help states advance critical transportation improvements while greatly reducing areas where transportation projects can move forward actually undermines the goal behind the surface transportation bill.

It is ironic that members of both chambers and parties have made streamlining the environmental review and approval process for transportation projects a priority of the transportation bill yet few talk about how EPA's PM proposal will severely disrupt the very process they are trying to make more effective. Essentially, while any streamlining reforms in the reauthorization bill could save years during the project delivery process, the EPA's proposed PM standards will severely restrict the opportunities states have to take advantage of these reforms.

In conclusion, ARTBA asks the Committee to recognize the shared goals of transportation and environmental policy and their interrelatedness. The implementation of EPA's recommended PM standards will hamper the nation's abilities to both preserve and improve its transportation

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[7] Unclogging America's Arteries, Effective Relief for Highway, Cambridge Systematics, Inc., (February 2004) available at: http://trpc.org/regionalplanning/transportation/projects/Documents/Smart%20Corridors/americanuseralliancestudy.pdf.

infrastructure. The retention of the current PM standards will, on the other hand, allow the nation to continue to make progress towards cleaner air while at the same time continue to pursue desperately needed transportation improvements vital to our economy, public health and safety. ARTBA looks forward to working with the Committee to achieve a cleaner environment through the continuation of proven technological and regulatory efforts.

Mr. WHITFIELD. Thank you, Mr. Herbst, and Mr. Muller, you are recognized for a 5-minute opening statement.

STATEMENT OF BRAD MULLER

Mr. MULLER. Thank you, Mr. Chairman. Good morning. Good morning, Ranking Member Rush, members of the subcommittee. Thank you for the opportunity to testify today.

My name is Brad Muller, and I work for a family-owned, fourth generation company which has been in continuous operation since 1901, producing cast iron pipe and fittings for plumbing. Charlotte Pipe is one of only three U.S. foundries left in America that produces the types of metal castings that we do, and dozens of competing foundries having gone out of business in the last 2 decades.

We employ 450 associates at our foundry, Mr. Chairman, many of whom have been there for decades. In recent years Charlotte Pipe and the entire metal casting industry has been hard hit by this recession. Despite a massive loss of sales, we have not laid off any associates, sacrificing our profitability to keep our people working.

Today I have the privilege of speaking on behalf of not only our company's associates but also the other domestic foundries as part of the American Foundry Society, our industry's trade association, which has more than 8,500 members in every State.

We are alarmed, Mr. Chairman, by a wave of new regulations that EPA is imposing that you documented earlier. As an energy-intensive industry, we are significantly impacted by increased electricity costs and reliability issues that will result from these regulations.

Of particular concern are EPA's new Mercury and Air Toxics Standards for coal-fired plants, known as Utility MACT. The rule requires major overhauls of power plants around the country yet is forecasted to result in double digit electricity prices in a least 30 States.

On the heels of the Utility MACT, EPA proposed in March the first-ever greenhouse gas standards for power plants, a rule that will effectively ban new coal-fired plants in this country and could threaten existing coal-fired generation.

According to a study conducted by NERA, the combined estimated costs of the 2012 EPA regulations is a staggering $127 billion.

In addition, Mr. Chairman, EPA has failed as you noted to consider the cumulative impact of its power sector regulations on grid reliability. So far more than 140 coal-fired generating units in 19 States have announced they will retire by 2015, creating volatility within the electric grid if steps are not taken to balance the retirements with new capacity.

EPA recently announced a proposed rule that would increase the stringency of the NAAQS Standards for fine particulate matter. The more stringent PM 2.5 standards will bring additional costs for existing foundries and create huge hurdles to permitting for expansions and new plants, the exact situation that we encountered.

A few years ago, Charlotte Pipe bought a significant amount of land in Stanley County in rural North Carolina with the intention

of building a new, state-of-the-art, high efficiency foundry and closing our current location in downtown Charlotte.

After we drew up plans for the facility, we submitted our air permit for review. State regulators eventually told us that while previous air dispersion models only had to account for filterable particulate, new air permits now require condensables to be included in the total PM 2.5 emissions, making the standard that much more difficult to meet.

This permitting change, combined with EPA's intension to lower the standards, made it impossible for us to build a new plant. In our case, naturally-occurring levels in rural North Carolina, where we were going to build the foundry, were are at 12.8 parts per billion, higher than EPA's lower end of the range, proposed range.

Instead of the 450 acres we bought, Charlotte Pipe would need 4,500 acres to comply with the new standards. A new plant would have brought 1,800 jobs, including about 1,000 permanent new jobs, to what is currently a depressed area of rural North Carolina. The tax benefit of constructing and opening a new foundry in Stanly County was estimated to be about $70 million over the initial 4-year period, with $17 million each year thereafter.

Charlotte Pipe understands and supports the need for reasonable regulations to protect the environment, worker safety, and health, but the continued ratcheting down of emissions limits—I am sorry. But the continued ratcheting down of emission limits produces diminishing returns at far-higher costs. EPA's new stringent standards will put many regions out of attainment, and manufacturers considering a place to build a plant and/or expand production will not be able to obtain the necessary permits.

Thank you, again, for the opportunity to appear today, and I will be happy to respond to questions.

[The prepared statement of Mr. Muller follows:]

CHARLOTTE
PIPE AND FOUNDRY COMPANY

Testimony
Brad Muller, Vice President of Marketing,
Charlotte Pipe and Foundry Company

Before the

U.S. House of Representatives
Committee on Energy and Commerce,
Subcommittee on Energy and Power

The American Energy Initiative: A Focus on the New Proposal
to Tighten National Standards for Fine Particulate Matter

June 28, 2012

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Summary for Testimony of Brad Muller
On Behalf of Charlotte Pipe and Foundry Company

- **Overview**
  Charlotte Pipe and Foundry Company of Charlotte, North Carolina is a family-owned fourth generation business that has been manufacturing cast iron pipe and fittings for plumbing systems since 1901. Our pipes and fittings are used primarily in building construction for sanitary and storm drain, waste and vent piping applications. Charlotte Pipe, employing 450 associates, is one of only three U.S. foundries left in America that produces these types of castings.

- **Impact of EPA's New Proposed Rule on Particulate Matter (PM 2.5) on Charlotte Pipe**
  In June, the U.S. Environmental Protection Agency (EPA) announced a proposed rule that would increase the stringency of the National Ambient Air Quality Standard (NAAQS) for fine particulate matter (PM 2.5) from its current level of 15 micrograms per cubic meter (µg/m3) to between 12 (µg/m3) and 13 (µg/m3). The new standards will put many regions out of attainment, and manufacturers considering a place to build a plant and/or expand production will not be able to obtain the permits in non-attainment areas. The proposed new rule will come at a significant economic cost and lost investments in some areas of the country. EPA should have retained the current standards as part of the new proposal.

  It will certainly be more difficult for foundries to expand and/or build new operations in some areas of the country. In our example, naturally occurring levels in rural North Carolina, where we were considering building our new state-of-the-art foundry are at 12.8 ppb. It is clear, we will not be able to locate a plant on the area of real estate that Charlotte Pipe owns and meet these naturally-occurring background levels based on EPA's new proposed PM 2.5 standards.

- **Challenges to Charlotte Pipe and U.S. Foundry Industry**
  The U.S. metalcasting industry is facing the most intense global competition in our history and significant challenges from the increasing costs associated with federal regulations, tax structure and other actions by our government. Imported castings now comprise nearly 25% of the market, with more than a quarter of these imports are coming from China.

- **Wave of new EPA Regulations Impacting the Power Sector & Foundries**
  We are alarmed by of new regulations that EPA is imposing on the utility sector over the next five years with little regard for their impact on manufacturers. As an energy-intensive industry, foundries are troubled by the increased electricity costs and reliability issues that will undoubtedly result from these new regulations. Of particular concern is EPA's Utility MACT for coal-fueled power plants. The rule requires major overhauls at power plants around the country. It is forecasted to result in double digit electricity prices in about 30 states and threaten electric reliability. EPA also proposed in March the first-ever greenhouse gas (GHG) New Source Performance Standards (NSPS) for new power plants—a rule that will effectively ban any new coal-fired power plants in this country. The other major EPA regulations that will impact electric reliability include: Cross State Air Pollution Rule (CSAPR); the National Ambient Air Quality Standards (NAAQS) for ozone, sulfur oxides, nitrogen dioxide, and particulate matter; the Coal Combustion Residuals Rule; and the Cooling Water Intake Structure regulations.

Good Morning. Chairman Whitfield, Ranking Member Rush and Members of the Subcommittee, thank you for the opportunity to testify as part of today's discussion on The American Energy Initiative and EPA's new proposal to tighten national standards for fine particulate matter.

My name is Brad Muller, and I am Vice President of Marketing for Charlotte Pipe and Foundry Company of Charlotte, North Carolina. I have the good fortune to work for this family-owned fourth generation company which has been in continuous operation since 1901 producing cast iron pipe and fittings for plumbing systems. Iron pipe has been the backbone of our country's water systems and is still the most prevalent and preferred water pipe material used for drinking water systems in the U.S. Our pipes and fittings are used primarily in building construction for sanitary and storm drain, waste and vent piping applications. Charlotte Pipe is one of only three U.S. foundries left in America that produces these types of metal castings, with dozens of competing foundries having closed their doors over the last two decades.

We currently employ 450 associates at our foundry, many have 20, 30, even 40 plus years of service. In recent years, Charlotte Pipe and the entire metalcasting industry has been hard hit by the recession. Since the recession began in December 2007, unfortunately 150 metal casters have shut their doors forcing thousands to lose their jobs.

For Charlotte Pipe, we have faced some challenging times. Commercial construction – the primary market for our cast iron pipe and fittings – was down 64 percent from its peak in 2006, before beginning a slight rebound this year. Despite such a massive loss of volume, we have not laid off any associates, sacrificing our profitability to keep our people working as many hours as possible while keeping their benefits and health insurance intact. In fact, we have not had a lay-off in our Cast Iron Division since the early 1950s when we mechanized the plant, despite several significant recessions since that time.

Today I have the privilege of speaking on behalf of not only our Company's associates and their families, but also the other domestic foundries that are part of the American Foundry Society (AFS) – our industry's major trade and technical association which is comprised of more than 8,500 members in every state in the country.

Background on Metalcasting Industry

The U.S. metalcasting industry is the sixth largest industry in America and is the second largest supplier of castings in world. The U.S. foundry industry consists of 2,040 operating casting facilities, of which approximately 700 produce ferrous castings and 1,400 produce nonferrous castings. U.S. metalcasters ship cast products valued at more than $20 billion annually and directly employs over 200,000 people. Our industry is dominated by small businesses, with over 80% of U.S. metalcasters employing 100 workers or less. In fact, many are still family-owned.

Metalcasters offer good-paying, blue-collar jobs with benefits that have allowed our employees to support their families and send their children to college. The industry is widely dispersed throughout the country with the highest geographic concentration of facilities is in Alabama, Ohio, Pennsylvania, Indiana, Illinois, Michigan, California, Texas, and Wisconsin.

Our industry is critical to the U.S. economy. More than 90% of all manufactured goods and capital equipment use metal castings as engineered components or rely on castings for their manufacture. From critical components for aircrafts and automobiles to home appliances and surgical equipment, cast metal products are integral to our economy and our way of life.

Castings are almost completely manufactured from recycled scrap materials. As a result, foundries take tens of thousands of old cars from our nation's highways and junkyards for use in the manufacture of our castings.

Our industry is diverse, employing a variety of casting processes and alloys to make a wide range of products. We produce both simple and complex components of infinite variety. Metalcasters produce more than 600 lbs of cast metal (aluminum, iron, steel, zinc and/or magnesium) for every vehicle on the road. Automobiles and other transportation equipment utilize 31% of all castings produced in the U.S. - including engine blocks, crankshafts, camshafts, cylinder heads, brake drums or calipers, intake manifolds, transmission housings, differential casings, U-joints, suspension parts, flywheels, engine mount brackets, front-wheel steering knuckles, hydraulic valves, and a multitude of other castings.

We are the mainstay of national defense. All sectors of the U.S. military are reliant on metal castings for jet fighters, ships, tanks, trucks, weapon systems and other vital components. In fact, the U.S. Department of Defense has established formal programs to convert fabricated components to single-piece castings, improving our military's ability to cost-effectively produce such equipment in the least amount of time.

Today, the U.S. metalcasting industry is facing unprecedented challenges - the most intense global competition in our history and by the increasing costs associated with new federal regulations and other actions by our government, as well as increasing energy prices and health care costs. A study conducted by the Manufacturing Institute and MAPI in 2011 calculated it is 20% more expensive to manufacture in the U.S. compared to nine trading partners The primary driver of this cost differential is policy in the areas of regulation, taxes, litigation, and energy.

In 2011, federal government agencies issued an unprecedented amount of costly final rules totaling 3,807, including 32 new major regulations (those costing over $100 million). These new major rules will add $10 billion annually in regulatory costs, along with $6.6 billion in implementation costs. Thousands of more rules are in the pipeline. These additional costs will only add to the obstacles foundries casters and manufacturers have to create jobs and expand their businesses.

Imported castings now comprise nearly 25% of the market, with more than a quarter of these imports are coming from China where energy, labor, tax and material costs are substantially lower partly due in part to government subsidies. When trying to export our pipes and fittings, some of our trading partners slap on tariffs of 30% or more, which essentially shuts us out from ever selling in those markets.

Impact of EPA Regulations on Metalcasting Industry

We are alarmed by a wave of new regulations that EPA is imposing on the utility sector over the next five years. As an energy-intensive industry, metalcasters are troubled by the increased electricity costs and reliability issues that will likely result from these new regulations.

U.S. foundries cannot produce castings without adequate and affordable supplies of natural gas and electricity. For many metalcasters energy is a key expense, only behind raw materials and labor in terms of costs of doing business. Melting is the most energy-intensive operation in metal casting operations, accounting for about 55% of the total energy use. Energy costs are highest in iron foundries such as Charlotte Pipe since the melt temperature is much higher for this metal.

Unfortunately, over the last two years, there are numerous specific examples of regulations and proposed rules by EPA that have a particularly burdensome impact on our industry, with little regard for their impact on job creation and the manufacturing supply chain. There also seems to be no recognition of the cumulative impact of these regulations.

Of particular concern are EPA's new Mercury and Air Toxics Standards for coal-fueled power plants, known as Utility MACT. The rule requires major overhauls at power plants around the country. It is forecasted to result in double digit electricity prices in about 30 states and threaten electric reliability.

On the heels of the Utility MACT, EPA proposed in March the first-ever greenhouse gas standards for power plants—a rule that will effectively ban any new coal-fired power plants in this country and could threaten existing coal-fired generation. The other major EPA regulations that will impact electric reliability include: Cross State Air Pollution Rule (CSAPR); the National Ambient Air Quality Standards (NAAQS) for ozone, sulfur oxides, nitrogen dioxide, and particulate matter; the Coal Combustion Residuals Rule; and the Cooling Water Intake Structure regulations.

According to a study conducted by NERA[1], the combined estimated costs of the 2012 EPA regulations (Utility MACT, Cross State Air Pollution Rule, Cooling Water Intake Rule, & Coal Ash Rule) is a staggering – $127 billion. Since state law allows the electric providers to pass all energy and environmental compliance costs through to the consumer, we expect our energy prices to increase substantially. Even a $0.01/kWh increase in the cost of electricity imposes additional costs of nearly $9 billion per year on domestic manufacturing facilities.

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[i] National Economic Research Associates (NERA) Study, October 2011.

In addition, EPA has failed to consider the cumulative impact of its power sector regulations on grid reliability. In fact, no comprehensive study has been done to assess the effect on the price of electricity, jobs, reliability of electricity supply, and the overall economy. The Federal Energy Regulatory Commission (FERC) has questioned whether the compliance deadlines set forth in EPA's regulations are too expeditious to allow sufficient lead-time to replace retiring resources. So far, over 140 coal-fired electricity generating units in 19 states have announced they will retire by 2015. These retirements will create volatility within the electric grid if steps are not taken to balance the retirements with new capacity.

Charlotte Pipe and the U.S. foundry industry is committed to working with Congress to establish reasonable climate and energy policies that will protect the environment, while at the same time ensuring reliable and affordable sources of energy.

EPA's New Proposed Rule on Particulate Matter (PM 2.5)

On June 15, 2012, the EPA announced a proposed rule that would increase the stringency of the National Ambient Air Quality Standard (NAAQS) for fine particulate matter (PM 2.5) from its current level of 15 micrograms per cubic meter (annual average basis) to between 12 and 13 micrograms per cubic meter.[2] These new proposed levels approach naturally occurring background levels in many parts of the nation, including portions in my home state of North Carolina.

Air quality progress under the current standards, control programs, and industrial initiatives has been substantial. According to EPA, between 2000 and 2010, concentrations of PM 2.5 fell by 27%. As a result, more than three fourths of Americans today live in areas where air quality meets today's standards.

We believe that the proposed more stringent PM 2.5 standards will bring additional costs not only foundries, but U.S. manufacturers, utilities, and states. Specifically, these new proposed standards

[2] According to EPA, the official "issue" date of the proposal is June 14, 2012. However, the proposal was not announced until June 15, 2012. The proposal has not yet been published in the Federal Register. A pre-publication version of the proposal can be accessed at: http://www.epa.gov/airquality/particlepollution/2012/proposal.pdf.

will create challenging requirements for existing foundries and create huge hurdles to permitting expansions and the building of new plants or in the worst case scenario – prevent new plants from being built at all. Unfortunately, this is the situation where our foundry finds itself.

A few years ago, Charlotte Pipe and Foundry bought a significant amount of land in Staly County, in rural North Carolina, with the hopes of building a new, state-of-the-art, high efficiency green foundry and closing our current foundry located in downtown Charlotte.

After we drew up plans for the new facility, we submitted our air permit to the North Carolina Department of Environment and Natural Resources and even paid an extra fee to have it fast-tracked in 9 months. A year and a half later, the permit sat unapproved. Our state regulators eventually told us that while previous air dispersion models only had to account for filterable particulate, new air permits now require condensables to be included in the total PM 2.5 emissions, making the standard that much more difficult to meet. Condensables are fine particulate matter that coverts into a gas under the heat of emissions – there are significant technical questions as to when and to what extent condensable emissions actually form and impact ambient monitors.

Rather than model for this new requirement, changed in mid-stream of the permitting process, we pulled our air permit application and suspended the project. We could not pass the model – the foundry was not even close when adding in condensables. The state also came back to us and said since we would be relocating our plant to a poor area - we would have to consider environmental justice. Additional regulatory requirements could have included new requirements on our air and water permits, as well as other hurdles to site the facility. A new plant would have impacted the local community by bringing new jobs to their area. Not to mention the ripple effect of other businesses that would have surrounded us.

With the lower PM 2.5 standards being proposed by EPA, it will certainly be more difficult for foundries to expand and/or build new operations in some areas of the country. In our example, naturally occurring levels in rural North Carolina, where we were considering building our new foundry, we are at 12.8 ppb. It is clear, we will not be able to locate a plant on the area of real estate

that Charlotte Pipe owns and meet these naturally-occurring background levels.

Instead of 450 acres, Charlotte Pipe would need 4,500 acres to comply with EPA's proposed PM 2.5 regulation. There isn't that much land to purchase in the county and the cost would be prohibitive. In addition, all of the city streets would have to be abandoned for the property lines to be considered contiguous for modeling.

In addition, Charlotte Pipe & Foundry hired an outside firm to conduct an economic impact study on the new foundry project. It was estimated that the project would have created 1,802 new jobs – including 987 new permanent jobs – contributing $388.3 million in employee compensation over the initial four year period. This new North Carolina foundry project would have required at least a couple hundred new construction jobs – consultants, architects, mechanical engineers, environmental engineers, facility engineers, machinists, metal casters, welders, steam fitters, and countless other high-paying construction jobs. These would have been good paying jobs, with benefits. The tax benefit alone of constructing and opening a new foundry in Stanly County was estimated to be $68.9 million over the four year period, with $17.1 million each year thereafter.

In setting the NAAQS, the EPA does not have to consider the costs of implementing the standards[3]. As has traditionally been done in NAAQS rulemaking, the EPA has conducted a Regulatory Impact Analysis (RIA) to provide the public with information on the potential costs and benefits of attaining several alternative PM2.5 standards. The summary of the RIA estimates costs ranging from $2.9 million (for 13.0 μg/m3) to $69 million (for 12.0 μg/m3) per year. We are hard pressed to believe that EPA in its cost estimate seriously estimated and/or considered all the facilities that will not be built in the U.S., as well as plans to expand are shelved.

If finalized, the proposed annual primary NAAQS would add an unknown number of additional areas to the 55 areas already designated as nonattainment for $PM_{2.5}$ and make attainment more difficult for existing areas. The American Foundry Society is very concerned because it could seriously limit

[3] This was confirmed by the Supreme Court in *Whitman v. American Trucking Associations*, 531 U.S. 457, 465-472, 475-76 (2001).

economic development in certain parts of the country. The lower limit won't be good news for places trying to attract new manufacturing jobs or expanding their facilities such as Illinois, Ohio, Pennsylvania, Wisconsin and other states.

Proposed new and modified major stationary sources of PM 2.5 in these areas will be subject to the more stringent Nonattainment New Source Review (NNSR) requirements instead of Prevention of Significant Deterioration (PSD) requirements.

Impacts would also be felt in attainment areas. First, existing regulations and statutes in many states would require most New Source Review (NSR) permit applicants to demonstrate compliance with the new NAAQS, even though nonattainment designations will not be finalized until late 2014. Second, demonstrations will become more difficult as EPA continues to drive the NAAQS closer to background concentrations.

Conclusion

EPA has been embarked on a decades-long process to implement the Clean Air Act and its amendments. There is no doubt that important benefits have been brought to our nation from efforts to improve air quality. But the continued ratcheting down of emission limits produces diminishing returns at far higher marginal costs. This means that each new air rule will have a greater impact on job creation than those in the past. We believe that EPA's new stringent PM 2.5 standards will put many regions out of attainment, and manufacturers considering a place to build a plant and/or expand production will not be able to obtain the permits in non-attainment areas. The proposed new rule will come at a significant economic cost and lost investments in some areas of the country. EPA should have retained the current standards as part of the new proposal.

Charlotte Pipe understands and supports the need for reasonable regulations to protect the environment, worker safety and health, and a host of other workplace issues. But we also recognize that our industry and the entire manufacturing sector are facing unprecedented pressures in their efforts to remain competitive in the global economy. To regain manufacturing momentum and encourage hiring, the United States needs not just improved economic conditions, but also government policies more attuned to the realities of global competition.

The key is to find the balance between ensuring a safe and healthy workplace and allowing that workplace to compete in order to be able to continue to provide employment. That is where the current U.S. regulatory process is lacking. I believe that our current government looks upon manufacturers not as partners that would alleviate unemployment and generate tax revenues, but as targets to regulate, intimidate and punish to justify the expanding government regulatory work force.

The cumulative burden of this new proposed standard and other costly EPA regulations is nearing a tipping point. More than ever, it is critically important that we regulate only that which requires regulation, and only after a thorough vetting of potential benefits, impacts and costs of that regulation on businesses and the manufacturing supply chain.

In this current economy, it is clear that cost-ineffective EPA regulations dampen economic growth and will continue to hold down job creation. For some foundries, it will be the final straw that destroys their whole business.

Thank you again for the opportunity to appear before you today. I would be happy to respond to any questions.

Mr. WHITFIELD. Thank you very much, and Dr. Guidotti, you are recognized for 5 minutes.

STATEMENT OF TEE LAMONT GUIDOTTI

Mr. GUIDOTTI. Thank you for this opportunity. My name is Tee Guidotti. I am a medical doctor and——

Mr. WHITFIELD. Would you put your mike just a little bit closer?

Mr. GUIDOTTI. Thank you for this opportunity. My name is Tee Guidotti. I am a medical doctor and environmental health scientist with training in epidemiology and training and qualifications in toxicology. I have held many positions over my career, including Professor and Chair of the Department of Environmental and Occupational Health at George Washington University. I am now an International Consultant based here in Washington, DC.

I am here today representing the American Thoracic Society, which is the world's leading medical organization devoted to advancing clinical and scientific understanding of pulmonary diseases, critical illness, and sleep-related breathing disorders. The American Thoracic Society supports EPA adopting a much stronger standard for fine particulate matter, PM 2.5.

First, on the ground that revision of the standard will be protective of human health, and second, on the grounds that the scientific evidence accumulated by EPA is sufficient and compelling to justify a move to a more protective standard at this time. The ATS recommends an annual standard of 11 micrograms per cubic meter combined with a 24-hour standard of 25 micrograms per cubic meter.

That specific recommendation has been supported by a wide range of medical societies and public health organizations, including the American Medical Association, the American Academy of Pediatrics, the American Lung Association, the American Health Association, and the American Public Health Association.

The ATS further believes that the scientific evidence that supports the proposed revision and upon which EPA relies is sound, comprehensive, and validated. This body of evidence is the product of decades of intensive research conducted with stringent oversights, double and triple checking results, reanalysis to confirm every important finding, and laboratory validation of observations in human populations.

Hundreds, probably now thousands, of studies in the United States and around the world have confirmed that elevations in fine particulate matter are associated with an increased risk of premature death, cardiovascular disease, hospitalization for respiratory and cardiovascular diseases, and respiratory symptoms within days of the exceedance.

A number of very large studies in the U.S. and around the world have looked at the long-term health effects of ambient particles. These studies have provided firm evidence linking long-term exposure to ambient particulate matter and all cause mortality, cardiovascular mortality, and non-fatal cardiovascular events. The impact of particulate air pollution on life expectancy in a word is substantial.

In the scientific review of the 2009, Integrated Science Assessment for Particulate Matter, the external panel of independent sci-

entists that makes up the Clean Air Scientific Advisory Committee, commonly called CASAC, and the EPA scientists involved have concluded that a causal relationship, meaning that evidence exists for a cause and effect, not just an association, a cause and effect relationship is strong between ambient fine particulate matter and both mortality, meaning deaths, and cardiovascular effects and that the evidence for a cause and effect relationship with respiratory effects is also strong.

These conclusions were reached following a rigorous review. EPA convened ten multi-day public workshops, CASAC meetings, and teleconferences beginning in 2007, in a transparent process that allowed scientific peer review by CASAC and public comment at every step. The science has been thoroughly vetted. CASAC reached a unanimous, unanimous conclusion that a range of 13–11 micrograms per cubic meter for the annual scientific, for the annual standard was scientifically justified.

In epidemiology there are guides to whether an association is likely to be causal or non-causal, meaning that the true cause may be indirect because it acts on both the risk factor and the outcome, or that it may be spurious. All of these criteria have been abundantly satisfied in the case of fine particulate matter, and there has even been equally strong confirmatory and mechanistic evidence derived from toxicology, from animal studies and even volunteer studies and laboratory studies that now show us why this is happening and give us a window on the mechanism of why these things happen.

These scientific studies have linked particulate matter exposure to problems, including aggravated asthma in children, increased emergency department visits, stroke, heart attacks, more frequent deaths, and second heart attacks from people who have already had one, and hospital admissions. It also demonstrates that the situation is worse for certain parts of the population such as children and teenagers, the elderly, and people who already have cardiovascular disease.

Congress built into the Clean Air Act an orderly, systematic process for the regular review of scientific evidence related to the health effects of air pollution. The American Thoracic Society strongly supports the authority of the EPA to periodically review and update the air quality standards as mandated by the Clean Air Act. The evidence of harm from particulate matter pollution underscores how important it actually is for EPA to review and adjust health standards on an ongoing basis, and ATS believes that Congress should continue to allow them to do so.

Thank you.

[The prepared statement of Mr. Guidotti follows:]

Testimony of
Tee Guidotti, MD, MPH, DABT
Representing the
American Thoracic Society

Hearing on
The Proposed National Ambient Air Quality Standards
for Particulate Matter

Subcommittee on Energy and Power
Committee on Energy and Commerce

U.S. House of Representatives

June 28, 2012

Mr. Chairman, Members of the Committee, thank you for the opportunity to testify today. My name is Tee Lamont Guidotti. I am a medical doctor and environmental health scientist with training in epidemiology and training and qualifications in toxicology. I held many positions over the years, including professor and Chair of the Department of Environmental and Occupational Health in the School of Public Health and Health Services and Director of the Division of Occupational Medicine and Toxicology of the Department of Medicine, School of Medicine and Health Sciences at George Washington University. I also held cross-appointments in epidemiology, health policy and pulmonary medicine. I have engaged in research on air

quality and health and have followed the issue of fine particulate matter since before fine particulates were identified as a special hazard. I am now an international consultant based on Washington DC. I am here today representing the American Thoracic Society.

Founded in 1905, the American Thoracic Society is an international medical society with more than 15,000 members. The American Thoracic Society is the world's leading medical association dedicated to advancing clinical and scientific understanding of pulmonary diseases, critical illnesses and sleep-related breathing disorders.

The American Thoracic Society supports EPA adopting a much stronger standard for fine particulate matter ($PM_{2.5}$), first on the grounds that revision of the standard will be protective of human health, and second on the grounds that the scientific evidence accumulated by EPA is sufficient and compelling to justify a move to a more protective standard at this time. The American Thoracic Society is recommending an annual standard of 11 $\mu g/m^3$ combined with a 24-hour standard of 25 $\mu g/m^3$. That recommendation has been supported by a wide range of medical societies and public health groups, including the American Medical Association, the American Academy of Pediatrics, the American Lung Association, the American Heart Association and the American Public Health Association.

There is a broad consensus in the scientific community that particulate matter air pollution is harmful to human health. Based on the available evidence, the American Heart Association recently concluded that exposure to ambient fine particulate matter air pollution ($PM_{2.5}$) is a "modifiable

factor that contributes to cardiovascular morbidity and mortality".[1] The World Health Organization attributes 28,000 premature deaths in North America and 800,000 worldwide to ambient particulate matter each year,[2-3] although more recent studies suggest that the true public health burden might be even greater.[4]

The American Thoracic Society further believes that the scientific evidence that supports the proposed revision and upon which EPA relies is sound, comprehensive, and validated. This body of evidence is the product of decades of intensive research conducted with stringent oversight, double- and triple-checking results, reanalysis to confirm every important finding, and laboratory validation of observations in human populations. The demonstration of the health effects of $PM_{2.5}$ is itself a scientific triumph nearly on a level with the analysis of the human genome.

This was hard science, difficult to do because health outcomes are tangled up and related to one another and because several air pollutants and weather conditions move up or down closely together. It takes years of observation, careful analysis, and replication at many different sites to isolate and characterize the individual effects of $PM_{2.5}$ and to separate it from, say, ozone or "synoptic" weather patterns characterized by heat and humidity. This science was tough to do and it was ultimately well done by the many investigators in the United States who figured out the problem and by thousands of investigators around the world who have studied the problem in diverse settings to establish its generalizability. In the end the evidence is overwhelming.

In the scientific review of the 2009 Integrated Science Assessment for Particulate Matter, the external panel of independent scientists that make up the Clean Air Scientific Advisory Committee and the EPA scientists concluded that a "causal relationship" exists between ambient fine particulate matter and both mortality and cardiovascular effects and that "a likely causal" relationship exists between ambient fine particulate matter and respiratory effects.[5-6]

These conclusions were reached following a rigorous review. EPA convened ten multi-day public workshops, CASAC meetings, and teleconferences beginning in 2007 in a transparent process that allowed scientific peer review by CASAC and public comment at every step. The CASAC alone submitted over 650 pages of comments reviewing each of the EPA documents multiple times. The science has been thoroughly vetted. The CASAC reached a unanimous conclusion that a range of 13-11 $\mu g/m^3$ for the annual standard was scientifically justified. [13]

The American Thoracic Society further believes that the scientific evidence that supports the proposed revision and upon which EPA relies is sound, comprehensive, and validated. This body of evidence is the product of decades of intensive research conducted with stringent oversight, double- and triple-checking results, reanalysis to confirm every important finding, and laboratory validation of observations in human populations. The demonstration of the health effects of $PM_{2.5}$ is itself a scientific triumph nearly on a level with the analysis of the human genome.

In epidemiology, there is a guide to whether an association is likely to be causal or non-causal, by which is meant that the true cause may be indirect, acting on both the risk factor and the outcome, or that the association is spurious, the result of bias or error. This guide consists of nine basic tests, or "criteria" for accepting as causal a statistical association demonstrated by studies in human populations. These nine criteria are: [5]

1. Strength of association (interpreted here as strength against a background of other environmental drivers)
2. Consistency
3. Specificity
4. Temporal relationship (temporality)
5. Biological gradient (an exposure-response relationship)
6. Biological plausibility
7. Coherence
8. Experiment evidence
9. Analogy (are there similar observed associations)

For fine particulate air pollution, all nine criteria have been abundantly and exhaustively satisfied. There have even been quasi-experimental situations in human populations (in which air pollution dropped and then rose again) which have demonstrated a dip and then a return in mortality, an unusual and very compelling validation. [5]

Furthermore, epidemiology is not the only way of knowing that $PM_{2.5}$ has an effect on the human body. Studies of the effect of fine particulate matter in tissues, in animal experiments, and in human volunteer research has clearly

shown that even low levels of $PM_{2.5}$ are associated with abnormalities of the heart conduction system, coagulation of blood, and airways.

There are good reasons why $PM_{2.5}$ is so potent in the human body, despite the very small size of the particles and the very small mass of all the particles that reach the lung. This is largely because the size range of $PM_{2.5}$, being so tiny, insinuates itself in places where larger particles cannot go and presents the body, in the aggregate, with a geometrically much larger surface are than large particles. We know this now.

The conclusion that ambient fine particulate matter is an important and preventable cause of death and hospitalization has been endorsed by a number of scientific organizations including the World Health Organization, the National Research Council, the American Medical Association, the American Lung Association, the American Heart Association, the American Academy of Pediatrics, the American College of Cardiology, and the American Association of Cardiovascular and Pulmonary Rehabilitation, among others and the Clean Air Scientific Advisory Committee.

I now draw your attention to some key scientific findings of these health effects.

Long-term health effects

A number of large studies have looked at the long-term health effects of ambient particles. The first of these studies was the Harvard Six Cities study which followed 8111 men and women living in 6 U.S. cities for 14-16 years. The researchers found that over a 16 year period, adults who lived in the

most polluted of the 6 cities had a 26% higher rate of death as compared to those in the least polluted city.[7] Several other studies have found similar results including the American Cancer Society Cancer Prevention Study II,[8-10] the California Seventh-day Adventists cohort study,[11] and a recent national study of 66,000 participants from the Women's Health Initiative (WHI) Observational Study.[12] These studies provide evidence linking long-term exposure to ambient particulate matter and all-cause mortality, cardiovascular mortality, and non-fatal cardiovascular events.

The impact of particulate air pollution on life expectancy is substantial. Scientists recently looked at changes in life expectancy in 200 counties in the U.S. and calculated that reductions in fine particle air pollution between 1980 and 2000 increased the average lifespan in these counties by approximately 5 months.[14] Importantly, the greatest increase in life expectancy was seen in those counties showing the greatest reduction in fine particle air pollution during this time.

Short-term health effects

Hundreds of studies in the U.S. and around the world have confirmed that elevations in particulate matter are associated with an increased risk of premature death, cardiovascular death, hospitalization for respiratory and cardiovascular diseases, and respiratory symptoms within days.[5] These associations have been found for $PM_{2.5}$ (fine particles smaller than 2.5 micrometers in diameter), PM_{10} (particles smaller than 10 micrometers in diameter), and $PM_{10-2.5}$ (coarse particles ranging in diameter from 2.5 to 10 micrometers).

These scientific studies have linked particulate matter exposure to a variety of problems, including:

- aggravated asthma in children;[15]
- increased emergency department visits and hospital admissions;[16-17]
- higher risk of hospitalization for congestive heart failure,[18]
- stroke,[19] and myocardial infarction (heart attacks);[20]
- increased risk of premature death;[21] and
- more frequent dangerous irregularities of the heartbeat[22]; and
- more frequent deaths, second heart attacks, and hospital admissions for people who have already experienced one heart attack.[23]

Particulate pollution can cause health problems for anyone, but certain people are especially susceptible. Children and teenagers, the elderly, and people who already have cardiovascular disease, chronic lung disease or diabetes are among the groups most at risk. Even healthy adults who work or exercise outdoors may face higher risk.[5] As best we can now tell, people pass into and out of conditions where they are more susceptible to the effects of fine particulates. Even younger and healthier people may be transiently susceptible.

Air pollution acts by serving as the last straw or by stacking the odds against a person when they are most vulnerable to their health problems. We know that the majority of people who are affected by fine particulate air pollution are older and may already be ill, the effect of $PM_{2.5}$ are not limited to them: fine particular air pollution also takes smaller numbers of young people and even, in some studies (mostly of more severe pollution), fetal deaths. The

effects are seen disproportionally in individuals with low socioeconomic status or lower educational levels because of where they live and their health status.

Many of these studies have been done in cities that are in compliance of the U.S. National Ambient Air Quality Standards. Thus, the harmful effects of particulate matter can be seen even at pollution levels well below the current regulatory standards.

Congress built into the Clean Air Act an orderly process for the regular review of the scientific evidence related to the health effects of air pollution. This review includes multiple rounds of peer review, including by the congressionally mandated panel of independent scientists – the Clean Air Scientific Advisory Committee (CASAC). The American Thoracic Society strongly supports the authority of the EPA to periodically review and update the air quality standards as mandated by the Clean Air Act, including for PM_{10} and coarse particle pollution. The evidence of the harm from particulate matter pollution underscores how important it is for the EPA to review and adjust health standards on an ongoing basis — and for Congress to continue to allow them to do so.

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Mr. WHITFIELD. Thank you, and Dr. Valberg, you are recognized for a 5-minute opening statement.

STATEMENT OF PETER A. VALBERG

Mr. VALBERG. Well, thank you, and good morning to the Chairman and members of the committee. I appreciate this opportunity to speak. I am Peter Valberg, Principal at Gradient, an environmental health consulting firm in Boston. I have worked for many years in public health and inhalation toxicology. For about a decade I was a faculty member at the Harvard School of Public Health. I was a member of the National Academy of Sciences panel that looked at the public health benefits of air quality regulation. I have testified before the Clean Air Science Advisory Committee, and today I am testifying about the toxicity of airborne particulate matter, which I will call PM.

And what I point to are the critical role of experimental science in evaluating the PM health effects, and I do this because I believe the EPA's health effects analysis of PM relies too heavily on statistical associations per se, and EPA undervalues the role of laboratory science in helping understand the toxicology of PM.

Our scientific knowledge is based on—health risk is based on three legs of evidence. One leg is statistical, epidemiology, another leg is clinical data and experimental studies with lab animals, and the third leg is understanding biological mechanism. If any legs are weak or missing, as in the case of ambient PM at the levels of the PM standard, the reliability of our knowledge is compromised. Experimental science calls into question EPA's forecast of harm such as death caused by small increments in PM levels at concentrations close to the present day standards.

That is neither data from lab animals inhaling PM nor human clinical data validate a causal basis for the statistical associations between PM levels and mortality that are reported by some of the observational epidemiology studies.

Moreover, toxicologists have studied the chemicals that constitute PM in outdoor air, and no one has found an ambient PM constituent that is life threatening when breathed at levels that we encounter outdoors. Remember that in human responses to chemical intake it is the dose that makes the poison, and with regard to mechanistic support, EPA does not provide a sequence of recognized biological events whereby low levels in the range of 12 or 13 micrograms per cubic meter of outdoor PM will lead to death or effect serious enough to cause hospitalization.

On a more practical side EPA's health harm projections for PM, which are based on statistical associations, are contradicted by the health of people in dusty occupations, where worker studies show that at levels of PM considerably above ambient PM levels do not show increased mortality rates in those work populations.

Likewise, in our own everyday experience we all breath elevated levels of PM in our homes, cars, personal activities such as lawn mowing, raking leaves, barbequing, vacuuming, sitting by a fireplace. The PM levels we breathe are vastly higher than the PM in typical outdoor air, and although of short term, these elevated levels contribute significantly to our annual and lifetime PM dose, and EPA does not make it clear that according to their own health

harm projections for PM these indoor levels should be vastly harmful, more harmful, should be vastly more harmful than outdoor PM.

EPA relies on statistical associations between central monitor PM levels and population mortality rates, but such correlations cannot establish causal links. The computer model is required to uncover these PM mortality correlations, require many assumptions and adjustments. The results you get depend on the model you use, how you set it up, and how many different tests you run. It is not possible to correct from any non-PM air pollutants as well as non-pollution factors that may confound these PM associations.

This model dependency is a known problem and has been pointed out in numerous publications. Many unknown factors can affect population mortality rates. For example, studies have shown that population mortality is correlated with calendar date, day of the week, stock prices, weather, or outcome of sports events, and yet we wouldn't think of outlawing certain calendar dates or the Super Bowl on the basis of these associations which are quite consistent.

Even if we restrict our attentions to statistical studies per se, there are unexplained inconsistencies in reported PM effect factors across urban areas with no PM risk being reported from any cities, leaving uncertainty as to whether lowering the standards will truly yield health benefits, and EPA does not explain or delve into why these "no effect," or inconsistent findings should be disregarded in favor of those studies that do show small effects.

In summary, EPA's statistical approach is fraught with numerous assumptions and uncertainties, and EPA does not provide experimental evidence and laboratory science to support PM-causing death and hospitalizations at levels below the current standards.

Moreover, since EPA admits they have no understanding of which PM constituent or which PM chemical they believe causes the deaths they predict, does it really make sense to lower the standards without such more specific information.

Thank you for the opportunity to speak, and I welcome your questions and comments.

[The prepared statement of Mr. Valberg follows:]

Gradient

Peter A. Valberg, Ph.D., Gradient, 20 University Road, Cambridge, MA 02138
witness for the House of Representatives' hearing entitled "The American Energy Initiative," June 28, 2012, Committee on Energy and Commerce, Subcommittee on Energy & Power.
"Is there a toxicological rationale for US EPA's tightening the National Ambient Air Quality Standards for fine particulate matter (PM-2.5) in our ambient (outdoor) air?"

Good morning, Mr. Chairman and members of the Subcommittee on Energy and Power. Thank you for inviting me to testify this morning. I'm Peter Valberg, Principal at Gradient, an environmental consulting firm near Boston. I've worked for many years in public health and human health risk assessment and inhalation toxicology. For more than a decade, I was a faculty member at the Harvard School of Public Health, and I was a member of a National Academy of Sciences panel that worked on evaluating public health benefits of air-pollution regulations. I've also testified before the Clean Air Science Advisory Committee (CASAC). In my testimony regarding airborne particulate matter, or "PM," I point to the importance of experimental science in evaluating PM health effects, because EPA's health-effects analyses of $PM_{2.5}$ rely too heavily on statistical associations and undervalue the role of laboratory science in helping understand the toxicology of breathing PM in outdoor air.

There are major questions about EPA's forecast of serious health effects caused by small increments in PM levels at concentrations close to the NAAQS. Most importantly, neither data from lab animals inhaling PM nor the human clinical data validate a causal basis for the statistical associations between PM levels and, say, mortality, that are reported by observational epidemiology studies. Our scientific knowledge regarding the health risk of any exposure is supported by three legs of evidence: one leg is observational studies, or, epidemiology, another leg comes from clinical data and experimental studies with lab animals, and the third leg is understanding of biological mechanism. If any legs are weak or missing, as in the case of ambient PM, the reliability of our knowledge is compromised.

Researchers have carefully monitored both human volunteers and animals breathing all types of PM, often at levels hundreds of times greater than in outdoor air. They don't find evidence of sudden death or life-threatening effects. Moreover, toxicologists have studied the chemicals that constitute particles in outdoor air, and no one has found any ambient $PM_{2.5}$ constituents that are life threatening when breathed at levels we encounter outdoors (Valberg, 2004). Remember that, in human responses to

chemical intake, "the dose makes the poison." With regard to mechanistic support, EPA does not provide a sequence of recognized biological events whereby breathing low levels (12 to 13 $\mu g/m^3$) of outdoor $PM_{2.5}$ can cause death or disease requiring hospitalization.

On a more practical side, EPA's health harm projections for PM, which are based on the statistical associations alone, are contradicted by the health of people in dusty occupations, and by everyday experience of all of us when we breathe elevated levels of PM in our own homes, cars, and other personal environments, such as lawn mowing, raking leaves, barbecuing, vacuuming, and sitting by the fireplace or campfire. These PM concentrations are vastly higher than PM in typical outdoor air. Even though many of these activities are short term, their elevated levels contribute significantly to our annual and lifetime $PM_{2.5}$ dose, and EPA does not make clear that, according to their health harm projections for PM, these indoor levels should be vastly more harmful than outdoor $PM_{2.5}$.

Worker studies show that occupational environments with levels of dust and smoke in compliance with occupational standards do not exhibit excess mortality. (Abraham *et al.*, 2011; Dell *et al.*, 2008; Fryzek *et al.*, 2003; Harber *et al.*, 2003; Wild *et al.*, 2008) For example, for workers exposed to airborne copy-machine toner, Alison Abraham, Jon Samet, and collaborators determined that the workers' PM exposures over many years averaged in the range of 340 $\mu g/m^3$, yet mortality rates were <u>not</u> increased, but <u>below</u> expected rates. *i.e.*, the standardized mortality ratio (SMR) was 0.88, and this was statistically significantly below 1.00 (Abraham *et al.*, 2011).

EPA relies on statistical associations between central-monitor PM levels and population mortality rates, but correlations cannot establish causal links. The computer models needed to uncover the PM-mortality correlations require many assumptions and adjustments, and the results you get depend on the model you use, how you set it up, and how many different tests you run. It's not possible to correct for the many non-PM air pollutants, as well as non-pollution factors that may confound the PM-mortality associations. This model dependency is a known problem, and it has been pointed out in several publications. *e.g.*, Koop and Tole (2004); Cox (2012) and Greven *et al.* (2011) Many unknown factors can affect population mortality rates. For example, studies have shown that population mortality rates

are correlated with calendar date, day of the week, stock prices, weather, or outcome of sports competitions (Phillips *et al.*; Ma *et al.*; Keatinge and Donaldson; Kloner *et al.*; Valberg). Yet, we would not think of outlawing certain calendar dates, or the Super Bowl, even though the associations with increased mortality are quite consistent.

Even if we restrict our attention to the statistical studies *per se*, there is considerable unexplained heterogeneity in reported PM effect factors across urban areas, with no risks reported for many cities, leaving uncertainty as to whether lowering the $PM_{2.5}$ NAAQS will truly yield health benefits. Numerous reports can be found where analyses of short-term or long-term ambient PM concentrations leads to inconsistent, or null, health impacts. (Short term: Chock *et al.* 2000; Clyde *et al.* 2000; Klemm and Mason 2003; Moolgavkar 2003; Ito 2003. Long-term: Krewski *et al.* 2000 [for models that include SO_2]; Beelen *et al.* 2008; Enstrom 2005; Lipfert *et al.* 2006 [for models that included traffic density]; Chen *et al.* 2005 [for males in the cohort]; Brunekreef *et al.* 2009; Zeger *et al.* 2008) In a recent study of the association of $PM_{2.5}$ levels with risk of stroke, an increase in $PM_{2.5}$ levels decreased the risk of stroke. "Overall, $PM_{2.5}$ was associated with a – 0.7% change in ischemic stroke risk per 10 $\mu g/m^3$" (O'Donnell *et al.*, 2011). Likewise, a recent study in Japan evaluated the effects of PM on stroke and found no effect (Turin *et al.*, 2012). Such results pointing in opposite directions highlight significant remaining uncertainties in the PM associations, and EPA does not explain why these "no effect," or inconsistent findings, should be disregarded in favor of those studies that show small, but statistically significant, effects.

In summary, EPA's statistical approach is fraught with numerous assumptions and uncertainties, and EPA does not provide adequate experimental evidence and laboratory science to support a causal role for $PM_{2.5}$, at levels below the current $PM_{2.5}$ NAAQS, causing serious health effects, like mortality. Moreover, since EPA admits they have no understanding of which $PM_{2.5}$ constituents they believe cause their predicted deaths – does it make sense to lower the standard without such information?

Thank you for the opportunity to testify today, and I look forward to answering your questions.

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Mr. WHITFIELD. Well, thank you, Dr. Valberg, and Mr. O'Mara, you are recognized for 5 minutes.

STATEMENT OF COLLIN O'MARA

Mr. O'MARA. Thank you, Mr. Chairman, Ranking Member Rush, members of the subcommittee. My name is Collin O'Mara. I serve as the Secretary of Energy and Environment for the State of Delaware, and it is my pleasure to be with all of you today.

The proposal that we are discussing today is measured, it is based on sound science, it is technically feasible, it is cost effective, and it has been a long time in the making.

The PM2.5 NAAQS currently in effect includes an annual standard of 15 micrograms per cubic meter, which was promulgated in 1997, and then in 2006, the 24-hour standard of 35 micrograms per cubic meter, was established. As a result of litigation, the U.S. Court of Appeals for the District of Columbia remanded the 2006, annual PM2.5 standard to EPA because the agency failed to explain adequately why the standard provided the requisite protection for at-risk populations including children. When it became clear that EPA would fail to meet its promised deadlines to the Court, many of the plaintiffs, including the State of Delaware and several other States and the American Lung Association, filed mandamus petitions in the DC Circuit in November, 2011, on grounds that EPA had unreasonably delayed responding to the remand order from 2006. And the court then ordered EPA to respond.

EPA has now proposed its response, concluding that the PM2.5 standards established in 2006, are, indeed, insufficient to protect public health as required by the Clean Air Act, and that the proposed revisions are warranted to provide the appropriate degree of increased public health protection.

This proposed action by EPA is both a legislative and Court-mandated requirement that is long overdue and necessary. Peer-reviewed science clearly supports EPA's action. In December, 2009, EPA published an analysis of a particulate matter-related, peer-reviewed health science literature in its Integrated Science Assessment, the ISA, which concluded that the epidemiologic, controlled human exposure, and toxicological studies each provide evidence for increased vulnerability of various populations such as children, older adults, people with pre-existing diseases, and lower-income individuals.

In June, 2010, EPA then published its Quantitative Health Risk Assessment for Particulate Matter to quantify exposure the risk. This analysis estimated that 63, between 63 and 88,000 premature deaths each year are related to PM2.5 exposure.

And then in April of this year, of 2011, EPA published its Policy Assessment for Review of Particulate Matter National Ambient Air Quality Standards, which recommended revising the annual standard in the range of 11 to 13 micrograms per cubic meter and then recommended leaving the current 24-hour standard exactly the same at 35. Oh, I am sorry. Recommended changing it, either leaving it at 35 or reducing it to 30.

EPA has proposed to update the annual PM2.5 standard within a range of this 11 to 13 as recommended by the experts. They propose staying between 12 and 13, at the upper end of the range, and

then to retain the 24-hour PM2.5 standard. In doing so EPA exercised and is demonstrating moderation. The agency easily could have selected, for example, a number at the lower end of the range, i.e., 11. They could have set a tighter daily standard, below 35, and they could have set a more stringent PM10 standard. In other words, the proposal could have been more stringent.

Finalizing this action at the lower end of the proposal, so at 12, will provide increased protection for at-risk populations against an array of PM2.5-related adverse health effects and give the public greater confidence that the air they are breathing is actually healthy.

Some have questioned whether we can afford this rule. Even though EPA is statutorily prohibited from considering the costs of implementing the NAAQS, they have conducted a Regulatory Impact Analysis which provides the potential costs and benefits of several alternatives. An analysis of this report suggests that the benefits of a protective 12 micrograms per cubic meter standard as proposed outweigh the cost by a ratio of 30 to 1 to 85 to 1. That is $30 of benefits for every $1 of cost up to $85 a benefit for every $1 of cost.

Our experience in Delaware reinforces both the importance of this rule and the cost-benefit analysis for this standard. We have proven in Delaware repeatedly that measures which will achieve a health-based PM2.5 standard are both technically feasible and cost-effective. Under the Clean Air Act, States are given the flexibility to meet standards in the most cost-effective manner by considering the economic impacts when implementing rules to meet a more health protective standard, and this is exactly what we have done in Delaware.

For example, in 2006, we promulgated a regulation that required NOx, SO2, and mercury emission controls on all of our coal and oil-fired power plants. This multi-pollutant approach allowed effective facilities to design the most cost-effective emission controls that would reduce these multiple pollutions at the same time. It is important to note that this approach did not require a specific target for PM2.5, but through this approach we have already reduced PM2.5 emissions by 63 percent from the 2006 levels and will be reduced by 83 percent by 2013. These are already products that are in the works. This is not speculative data. These are actual projects that are on the ground.

We have worked with some of the largest companies in Delaware, including NRG, Calpine, PBF, DuPont, Perdue, Mountaire, Evraz Steel, and Croda, to reduce their emissions, including PM2.5. We have seen dramatic decreases across several sectors. Most of these projects have been actually kind of public-private partnerships if you will, with the State sometimes providing financing or expedited permitting to ensure reductions across multiple pollutants, timely project completion, creation of construction jobs and improved economic competitiveness. We believe that we are proving they can have both a very strong economy and a healthy environment at the same time.

Yet despite significant progress in Delaware to reduce PM2.5 and other traditional pollutants, our State continues to suffer adverse health effects from sources of transport that contribute more than

95 percent of the PM2.5 in Delaware. The proposed national standard would bring us one step closer to reducing this transport pollution that continues to plague our downwind States and in doing so will help ensure healthy air for all of our residents.

Thank you for the opportunity to be with you today. I look forward to your questions.

[The prepared statement of Mr. O'Mara follows:]

TESTIMONY OF COLLIN O'MARA BEFORE THE HOUSE ENERGY AND COMMERCE SUBCOMMITTE ON ENERGY AND POWER ON THE ENVIRONMENTAL PROTECTION AGENCY'S PROPOSAL TO TIGHTEN THE NATIONAL AMBIENT AIR QUALTY STANDARDS FOR FINE PARTICULATE MATTER

Chairman Whitfield, Ranking Member Rush, and Members of the Subcommittee, my name is Collin O'Mara and I serve as Delaware's Secretary of the Environment and Energy and past Chair of the Ozone Transport Commission. I would like to thank you for the opportunity to discuss the Environmental Protection Agency's proposal to tighten the National Ambient Air Quality Standards ("NAAQS") for Fine Particulate Matter ("$PM_{2.5}$").

Sections 108 and 109 of the federal Clean Air Act ("CAA") govern the establishment, review, and revision, as appropriate, of the national ambient air quality standards to protect public health and welfare, with an adequate margin of safety. The CAA requires periodic review of the air quality criteria – the science upon which the standards are based – and the standards themselves. As part of this process, EPA is required to set NAAQS for particulate matter that is 2.5 microns or less in diameter, or so-called "$PM_{2.5}$".

The $PM_{2.5}$ NAAQS currently in effect include an annual standard of 15 micrograms per cubic meter ($\mu g/m^3$), promulgated in 1997, and a 24-hour standard of 35 $\mu g/m^3$, established in 2006. As a result of litigation, the U.S. Court of Appeals for the District of Columbia Circuit remanded the 2006 annual PM2.5 standard to EPA because the agency failed to explain adequately why the standard provided the requisite protection from both short- and long-term exposures to fine particles, including protection for at-risk populations, including children. When it became clear that EPA would again fail to meet its promised deadlines, many of the State Plaintiffs and ALA filed mandamus petitions in the D.C. Circuit in November 2011 on grounds that EPA had unreasonably delayed in responding to the remand order in the American Farm Bureau case. See D.C. Cir. Case No. 06-1410, Dkt. Nos. 1342305 & 1342371. The court ordered EPA to respond. See id., Dkt. No. 1345477.EPA has just now proposed its response, concluding that the PM2.5 standards established in 2006 are not requisite to protect public health with an adequate margin of safety, as required by the CAA, and that the proposed, more stringent, revisions are warranted to provide the appropriate degree of increased public health protection.

This proposed action by EPA is long overdue and necessary. Despite significant efforts in Delaware to reduce $PM_{2.5}$ and other traditional pollutants, our state continues to suffer adverse health impacts from $PM_{2.5}$ transported into our state from upwind sources. A strengthened national standard will achieve both local reductions, but will also bring us one step closer to reducing the transport pollution that continues to plague downwind states.

The latest science supports EPA's action:

- In December 2009, the EPA published a review of the particulate matter-related health science literature in the Integrated Science Assessment ("ISA"), which is a required part of the promulgation of new or revised NAAQS. The ISA concluded

that the epidemiologic, controlled human exposure, and toxicological studies provide evidence for increased susceptibility for various populations, including children and older adults, people with pre-existing cardiopulmonary diseases, and people with a lower socio-economic status. EPA additionally concluded that both long-term and short-term exposure to $PM_{2.5}$ is causally associated with cardiovascular effects and premature mortality.

- In June 2010, EPA published the "Quantitative Health Risk Assessment for Particulate Matter" ("Health Risk Assessment") to quantify exposure and risk. This assessment of health impacts of exposure to PM focused on 15 urban study areas. This analysis estimated that about 63,000 to 88,000 premature deaths each year in the United States are related to $PM_{2.5}$ exposure.
- In the 2012 "State of the Air" report for Delaware, the American Lung Association reported that there are 897,934 people living in Delaware who are at risk from air pollution, of whom 205,765 were under 18 years old and 129,277 were 65 years or older. Of these, there were:

  - 69,012 adult asthmatics and 27,795 child asthmatics;
  - 30,282 residents with chronic bronchitis;
  - 13,760 residents with emphysema; and
  - 234,056 residents with cardiovascular disease.

  Those individuals impacted by ozone are also impacted by higher levels of $PM_{2.5}$ pollution.

- In April 2011, EPA published the "Policy Assessment for the Review of Particulate Matter National Ambient Air Quality Standards" in which EPA staff recommends that consideration be given to revising the $PM_{2.5}$ NAAQS to provide increased protection for both long- and short-term exposures. EPA staff concluded that evidence supports revising the annual standard in the range of 11-13 $\mu g/m^3$ (with evidence most strongly supporting an annual standard in the 11-12 $\mu g/m^3$ range). Staff also recommended either leaving the current 24-hour standard of 35 $\mu g/m^3$ in place or strengthening it to 30 $\mu g/m^3$ (particularly in combination with an annual standard of 13 $\mu g/m^3$). In its September 2010 comments on the second draft of the Policy Assessment, the Clean Air Scientific Advisory Committee concluded that these levels "are supported by the epidemiological and toxicological evidence" as well as by the Integrated Science Assessment and the Health Risk Assessment.

EPA has proposed to revise the annual PM2.5 standard by lowering the level to within a range of 12.0 to 13.0 micrograms per cubic meter (μg/m3), and to retain the 24-hour PM2.5 standard. EPA exercised moderation. Following EPA staff recommendations the agency could have selected, for example, a lower end of the range—i.e., 11; they could have set a tighter daily standard—below 35; and they could have set a more stringent PM_{10} standard. In other words, the proposal could have been more stringent to achieve a truly health-based standard. The public deserves the right to know whether the air they are breathing is safe, and the current NAAQS

gives a false sense of security that the air the public is breathing is safe when we know thousands more may be dying prematurely because of an outdated and inadequate $PM_{2.5}$ standard.

Finalizing this action at the lower end of the proposal – 12.0 ug/m3 – will provide increased protection for children, older adults, persons with pre-existing heart and lung disease, and other at-risk populations against an array of PM2.5-related adverse health effects that include premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease.

Some have questioned whether we can afford this rule. Even though EPA is statutorily prohibited from considering the costs of implementing NAAQS (as confirmed by the U.S. Supreme Court in *Whitman v. American Trucking Associations*), EPA has conducted a Regulatory Impact Analysis (RIA) that provides information on the potential costs and benefits of attaining several alternative PM2.5 standards. Our calculation based on information in the EPA proposal is that the benefits of a protective 12.0 ug/m3 NAAQS outweigh the cost by between 30:1 and 85:1.

Our experience in Delaware reinforces the cost-benefit analysis for this standard. We have proven in Delaware that the measures which will achieve a health-based PM2.5 standard are both technically feasible and cost-effective. Under the CAA, states are given the flexibility to meet the standards in the most cost-effective manner by considering economic impacts when implementing rules to meet the more health protective standard—and we did just this in Delaware. For example, in 2006 we promulgated a regulation that required NOx, SO2, and Hg emission controls on all of our coal and oil fired power plants. This multi-pollutant approach benefited the power plants because they were afforded the opportunity to design emission controls that complimented each other. These controls aided in our attainment of the ozone NAAQS by reducing NOx, and the $PM_{2.5}$ NAAQS by reducing NOx and SO2. In addition, although direct $PM_{2.5}$ was not specifically regulated, direct PM2.5 (filterable and condensable) emissions were reduced from 2006 levels by 63% beginning 2012 (1750 tons/year to 643 tons/year) and 83% by the end of 2013 (1750 tons/year to 294 tons/year). Furthermore, acid gas emissions were reduced to the extent that these units will no longer top the Toxics Release Inventory (TRI) list in Delaware.

We have also worked with some of the largest companies in Delaware, including NRG, Calpine, PBF, DuPont, Perdue, Mountaire, Evraz Steel, and Croda, to reduce their emissions, including PM2.5. Most of these projects have been public-private partnerships with state providing assistance either with the financing or expedited permitting to ensure reductions across multiple pollutants, timely project completion, creation of construction jobs and improved economic competitiveness.

It is also important to note that other regulations in effect, including the Transport Rule and the Utility Air Toxics Rule, will significantly reduce PM2.5 and help many jurisdictions achieve attainment in a timely fashion without adopting significant additional regulations. In addition, reductions from improved vehicle standards and cleaner fuels will also reduce multiple pollutants including PM2.5. For this among other reasons, we support adoption of national

measures by EPA, particularly when local efforts alone are not sufficient to address multi-state transport challenges such as reducing $PM_{2.5}$.

I thank you for the opportunity to discuss this important proposal and look forward to your questions.

Mr. WHITFIELD. Thank you very much, and Dr. Smith, you are recognized for 5 minutes.

STATEMENT OF ANNE E. SMITH

Ms. SMITH. Thank you, Mr. Chairman and members of the subcommittee. Thank you for inviting me. I am Anne Smith, Senior Vice President at NERA Economic Consulting. I am an economics and risk assessment professional. My testimony is my own and does not represent the position of my company or its clients.

The proposed PM NAAQS will likely be more costly than EPA is reporting, and its benefits are far more uncertain than EPA indicates. One feature of the proposed rule that will drive costs above what EPA has estimated is a new requirement that the fine PM monitors be placed near roads in each area. Near-road monitors can be expected to have much higher fine PM readings than the monitors that are currently used to assess attainment status.

On its own this new monitor requirement may seem innocuous, but EPA is also proposing the attainment status now be determined by each region's single worst-case monitor. That worst-case reading is likely to come from the newly-placed near-road monitor.

So any NAAQS level, including the current NAAQS level if it were still in effect, will become much more difficult to meet as a result of these changes. EPA has not accounted for the costs of the extra stringency that these combined changes in the rule would create.

EPA's estimates of the benefits of the proposed PM NAAQS are far more uncertain than EPA admits. The Administrator argues for not setting the primary standard below 12 micrograms per cubic meter because of increasing lack of confidence that she has in predictions of health impacts from yet lower fine PM levels.

But the Administrator's lack of confidence has not prevented EPA from taking full credit for those predicted health impacts as if they were absolutely certain when estimating the proposed rules dollar benefits, and yet more uncertainty is missing in EPA's dollar benefits estimates.

For example, almost all of EPA's estimate of benefits is based on a presumption that the statistical association between fine PM and mortality risk is a causal relationship. That presumption of causality is still subject to question. This point has been demonstrated vividly by a new method of analyzing the fine PM risk data that was published in the Journal of the American Statistical Association just a year ago after EPA's causal determination was finalized.

When striking new evidence suddenly emerges that a regulatory action may have no benefits at all, it would seem prudent for EPA to take the time to more closely examine and deliberate the new evidence before locking in the major new regulatory action. But also this ongoing uncertainty should at least be recognized in the benefits estimates, and it is not.

Let me now turn to the proposed new secondary standard to protect urban visibility. This unusual new proposed standard and proposed rule deserves close inspection. It would be based on an arcane indicator called the "deciview," and it has—that deciview has some troubling implications for a PM standard.

For one, a uniform national deciview standard will limit fine PM concentrations to very different levels in different cities. Just as an example, a 28 deciview standard such as EPA is proposing, would imply 24-hour average fine PM limits that could be as low as 18 micrograms per cubic meter in some areas and as high as 43 micrograms per cubic meter in other areas. A huge variation. Each U.S. city will face a different PM standard under the proposed deciview standard.

While EPA says the visibility standard would have minimal costs, small variations from the proposed level and form could make it much more stringent than the primary standard to protect health, but even if this visibility standard would be binding in only a couple of cities as EPA says, do we really want a rule that makes some cities spend more to protect its public from its aesthetic distress than it will have to spend to get its ambient PM levels down to levels that EPA considers protective of the public health? No. This is clearly a reversal of reasonable public spending priorities.

It also is unjustifiable because the EPA is using a scientifically-indefensible method to determine when and if visibility degradation does adversely affect public welfare. EPA has ignored evidence that has been provided regarding the method's lack of credibility. If this evidence were to be acknowledged, there would be no basis for setting any visibility standard.

Thank you. I have a longer written statement that substantiates the points I have made, and I request that it also be entered into the record, and I would be happy to accept questions.

[The prepared statement of Ms. Smith follows:]

Prepared Statement of
Anne E. Smith, Ph.D.
at a Hearing on
The American Energy Initiative
– A Focus on EPA's New Proposal to Tighten National Standards for Fine Particulate Matter in the Ambient Air –
by the
Subcommittee on Energy and Power
Energy and Commerce Committee
United States House of Representatives
Washington, DC

June 28, 2012

Mr. Chairman and Members of the Committee:

Thank you for your invitation to participate in today's hearing. I am Anne E. Smith, a Senior Vice President of NERA Economic Consulting. I am a specialist in environmental risk assessment and integrated assessment to support environmental policy decisions, which was a core element of my Ph.D. thesis at Stanford University in economics, with a minor concentration in decision sciences. I have performed work in the area of air quality cost and benefits analysis and risk assessment over the past thirty years, including as an economist in the USEPA's Office of Policy, Planning, and Evaluation, as a consultant to the USEPA Air Office, and in many consulting engagements since then for government and private sector clients globally. I have also served as a member of several committees of the National Academy of Sciences focusing on risk assessment and risk-based decision making. I have analyzed costs, risks and benefits of many U.S. air policies, including fine particulate matter ($PM_{2.5}$), regional haze, ozone, mercury, NO_2, SO_2, and greenhouse gases. I have been extensively involved in assessment of the evidence on risks from ambient $PM_{2.5}$ since EPA first turned to the task

of identifying an appropriate National Ambient Air Quality Standard (NAAQS) for $PM_{2.5}$ over fifteen years ago. I have also been active in the assessment of visibility impacts since twenty years ago, when I supported the Grand Canyon Visibility Transport Commission's integrated analysis of western regional haze management options.

I thank you for the opportunity to share my perspective today on the EPA's new proposal to tighten the national ambient air quality standards (NAAQS) for fine particulate matter ($PM_{2.5}$). My written and oral testimonies reflect my own opinions, and do not represent any position of my company, NERA Economic Consulting or of any of its clients.

Executive Summary

The focus of this hearing is EPA's new proposal to tighten the $PM_{2.5}$ NAAQS. Several critical features of the new proposal are worth highlighting because they merit much closer inspection and understanding. As a group, these features suggest that the proposed PM NAAQS could be more costly than EPA's cost estimate, and its benefits are far more uncertain than EPA's benefits analysis indicates.

Two features of the Proposed Rule that could result in costs higher than EPA has estimated are:

1. EPA proposes to require a new set of monitors placed near roads in each air quality area, while simultaneously proposing to eliminate determination of attainment with a spatial average of $PM_{2.5}$ from all monitors in an area, so that attainment will be determined by each area's single worst-case monitor. Given

that it is highly likely that most near-road monitors will have higher $PM_{2.5}$ readings than community-oriented monitors, this change is likely to make the proposed NAAQS much more stringent than EPA has estimated. EPA has not attempted to characterize how much *more* stringent the standard will become as a result of these two changes to the NAAQS, or its cost implications. (See **Section 1** for further explanation.)

2. EPA proposes for the first time a secondary standard specifically to limit urban visibility degradation. The proposed visibility secondary standard would not be set equal to the primary standards, but would be set using a highly complex and arcane indicator called the "deciview." The following two facts about the deciview are generally unknown to all but a few "visibility experts":
(a) seemingly small changes in the deciview level imply much larger changes in ambient $PM_{2.5}$ concentrations; and (b) a uniform national deciview standard will limit ambient $PM_{2.5}$ concentrations to very different levels in different cities. That is, a deciview-based standard implies a highly non-uniform $PM_{2.5}$ NAAQS.
These two facts imply substantial uncertainty about the cost of the Proposed Rule if even seemingly slight changes are made in the proposed form and level of the proposed visibility standard. (See **Section 2** for further explanation.)

Perhaps most important of all with respect to the proposed visibility standard is that EPA has developed its case for the need for that standard using a type of study that has been demonstrated to be unreliable for determining the amount of visibility degradation that can be said to adversely affect the public welfare. Thus, in return for the

planning complexity and cost uncertainty that the visibility standard would create, there would be no scientific basis for believing it will reduce adverse effects on the public welfare. Indeed, EPA's method cannot even credibly establish that urban visibility is causing adverse public welfare impacts under the current PM NAAQS. (See **Section 3** for further explanation.)

EPA's estimates of the health benefits of the proposed PM NAAQS are also far more uncertain than EPA admits. The Administrator's own rationale for setting the primary annual standard at a level no lower than 12 $\mu g/m^3$ is based on the greatly increasing uncertainty that the Administrator expresses regarding EPA's own projections of health benefits from yet-lower $PM_{2.5}$ levels. However, none of these admitted uncertainties are reflected in EPA's estimates of the benefits of the Proposed Rule. Uncertainty prevents the Administrator from setting the standard lower, but this hasn't prevented EPA from taking full credit for such uncertain benefits. The benefits analysis is thus inconsistent with the rationale for the standard. (See **Section 4** for further explanation.)

Further, almost all of EPA's estimate of benefits is predicated on a presumption that the statistical ("epidemiological") associations between chronic ambient $PM_{2.5}$ concentrations and mortality risk are causal in nature, and that all $PM_{2.5}$ constituents are equally potent. Even the presumption of causality is still subject to question, as has been demonstrated by a $PM_{2.5}$ chronic risk study published in 2011. (See **Section 5** for more explanation.) Uncertainty about the causality presumption means there is a possibility that there will be no benefits at all from a tightened $PM_{2.5}$ NAAQS. Causality uncertainty,

which affects benefits estimates from $PM_{2.5}$ reductions at all levels (even benefits from reductions above the current standard), also is not reflected in EPA's benefits estimates. EPA's science assessment, which is the source of EPA's assertion that the chronic mortality risk associations are causal, was written before the 2011 paper was published. When strong contradictory evidence emerges, as is the case now, it would seem prudent public policy to more closely examine and deliberate the new evidence before locking into major and costly new regulatory actions.

The Proposed Rule was released on June 14, 2012. As of the time of this writing (June 27), EPA has not released its Regulatory Impact Analysis (RIA). Only a very brief summary of the RIA results is provided in the Proposed Rule and the associated Fact Sheet. Lack of access to much of the underlying analysis for EPA's cost and benefit estimates is frustrating because the above issues should be studied in greater depth, and that cannot be done without more backup to EPA's calculations of benefits and costs. Even without the relevant documentation, however, the basic points I have identified above provide concerns that the PM NAAQS rule will likely cost more than EPA has estimated, while providing benefits that are much more uncertain than EPA's predictions. Benefits uncertainty includes the possibility of no chronic mortality benefits, which account for over 90% of the value in EPA's benefits estimate.

Section 1. Changes in Monitoring and Attainment Requirements Make the Proposed Standard Tighter than EPA Estimates, and Likely More Costly to Meet

Some of the Proposed Rule's changes to the PM NAAQS relate to monitoring and attainment determinations. For one, the Proposed Rule would require a new set of $PM_{2.5}$ monitors to be placed near roads in each air quality area. Addition of such monitors to

the monitoring network will help provide information about how much higher $PM_{2.5}$ concentrations may be in the vicinity of traffic. At present there is only limited evidence, but it suggests that the near-road concentrations could be substantially higher than at the standard community-based monitors presently being used to assess attainment.[1] Thus, near-road monitors can reasonably be expected to become the worst-case monitors for each air quality area.

Simultaneously, the Proposed Rule also would eliminate the ability to determine attainment using the spatially-averaged concentration across all the monitors in an area, meaning that attainment will now be determined by concentrations measures at each area's single worst-case monitor. This means that one can fully expect that attainment of the $PM_{2.5}$ NAAQS will be determined by the future near-road monitors. Given that it is highly likely that many areas' near-road monitors will have higher $PM_{2.5}$ readings than community-oriented monitors, the proposed NAAQS will become much more stringent and therefore more difficult to attain than it would be if based on the current monitoring network.

EPA has not attempted to characterize how much *more* stringent the standard will become as a result of these two changes to the NAAQS combined. A simple numerical example will have to illustrate how much it might impact the Proposed Rule's costs. Assume that the annual $PM_{2.5}$ standard is set at 13 $\mu g/m^3$, and a city's spatially-averaged annual $PM_{2.5}$ level based on the existing network of community-oriented monitors is 12.5 $\mu g/m^3$. It is in attainment and would face no cost from the Proposed Rule. However,

[1] See, for example, pp. 3-162 to 3-164 of EPA's *Integrated Science Assessment* for PM.

if it starts up a near-road monitor and levels of $PM_{2.5}$ at that monitor are 20% higher than at the average community-oriented monitor,[2] suddenly the $PM_{2.5}$ level determining that city's attainment status will rise to 15 $\mu g/m^3$. The city will be thrown into nonattainment, and probably face high costs of attainment, given the degree of additional ambient concentration reduction that it will need to accomplish. Thus, without the monitoring change the standard imposes no cost, but with the monitoring change it imposes large costs. Note that attainment costs increase while the NAAQS level itself is kept the same.[3] There is no evidence that EPA's analysis has accounted for how these elements of its Proposed Rule are likely to affect attainment status, and EPA's cost estimate is therefore likely underestimated.

Section 2. The Secondary Standard for Visibility Is Complex, Highly Sensitive, and Implies Different Regions Will Face Very Different $PM_{2.5}$ Limits

The proposed secondary standard for urban visibility is 28 to 30 deciviews, based on the 90th percentile of 24-hour average $PM_{2.5}$ measurements (over a 3-year period). A deciview (dv) is very complex, and only readily understood by people who have spent a good deal of time working with visibility metrics. The complexity of this metric is illustrated by simply writing down some of the formulas by which it is calculated from monitored $PM_{2.5}$ concentrations:[4]

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[2] Near-road monitoring was introduced with the NO_2 NAAQS. The NO_2 *Integrated Science Assessment* finds that NO_2 near roads can be twice the levels at other monitor locations. Spatial gradients of $PM_{2.5}$ are probably quite different from those of NO_2 away from roadways, but this and information in the $PM_{2.5}$ *ISA* (pp. 162-164) indicates that a 20% increment such as is used in this example is probably not unreasonable.

[3] The health risks EPA attributes to $PM_{2.5}$ do not change just because of the change in how attainment is determined – that is still calculated based on composite monitor levels, because those are the basis for the epidemiological associations.

[4] These formulas are in the Proposed Rule at p. 257 and p. 358, respectively.

Deciview (dv) = 10 ln (*bext* / 10 Mm^{-1}),

where the value of *bext* is calculated from estimates of the concentrations of each of the individual $PM_{2.5}$ components listed in the next equation:

PM2.5 *bext* = 3 x *f*(RH) x [Sulfate]
+ 3 x *f*(RH) x [Nitrate]
+ 4 x [Organic Mass]
+ 10 x [Elemental Carbon]
+ 1 x [Fine Soil]

The final term in this complex calculation is *f*(RH), which is itself a complex and non-linear function of the location's relative humidity, RH. Thus, there many steps to calculate a deciview, precluding any rule of thumb or intuitive approximation of what a deciview means in terms of a limit on $PM_{2.5}$ concentrations.

The formulas are provided only to illustrate the complexity, and not because many readers will gain much understanding from reading them. The important points that they can be used to demonstrate, however, are: (a) seemingly small changes in the deciview level imply much larger changes in ambient $PM_{2.5}$ concentrations; and (b) a uniform national deciview standard will limit ambient $PM_{2.5}$ concentrations to very different levels in different cities.

One deciview is supposed to represent the amount of change in visibility that a normal eye can discern under optimal viewing conditions. It is a logarithmic function of visibility (called "light extinction," which is the term labeled "b_{ext}" in the above formulas) because people's ability to perceive visibility changes is logarithmic, meaning that approximately a 10% change in light extinction must occur before people can detect it.

Thus, a range from 28 dv to 30 dv (seemingly a 7% difference between the two levels) implies roughly a 20% range in visibility. For a given location with a fixed $PM_{2.5}$ constituent mix and relative humidity, the 2 dv range under consideration also implies about a 20% range in the implied $PM_{2.5}$ limit. This is quite a wide range from the perspective of the stringency of attaining such limits.

For example, in a city similar to Washington DC during a period of moderate humidity (*e.g.* about 70% RH), the 2 dv range implies a $PM_{2.5}$ concentration range from about 23 $\mu g/m^3$ to 28 $\mu g/m^3$.[5] This is a quite wide range of stringency – and also quite stringent given that it applies to 24-hour average $PM_{2.5}$.[6] Notably, EPA requests comment on a deciview standard as low as 25 dv. For a location with the above illustrative mix of $PM_{2.5}$ and relative humidity, this yet-lower visibility standard would imply a 24-hour average $PM_{2.5}$ concentration of about 17 $\mu g/m^3$! In short, s*eemingly small changes in the deciview level imply much larger changes in ambient $PM_{2.5}$ concentrations.*

EPA proposes a uniform national deciview standard, but this would imply a standard that is non-uniform across the country in terms of the limits it would imply on $PM_{2.5}$ concentrations. For example, consider what a uniform visibility standard of 28 dv would mean for different areas. For cities with the same $PM_{2.5}$ mix as in the prior example (*i.e.*, similar to the Washington DC mix), 28 dv would imply a $PM_{2.5}$ limit

[5] These calculations assume the $PM_{2.5}$ is 50% sulfate, 10% nitrate, 25% organic mass, 10% elemental carbon and 5% fine soil.

[6] For purposes of comparison, the 24-hour average primary standard is 35 $\mu g/m^3$.

ranging anywhere from 18 $\mu g/m^3$ in areas with very high relative humidity[7] to 43 $\mu g/m^3$ in areas with very low relative humidity. Similarly, if the relative humidity is held at about 50%, but the $PM_{2.5}$ mix is altered from sulfate-dominated to much less sulfate-dominated (more like Western areas of the U.S.)[8], the implied $PM_{2.5}$ limits for the same 28 dv standard would vary from about 29 $\mu g/m^3$ to 33 $\mu g/m^3$ for those two types of areas. In short, *a uniform national deciview standard will limit ambient $PM_{2.5}$ concentrations to very different levels in different cities.*

The visibility standard's difficulty to attain is also very sensitive to the form of the standard, such as its percentile and its averaging period. The numerical examples above suggest that depending on local conditions, the $PM_{2.5}$-equivalent limit of 28 dv may vary from 18 $\mu g/m^3$ to 43 $\mu g/m^3$ on a 24-hour average. It is not possible without further study to determine how much lower than the primary daily standard of 35 $\mu g/m^3$ (24-hour average) a location's 28-dv $PM_{2.5}$-equivalent limits must be before the visibility standard would actually be more stringent than the health-based $PM_{2.5}$ NAAQS. That is because even though both are based on 24-hour average data, the health-based standard is based on the 98th percentile value while the visibility standard is proposed to be based on the 90th percentile value. Differences in variability in relative humidity among locations make it difficult to expect it to be possible to develop even a rule of thumb for a relationship between the two percentiles.

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[7] But less than the 90% RH screen provided for in the Proposed Rule.

[8] Assuming for this example that the less sulfate-dominated mix is 20% sulfate, 15% nitrate, 30% organic mass, 15% elemental carbon and 20% fine soil.

It is also important to note the sensitivity to the averaging period. In drafts of EPA's *Policy Assessment for the Review of the PM NAAQS,* EPA considered a 1-hour averaging period and a range of other percentiles. Based on analyses presented by EPA, I estimated that the 30 dv standard based instead on a *maximum daily 1-hour averaging period* (90th percentile) would have been more stringent than the primary daily standard (98th percentile) in 12 of 15 cities EPA had analyzed – in most cases being as stringent as a daily primary standard lower than 25 $\mu g/m^3$ (compared to the actual primary standard of 35 $\mu g/m^3$).[9] I also estimated that a shift of the form from 90th percentile to *98th percentile* could halve the equivalent $PM_{2.5}$ limit stated in the same form as the primary standard. Thus, what may seem to be minor changes in the proposed deciview level of the standard, such as a different averaging period or a different percentile, can make vast differences in its stringency. Shorter averaging periods or higher percentile requirements could easily render a visibility standard of 28 to 30 dv much more stringent than the primary standards for most areas of the U.S.

Section 3. EPA's Analysis Methods Do Not Credibly Identify a Visibility Level that Adversely Affects the Public Welfare

A secondary standard for urban visibility requires reasonable determination regarding what urban visual air quality (VAQ) levels are harmful to the public welfare. To make its determination in the Proposed Rule, EPA is relying a type of public survey it calls the "VAQ preference study" method. This is a highly simplistic survey, in which individuals are shown photographs of the same vista under a range of different visibility

[9] Anne E. Smith, *Technical Comments on Chapter 4 of EPA's "Policy Assessment for the Review of the Particulate Matter National Ambient Air Quality Standards" (First External Review Draft)*, prepared at request of Utility Air Regulatory Group and submitted to PM Docket with UARG's Comments, April 26, 2010, Table A-1.

conditions, and asked to rate whether the VAQ in each photograph is "acceptable" or "unacceptable." The VAQ at which EPA considers public welfare to be adversely affected (the "VAQ cutpoint") is the VAQ level that at least 50% of survey respondents deem unacceptable.

No theoretical formulations exist that justify this method as a measurement of public welfare effect. It is, however, at odds with much of the literature on the psychology of survey design and preference elicitation. Only four such surveys have been performed since the first such survey was conducted twenty years ago, each in a different location and each producing statistically significantly different estimates of a VAQ cutpoint. Given its central role in setting a NAAQS with potentially significant compliance challenges, the scientific validity of this method is an important question.

Earlier in the current PM NAAQS review cycle, I led a project that investigated the ability of this method to identify a robust estimate of the VAQ cutpoint that would not be sensitive to slight changes in the questionnaire used. We performed a controlled experiment with the survey instrument that to my knowledge is the the only known exploration of the scientific validity of the VAQ preference study method. We replicated the survey instrument from one of the existing VAQ preference studies. Then we ran two variants of the same survey in which the only change was to show respondents a different range of VAQ levels. We found that merely showing a different range of VAQ levels generated very different estimates of the VAQ cutpoint – differences that were also statistically significant. Other questions asked during these surveys indicated that respondents in each survey variant were equally well able to relate the particular range of

VAQ shown to them in the photographs to the full range of visibility conditions they experience in daily life. Thus, the significantly different responses across survey variants regarding what VAQ levels are "acceptable" cannot be attributed to inability on the part of respondents to discern when they were not being shown the entire range of actual visibility conditions.

This study provides strong evidence that the VAQ preference survey method that EPA is relying on does not actually estimate individuals' absolute preferences regarding VAQ, because an absolute preference structure would not be malleable to the particular levels of VAQ over which their preferences are elicited. Although this study was documented and provided to EPA in formal comments,[10] EPA has elected to ignore its clear and fundamental implication that EPA is not using a credible method for determining if urban visibility degradation is adversely affecting the public welfare under the current PM NAAQS. EPA's method also cannot credibly identify a level at which such adverse effects would occur.

Section 4. EPA's Acknowledgement of Uncertainty in Risks from $PM_{2.5}$ At Low Levels Is Not Reflected as Uncertainty in its Estimates of Benefits of the Proposed PM NAAQS

EPA's estimates of the health benefits of the proposed PM NAAQS in its RIA are far more uncertain than EPA admits. The Administrator's own rationale for setting the primary annual standard at a level no lower than 12 $\mu g/m^3$ is based on the greatly

[10] Anne E. Smith and Sabrina Howell, *An Assessment of the Robustness of Visual Air Quality Preference Study Results*. CRA International. Washington, DC. March 30, 2009. http://yosemite.epa.gov/sab/sabproduct.nsf/B55911DF9796E5E385257592006FB737/$File/CRA+VAQ+Pref+Robustness+Study+3+30+09+final.pdf.

increasing uncertainty that the Administrator expresses regarding EPA's own projections of health benefits from yet-lower $PM_{2.5}$ levels. For example, the Proposed Rule states:

> Based on consideration of the composite monitor annual mean $PM_{2.5}$ concentrations involved in estimating long-term exposure-related mortality, the Risk Assessment has higher confidence in using those concentrations that generally fall well within the range of ambient $PM_{2.5}$ concentrations considered in fitting the concentration-response functions used (*i.e.*, within one standard deviation of the mean $PM_{2.5}$ concentration reported in Krewski *et al.* (2009) for 1999-2000) as inputs to the risk model....With lower alternative annual standard levels of 12 $\mu g/m^3$ and 10 $\mu g/m^3$, the composite monitor annual mean values ranged from approximately 9.0 to 11.4 $\mu g/m^3$ and 7.6 and 8.9 $\mu g/m^3$, respectively. These concentrations are towards the lower end of the range of ACS data (in some cases approaching the lowest measured level) used in fitting the concentration-response functions, particularly for an annual standard level of 10 $\mu g/m^3$, and, thus, the Policy Assessment concludes there is less confidence in the risk estimates associated with these levels [10 and 12 $\mu g/m^3$] compared with those for the higher alternative annual standard levels considered.[11]

Building on this notion of increasing uncertainty about health risks at increasingly lower $PM_{2.5}$ levels, the Proposed Rule describes the Administrator's rationale for proposing an annual standard in the range of 12 $\mu g/m^3$ to 13 $\mu g/m^3$ in terms of such decreasing confidence. Some excerpts of the rationale are quoted below:

> In reaching decisions on alternative standard levels to propose, the Administrator judges that it is most appropriate to examine where the evidence of associations observed in the epidemiological studies is strongest and, conversely, where she has appreciably less confidence in the associations observed in the epidemiological studies. ...
>
> She also recognizes ...that there is significantly greater confidence in observed associations over certain parts of the air quality distributions in the studies, and conversely, that there is significantly diminished confidence in ascribing effects to concentrations toward the lower part of the distributions. ...
>
> Based on the above considerations, the Administrator concludes that it is appropriate to propose to set a level for the primary annual PM2.5 standard within the range of 12 to 13 $\mu g/m^3$. . .While the Administrator recognizes that CASAC

[11] PM NAAQS Proposed Rule, p. 89 (emphasis added).

> advised, and the Policy Assessment concluded, that the available scientific information provides support for considering a range that extended down to 11 μg/m^3, she concludes that proposing such an extended range would reflect a public health policy approach that places more weight on relatively limited evidence and more uncertain information and analyses than she considers appropriate at this time.[12]

None of these admissions of uncertainty in the continuation of the risk association at ever lower $PM_{2.5}$ levels is reflected in EPA's estimates of the benefits of the Proposed Rule. This can be ascertained by the fact that the reported "range" of benefits associated with alternative levels of the proposed primary annual standard does not expand as that level is reduced. For example the range from the low to high end of the estimated benefits for the 13 μg/m^3 alternative standard (*i.e.*, $88 million to $220 million) is a factor of about 2.5. If EPA's benefits calculations reflected a growing uncertainty as $PM_{2.5}$ is reduced even further, then the range from the low to high end of the estimated benefits for the 12 μg/m^3 alternative standard would be greater than a factor of 2.5. But that range also is about a factor of 2.5 (*i.e.*, $2.3 billion to $5.9 billion). In sum, no expansion in uncertainty is reflected in EPA's benefits analysis as the alternative standard is tightened to the lowest level that the Administrator has confidence may be necessary to protect the public health with an adequate margin of safety.[13]

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[12] PM NAAQS Proposed Rule, pp. 154-163 (emphasis added).

[13] In fact, experience from past EPA RIAs tells us that the range it states for its benefits estimate is defined by deterministic application of two different relative risk estimates from the epidemiological models, both of which are given full consideration in the Administrator's review of the weight of evidence that leads her to conclude that the lowest level of the standard that she has confidence in considering is 12 μg/m^3. Specifically, they are the 2002 study by Pope *et al.* of the American Cancer Society cohort at the lower bound and the 2006 study by Laden *et al.* of the Harvard Six-Cities cohort at the upper bound. The RIA does not treat either study's risk associations as any less certain at the lowest $PM_{2.5}$ levels than at the highest levels.

Thus, while uncertainty prevents the Administrator from being able to justify setting the standard lower, EPA's benefits calculations still take full credit for predicted health risk reductions that come from changes in $PM_{2.5}$ that occur at concentrations already well below 12 $\mu g/m^3$. The benefits analysis is thus inconsistent with the rationale for the standard, and projects an overstated degree of certainty.

Section 5. Doubts that the Chronic Mortality Risk Associations Are Causal Continue to Emerge

Statistical studies alone cannot provide strong evidence of causality even when many such papers have been published. This is because of the possibility of *systematic biases*, which can cause all of the statistical results from multiple different studies to be wrong for the same reason. The potential for systematic bias should not be ignored in deciding whether this body of purely statistical evidence is detecting an association that is causal.

Systematic biases can occur if the statistical studies have relied on similar methodologies and similar data sources. This is certainly the situation for the chronic mortality risk epidemiological literature that EPA is relying on for over 90% of its benefits estimate. All of the chronic mortality risks studies that EPA relies on to draw its conclusion of causality draw from the same fundamental universe of data, because they all sample individuals across the U.S. and assess the correlation between their local monitors' $PM_{2.5}$ levels and their relative mortality risks after attempting to control for the broad swath of much stronger determinants of risk (*e.g.*, age, sex, diet, smoking habits, and socioeconomic factors). Controlling effectively for these other factors is the key to getting a sound answer, yet *all* of the studies are reduced to using the same approximate

data and feature high rates of error in assigning those variables to individual cohort members. In any single study, there is a good chance that the controls for the primary determinants of mortality risk are incomplete, and some confounding remains to bias the association estimated for $PM_{2.5}$. Unfortunately, all of these studies face the same problem, in a systematic way, because they all rely on the same types of data and face the same fundamental data limitations.

An innovative approach to exploring chronic $PM_{2.5}$ mortality risk described in a 2011 paper in the *Journal of the American Statistical Association*[14] finds that confounding could be playing a significant role in the statistical findings of positive $PM_{2.5}$-mortality associations. It does so by developing a mathematical method for estimating two separate risk coefficients, or "beta" values: one that is based on the changes in average $PM_{2.5}$ over time that is shared across the nation, and the other that is based on the changes in $PM_{2.5}$ that occur only within a city. If $PM_{2.5}$ has a causal relationship with mortality risk, for any effect that is detected for a $PM_{2.5}$ reduction that occurs nationally, a comparably sized effect should also be detected for $PM_{2.5}$ reductions that occur only locally. The authors state that "absent confounding or other model misspecification, the two estimates should be similar."[15]

Their analysis finds a relative risk from $PM_{2.5}$ just as other chronic studies have. However, they find that relative risk is entirely due to the beta for the national $PM_{2.5}$ trend, while declining $PM_{2.5}$ appears to contribute essentially zero risk reduction when it

[14] Sonja Greven, Francesca Dominici, and Scott Zeger, "An Approach to the Estimation of Chronic Air Pollution Effects Using Spatio-Temporal Information," *Journal of the American Statistical Association*, Vol. 106(494): 396-406, June 2011.
[15] *Ibid*, p. 397.

occurs within a city at a rate that differs from the nationwide trend. The authors express concern that they have found evidence of confounding in the $PM_{2.5}$ chronic risk association.

Since their methods effectively reproduce the type of relative risk that other chronic risk papers find when they also estimate only a single risk coefficient, this new paper offers highly suggestive evidence that all of the large body of statistical studies of mortality risk from chronic $PM_{2.5}$ exposure may – systematically – be detecting a non-causal association. It is unimportant whether those observed associations are confounded due to a missing explanatory variable for another pollutant, socioeconomic factor, or locational factor (such as noise from traffic) – a conclusion that the association is non-causality means that mortality risk will still not respond to changes in $PM_{2.5}$. It means that risk analyses based on those studies' results will all predict benefits where there will actually be none. Thus, confidence in EPA's benefits estimates, which are predicated on the *presumption* of causality, is overstated as long as the question of non-causality in the chronic mortality associations remains unresolved.

EPA's science assessment, which is the source of EPA's assertion that the chronic mortality risk associations can be viewed as causal, was written before the 2011 paper was published. When strong contradictory evidence emerges, as is the case now, it would seem prudent public policy to more closely examine and deliberate the new evidence before locking into major and costly new regulatory actions.

Mr. WHITFIELD. Thank you, Dr. Smith, and Mr. Holmstead, you are recognized for 5 minutes.

STATEMENT OF JEFFREY R. HOLMSTEAD

Mr. HOLMSTEAD. Mr. Chairman, Mr. Rush, it is a pleasure to be here. Thank you for having me. My name is Jeff Holmstead, and I am a partner in the law firm of Bracewell and Giuliani, but today I am not representing my law firm or any clients. I have not talked with anybody about my views, but I am here just to talk about this proposal as someone who has really spent his professional life working on the Clean Air Act and looking at what works, what doesn't, and really looking at the implications of the various different Clean Air Act Programs that we have. As some of you know, I was the head of the EPA Air Office for almost 5 years, and so I like to believe I know a lot about what works in the Act and what doesn't.

My primary concern about the new proposed standards for PM is that EPA is not being honest about the burden that it will impose on State and local governments, on businesses and companies, and on American consumers, and I, again, I was amused. Some of you may have seen these charts and press releases, but, you know, the press release says EPA proposes Clean Air Act standards. Ninety-nine percent of U.S. counties will meet the standards without any actions, any additional actions. Ninety-nine percent of counties. They have a map that says, oh, this isn't going to do anything. Depending on where we set the standard you are going to have either two additional counties or four or six additional counties that won't have to take any action to meet these new standards.

Well, that would be great if that is how the Clean Air Act worked. If all you have to do is wait for existing programs to get the air into attainment by this 2020, date, but as I say, that is not the way the Clean Air Act works. As soon as EPA finalizes a new standard, there are immediate permitting burdens that as several people have said, make it much more difficult to permit anything, regardless of whether EPA is projecting that you are going to meet the standard in just a few years.

So, anyway, I just—it frustrates me because I think the Clean Air Act is important. I think there are important benefits from the Clean Air Act. I just think we need to be honest with people about what the burdens are and my own view is we ought to try to be achieving those benefits in the most cost-effective way possible.

If I can just point out a couple of other concerns and others have already mentioned some of these, especially Dr. Smith, but this idea that this is only a minor adjustment to the standard because we are just reducing it from 15 to 13 or 12 completely ignores some of the key parts of this proposal. If we are now today essentially you put these monitors out in an area, and you average across all those monitors because everybody has essentially said that PM2.5 is an area-wide issue, you don't look at the highest monitor, you look at the average of all these monitors.

Now we are going to be looking at the worst case single monitor, and we are going to be putting a monitor nearby a road that will certainly be in almost all cases the highest monitor. So we don't

know whether the standard is going to increase the stringency by 30 percent or by 50 percent, and I don't think there is any way for EPA really to know for sure. I just think we need to be honest about the implications of that.

I am also as someone who has been a regulator, a little troubled about this new secondary visibility standard. Although it is cloaked as a scientific determination, as Dr. Smith's testimony explains, it really is extremely subjective, extremely variable from one place to the other, and the idea that you have someone that essentially says, we are going to force society to spend a lot of money because we think that there is a problem with visibility in urban centers, that is not what Congress designed the Clean Air Act to do, and I don't think that is an appropriate exercise of authority by a regulatory agency.

So I am just troubled, again, that the Clean Air Act seems to be misused for something it was never intended to be used for. I am actually a big believer in the Clean Air Act and the gains that we have achieved I think it is one of the major success stories of the Federal Government, but we are spending a lot more money than we need to spend as a society, and unfortunately, there are many parts of the Clean Air Act that have come to be used as weapons by people who oppose a transportation project, even a state-of-the-art new facility to build something, to manufacture something, and I think it is time that we were honest with people about the implications of this and that perhaps we look for more effective ways to achieve our Clean Air Act goals.

Thank you very much.

[The prepared statement of Mr. Holmstead follows:]

Statement of Jeffrey R. Holmstead
Bracewell & Giuliani LLP

Implications of EPA's Proposed National Ambient Air Quality Standards (NAAQS) for Fine Particles (PM2.5)

Energy and Commerce Committee
Subcommittee on Energy and Power
U.S. House of Representatives
June 28, 2012

Mr. Chairman and Members of the Subcommittee, thank you for giving me the opportunity to testify before you today. My name is Jeff Holmstead. I am a partner in the law firm of Bracewell & Giuliani and the head of the firm's Environmental Strategies Group. Today, however, I am not appearing on behalf of my law firm or any of my firm's clients. I am here to provide my own views as a former official in both the Environmental Protection Agency (EPA) and the White House who has spent more than 20 years working on Clean Air Act issues. I am here to talk about some of the major implications of EPA's recent proposed rule to lower the national ambient air quality standards (NAAQS) for "fine particulates," which are generally referred to as PM2.5

Since 1989, I have spent my professional life working on Clean Air Act issues. From 1989 to 1993, I served on the White House Staff as an Associate Counsel to President George H. W. Bush. In that capacity, I was deeply involved in the Administration's efforts to seek passage of and then implement the 1990 Amendments to the Clean Air Act. From 2001 to 2005, I served as the head of EPA's Air Office. Before and after my tenure at EPA, I have been an attorney in private practice and have counseled many different companies on Clean Air Act compliance issues. From many different perspectives, I am familiar with the regulatory implications of implementing a new NAAQS.

My primary concern about the new proposed standards is that EPA is not being fully honest about the burden it will impose on state and local governments, companies and businesses, and American consumers. EPA is not, or at least should not be, just another advocacy group waging a public relations campaign. The Agency and its officials should be open and honest about the implications of its regulatory actions.

1. EPA suggests that the new standards will impose very little burden because it has done computer modeling which finds that most of the country will achieve the new standards by 2020. But this is not how the Clean Air Act works. Under the statute, EPA is required to decide, based on current air quality data, whether an area meets or does not meet the standard. Areas that do not currently meet the standard, and other nearby areas

that "contribute" to exceedances of the new standard, must be designated as "non-attainment" areas.

2. By statute, this designation process must be finished by 2014. The fact that some or even most areas may meet the standards by 2020 is not relevant.

3. Once an area is designated as nonattainment, there is essentially a ban on the construction of new industrial or manufacturing facilities in this area, and it becomes very difficult even to expand existing facilities. This happens immediately because of new permitting requirements.

4. It also becomes even more difficult to build new roads or other transportation projects in areas that are designated as "nonattainment."

5. EPA also fails to discuss the implications of two key aspects of its proposal that will increase – and may dramatically increase – the cost of meeting the new standard

    A. A requirement to place new monitors near busy roads, along with the elimination of area-wide averaging, so that attainment will be based on the highest monitored concentrations in the area. EPA has not tried to estimate how much more "stringent" these changes will make the standard, and this change is not even addressed in the Agency's modeling.

    B. A new secondary standard designed to improve visibility in urban areas. This requirement will also make the standard much more stringent that EPA suggests.

If EPA believes in its modeling results, it should support a statutory change that would eliminate new regulatory burdens that, according to EPA, will not be necessary to meet the standards by 2020. Under such an approach, only a few counties identified by EPA would need to worry about the current requirements for nonattainment areas. All other parts of the country, according to EPA, will meet the new standards by 2020 and do not need to be burdened by additional regulations.

Mr. WHITFIELD. Thank you, Mr. Holmstead, and thank all of you for your testimony, and at this time I recognize myself for 5 minutes of questions.

First comment I would make is that I have sat through 21 of these hearings in the last period of months, and I think it is very easy for people to say, well, Democrats support the Clean Air Act, Republicans basically oppose the Clean Air Act, and simplify the debate. And yet after the hearings that I have sat through I genuinely believe that Administrator Jackson is misleading the American people either wittingly or unwittingly, and why do I say that? Because of this. You made the comment, Mr. Holmstead, that EPA is not being honest, and I think that is true in many, in some instances.

For example, when they adopted the Utility MACT, which they call the Mercury Rule, they said that the primary benefit from the Utility MACT adoption would come from reduction of mercury. That would be the primary benefit, and yet their own analysis and everyone agreed that the real benefit did not come from mercury emission. In fact, there was minute benefit from mercury emission. It all came from reduction of particulate matter.

And just like Mr. Valberg has talked about how there is no real evidence of which particulate matter causes health problems, EPA admits they have no understanding of which particulate matter constituents cause their predicted deaths or health problems. They admit that, and yet frequently in the analysis that they present up here, everything seems to be absolutely, 100 percent certain.

And another frustration that I have had and Dr. Guidotti, you wrote a book entitled, "Global Occupational Health," and I haven't read all of it, but I read parts of it, and I think it is very good, but you made the comment employment is one of the most significant determinants of health even though it is not a typical work-related hazard. And you also said good research strongly links unemployment with adverse health effects.

And Mr. Muller made the comment that 140 coal plants by 2015 have announced they are going to be closing, and our economy is pretty weak now, so those people are going to lose their jobs, and Mr. Muller is not going to be able to expand his business because he can't meet these air permit requirements. He was going to hire 1,800 people. Some of those people may be unemployed, and yet EPA never looks at the cost of health because of a new regulation that causes unemployment.

And I would ask you, Dr. Guidotti, do you believe, I mean, none of us want to trash the, get rid of the Clean Air Act, but it hadn't really been looked at since 1990. Do you think that that is a valid subject that we should explore of the health impacts on those people and their families who lose their jobs?

Mr. GUIDOTTI. Well, certainly I do or I wouldn't have written that. I think that the——

Mr. WHITFIELD. And that is why I quoted it.

Mr. GUIDOTTI. I am not entirely sure that I personally wrote that, but the—you are referring to a book that had multiple authors. The point, though, is well taken that there are unemployment as well as many other social factors that do on a population basis and on an individual basis we can see with our friends and

neighbors affect a person's health. Nothing affects a person's health as badly, though, as having a disease and——

Mr. WHITFIELD. Well, let me just interrupt a minute. I mean, I agree with you that they have diseases, but people who don't have access to healthcare get diseases also. So I don't want to argue the point. I am just saying that I think it is a mistake that they not at least explore the impact of loss of healthcare on people who lose their job because of these regulations or not able to get a job.

Mr. BILBRAY. Mr. Chairman, may I respond?

Mr. WHITFIELD. Who said that?

Mr. BILBRAY. Mr. Chairman.

Mr. WHITFIELD. Oh, yes. Yes.

Mr. BILBRAY. I would just like to reinforce when we look at climate change, the justification for Clean Air Act in climate change was that the economic, the disruption of economies around the world would affect humans and human lives and that basically the major health impacts of climate change was economic chaos that was created for it.

It is interesting that it was able to be applied to climate change issues but not based on the economic impacts of regulation. It was sort of like a double standard, because we looked at the economic impact of climate change, but we sort of say that it is sacrilegious to look at the economic impact of regulation. Isn't there an inconsistency there?

Mr. WHITFIELD. Well, my time has expired, and thanks to the gentleman from California, I am going to get 20 seconds back from you now.

At this time I recognize the gentleman from Illinois, Mr. Rush.

Mr. RUSH. Not to deny, a lot of statements have been made this morning, and you heard many of them. You were just asked some questions by the chair. For the record, would you care to respond more thoroughly to some of the claims that you heard? You are a trained physician. Do you want to talk about some of the known health impacts associated with breathing in these particulates, and do you want to expound a little bit more on the statement in the book that you coauthored about the unemployment impacts on health? I am—my district is a very poor district, high unemployment, and I agree that it does have a serious impact on health.

Where does that sit in terms of this discussion that we are debating today?

Mr. GUIDOTTI. Well, thank you very much for asking. I think that we are dealing with a complicated situation in which the environment comes together with social factors, comes together with health factors. I am qualified to speak about the health factors, and that is what I am going to focus on here.

I think that the productivity and the continued future of sustainable health in an economy in this and any other country depends on having competitive technology and increasingly that means clean technology, and it also means having a healthy workforce, a workforce that is sick, a workforce in which disabled individuals can't work because their health is further impaired by environmental factors, people who are high risk of a death this is, would be entirely avoidable and would be—if they were sufficiently protected, and people who are present at work but aren't able to focus

and aren't able to work at full capacity because their disease is like lung diseases and like allergies, are made that much worse are also a strong grade and a strong resistance to full productivity.

So I don't think that this is an easy issue of employment, unemployment, and tradeoff between health and employment. I think that the future of the American workforce depends in large part on being healthier relative to other workforces, maintaining and preferably enhancing the health that we have today so that we are more competitive and healthier compared to other countries than we are currently.

Mr. RUSH. Is there a scientific basis for these EPA's proposal for lowering the fine particulate standards from 15 micrograms per cubic meter average over a year to between 12 and 13 micrograms?

Mr. GUIDOTTI. Yes, and thank you for asking. Dr. Valberg referred to a three-legged stool, and I think that we can—with it—acknowledging that it has drawbacks, I think that we can talk about that three-legged stool in terms of the epidemiologic evidence, which has the one overwhelming benefit in that it tells us about human beings. And the evidence there is overwhelming. I mentioned the guides to assessing statistical evidence as being likely to be causal. They are completely satisfied, and indeed, overwhelming in the case of fine particulate matter.

If you look at toxicology, however, toxicology is the science of poisons and the effects of external agents on the body, and we have very strong toxilogical evidence that fine particulate matter is disproportionately toxic to the human body, and because of the third leg of the stool which has to do with biomedical and laboratory research, we now have a pretty clear idea of why, and we know, for example, that ambient fine particulate matter in the outdoor environment is not necessarily the same particulate matter that we have in the indoor environment. That the toxicity of these fine particles depends on the size and the distribution, and I have got to come back to that because that is a truly critical factor. Their composition, and we now know that those fine particulate particles that include metals are far more toxic than others, and they are more likely to include metals when they are ambient. And atmospheric transformation because there are processes in the environment that actually change the particles, change the chemical composition as they age in the atmosphere.

Size is particularly important because the tiny particles we are talking about so much lower than the size of particles that—in some of the studies that Dr. Valberg was alluding to earlier, get into places in the body that the larger particles don't, and that means that the does that the cell sees, the dose that the tissue sees is a lot higher than the dose that is delivered say in an experimental study or that is measured outside.

So it is a size distribution composition and atmospheric transformation are critical factors that you simply don't see in indoor air pollution.

Mr. WHITFIELD. The gentleman's time has expired.

Mr. RUSH. Thank you, Mr. Chairman.

Mr. WHITFIELD. At this time I recognize the gentleman from Virginia, Mr. Griffith, for 5 minutes.

Mr. GRIFFITH. Dr. Guidotti, let me pick up a little but there. If I follow your reasoning, if there is a scientific basis to establish that people who have allergies or lung diseases may be adversely affected, then the EPA under the Clean Air Act should take action against the offending items. Is that your testimony?

Mr. GUIDOTTI. No. I think that is an extrapolation of my testimony. I think that——

Mr. GRIFFITH. Is it accurate?

Mr. GUIDOTTI [continuing]. The reality—what is that?

Mr. GRIFFITH. Is it accurate? Yes or no?

Mr. GUIDOTTI. Could you repeat it?

Mr. GRIFFITH. If people have, if there is a scientific basis to establish that there is something in the air that is causing people with allergies and lung diseases to suffer, they may not be able to pay attention as well to work when they are working, or they may not be able to do things that they might otherwise do if this item wasn't present in the air, that the EPA should take action.

Is that an extrapolation of your testimony, and is that accurate?

Mr. GUIDOTTI. No, it is not.

Mr. GRIFFITH. All right. Tell me why.

Mr. GUIDOTTI. Well, because there is——

Mr. GRIFFITH. Because that is what I heard.

Mr. GUIDOTTI. What is that?

Mr. GRIFFITH. That is what I heard, sir.

Mr. GUIDOTTI. Well, I am sorry that you heard it that way. Let me clarify it, please. The——

Mr. GRIFFITH. Well, let me try to straighten it out because I only have so much time.

Mr. GUIDOTTI. Excuse me?

Mr. GRIFFITH. I only have so much time, so let me try to straighten it out then, because that is what I thought I heard you saying, that the EPA proposed rules would, based on a scientific basis that some of these items cause people not to be able to perform as well and that people with allergies and lung disease we should be trying to take care of them. Is that not what you said? I need——

Mr. GUIDOTTI. Well——

Mr. GRIFFITH [continuing]. A simple answer yes or no?

Mr. GUIDOTTI [continuing]. The second statement that you said is correct. The first statement is not.

Mr. GRIFFITH. What is not correct?

Mr. GUIDOTTI. What is not correct is that the implication that you said in the earlier statement that it was——

Mr. GRIFFITH. So the second statement was correct?

Mr. GUIDOTTI. What is that?

Mr. GRIFFITH. The second statement was correct?

Mr. GUIDOTTI. The second statement was correct with——

Mr. GRIFFITH. All right. So let me go through then because here is what I heard you saying, and understand that I may be a little edgy today because yesterday I had my son, my wife had my son at the allergist, and he has been under an allergist's care since he was 4 months old. He is 6 now. What I heard you say was the EPA ought to be taking actions against trees because my son's number one problem is trees. I have an issue with trees as well.

You know, the problem is you can take these things to an extreme to a point where they no longer make sense, and I would submit that that is where we are with these new standards that the EPA is proposing. Yes, you could make my son's life a whole lot better if you tore down every tree in the United States of America and the world, but that obviously is ridiculous.

But I would submit that what the EPA is now trying to do to these gentlemen trying to produce jobs is just as ridiculous because we have to have jobs, and as your book, whether you wrote that chapter or not, says unemployment also has an effect, and what we are doing is we are killing jobs left and right, and you know, there is—it is so significant in my district, I represent a coal mining area. Not all of my district is coal mining, but a big chunk of it is. There is a bumper sticker out there that says if you think coal is ugly, wait until you see poverty.

And I submit that what we are doing is we are putting a lot of people out of work, we are making the overall economic situation so bad that people are truly hurting, and that that is going to have a bigger health impact than these new regulations would have. The positive impact these new regulations would have is offset by a tremendous negative.

Let me ask Mr. Herbst this question in the time that I have remaining. They are also in my district building a road up the side of Christiansburg Mountain. They had to blow up half the mountain or half of one of the hills, depending on how you want to define them, to get this road laid out.

Are you telling me that under these new standards we probably wouldn't have been able to add that extra lane?

Mr. HERBST. That is a very good possibility. The concern that we have is the additional regulation changing things. We were given with the Stimulus Program, if I can use that as an example, what we saw is all this available money for localities, for counties, States to come down for construction projects, and what we had, the problem that we had was three-fold. Number one, a lot of the municipalities did not apply because they didn't want the strings attached. Number two was another example that we are still going through right now with a contractor who is owed over $1 million, family-owned, small business, isn't being paid because the regulators came in afterwards and audited and said all of these procedures by the owner, which was a municipality, didn't fulfill their obligation. So the municipality turns around and tells the owner, we are just not going to pay you. So this contractor is out over $1 million and is fledgling right now and may not stay in business. So that is a problem with the additional regulation.

The third one is probably more closely related to your issue, is we had one contractor through this program that was—bid he job to straighten out a curb line along the roadway, major roadway in the town, and what happened was the Federal Government came in and said, you know what? You need land takings less than a foot and a half. It is not following the Federal regulations. You are not eligible for the funds, and that project could not go forward.

So that is what regulation does. We are told you can go ahead and do this. Meanwhile we have lost 40,000 jobs in the industry just in my bi-county region.

Mr. GRIFFITH. Just in your region?

Mr. HERBST. Yes.

Mr. GRIFFITH. Forty thousand jobs?

Mr. HERBST. Yes.

Mr. GRIFFITH. I yield back, Mr. Chairman.

Mr. WHITFIELD. The gentleman's time has expired.

At this time I recognize the gentleman from West Virginia, Mr. McKinley, for 5 minutes.

Mr. MCKINLEY. Thank you, Mr. Chairman. I guess let's start with you, Mr. Holmstead, from your experience. Does the EPA have, does it have authority to regulate air quality in a school building?

Mr. HOLMSTEAD. Inside a building? No.

Mr. MCKINLEY. Inside.

Mr. HOLMSTEAD. No, they do not.

Mr. MCKINLEY. Does it have the authority to regulate air in a home?

Mr. HOLMSTEAD. No, it does not.

Mr. MCKINLEY. Does it have authority to regulate the air in this room?

Mr. HOLMSTEAD. No, I don't believe it has any authority to regulate——

Mr. MCKINLEY. Does it have the authority to regulate air in my former office building?

Mr. HOLMSTEAD. No.

Mr. MCKINLEY. Does it have the authority to regulate the air in my car?

Mr. HOLMSTEAD. I don't think so.

Mr. MCKINLEY. Thank you. I am just curious because I want to build back off what Mr. Valberg was saying, Dr. Valberg, and what we have heard here over the last 18 months of my term here in Congress has been about air quality, and I have struggles as an engineer, one of just two of us in Congress, to see how we differentiate between indoor air quality and outdoor air quality. When we talk about the diseases that people are coming down with, how have we—maybe, Dr. Valberg, maybe if you could explain, how do we differentiate that when someone has an asthma attack, how—why is it that some folks in this chamber will say it is caused by outdoor air, but 90 percent of our time is spent in indoor air? How do you think people can differentiate between where they get the particulate matter that causes an asthma attack?

Mr. VALBERG. That is a very good question, and I agree with Dr. Guidotti that the composition of different types of air is, in fact, different, but it is EPA's position that, you know, according to their paradigm and their formula, they treat it all equally, even though indoor air may be different.

Mr. MCKINLEY. But have you seen the EPA's own Web site? Their own Web site says that indoor air quality is 96 times worse than outdoor air.

Mr. VALBERG. Yes. It is—not only is it worse, but we mostly spend our time indoors. I think we all have this impression that if we want fresh air, we go outdoors. If we want to have less, more stale air, we are usually indoors.

Mr. MCKINLEY. Well, Dr. Valberg, you know, all, the whole panel, look. I know we can achieve this. Science and manufacturers, everyone can provide us even better air quality. We know that. We can achieve that. It is one of those moving targets, however, that disturbs me as a former businessman that, you know, just because we can doesn't mean we should. Just because we can doesn't mean we should, and so I am looking to see if it is—if we are trying to get down to 13 micrograms per cubic meter today, well, what is the real goal? Where do we really want—why don't we just set—that is the real goal we are going to. Zero? Is it one? Once we start down that slippery slope, I don't understand where we are going because I am disturbed about us using—the EPA is using—science and Clean Air Act as a weapon as you described.

Let me just, for all of you to understand what we are really quibbling over here, is this approximately 2 micrograms per cubic meter, and it is going to cost our economy billions of dollars to comply, but I know in this room so few people can relate to engineering terms or scientific terms. I love the use of epidemiology and toxicology and pulmonologists. I am just saying put it in relationship to where people can understand.

In this room is approximately 70,000 cubic feet of space. What we are talking about at 2 micrograms per cubic meter, the amount of particulate, the weight of particulate matter, is the size of this piece of paper. This is smaller than a point on your eraser. That is what we are talking about here. That is the billions of dollars that we are going to put our economy through. Those are the people that we are going to have possibly fewer job opportunities for because we are chasing a piece that small, because we can.

Should we? Can we afford that as a society when 24 million people are either unemployed or underemployed? When we are allowing a rogue agency to pursue that amount? Shame on us.

I yield back my time.

Mr. WHITFIELD. Thank you, Mr. McKinley. At this time I recognize the gentleman from California, Mr. Bilbray, for 5 minutes.

Mr. BILBRAY. Thank you, Mr. Chairman.

Mr. Holmstead, I think you said it probably the most balanced approach and the fact is both sides may be in denial of a lot of things; one, the health impacts of pollutants, but also the big denial, and I will say this for my, the ranking member, the denial of the impact that regulation overall, and especially inappropriate regulation, has on not just the economy but the entire lifestyle and thus the health style of the general public. The impacts are there, and it seems like there is a real denial there, and I will just say this for those of you that don't know, everybody on this committee knows, I spent 6 years on the Air Resources Board in California. Ten years at the Air District.

Mr. O'Mara, let me tell you something. I have been where you are. Can you come before us now and say that there hasn't been major mistakes made by the Federal Government in the implementation of the Clean Air Act?

Mr. O'MARA. I think that most, I think there have been mistakes, and I think that many of them relate to, you know, the science not being followed, implementation schedules being moved

around so there wasn't regulatory predictability for companies to make informed decisions.

Mr. BILBRAY. Or major strategies that were based on misperceptions and not science. You are too young to remember this, but some of us remember the Federal Government putting auto emission standards in place that basically forced Detroit to go to diesels during the '70s. The toxicity of diesel now is rated way over benzene, isn't it? So the Federal Government basically was pushing the private sector towards pollution with what was claimed to be an environmental regulation.

Anybody here wants to stand up for the 1990 amendments to the Clean Air Act? Anybody here want to say that it was a great idea? Because——

Mr. HOLMSTEAD. There were certainly parts of them that were.

Mr. BILBRAY. Parts of it. Yes, but the optionate mandate, the mandate that we put ethanol and MTBE in our fuel stream, we knew in California within months, we tried to say Federal Government, stay out of this. Now, the science might have been flawed, but what I saw was more the politics was flawed. Wouldn't you agree that there was forces that claimed to be environmentally driven that were driven by economic greed and the use of getting the Federal Government to force the general public to use products that they would have a monopoly on? Mr. O'Mara, wouldn't you agree with that?

Mr. O'MARA. Yes, and I would agree with Mr. Holmstead. I mean, the vast majority was a very good bill, but I think there were individual sections that were of special interest.

Mr. BILBRAY. And wouldn't you agree that the mandate for MTBE and ethanol was an environmental mistake?

Mr. O'MARA. We have concerns about the ethanol mandate today as well.

Mr. BILBRAY. OK. So my point being is that there is a lot of people that wrap themselves up into a claim of environmental strategy that does not reflect good science. I—then there is other agendas, and these hidden agendas are what I get upset about. While we are talking about reducing stationary sources here, and I will tell you something, the secondary visual issue with me, that boggles my mind because nowhere in the debate or discussion of the Clean Air Act did people talk about aesthetics. We talked about the public health.

Would everybody agree that public health, protection of children, that was—Doctor, wasn't that the selling point of the Clean Air Act to the people and to the Congress of the United States? Either one of you doctors. It was the health issue. Right?

Mr. VALBERG. Correct.

Mr. BILBRAY. OK. Now we have got what appears to be mission creep, that while we are doing this, why don't we set this, and why don't we use this, and why don't we do this, and we forget about where it comes down to. This is where we get down to the gentleman at the end.

How often when you are looking to build a road does your air district require that we consider the environmental impact of the no-project option? If you don't build that extra lane, what is going to be the congestion that is going to increase the pollution? How much

weight under existing law is the no-project option give when you consider it? Because I know they darn well make you look at the emissions while building that lane, but how much do they look at the benefits of reducing congestion?

Mr. HERBST. It is relatively limited, the congestion reduction, in most of the projects. The no-build opinion, they consider it, but it is really, when they look at the air quality because that is not really a major issue for us, and that is something that we advocate because we, indeed, want to create cleaner air, you have to remove the congestion, but people on the other side say you are expanding the highway system.

Mr. BILBRAY. I would say this, and I will say this to both sides of the aisle and the leadership here. It is interesting that there are those who are quick to force the private sector to change the way you do business to reduce emissions, but when you have got major universities and studies showing government inappropriate traffic control could be as high as 22 percent of auto emissions, this is some place the Federal, that Federal Government, Democrats and Republicans, ought to recognize that the sin of omission, that requiring the private sector to do a lot of things but allowing the government to continue to force Americans to pollute and burn fuel they don't have to and ignoring the government's impact on pollution, to me shows we have no credibility on this issue. It looks like we are more anti-business than we are pro-environment, and I think we need to change that.

I yield back, Mr. Chairman.

Mr. WHITFIELD. The gentleman's time has expired.

I want to thank the panel for joining us today. We appreciate your testimony. We have read all of the testimony, and your insights have been quite helpful and with that we will adjourn this hearing, and we will keep the record open for 10 days for—so thank you all very much, and that will adjourn today's hearing.

[Whereupon, at 10:19 a.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

Opening Statement of Rep. Henry A. Waxman
Ranking Member, Committee on Energy and Commerce
Hearing on "The American Energy Initiative – National Standards for Fine Particulate Matter"
Subcommittee on Energy and Power
June 28, 2012

Today's hearing continues the 18-month Republican attack on the Clean Air Act, EPA regulations, and the science that informs our understanding of the effects of air pollution.

The House Republicans have made this the most anti-environmental House in history. To date, the Republicans have voted more than 270 times on the House floor to weaken long-standing public health and environmental laws, block environmental regulations, defund environmental protections, and oppose clean energy.

The most troubling aspect of this anti-environment campaign is the denial of science. There is no way to govern responsibly if you refuse to accept the findings of the National Academy of Sciences and the rest of the scientific community. Yet that is what is happening in this Committee, and the result is a national embarrassment.

Here's what one of the world's preeminent science journals, Nature, wrote about what is happening in this Committee and the House of Representatives:

> It is hard to escape the conclusion that the U.S. Congress has entered the intellectual wilderness, a sad state of affairs in a country that has led the world in many scientific arenas for so long. . . . At a subcommittee hearing . . . anger and distrust were directed at scientists and respected scientific societies. Misinformation was presented as fact, truth was twisted and nobody showed any inclination to listen to scientists, let alone learn from them. It has been an embarrassing display, not just for the Republican Party but also for Congress. . . .

Those comments were about votes in the Committee that denied the existence of climate change.

Today, the subject is the harmful health effects of fine particulate matter, but the tactic is the same: ignore the scientific experts and dispute the overwhelming scientific evidence of the risk to human health.

Today we will hear from the majority's witnesses that there are "major questions about EPA's forecast of serious health effects" related to particulate matter. We will also hear that "the health benefits of the proposed PM NAAQS are also far more uncertain than EPA admits." Members of this Committee will likely question whether strengthening the current fine particulate standard would have any significant benefits for public health.

These claims are simply not supported by the overwhelming scientific consensus. In 2005, this Committee heard the following statement:

> Of the many air pollutants regulated by EPA, fine particle pollution is perhaps the greatest threat to public health. Hundreds of studies in the peer-reviewed literature have found that these microscopic particles can reach the deepest regions of the lungs. Exposure to fine particles is associated with premature death, as well as asthma attacks, chronic bronchitis, decreased lung function, and respiratory disease.
>
> Exposure is also associated with aggravation of heart and lung disease, leading to increased hospitalizations, emergency room and doctor visits, and use of medication.

That was a statement by Jeff Holmstead, the Assistant Administrator for Air, testifying on behalf of the Bush EPA.

Scientists and medical experts tell us that there are significant health effects from fine particulates at levels below the current ambient air quality standards. It is our job to listen to them and act responsibly to protect the public from these risks.

I regret that we will not be fulfilling our fundamental obligation to be responsible legislators today.

American Forest & Paper Association
and American Wood Council
Statement Submitted for the Record
House Energy and Commerce Committee
Subcommittee on Energy and Power
Hearing on
The American Energy Initiative
June 28, 2012

The American Forest & Paper Association (AF&PA) and the American Wood Council (AWC) are pleased to submit this written statement to the House Energy and Commerce Committee concerning the tightening of the national standards for fine particulate matter ($PM_{2.5}$).

The American Forest & Paper Association is the national trade association of the forest products industry, representing pulp, paper, packaging and wood products manufacturers, and forest landowners. Our companies make products essential for everyday life from renewable and recyclable resources that sustain the environment. The forest products industry accounts for approximately 5 percent of the total U.S. manufacturing GDP. Industry companies produce about $190 billion in products annually and employ nearly 900,000 men and women, exceeding employment levels in the automotive, chemicals and plastics industries. The industry meets a payroll of approximately $50 billion annually and is among the top 10 manufacturing sector employers in 47 states. We support policy efforts to increase our nation's energy security and our member companies are leading the effort to achieve this objective by combining advanced technology and innovative manufacturing practices with responsible stewardship of our nation's natural resources.

The American Wood Council (AWC) is the voice of North American traditional and engineered wood products, representing over 60 percent of the industry. From a renewable resource that absorbs and sequesters carbon, the wood products industry makes products that are essential to everyday life and employs approximately one-third of a million men and women in well-paying jobs. AWC's engineers, technologists, scientists, and building code experts develop state-of-the-art engineering data, technology, and standards on structural wood products for use by design professionals, building officials, and wood products manufacturers to assure the safe and efficient design and use of wood structural components.

Emissions of particulate matter are a component of a facility's air operating permit which is required for all major sources that emit beyond minimum thresholds. AF&PA and AWC member facilities are subject to this requirement.

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The current $PM_{2.5}$ standards are currently set at an annual average of 15 microns per cubic meter of air ($\mu g/m^3$) and a 24-hour average of 35 $\mu g/m^3$. EPA's proposed rule indicates a preference to lower the annual $PM_{2.5}$ standard to a range of 13 $\mu g/m^3$ to 12 $\mu g/m^3$, while soliciting comment on an annual standard as low as 11 $\mu g/m^3$ and a 24-hour standard at 30 $\mu g/m^3$. EPA agreed by consent decree to finalize this proposed rule by December 14, 2012.

AF&PA and AWC are disappointed that EPA did not include the current standard as a formal alternative in the proposed rule, and thereby request comment on it as an option. There is significant uncertainty in the science used to develop the revised PM NAAQS standards, and we think EPA erred in finding that the existing standard is inadequate. The economic impacts of a lower standard at these levels are too great to ignore the scientific uncertainty.

In the proposed rule, EPA states, "...a substantial amount of new research has been conducted since the close of the science assessment in the last review of the $PM_{2.5}$ NAAQS (US EPA, 2004), with important new information coming from epidemiological studies, in particular". AF&PA and AWC do not believe that EPA actually considered all the new research when it issued the proposed rule.

New PM research highlights the uncertainty associated with health effects and PM exposure

For example, one new study, *An Approach to the Estimation of Chronic Air Pollution Effects Using Spatio-Temporal Information* (Greven, Dominici, and Zeger, June 2011) examines 18.2 million Medicare beneficiaries and accounts for lifestyle and other environmental exposures such as smoking, stress, body mass index, occupational exposures, and indoor and outdoor air quality. The study finds that "after adjusting for the association between national trends in mortality and $PM_{2.5}$, there is no significant association between an increase in the local yearly average $PM_{2.5}$ concentration and the risk of dying in a given month for the local Medicare population."

EPA cherry picked studies and results

In estimating risk and in determining a level of exposure that protects public health with an adequate margin of safety, EPA has "cherry picked' the results, relying on selected studies and results that support their no threshold hypothesis while ignoring completely or inappropriately discounting the results of other studies that do not support their hypothesis.

According to the Health Effects Institute, which is supported jointly by EPA and industry, the large majority of studies examining the shape of the quantitative relationship between air pollutant levels and acute mortality data have relied on model fit criteria. However, these criteria were not developed to assess scientific theories of cause-and-effect and are therefore inappropriate for making firm conclusions on the nature of the

response function between mortality and air pollutant concentration. Consequently, drawing a proposed more stringent standard from these models also is inappropriate.

In contrast to EPA's conclusions, the results of existing studies examining thresholds in time series studies are inconsistent. Some studies report a log-linear relationship with no evidence for a threshold, while other studies report the existence of thresholds (Smith 2000; Stylinaou 2009; Nicolich and Gamble 2000). EPA does not cite in their review the results of studies that report thresholds. The vast majority of EPA's claimed health benefits come from reductions below these thresholds.

In addition, in new multi-city studies, there is a high degree of heterogeneity with no mortality or morbidity association (i.e., a threshold) observed in many regions of the country.

EPA understates economic impacts

Finally, we are concerned EPA is understating the impacts of a tighter $PM_{2.5}$ standard by saying only 6 counties will be designated as non-attainment in 2020. First, states will be making non-attainment designation required under the Clean Air Act using 2009-2011 or perhaps 2010-2012 air quality data which will show dozens of counties as exceeding the proposed range. It is not clear how EPA can claim that the resulting state implementation plans (SIPs) only need to look at control measures in the 6 counties or fully credit the emission reductions that may be occurring from existing regulations that might reduce PM; we note that both the utility MATS rule and CSAPR are being challenged in court. In addition, current background levels of PM are very close to the proposed standard. As a result, businesses seeking air quality permits to construct new projects or modify existing plants anywhere in the country may find it extremely difficult to model compliance with the new $PM_{2.5}$ NAAQS under the PSD program and will be forced to look at pollution controls that may be technically infeasible or cost prohibitive. Thus, investments that could create new jobs or maintain competitiveness may be harmed by the tougher proposed limits.

Summary

Recent scientific studies show health-based risks to $PM_{2.5}$ exposure have decreased since fine particulate standards were reviewed in 2006. This downward trend does not support lowering the current standards. There have been no new short-term studies of $PM_{2.5}$ impacts. Available studies do not resolve issues identified in the 2006 review such as the effect of modeling specifications, the relative importance of other pollutants, and the unexplained region-wide differences in exposure risks. In addition, new studies such as Greven et al. indicate significant uncertainty about health effects and exposure to $PM_{2.5}$.

Congress has an excellent opportunity to direct EPA to: properly evaluate the entire body of science on human exposure to fine particulate matter; assess the uncertainty around health effects to PM exposure; and reconsider whether retaining the current

annual standard is sufficient to protect public health. To not do so risks economic harm with no certainty of gains in reducing heath risk.