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New York, NY 10005-2113  
Phone: (212) 315-8700  
Fax: (212) 608-3219

[www.LungUSA.org](http://www.LungUSA.org)

June 6, 2012

The Honorable Andy Harris  
Chairman  
Subcommittee on Energy and  
Environment  
Committee on Science, Space  
and Technology  
U.S. House of Representatives  
Washington D.C. 20515

The Honorable Brad Miller  
Ranking Member  
Subcommittee on Energy and  
Environment  
Committee on Science, Space  
and Technology  
U.S. House of Representatives  
Washington D.C. 20515

Dear Chairman Harris and Ranking Member Miller:

Today the Subcommittee on Energy and Environment is holding a hearing titled *EPA's Impact on Jobs and Energy Affordability: Understanding the Real Costs and Benefits of Environmental Regulations*. The American Lung Association urges the committee to recognize the true health costs and consequences of air pollution and the enormous health benefits the Environmental Protection Agency's safeguards provide to the American people. Since 1970, under the Clean Air Act, the U.S. economy grew by over 200% while cutting air pollution by 70%.<sup>1</sup>

For over forty years the Clean Air Act has significantly and dramatically improved the quality of our nation's air. The Clean Air Act protects public health and reduces health care costs by preventing thousands of adverse health outcomes including cancer, asthma attacks, strokes, heart attacks, emergency department visits, hospitalizations, and premature deaths. A rigorous, peer reviewed analysis, *The Benefits and Costs of the Clean Air Act from 1990 to 2020*, conducted by EPA, found that the air quality improvements under the Clean Air Act will save \$2 trillion by 2020 and prevent at least 230,000 deaths annually. EPA estimates that Clean Air Act benefits in 2010 exceed costs by a factor of more than 30 to one.<sup>2</sup>

The Clean Air Act requires that the states and the U.S. Environmental Protection Agency take steps to reduce air pollution and the enormous health toll pollution places on the American people. The Clean Air Act is a robust, thoughtful, bipartisan approach, ensuring that air pollution standards are set based on the best available health science. These national ambient (outdoor) air quality standards (NAAQS) are our nation's official definition of how much air pollution is safe to breathe, and must be set at levels sufficient to protect public health with an adequate margin of safety. The NAAQS apply to only six pollutants: ozone (smog), particulate matter (soot), sulfur dioxide, nitrogen dioxide, carbon monoxide and lead.

From the Clean Air Act's beginning, Congress recognized that the public had the right to clean air based upon truthful, up-to-date science-based information about what air quality is healthy. Congress recognized that inserting cost considerations in the standard setting process would be impossible and unethical. They felt it would be

<sup>1</sup> U.S. Environmental Protection Agency 2012, *Air Trends Graphic*  
<http://www.epa.gov/airtrends/images/comparison70.jpg>

<sup>2</sup> U.S. Environmental Protection Agency 2011. *The Benefits and Costs of the Clean Air Act from 1990 to 2020* <http://www.epa.gov/oar/sect812/prospective2.html>

impossible to determine because the predictions will vary widely and new advances, regional variations can make those projections completely obsolete quickly. They felt it would be unethical because they agreed that the health and lives of one group of people should not be sacrificed to benefit another group economically.

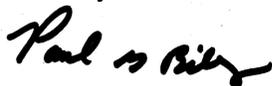
Instead Congress placed in costs and feasibility into the Clean Air Act in a more appropriate place: determining which sources to clean up and when that cleanup occurs. Costs and feasibility are key components in meeting the standards. States write plans (State Implementation Plans or SIPs) to adopt pollution control measures that make the most sense for their communities and fully consider costs. For example, the process that resulted in the Mercury and Air Toxic Standards and the Cross State Air Pollution Rule thoroughly and comprehensively examined pollution control technology, implementation costs, and health benefits. Forty years of evidence that the benefits of cleaning up the emissions outweigh the costs should provide enough evidence that Congress chose the correct approach.

For the Mercury and Air Toxic Standards, the analysis found that the new standards will prevent up to 11,000 premature deaths, 4,700 heart attacks and 130,000 asthma attacks every year. The public value of the air quality improvements totals \$37 billion to \$90 billion each year. For every dollar spent to reduce air toxics pollution, Americans receive \$3-9 in health benefits.<sup>3</sup>

The Cross State Air Pollution rule will yield \$120 to \$280 billion in annual health and environmental benefits in 2014, preventing up to 34,000 premature deaths. These benefits far outweigh the estimated annual costs of the cleanup – only \$2.4 billion in annual costs and capital investments.<sup>4</sup>

The Clean Air Act saves hundreds of thousands of lives, sparks innovation that dramatically improves the quality of life for millions of people, and does so in an exceedingly cost effective manner.

Sincerely,



Paul G. Billings  
Vice President  
National Policy & Advocacy

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<sup>3</sup> U.S. Environmental Protection Agency, Mercury and Air Toxics Standards 2012. <http://www.epa.gov/mats/health.html>

<sup>4</sup> U.S. Environmental Protection Agency, Cross-State Air Pollution Rule 2012. <http://www.epa.gov/airtransport/>



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F. (212) 315 - 6498

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International Activities

**Washington Office**  
1150 18th Street, N.W.  
Suite 300  
Washington, D.C. 20036  
P. (202) 296 - 9770  
F. (202) 296 - 9776  
[www.thoracic.org](http://www.thoracic.org)

June 5, 2012

The Honorable Andrew Harris  
Chairman  
House Science, Space, and  
Technology, Subcommittee  
on Energy and Environment  
U.S. House of Representatives  
Washington D.C. 20515

The Honorable Brad Miller  
Ranking Member  
House Science, Space and  
Technology, Subcommittee  
on Energy and Environment  
U.S. House of Representatives  
Washington D.C. 20515

Dear Chairman Harris and Ranking Member Miller:

On behalf of the 15,000 members of the American Thoracic Society I want to thank the committee for the opportunity to submit written comments on today's hearing regarding the health and economic impacts of air pollution control. The American Thoracic Society is a medical professional organization dedicated to the prevention, diagnosis, cure and research of respiratory, critical care and sleep-related illness.

Air quality plays an essential role in the interaction between lungs and our environment. As such, air pollution control is an important issue for our members and the patients we serve. ATS members conduct the science that demonstrates the adverse health effects of exposure to air pollution. Our journals publish research that documents air pollution's health effects. Our physician members treat patients whose respiratory disease is directly impacted by air pollution.

Today's briefing is another in a remarkable series of hearings the House of Representatives has held on the subject of federal air pollution regulations. The string of hearings is remarkable in both its number and its overwhelming focus on the cost to industry to comply with federal air pollution standards. Largely absent from the hearings are the known health effects of air pollution and the ensuing health-related economic impact of air pollution or, conversely, the economic benefits of improved air quality.

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We hope our written comments will help the committee by providing a more complete understanding of air pollution and its health and economic impacts. Rather than include the vast compendium of studies that document the adverse health effects of air pollution, we would like to bring to the committee's attention several recent articles that have appeared in scientific journals that summarize the scientific literature, discuss key regulations and provide insight for policy makers to consider. Copies of these articles are attached for the committee's convenience.

The first article, by Pinkerton and Balmes, is from the *American Journal of Respiratory and Critical Care Medicine*. The article reviews the adverse health effects of ozone and urges Congress to preserve the Environmental Protection Agency's authority to issue stricter National Ambient Air Quality Standards for ozone. The article specifically addresses the economic costs and benefits of complying with air pollution requirements:

Critics of the CAA and the EPA say that the economic costs of our cleaner and healthier air are too high to justify further tightening of the NAAQS. They say that these regulations "kill jobs." What evidence is there for such assertions? Very little. In fact, recent estimates indicate that environmental regulations in general, not just the NAAQS, account for approximately 0.1% of costs to business (3). Moreover, compliance with the NAAQS generates jobs (3, 4). Most analyses of the economic impact of the CAA show that implementation of the NAAQS has actually added to the GDP (3–5). If one adds in the costs of avoided health care, the overall economic benefit is without question (6).

An article by Lipsman and Frank published in the *American Journal of Preventive Medicine* also notes the value of air pollution control. The article summarizes key studies that show air pollution is bad for human health. The article further reviews several natural experiments—such as the 1996 Atlanta and 2008 Beijing Olympics—where policy measures to reduce air pollution lead to direct health benefits. The article also notes the economic benefits of air pollution control:

As physicians, our orientation is to health. However, one of the reasons given by congressional advocates for weakening air pollution controls is their adverse financial impact on industry. Thus, it is helpful to know that there is also a science base for the monetary costs of air pollution and the financial benefits of air pollution control. An EPA model [14] has demonstrated that control of PM<sub>2.5</sub> emissions results in \$100 billion of benefits annually.

An in-press article by Li and colleagues in the *Journal of Allergy and Clinical Immunology*, discusses the health benefits for the Mercury and Air Toxics rule recently finalized by EPA. The article describes the health benefits of air pollution control and provides economic context for valuing the benefits of air pollution.

These health impacts have costs. EPA projects that by 2020, the Clean Air Act standard will prevent 230,000 premature deaths, 75,000 cases of chronic bronchitis, 200,000 heart attacks, 2.4 million asthma exacerbations, and 120,000 emergency room visits. The economic value of these avoided health events is estimated to exceed \$2 trillion dollars. The public and private industry cost of complying with these Clean Air Act standards is estimated to be \$65 billion [18]. The populations that may contribute to the benefit and cost ratio may differ, as presented in the following examples...

Economists have also studied the cost benefits of air pollution controls. Morgenstern et al examined the employment effects of environmental regulations on 4 industries with significant pollution, iron and steel mills, pulp and paper mills, plastics industry and petroleum refineries. The study concluded that for every \$1 million spent in environmental controls, 1.5 jobs were created [21]. Bezdak and colleagues found that environmental regulations have both positive and negative job effects, but that the net employment effect of environmental regulations is positive [22].

The last article, by Jonathan Samet M.D., appeared in the *New England Journal of Medicine*. In discussing a wide range of issues related to air pollution control, Dr. Samet notes that;

Over the 40 years since NAAQS were first promulgated, they have led to progressive reductions in levels of criteria pollutants (see graph). Economic analyses indicate that these reductions have been highly cost-effective.<sup>1</sup>

These articles are just a brief sampling of the vast scientific literature that documents the adverse health effects of air pollution and the economic benefits of air quality improvements. I hope the summary information provided will help the committee more fully understand the health and economic value of air pollution control.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gary Ewart', with a long horizontal stroke extending to the right.

Gary Ewart  
Senior Director, Government Relations  
American Thoracic Society

## Clearing the Air

Exposure to outdoor air pollutants is a major contributor to the burden of disease (1). To protect the health of the general public and susceptible subgroups, in particular those with pre-existing respiratory and cardiovascular diseases, the Clean Air Act (CAA) was passed in Congress with a bipartisan majority and signed into law by President Richard M. Nixon in 1970 (2).

The CAA is perhaps the most successful environmental law enacted in the United States. As a result of this landmark legislation, the Environmental Protection Agency (EPA) was established and national ambient air quality standards (NAAQS) have been set for six so-called criteria pollutants (ozone, particulate matter, nitrogen oxides, sulfur oxides, carbon monoxide, and lead). The NAAQS were developed because these pollutants were ubiquitous in urban areas across the country and sufficient scientific evidence was available to document a significant impact on public health.

The benefits of the CAA have been huge. Forty years after its enactment, we have cleaner air to breathe all over the country despite a 33% increase in our population. In Los Angeles, perhaps our smoggiest city, one can again see the beautiful mountains that surround it. But the greatest benefits of the improved air quality are the lives saved, hospitalizations and emergency room visits avoided, and decreased school and work days lost to pollution-exacerbated illness.

Why have the CAA and the EPA been so successful at improving our air quality and protecting the public health? One reason is the requirement of the law that standards be evidence-based. The authors of the legislation were wise enough to specify that an independent committee of scientists from outside the agency, dubbed the Clean Air Scientific Advisory Committee (CASAC), be established to review existing data and advise the EPA Administrator when the air quality standards are periodically reevaluated. This approach was designed to shield the standard-setting process from political pressures and to ensure that the standards were supported by good science.

Critics of the CAA and the EPA say that the economic costs of our cleaner and healthier air are too high to justify further tightening of the NAAQS. They say that these regulations “kill jobs.” What evidence is there for such assertions? Very little. In fact, recent estimates indicate that environmental regulations in general, not just the NAAQS, account for approximately 0.1% of costs to business (3). Moreover, compliance with the NAAQS generates jobs (3, 4). Most analyses of the economic impact of the CAA show that implementation of the NAAQS has actually added to the GDP (3–5). If one adds in the costs of avoided health care, the overall economic benefit is without question (6).

Although we are in a period of relative economic hardship, this does not justify abandoning a strikingly successful program that has provided more benefit than economic harm. The CAA-mandated air quality standard-setting process, based on science rather than politics, should be maintained.

When the scientific evidence about health impacts of a criteria pollutant supports the tightening of its air quality standard, the

EPA is required by the CAA to protect the public health. This requirement has been upheld by the Supreme Court when the trucking industry challenged EPA Administrator Carol Browner’s decision to promulgate a fine particulate matter (PM<sub>2.5</sub>) standard in 1997 (7). That is why the ATS and multiple other health-related organizations are so disturbed by President Obama’s decision to order current EPA Administrator Lisa Jackson to rescind reconsideration of the ozone air quality standard.

On the basis of the scientific evidence available in 2006, the CASAC unanimously recommended that the standard be set between 60 and 70 ppb, primarily to protect susceptible populations such as people with asthma. A key feature of the CAA is a requirement that a “margin of safety” from the lowest level of a pollutant known to cause harm be included when an air quality standard is set to prevent adverse health effects in sensitive individuals. The committee was asked to review the evidence twice since 2006, and each time unanimously reaffirmed its recommendation (8). Since 2006, multiple studies have shown adverse effects of ozone at levels below the current standard of 75 ppb (9–11).

The President’s action to abrogate EPA Administrator Jackson’s decision to set a new, more health-protective standard for ozone on the basis of the scientific evidence was based partly on the notion that in these tough economic times the nation could not afford such a standard (12). This reasoning seems contrary to the language of the CAA in which public health is clearly intended to be the primary consideration, above and beyond costs. But as we have shown above, cleaner air does not have an overall negative impact on the economy or cost jobs. What tighter air quality standards do bring are economic incentives to shift to cleaner and more sustainable sources of energy, away from combustion of fossil fuels. Jobs may be lost in the coal and oil sectors, but jobs in control technology and clean energy will be gained (4).

As an international organization devoted to evidence-based promotion of respiratory health, the ATS has been in the forefront of efforts to improve air quality in the United States and around the world. We ask members of the Society and the public at large to consider carefully the health and economic benefits derived from the Clean Air Act versus its costs. In the face of multiple legislative initiatives to weaken the CAA, we call on the President and members of Congress to uphold this law that has resulted in cleaner air for all Americans to breathe.

**Author disclosures** are available with the text of this article at [www.atsjournals.org](http://www.atsjournals.org).

JOHN BALMES, M.D.  
*University of California, San Francisco  
San Francisco, California*

KENT PINKERTON, PH.D.  
*University of California, Davis  
Davis, California*

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## Rate of Decline in FEV<sub>1</sub>: Is Emphysema the Culprit?

One of the most basic and relied-upon methods to assess the severity and rate of progression of chronic obstructive pulmonary disease (COPD) is spirometry. In 1977 Fletcher and Peto described what is now the dogma of smoking-related lung injury (1). After attaining maximal lung function in young adulthood, we experience a gradual age-related decline. While we may lose 25 to 30% of our lung function over a lifetime, we generally have ample reserve to prevent clinically significant compromise in our pulmonary status. In contrast, smokers experience an accelerated rate of decline in lung function that puts them at risk for premature respiratory disability and death. Upon cessation of smoking, however, lung function resumes a more normal age-related decline. Numerous subsequent studies have demonstrated that the rate of decline in FEV<sub>1</sub> is closely tied to smoking status: greatest in current smokers, less in former smokers, and even less in never-smokers (2). What has been less well described is the variable rate of decline in lung function experienced by both current and former smokers, as well as the associations/determinants of this decline.

In this issue of the *Journal*, Nishimura and coworkers (pp. 44-52) report the results of a multicenter observational study examining the serial change in lung function in a cohort of 279 continuous, intermittent, and former smokers (3). Following baseline computed tomographic (CT) assessments of emphysema as well as measures of the carbon monoxide transfer coefficient (Kco), subjects were followed for up to 5 years and completed lung function testing up to every 6 months. The authors identified three groups: Rapid decliners in lung function ( $-63 \pm 2$  ml/yr), Slow decliners ( $-31 \pm 1$  ml/yr), and Sustainers ( $-2 \pm 1$  ml/yr). While there was no difference in measures of lung function at enrollment, subjects with more emphysema at baseline had a 47% increase in the odds of being a Rapid decliner over the subsequent period of observation. Rapid decliners also tended to have a lower baseline %Kco than either the Slow decliners or the Sustainers.

The association between baseline radiologic burden of emphysema and subsequent decline in FEV<sub>1</sub> is consistent with recent data published by both Mohamed Hoesein and colleagues and Vestbo and coworkers (4, 5) In these studies totaling over 4,200 subjects, those with the greatest amount of emphysema on their baseline CT

scans experienced the greatest subsequent decline in lung function. What remains to be described is the mechanism behind this association. Is emphysema the cause of this decline, or is it associated with yet undetermined factors affecting disease progression?

The development of emphysema is ascribed to chronic noxious exposures such as recurrent inhalation of particulates, including tobacco smoke, coupled with a biological response characterized by cell senescence, autoimmunity, local vascular injury, or a potential imbalance in protease and antiprotease activity (6-10). Once established, the progression of emphysema is less clear but is generally attributed to the same mechanisms that led to its initial appearance. To be consistent with the observation of Nishimura and coworkers, even after the noxious exposure has ceased (former smokers), these responses would continue and emphysema would beget more emphysema. This self-propagating process could be due to unrelenting inflammation, a heightened propensity for respiratory events such as acute exacerbations of COPD, local mechanical stress disrupting tissue integrity, or a combination of such factors (11, 12).

A second interesting observation made by Nishimura and colleagues in this cohort was the identification of a subgroup of Sustainers. Despite being an admixture of current, intermittent, and former smokers, these subjects experienced essentially no decline in lung function over the period of observation. Again, this finding is corroborated by Vestbo and coworkers, who reported that over the 3-year period of observation there were not only those whose lung function was stable, but almost 15% of the cohort experienced an improvement in their FEV<sub>1</sub> (5). It is unlikely that these trends in lung function fully represent the lifetime natural history of disease since, in both cases, they were observed in subjects who had preexisting impairments in lung function. Rather, these periods of stability and modest gain in function may represent interludes in spirometric progression.

Alternatively, the apparent stabilization of lung function may have a more ominous implication. It is increasingly appreciated that smoking leads to the development of both emphysema and interstitial lung disease, and there is a subset of subjects who may have an overlap of these two conditions. On CT scan, these interstitial changes have been termed subclinical interstitial lung disease or interstitial lung abnormalities (ILA), and in smokers

# Attack on Protections Against Air Pollution

Joshua Lipsman, MD, JD, MPH, Arthur L. Frank, MD, PhD

It is well accepted that air pollution has a deleterious impact on personal and public health. Because control and reduction of air pollution are subject to federal regulation, physicians, as advocates for patients, must help educate the Congress on its critical role in preventing the health effects of air pollution. This is particularly important given that Congress is currently debating whether to dismantle existing laws that protect the air we breathe, especially the Clean Air Act [CAA], a cornerstone of environmental health law. First passed in 1963, the CAA authorizes the federal government to reduce airborne contaminants, smog, and air pollution in general. Responsibility for the CAA was given to the U.S. Environmental Protection Agency (EPA) after its establishment in 1970. Since its initial passage, a number of amendments to the law have been passed—all with strong bipartisan support—to keep pace with the growing evidence base directly linking air quality to health.

Unfortunately, a faction in Congress is working to soften regulations on environmental polluters, which, consequently, will greatly weaken the health-protective impacts of the CAA. Several bills have been introduced in the 112th Congress to delay or remove the authority of the EPA to regulate pollutants such as carbon dioxide and others, which researchers have found contribute to the greenhouse effect in the Earth's atmosphere. For example, H.R.2584, currently before the full House, has provisions to prevent the EPA from requiring public reporting of greenhouse gas emissions, prevent the EPA from requiring emissions permits for major sources of greenhouse gas, and bar state or federal lawsuits regarding greenhouse gas emissions. (A list of dozens of similar bills at different stages of advancement in Congress is available from the corresponding author.)

The increased emission of carbon dioxide and other pollutants, known as “greenhouse gases,” is problematic because the ability of the environment to absorb these pollutants is far exceeded by their emission rate. This is causing increased temperature levels in the atmosphere. The temperature change in particular is beginning to have a dramatic

impact on the food patients eat, the water patients drink, the air patients breathe, and the pathogens to which patients are exposed. Regardless of these harmful consequences, the House of Representatives has already passed, as part of a federal funding bill, legislation to strip the EPA of its authority to regulate pollutants that contribute to greenhouse gases and has passed separate legislation that also achieves the same goal. In addition, similar legislation already has been introduced in the Senate.

Further, a Congressional review is now under way on the EPA over regulations the EPA has published under authority granted by the CAA. Senior members of Congress have issued worrisome statements about EPA “job killing regulations” to reduce or control harmful air pollutants such as ozone and particle pollution, and have passed legislation to curtail EPA regulatory authority. Specifically, the House has passed legislation blocking EPA rules on coarse-particle pollution and pollution from cement kilns. Additionally, legislation also has been introduced to block EPA rules on industrial boiler emissions.

Despite court challenges, federal courts, including the Supreme Court, repeatedly have reaffirmed the CAA and the obligation of the EPA to protect patients and communities from the harmful health effects of air pollution. Most recently, in *Massachusetts v. EPA*, the U.S. Supreme Court affirmed that the EPA has the authority and the obligation to regulate the emission of carbon dioxide and other greenhouse gases.

## Science Base

Air pollution is harmful to patients and can lead to disability, disease, and in some instances death. In 2006, the EPA convened a panel of experts to review recent scientific data regarding the nexus between a particular type of air pollution and health.<sup>1</sup> The EPA Clean Air Scientific Advisory Committee, in a letter to EPA Administrator Jackson stated, “Abundant epidemiological, clinical and animal toxicology studies implicate a causal relationship between exposure to PM<sub>2.5</sub> [a type of particulate air pollution] and cardiovascular and respiratory disease.”<sup>2</sup> Pollution-associated diseases include asthma exacerbations, COPD exacerbations, vascular remodeling, and heart attacks.

Although studies continue to link air pollution to poor health, scientists have shown that reductions in air pollution can improve health. Several natural experiments, such as a reduction in traffic pollution during the 1996

From the American College of Preventive Medicine (Lipsman), Washington DC; and the Department of Environmental and Occupational Health (Frank), Drexel University School of Public Health, Philadelphia, Pennsylvania

Address correspondence to: Joshua Lipsman, MD, JD, MPH, 155 East 29th Street, #31D, New York NY 10016. E-mail: [joshlipsman@gmail.com](mailto:joshlipsman@gmail.com). 0749-3797/\$36.00

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Atlanta Olympics and the 2008 Beijing Olympics, show that reductions in air pollution exposures can improve health.<sup>3,4</sup> A ban on coal sales in Dublin led to reductions in particulate matter pollution and a corresponding 5.7% reduction in all-cause mortality, a 10.3% reduction in cardiovascular mortality, and a 15.5% reduction in respiratory mortality.<sup>5</sup> A study of California children who moved to less-polluted areas showed increased lung function, whereas those who moved to more-polluted areas had decreased lung function.<sup>6</sup> The health effects of improved air quality on patients and communities are substantial. The EPA recently released a peer-reviewed report that estimated that in 2010 alone, reductions in air pollution as a result of provisions in the CAA prevented 160,000 deaths, 1.7 million asthma exacerbations, 86,000 emergency room visits and 3.2 million missed school days.<sup>7</sup> These benefits are accrued annually and are expected to increase through 2020.

Moreover, research is beginning to describe the harmful health effects of increased carbon dioxide levels and other pollutants in the air patients breathe. Increasing carbon dioxide concentrations are resulting in the earlier onset of spring, with the most substantial changes seen at northern latitudes. Rising temperatures are making ragweed pollen more allergenic and prolific and are extending the pollen season.<sup>8,9</sup> Rising temperatures also are introducing vectorborne diseases such as malaria into new areas.<sup>10</sup> Further studies have projected that rising temperatures will increase ozone generation, exacerbating air pollution, and will increase heat wave-related illnesses.<sup>11,12</sup>

For traditional pollutants like ozone and particle pollution, the evidence is clear that air pollution is harmful, whether it be from asthma exacerbations, emergency room visits, hospitalizations, missed school days, missed work days, increased medication use, or the highest price of all—preventable deaths. The costs of global climate change are less certain, but even the best-case scenarios will likely result in worsening health for those with chronic health conditions. Worst-case scenarios project changing precipitation patterns, droughts, rising sea levels, and more frequent and extreme weather events.<sup>13</sup> Each of these effects will have substantial health and economic implications.

As physicians, our orientation is to health. However, one of the reasons given by congressional advocates for weakening air pollution controls is their adverse financial impact on industry. Thus, it is helpful to know that there is also a science base for the monetary costs of air pollution and the financial benefits of air pollution control. An EPA model<sup>14</sup> has demonstrated that control of PM<sub>2.5</sub> emissions results in \$100 billion of benefits annually. Another study<sup>15</sup> has estimated that the life cycle effects of

coal and the waste stream generated cost the U.S. public one third to more than one half of a trillion dollars annually. Yet another study<sup>16</sup> estimated an annual cost of \$9.3 billion in 2049–2051 for offsetting climate change impacts on air quality for the six U.S. regions and five U.S. cities examined.

The science on the causes and consequences of air pollution is clear and compelling. The science on the human health effects of that pollution also is compelling. The CAA is established law that has been tested and affirmed in the courts. The important question is whether Congress will allow the EPA to move forward to issue health-based air pollution control standards—including for greenhouse gases.

Concerned physicians should contact their members of Congress urging them to strengthen and not weaken air pollution law. Moreover, professional societies such as the American College of Preventive Medicine and the American Thoracic Society seek physicians to become involved in their advocacy efforts. For the sake of patients and the health of the American public, we urge Congress to preserve the authority of the EPA under the CAA.

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# The NEW ENGLAND JOURNAL of MEDICINE

## Perspective

### The Clean Air Act and Health — A Clearer View from 2011

Jonathan M. Samet, M.D.

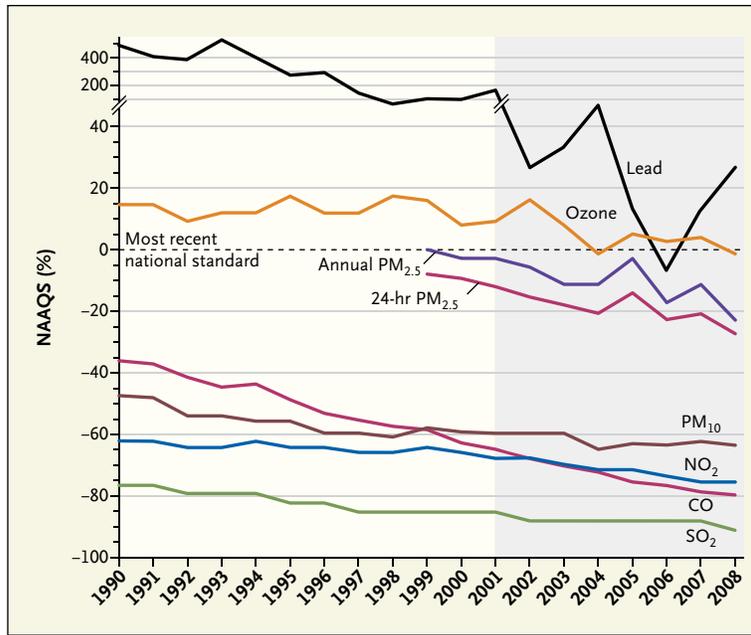
From my office, I have views of downtown Los Angeles and the San Gabriel Mountains. Air pollution infrequently obscures these views, and only rarely are my eyes and throat irritated by

smog when I'm outdoors. The Los Angeles air of today is far better than that of the mid-20th century, when severe oxidant pollution, initially of unknown origins, threatened the health and welfare of the city's residents. Severe smog was a common occurrence. Today, throughout the United States, air quality has improved greatly, and the last century's severe, life-threatening episodes of air pollution, such as one that caused about 20 deaths in Donora, Pennsylvania, over a 3-day period in 1948, have largely been forgotten. The Clean Air Act of 1970 (CAA) has driven this progress, but we now face new challenges in air-quality management.

The 20th-century pollution episodes and the pervasive smoke problem in cities motivated increasingly stringent and sweeping laws and programs to address air pollution. For more than 40 years, the CAA, aided by amendments passed in 1977 and 1990, has been the foundation for U.S. air-quality management. It provides a broad regulatory framework, covering air-pollution standards, various stationary and mobile sources, acid deposition, and stratospheric ozone protection. Two sections of the law address the major pollutants in ambient air, including particulate matter, ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide, as well as lead, which

ceased to be a widespread problem when it was removed from gasoline. These pollutants are referred to as "criteria pollutants," thanks to a passage in the law that requires the administrator of the Environmental Protection Agency (EPA) to issue "air-quality criteria," accurately reflecting the scientific evidence related to identifiable public health and environmental effects, for any substance designated as an air pollutant.

The CAA also requires the EPA administrator to set National Ambient Air Quality Standards (NAAQS) for pollutants for which air-quality criteria are listed. The language of the law on this point provides a strong public health mandate that has evolved through application and litigation. By intent, the NAAQS must protect susceptible groups within the U.S. population, although protection for the most susceptible may be



**National Levels of the Six Criteria Pollutants, as Percentages of the Levels Set in the Most Recent National Ambient Air Quality Standards (NAAQS), 1990–2008.**

PM<sub>2.5</sub> denotes particulate matter with particles less than or equal to 2.5  $\mu\text{m}$  in aerodynamic diameter, PM<sub>10</sub> particulate matter with particles less than or equal to 10  $\mu\text{m}$  in aerodynamic diameter, CO carbon monoxide, NO<sub>2</sub> nitrogen dioxide, and SO<sub>2</sub> sulfur dioxide. National levels are averages of levels provided by all monitors with complete data for the period. Air-quality data for PM<sub>2.5</sub> began to be collected in 1999. Data are from the U.S. Environmental Protection Agency.

unattainable. The achievement of what the CAA calls an “adequate margin of safety” does not imply that risk-free levels have been set, but that an acceptable level of risk has been reached, given uncertainties in the evidence. The costs of implementation and compliance are not to be considered in setting the NAAQS, although the law does call for costs to be considered in the setting of individual emission standards (e.g., for vehicles and electric utilities) that are intended to help meet the NAAQS. Under the CAA, the Clean Air Scientific Advisory Committee (CASAC, which I currently chair) provides peer review for the EPA’s reports and analyses that support NAAQS revisions.

Over the 40 years since NAAQS were first promulgated, they have

led to progressive reductions in levels of criteria pollutants (see graph). Economic analyses indicate that these reductions have been highly cost-effective.<sup>1</sup> However, as the EPA administrator now considers revisions to the NAAQS for particulate matter and ozone, the CAA’s tenets are being questioned. The questions are motivated by the possibility that even lower concentrations for the NAAQS will be proposed, leading to the designation of large regions of the country as out of compliance with the law; such a result would carry implications for many municipalities and states and multiple U.S. industries. The evidence supporting lowering of maximum levels comes largely from epidemiologic studies showing that current levels of particulate matter and ozone are ad-

versely affecting public health. Discussion of the NAAQS and the CAA has been further complicated by a U.S. Supreme Court finding that the EPA has authority to regulate greenhouse gas emissions.

Over the remainder of 2011, the EPA’s administrator, Lisa Jackson, will make key decisions with regard to lowering the NAAQS for particulate matter and ozone. For ozone, she has reopened the 2007 decision of then-administrator Stephen Johnson to set the standard at 0.075 ppm as the 8-hour average, which was made on the basis of the scientific evidence available at the time and the CASAC’s recommendation that the limit be in the range of 0.060 to 0.070 ppm. Subsequently, the CASAC has reaffirmed that recommendation and answered additional questions about the scientific foundation for the ozone NAAQS. There is great interest in the administrator’s final decision; in its teleconferences discussing the EPA’s questions on ozone, the CASAC received input from 57 public commenters. Some raised concern that the evidence was still too uncertain to warrant lowering the NAAQS and that any mandated reduction would be costly and lead to the elimination of jobs, whereas others claimed that such a reduction was needed to meet the CAA’s requirement for protecting public health. For particulate matter, a decision will be forthcoming by year’s end with regard to recommended reductions in the 24-hour and annual NAAQS. If the administrator follows the CASAC’s recommendations, the NAAQS will be set at lower levels for both particulate matter and ozone.

As the NAAQS have been re-

set at lower and lower concentrations, the gaps between acceptable concentrations and irreducible background levels have narrowed, raising the question of how much lower the limits can be pushed. For ozone and particulate-matter pollution, because no thresholds have been identified below which there is no risk at all, the EPA is using scenarios of risk and exposure to gauge the effects of setting the standards at various concentrations and giving consideration to the burden of avoidable disease. In promulgating the NAAQS for these pollutants, the administrator must weigh the public health burden against the uncertainty of the scientific evidence related to lower concentrations, keeping in mind the CAA's requirement for an adequate margin of safety. It is challenging for researchers to reduce this uncertainty, given the narrowing and low range of concentrations at issue and the difficulty of disentangling the effect of one pollutant from those of others.

As an alternative to regulating pollutants one at a time — the approach outlined in the CAA Amendments of 1990 — consideration is being given to multi-pollutant strategies that would enable the greatest possible reduction in the public health effects of the mixture of inhaled

pollutants.<sup>2</sup> Exposure to traffic-related pollution generally, for example, has adverse health effects but is not specifically addressed in the CAA.<sup>3</sup> Some multi-pollutant strategies have already been introduced. The CASAC has just reviewed a multi-pollutant approach for managing the combined effects of oxides of nitrogen and oxides of sulfur as they are deposited in sensitive aquatic ecosystems.<sup>4</sup> More integrated strategies for air-quality management might also improve control of greenhouse gas emissions, which come from the same sources as the criteria pollutants. New research approaches would be needed to support such integrated strategies.<sup>5</sup> Ongoing research may lead to more refined indicators for particulate-matter pollution, to replace the current mass-based standard, which includes a mixture of particles from many sources.

Further interpretation or amendment of the CAA may eventually be needed to advance multi-pollutant air-quality management. Revised interpretation can be controversial and subject to legal challenge; amendments have been passed infrequently and cautiously in the past. But the individual-pollutant approach no longer accords as well with our scientific understanding of air

pollution and its potential hazards for human and environmental health. More integrative strategies might well address air-quality problems extending from local to global levels. Any future Congressional action on the CAA should be consistent with the spirit of previous amendments, which recognized that U.S. standards for air quality should be grounded in the best available scientific evidence.

Disclosure forms provided by the author are available with the full text of this article at NEJM.org.

From the Department of Preventive Medicine, Keck School of Medicine and USC Institute for Global Health, University of Southern California, Los Angeles.

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An Open Letter from Health Professionals in support of  
THE CLEAN AIR ACT  
AND THE ENVIRONMENTAL PROTECTION AGENCY



MAY 2012

## Health Professionals' Open Letter to Policy Makers in Support of the Clean Air Act and the Environmental Protection Agency

May 2012

**As physicians, nurses, and public health experts, we urge our policy makers to support the Environmental Protection Agency's (EPA's) ability under the Clean Air Act to take action that will protect public health and address climate change.**

Climate change poses significant threats to the health and well-being of all Americans, with disproportionate impacts on children, the elderly, and the poor. Our own medical journals<sup>1,2,3,4,5</sup> and professional organizations (such as the American Medical Association,<sup>6</sup> American Academy of Pediatrics,<sup>7</sup> American Public Health Association,<sup>8</sup> and American Nursing Association<sup>9</sup>) have sounded the alarm. Health effects will include heat-related illnesses, exacerbated cardiovascular and respiratory diseases, more frequent outbreaks of water-borne diseases (such as *Cryptosporidium*) and vector-borne diseases (such as West Nile virus), and mental health impacts resulting from the stress of coping with extreme weather including flooding and hurricanes.<sup>10</sup>

The human and economic costs of these impacts are grave. For instance, a recent report from the Union of Concerned Scientists estimates that in 2020, the continental United States could pay an average of \$5.4 billion (in 2008 dollars) in health-related costs due to the increase in surface-level ozone associated with rising temperatures.<sup>11</sup>

On April 2, 2007, the Supreme Court ruled that global warming emissions are air pollutants covered by the Clean Air Act (CAA).<sup>12</sup> Subsequently, the EPA performed an exhaustive review of the relevant scientific research and determined that global warming emissions endanger public health and welfare and therefore must be regulated under the CAA.<sup>13</sup> Because the EPA's finding is based on well-established science, any effort to prevent or delay the agency from taking action to reduce global warming emissions is a rejection of that science.

The EPA is charged with protecting our public health and our environment, and the Clean Air Act is an extraordinarily successful and cost-effective way of doing so. In 2010 alone, this science-based law prevented an estimated 160,000 premature deaths and millions of cases of respiratory and cardiovascular disease—annual benefits that are projected to grow during the next decade. The Clean Air Act is also good for the economy, with its benefits exceeding its costs by 26 to 1.<sup>14</sup> Now the EPA must be allowed to act on its authority under the law and begin regulating global warming emissions.

Keeping in mind the urgency of America's climate and energy challenges, the prohibitive cost of inaction, and the many benefits of acting today, we urge you to oppose all attacks on the Clean Air Act. Please respect the scientific integrity of the EPA's endangerment finding and the agency's ability to act based on this finding, and stand up for the public health and economic good of our nation.

## Health Professionals' Open Letter to Policy Makers in Support of the Clean Air Act and the Environmental Protection Agency

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*The signers of this statement are physicians, registered or advanced practice nurses, or experts with a master's or Ph.D. in public health. \* denotes convening signer.*

### A COMPLETE LIST OF THE 3XX SIGNERS

#### ALASKA

Jill Seaman, MD  
Bethel, AK

#### ALABAMA

David Smith, MD  
Spanish Fort, AL

#### ARKANSAS

Hosea Mcadoo, MD  
Sherwood, AR

#### ARIZONA

Mark Brown, MD  
Tucson, AZ  
Gerald Karches, MS  
Tucson, AZ  
M. Elizabeth Hunter, MPH  
Phoenix, AZ  
Ulrich Michael, MD  
Tucson, AZ  
Linda Smith Schermer, MPH  
Sedona, AZ  
Eve Shapiro, MD  
Tucson, AZ  
Barbara Warren, MD  
Tucson, AZ  
**CALIFORNIA**  
John Ackerman, MD  
Santa Barbara, CA  
Zia Ahari, MD  
San Rafael, CA  
Ed Avol, MD  
Los Angeles, CA

Jerald Abajian, MD  
Napa, CA  
Barbara Baehr, MD  
San Diego, CA  
Laura Balestreri, MD  
Oakland, CA  
Ann Blake, PhD  
Alameda, CA  
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Jiu-Chiuan Chen, MD, MPH, ScD  
Los Angeles, CA  
Edward Cruz, MD  
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Davis, CA  
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Beverly Hills, CA  
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Vacaville, CA  
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Oakland, CA  
Thomas Knecht, MD  
Oakland, CA  
James Koss, MD  
Richmond, CA  
Jeffrey Kupperman, MD  
Santa Barbara, CA  
Donald Lahti, MD  
Beaumont, CA

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Piper Lillehoff, MD  
Irvine, CA

Robert Lowen, MD  
Palo Alto, CA

Erica Lubliner, MD  
Los Angeles, CA

Richard Maddock, MD  
Davis, CA

Teresa McColley, RN  
Santa Rosa, CA

Robert Meagher, MD  
Sacramento, CA

Lloyd Peckner, MD  
Santa Monica, CA

Dennis Pocekay  
Petaluma, CA

Stephen Read, MD  
San Pedro, CA

Sidney Reiff, MD  
Beverly Hills, CA

Linda Rosenstock, MD, MPH\*  
Los Angeles, CA

Kathy Ruppel, MD  
Stanford, CA

Fredrick Seil, MD  
Berkeley, CA

Daniel Silver, MD  
Los Angeles, CA

Gina Solomon, MD, MPH  
San Francisco, CA

Robert Spear, PhD  
Berkeley, CA

Mark Spohr, MD  
Tahoe City, CA

Arthur Strauss, MD  
Irvine, CA

Carl Sufit, MD  
Escalon, CA

Robert Sullivan, MD  
Sacramento, CA

M. Kelly Sutton, MD  
Fair Oaks, CA

Jon Trefil, MD  
Albion, CA

Harry Wang, MD  
Sacramento, CA

Stephen Weber, MD  
Sacramento, CA

Mel Werbach, MD  
Springville, CA

Mindi White, MD  
Los Angeles, CA

Junfeng (Jim) Zhang, PhD  
Los Angeles, CA

### **COLORADO**

Wayne Crill, MD  
Fort Collins, CO

Kenneth Kutalek, MD  
Evergreen, CO

Michael Paterson, MD  
Monte Vista, CO

Laurel Starr, MD  
Golden, CO

Huibert Vriesendorp, MD  
Silverthorne, CO

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Kathleen Cooper-McDermott,  
MSN, MPH  
Groton, CT

Michael Corjulo, APRN  
North Haven, CT

Vittoria Gassman, MD  
Norwalk, CT

J. Michael Herr, MD  
West Hartford, CT

Peter Kennedy, PhD  
West Hartford, CT

Ruth Knollmueller, RN, PhD  
Cheshire, CT

Mark Mitchell, MD, MPH  
Hartford, CT

Justin Paglino, MD  
Guilford, CT

Jonathan Stolzenberg, MD  
West Hartford, CT

John Strauss, MD  
New Haven, CT

Carolyn Jean Webb, SM, MS  
West Hartford, CT

Faith Weidner, MD  
Simsbury, CT

Monica Wheeler, MSN, RN  
Westport, CT

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Washington, DC

### **DELAWARE**

Alyssa Pensirikul, MD, PhD  
Wilmington, DE

### **FLORIDA**

Philip Blaustein, MD  
Parrish, FL

Raymond Bellamy, MD  
Tallahassee, FL

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in Support of the Clean Air Act  
and the Environmental Protection Agency**

Alan Delamater, PhD  
Plantation, FL

Barrett Dick, MD  
Bradenton, FL

Robert Fay, MPH  
St. Petersburg, FL

Sandra Gompf, MD  
Plant City, FL

Marybeth Palmigiano, MPH  
Tampa, FL

Cynthia Tainsh, MD  
Orlando, FL

**GEORGIA**

Dr. Susan Andresen  
Cartersville, GA

Vernon Dixon, MD  
Hiawassee, GA

Gail Heaberg, APRN  
Warner Robins, GA

Jeremy Hess, MD, PhD  
Decatur, GA

Karen Levy, PhD  
Atlanta, GA

Gary Ludi, MD  
Roswell, GA

Michele Marcus, PhD  
Atlanta, GA

Michael McGeehin, PhD, MSPH  
Atlanta, GA

J Paul Newell, MD  
Cartersville, GA

Justin Remais, PhD  
Atlanta, GA

Matthew Strickland, PhD  
Atlanta, GA

**HAWAII**

Sue Felt, RN, MS, MPH  
Kailua Kona, HI

Michele Nihipali, MPH  
Hauula, HI

**IDAHO**

Glen Albertson, MD  
Twin Falls, ID

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Skokie, IL

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Chicago, IL

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Chicago, IL

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Chicago, IL

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Chicago, IL

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Chicago, IL

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Chicago, IL

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Lisle, IL

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Chicago, IL

Marvin Makinen, MD  
Chicago, IL

Susanna McColley, MD  
Chicago, IL

Rachel Rubin, MD  
Chicago, IL

Barbara Sargent, PNP  
Libertyville, IL

Kristine Santos, RN  
Chicago, IL

Jennifer Weuve, ScD, MPH  
Chicago, IL

Eric Wilson, MD  
Chicago, IL

**INDIANA**

Denise Ward, DO  
Bristol, IN

Howard Christofersen, MD  
Porter, IN

Richard Newcomb, MD  
Portage, IN

**KANSAS**

Ann Suellentrop, MS, RN  
Kansas City, KS

**KENTUCKY**

Keisa Bennett, MD, MPH  
Lexington, KY

Virginia Bush, RN  
Louisville, KY

Denise Puthuff, MD  
Louisville, KY

**MASSACHUSETTS**

William Abend, MD  
Wellesley Hills, MA

Melissa Bartick, MD  
Cambridge, MA

Doris Berger, MD  
Brookline, MA

Suzanne Cashman, ScD  
Newtonville, MA

Stephanie Chalupka, EdD, APRN  
Worcester, MA

## Health Professionals' Open Letter to Policy Makers in Support of the Clean Air Act and the Environmental Protection Agency

David Christiani, MD, MPH, MS  
Boston, MA

Trina Cysz, RN, MPH  
Belchertown, MA

Paul Epstein, MD, MPH deceased\*  
Boston, MA

Jonna Gaberman, MD  
Longmeadow, MA

Arthur Gionti, MD  
Amherst, MA

Rose H. Goldman, MD, MPH  
Cambridge, MA

Barbara Goldoftas, PhD  
Worcester, MA

Pamela Grace, PhD, APRN  
Chestnut Hill, MA

Beverly Hector-Smith, NP  
Natick, MA

Ben Kerman, MD  
Arlington, MA

Gerald Tilden Keusch, MD  
Boston, MA

Nathaniel Kuhn, MD  
Belmont, MA

Charles Lidz, PhD  
Sutton, MA

Michael Mulenberg, MS  
Amherst, MA

Jack Paradise, MD  
Belmont, MA

Robert Petersen, MD  
Cambridge, MA

James Philip, MD  
Chestnut Hill, MA

Christine Rogers, PhD  
Amherst, MA

Beth Rosenberg, ScD, MPH  
Somerville, MA

Jeffrey Scavron, MD  
Springfield, MA

Kathleen Szegda, MPH, MS  
Springfield, MA

Bruce Wintman, MD  
Springfield, MA

### **MARYLAND**

Brenda Afzal, RN, MS  
Ellicott City, MD

Karyn Anderson, PhD, MD  
Baltimore, MD

Viviana Cuberos, MD  
Baltimore, MD

Laurette Cucuzza, MPH  
Silver Spring, MD

Monique Dubois-dalcq, MD  
Bethesda, MD

Kelly Lynne Fritz, MD  
Leonardtown, MD

Lorne Garrettson, MD  
Sandy Spring, MD

Katie Huffling, MS, RN, CNM  
Mount Rainier, MD

Mary Lo, MD  
Germantown, MD

Thomas Moench, MD  
Baltimore, MD

Cindy Lou Parker, MD, MPH  
Baltimore, MD

Liz Perera, MPH  
Bethesda, MD

Minerva Romero Arenas, MD  
Baltimore, MD

Mario Teran, MD  
Baltimore, MD

Christopher D. Toscano, PhD  
Columbia, MD

### **MAINE**

Janet Ordway, MD  
Old Orchard Beach, ME

Edward Walworth, MD  
Lewiston, ME

### **MICHIGAN**

Stuart Batterman, PhD  
Ann Arbor, MI

Alfred Franzblau, MD  
Ann Arbor, MI

Joseph Hess, MD  
East Lansing, MI

Howard Hu, MD, MPH, ScD\*  
Ann Arbor, MI

Larry Junck, MD  
Ann Arbor, MI

Shawn Kimmel, PhD, MA  
Detroit, MI

Kenneth Rosenman, MD  
East Lansing, MI

### **MINNESOTA**

Ann Bajari, MPH  
Annandale, MN

David Councilman, MD  
Minneapolis, MN

Deborah Mielke, MD  
Maple Grove, MN

### **MISSOURI**

Lester Bickford, MD  
Kansas City, MO

## Health Professionals' Open Letter to Policy Makers in Support of the Clean Air Act and the Environmental Protection Agency

Joan Butcher, MD  
Saint Louis, MO

Carmen Federowich, MD  
Monroe City, MO

### **MISSISSIPPI**

Janet Black, BSN, MSN, MPH  
Hattiesburg, MS

Swink Hicks, MD  
Madison, MD

### **MONTANA**

Kathleen Masis, MD  
Billings, MT

### **NORTH CAROLINA**

Alan Archbold, DO  
Hillsborough, NC

William Blackley, MD  
Elkin, NC

Deborah Fields, MD  
Greensboro, NC

Priscilla Guild, MSPH  
Chapel Hill, NC

Jonathan Kotch, MD  
Durham, NC

Jack Leiss, PhD  
Mebane, NC

Thomas Mutton, MD  
Winston Salem, NC

Donna Newman, PhD  
Raleigh, NC

Lewis Patrie, MD  
Asheville, NC

Martha Payne, PhD, MPH  
Durham, NC

Karin Yeatts, PhD  
Chapel Hill, NC

### **NEW HAMPSHIRE**

Phillip Hunt, ScD  
Newfields, NH

Michael OSullivan, PhD  
Madbury, NH

Nathan Sidley, MD  
Wonalancet, NH

Mark Windt, MD  
North Hampton, NH

### **NEW JERSEY**

Karen KellyThomas, PhD, RN  
Gibbsboro, NJ

Judith Klotz, DrPH, MPH  
Lawrenceville, NJ

Luis Montesinos, MD  
Little Falls, NJ

Marian Nowak, MEd, MSN, MPH  
Sicklerville, NJ

Joseph Ponessa, PhD, MS  
Moorestown, NJ

Ninu-Alexandri Quirk, MD  
Deal, NJ

Derek Shendell, DEnv, MPH  
Chatham, NJ

Mary Ellen Teshima, RN  
Towaco, NJ

Michael Yellin, MD  
Montclair, NJ

### **NEW MEXICO**

Eileen Barrett, MD  
Shiprock, NM

Robert Bernstein, MD  
Santa Fe, NM

Yadira Caraveo, MD  
Albuquerque, NM

Gene Chorostecki, MD  
Santa Fe, NM

Anita Holtz, MD  
Albuquerque, NM

Norton Kalishman, MD  
Albuquerque, NM

Barry Kirschbaum, MD  
Santa Fe, NM

Jean MacPhail, MD  
Santa Fe, NM

Stephen Markowitz, MD  
Santa Fe, NM

James Montesinos, MD  
Santa Fe, NM

James Sitrick Jr, MHSc  
Santa Fe, NM

Jon Spar, MSPH  
Albuquerque, NM

Barbara Starfield, MD deceased  
Las Cruces, NM

Alex Stelzner, MD  
Albuquerque, NM

### **NEVADA**

James Lawrie, MD  
Reno, NV

Nancy Menzel, RN, PhD  
Las Vegas, NV

William Schaffer, MD  
Las Vegas, NV

### **NEW YORK**

Carl W. Braun, MD  
New York, NY

Norma MT Braun, MD  
Thornwood, NY

## Health Professionals' Open Letter to Policy Makers in Support of the Clean Air Act and the Environmental Protection Agency

Joan Budd, MD  
Pleasantville, NY

Cenie Cafarelli, MD  
Rochester, NY

Vanessa Calderón, MD  
Ithaca, NY

Megan Cea, MD  
White Plains, NY

Gordon Comstock, MD  
Arcade, NY

Margaret Craven, MD  
Voorheesville, NY

Dominic Ferro, MD  
Nanuet, NY

Frederic Joyce, MD  
Utica, NY

Joseph Graziano, PhD  
New York, NY

Jessica Kandel, MD  
New York, NY

Andrew Kanter, MD, MPH  
New York, NY

Elizabeth Kinney, MS  
Albany, NY

Gerald Kolbert, MD  
Larchmont, NY

Philip Landrigan, MD, MSc  
New York, NY

Gerson Lesser, MD  
Bronx, NY

Jaymie Meliker, PhD  
Port Jefferson, NY

Jill Nord, MD  
Glendale, NY

Stacey Beth Plichta, ScD  
New York, NY

Richard Schloss, MD  
Huntington, NY

Mary Ann Segal, MD  
Bronx, NY

Vincent Silenzio, MD, MPH  
Rochester, NY

Sayone Thihalolipavan, MPH  
New York, NY

Ruth Walker, MD, PhD  
Brooklyn, NY

Mark Weller, MD  
Scarsdale, NY

### **OHIO**

Mary Brown, MPH  
Morrow, OH

Timothy Buckley, PhD\*  
Columbus, OH

Connie Burns, RN  
Columbus, OH

Jason Chao, MD  
Cleveland, OH

Elaine Connelly, RN  
Broadview Heights, OH

Kim Conway, RN  
North Royalton, OH

Anne Davy, RN, MS  
Prospect, OH

Daniel Dawley, MD  
Bowling Green, OH

Chantal Dothey, MD  
Cleveland, OH

Therese Dowd, PhD, RN  
Akron, OH

Lois McClelland, RN  
Sheffield Lake, OH

Theodore Nichols, MD  
Painesville, OH

Barbara Polivka, PhD  
Columbus, OH

Chris Rea, MPH  
Columbus, OH

Ann Reichsman, MD  
Cleveland Heights, OH

Susan Righi, MD  
Athens, OH

Jonathan Slaughter, MD  
Bexley, OH

Julia Veres, MSN  
Cleveland Heights, OH

Ann Williams, MD  
Cleveland Heights, OH

Chadwick Wright, MD  
Lewis Center, OH

### **OKLAHOMA**

G. Edward Shissler, MD  
Edmond, OK

### **OREGON**

Stephen Bachhuber, MD  
Happy Valley, OR

Nicholas De Morgan, MD  
Portland, OR

Martin Donohoe, MD  
Lake Oswego, OR

Sandra K. Joos  
Portland, OR

Nancy Loeb, MD  
Portland, OR

Jenny Pompilio, MD  
Portland, OR

Berklee Robins, MD  
Lake Oswego, OR

**Health Professionals' Open Letter to Policy Makers  
in Support of the Clean Air Act  
and the Environmental Protection Agency**

Irene Saikevych, MD  
Talent, OR

Catherine Thomasson, MD  
Corvallis, OR

**PENNSYLVANIA**

Nicholas Abend, MD  
Philadelphia, PA

Jeffrey Bedrick, MD  
Newtown Square, PA

Cheryl Bettigole, MD  
Philadelphia, PA

Lisa Evans, MD  
Philadelphia, PA

Arthur Frank, MD, PhD  
Philadelphia, PA

Bernard D. Goldstein, MD  
Pittsburgh, PA

George Leikauf, PhD  
Pittsburgh, PA

Felicia Lewis, MD  
Philadelphia, PA

Walter Margie, MD  
Bethlehem, PA

Dora Martinez-Armstrong, RN  
Philadelphia, PA

Mark Mishkin, MD  
Philadelphia, PA

Marvin Rosenthal, MD  
Easton, PA

Michael Rusli, MD  
Hummelstown, PA

Walter Veres, MD, MPH  
Philadelphia, PA

D. Sandra Whipple, MD  
Merion Station, PA

**RHODE ISLAND**

Polly Walker, MD, MPH  
Rumford, RI

**SOUTH CAROLINA**

Cynthia Schandl, MD, PhD  
Charleston, SC

**SOUTH DAKOTA**

John Whitney, MD  
Rapid City, SD

**TENNESSEE**

David Head, MD  
Nashville, TN

Linda Head, RN  
Nashville, TN

F. Menking, MD  
Nashville, TN

Joan Mitchell, RN, MPH  
Hermitage, TN

David N. Orth, MD  
Nashville, TN

Dow Strader, MD  
Bristol, TN

**TEXAS**

John Calomeni, MD  
Lajitas, TX

Adelita Cantu  
San Antonio, TX

Miguel Fernández, MD  
San Antonio, TX

Ronald Fisher, MD  
Houston, TX

Diane Graves, MPH  
Austin, TX

Paul Mayer, MD  
Livingston, TX

Lynnette Mazur, MD, MPH  
Houston, TX

Celeste Monforton, DrPH, MPH  
San Marcos, TX

Marian Morris, MD, MPH  
Austin, TX

Arnold Schecter, MD, MPH  
Dallas, TX

Carolina Young-Ortiz, MD  
Houston, TX

**UTAH**

Sherman Bloom, MD  
Salt Lake City, UT

Cris Cowley, MD  
Cottonwood Heights, UT

Dirk Davis, MD  
Logan, UT

Richard Kanner, MD  
Salt Lake City, UT

Brian Moench, MD  
Salt Lake City, UT

Anthony Musci, MD  
Salt Lake City, UT

Suzanne Stensaas, PhD  
Salt Lake City, UT

**VIRGINIA**

Laura Anderko, PhD, RN  
Annandale, VA

Kenneth Ballew, MD  
Ivy, VA

Virginia Barber, MD  
Crozet, VA

Larry K. Heath, MD  
Broad Run, VA

## Health Professionals' Open Letter to Policy Makers in Support of the Clean Air Act and the Environmental Protection Agency

George Hoke, MD  
Charlottesville, VA

Jacquelyn Lambert-Davis, RN  
Hampton, VA

Irma Mahone, PhD, RN  
Charlottesville, VA

Marcia McDuffie, MD  
Roseland, VA

Mary Picardi, MD  
Virginia Beach, VA

Pellavi Sharma, MPH  
Arlington, VA

Surili Sutaria, MS  
Arlington, VA

David Williams, MD, PhD  
Midlothian, VA

### **WASHINGTON**

John Butler, MD  
Lake Forest Park, WA

Sari Lisa Davison, MD  
Seattle, WA

Jerrold Eichner, MD  
Seattle, WA

Howard Frumkin, MD, MPH\*  
Seattle, WA

Ward Hinds  
Snohomish, WA

Mary Hutchison, NP  
Seattle, WA

Steve Kohl, MD  
Brush Prairie, WA

Jeffrey Paul LaGasse, MD  
Freeland, WA

Ralph Myer, MD  
Seattle, WA

Tracy Ouellette, MD  
Bow, WA

Robert Stagman, MD  
Mercer Island, WA

### **WISCONSIN**

Robert Block, MD  
Madison, WI

Mary Canales, PhD  
Eau Claire, WI

Derek Clevidence, MD  
Cottage Grove, WI

Theresa Guilbert, MD  
Madison, WI

Bruce Krawisz, MD  
Marshfield, WI

Jed Maker, MD  
Milwaukee, WI

Wanda Martinez, MD  
Milwaukee, WI

Dennis Ryan, MD  
La Crosse, WI

Richard Schmelzer, MD  
Madison, WI

Peter Sigmann, MD  
Sturgeon Bay, WI

Joseph Thompson, MD  
Tigerton, WI

Erika Voss, RN  
Wauwatosa, WI

### **WEST VIRGINIA**

Sarah Knox, PhD, MS  
Morgantown, WV

\* denotes convening signer

This letter was compiled by the Union of Concerned Scientists on behalf of the signers.



**Union of Concerned Scientists**  
Citizens and Scientists for Environmental Solutions



1401 New York Ave., N.W., Suite 1225  
Washington, D.C. 20005  
202-595-9302  
[www.asbcouncil.org](http://www.asbcouncil.org)

June 4, 2012

Representative Andy Harris  
506 Cannon HOB  
Washington, DC 20515

Representative Brad Miller  
1127 Longworth HOB  
Washington, D.C. 20515

Dear Representatives Harris and Miller,

I am writing with regard to the hearings being held by the Subcommittee on Energy and Environment this week to review EPA's impact on jobs and energy affordability.

The organization I represent, American Sustainable Business Council, is a national network representing more than 150,000 small businesses nationwide. Our members oppose the call by the U.S. Chamber and others for the widespread dismantlement of federal regulations. They believe that a balanced approach to regulation is good for their business and good for the economy as a whole.

Recently we conducted a scientific poll of a random sample of 500 small business owners across the country, to measure their views on regulation and other issues. The poll was designed and conducted jointly with two other national small business groups, Main Street Alliance and Small Business Majority. A summary of the results is attached. The key points relative to this discussion are as follows:

- **Small business owners support clean energy policies.** 79% support regulations for clean air and water in their communities. 61% support standards that move the country toward energy efficiency and clean energy.
- **Small business owners believe some regulations are needed to level the playing field with big business.** 78% said some regulations are important to protect small business from unfair competition. 94% believe enforcement should be at least as tough on big business as on small.

- **Small businesses understand the need for regulations, as long as they are designed and implemented intelligently.** 86% of small business owners agree some regulation of business is necessary for a modern economy, and 93% of them agree their business can live with some regulation if it is fair, manageable and reasonable.

It is important to take an objective and balanced view of regulations. Every regulation that restricts a harmful practice and eliminates jobs associated with that practice also opens the way for entrepreneurs and innovators who offer better, cleaner, safer alternatives. To cite a time-tested example, when lead was phased out of gasoline, this created demand for catalytic converters which created more and better jobs in the automobile industry than those which were lost when lead was banned. Similarly, air bags led to the development of good jobs and the development of sophisticated, high-margin sensor technology.

Regulations reward the best and most innovative companies in our economy. The Clean Water Act hurt some chemical companies but it helped others. The leaders renovated their plants to adopt new, more efficient process technology, while the laggards bolted on scrubbers and other cleaning equipment to old, inefficient plans. As a result, the leaders ended up with plants that could produce a better, more pure product, which they could sell at a premium. In addition, their new plants used less energy and raw material per unit of output, resulting in lower costs and higher profits.

Sensible regulations can promote economic growth and development, even as they safeguard our well-being. We urge the subcommittee to consider both sides of the issue.

Sincerely,

A handwritten signature in black ink, appearing to read "David Brodwin". The signature is fluid and cursive, with a long horizontal stroke at the end.

David Brodwin  
Co-founder  
American Sustainable Business Council

## Statements in Support of the EPA's Historic Carbon Pollution Standards

Center for American Progress	
Clean Air Council	American Lung Association
Clean Water Action	American Public Health Association
Climate Reality Project	Healthcare Without Harm
Climate Solutions	Blue-Green Alliance
Earth Day Network	CERES
Earthjustice	E2, ASBC, Main Street Alliance
Environment America	Small Business Majority
Environmental Defense Fund	Clean Energy Group
Green For All	PSEG
League of Conservation Voters	
League of Women Voters	Evangelical Environmental Network
National Audubon Society	Religious Action Center
National Wildlife Federation	Catholics United
Natural Resources Defense Council	Interfaith Power and Light
Operation Free	
Sierra Club	Connecticut DEEP Commissioner
Union of Concerned Scientists	Attorney General Eric T. Schneiderman
Voce Verdes, Presente, National Hispanic	NYS Department of Environmental
Medical Association	Conservation Commissioner Joe Marten
World Resources Institute	Former CO Governor Bill Ritter, Jr

## Statements in Support of the EPA's Historic Carbon Pollution Standards

Center for American Progress

**STATEMENT: CAP on the EPA's Proposed Carbon Pollution Standard for New Power Plants**

March 27, 2012

Contact: Christina DiPasquale, : 202.481.8181, [cdipasquale@americanprogress.org](mailto:cdipasquale@americanprogress.org)

Washington, D.C. — Today the Center for American Progress released the following statement on the Environmental Protection Agency's proposal to implement the first carbon pollution standard for new power plants:

The [Environmental Protection Agency's](#) carbon dioxide pollution reduction proposal for new power plants would finally limit harmful climate change emissions from the largest source in America.

Given its clear benefits, it is of little surprise that initial supporters of this proposal include the [American Lung Association](#), [PSEG utility](#), [Catholics United](#), and [tens of thousands of small businesses](#).

Once finalized, the "new source performance standard" for new power plants will ensure that utilities begin to employ more efficient, cleaner power generation systems. Although coal will continue to generate electricity in existing plants, it is clear that future electricity generation will rely more on new technologies, including wind, solar, and other renewable sources. The proposed rule will further expand the market for such carbon-pollution-free electricity generation, which had already been growing steadily because of sharp declines in cost.

The EPA's proposal provides regulatory certainty for utilities so they can plan their future investments in electricity generation. Like other pollution reduction rules, it should drive investment in innovative technologies that protect public health by reducing pollution, and create jobs from the development and manufacturing of cleaner, more efficient technologies.

With growing evidence that the serious impacts of climate change are already here, President Barack Obama deserves credit for this new standard. **We urge the EPA to promptly adopt and implement these new pollution reduction standards for power plants.**

This is the third major executive action launched by President Obama to reduce carbon pollution. The first two were vehicle tailpipe standards that will eliminate 6 billion metric tons of carbon dioxide pollution.

To speak with CAP experts, please contact Christina DiPasquale at 202.481.8181 or [cdipasquale@americanprogress.org](mailto:cdipasquale@americanprogress.org).

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## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

### **Clean Air Council**

FOR IMMEDIATE RELEASE: March 27, 2012

CONTACT: Katie Feeney, Clean Air Council

215-567-4004 x 112, [kfeeney@cleanair.org](mailto:kfeeney@cleanair.org)

**Clean Air Council Applauds First Ever Standards to Limit Industrial Carbon Pollution**  
*In response to today's announcement from the U.S Environmental Protection Agency (EPA), Clean Air Council Executive Director Joseph O. Minott, Esq. issued [the following statement](#):*

"The Council applauds today's announcement from the U.S. Environmental Protection Agency (EPA) to establish the first national standards to limit carbon pollution from new power plants. Every year in America, power plants dump more than two billion tons of dangerous carbon pollution and other pollutants into the air. This new standard announced by EPA is a necessary step forward to protect public health, particularly children's health, from the harmful effects of climate change, including air pollution."

"Children and seniors are particularly susceptible to the dangers of air pollution. EPA's new standards for industrial carbon pollution from power plants will help protect our children and families and public health from dangerous air pollution by limiting the health-harming effects of climate change. Health experts say that carbon pollution is particularly dangerous for children because it makes smog pollution worse, which triggers asthma attacks and permanently damages and reduces the function of children's lungs."

###

### **Clean Water Action**

#### **Power Plant Rules a landmark proposal to protect the air we breathe**

Clean Water Action welcomes the U.S. Environmental Protection Agency (EPA) [proposal for controlling carbon pollution](#) from new and modified power plants. "EPA is taking common sense steps to protect people from air pollution and climate change and to lead the way to a clean energy future," said Clean Water Campaigns Director, Lynn Thorp.

[Download and share our statement](#) and read [Lynn's thoughts on We All Live Downstream](#).

The greenhouse gas emissions limits for new and modified power plants have been issued under the Clean Air Act's New Source Performance Standards program, which controls hazardous air pollution from industrial sources. EPA proposed these new limits based on a finding that the climate change caused by industrial carbon pollution endangers human health. Increased asthma attacks and respiratory and cardiovascular illnesses are caused by air pollutants like soot and are only some of the negative effects of industrial carbon pollution.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

While the rule is a big step toward a healthier future, the new pollution limits already face opposition in the U.S. House of Representatives. "Clean Water Action will be holding elected officials accountable if they oppose programs that prevent dangerous illness in our most vulnerable people – children, the elderly and other most susceptible to air pollutants – and that protect our water and other resources from the potentially devastating impacts of climate change," said President and CEO, Bob Wendelgass

###

### **Climate Reality Project**

#### **STATEMENT ON EPA'S PROPOSED CARBON POLLUTION STANDARDS**

FOR IMMEDIATE RELEASE: March 27, 2012

CONTACT: Jason Miner, 202-337-0808, jminer@gloverparkgroup.com

Maggie L. Fox, President and CEO of The Climate Reality Project issued the following statement in response to EPA's proposed carbon pollution standards:

"The coal industry has spent hundreds of millions of dollars telling the American people that coal is "clean." If that's true, then the industry will welcome these new rules. But we are more likely to hear the same old tired and false claims denying the reality that coal is dirty and that burning it is a major cause of the climate crisis. As the record-breaking temperatures we're experiencing this month all over the United States and Canada make clear, it's past time for bold solutions. The coal industry must either clean up its act, or make way for cheaper, cleaner ways to power our country."

###

### **Climate Solutions**

At the end of the day, climate policy boils down to a simple question: will we put responsible limits on the pollution that causes climate disruption? When we do, we unleash unlimited potential to innovate, invest, and build a new, more secure energy economy. And UNTIL we do, we're fumbling our most important responsibility – securing a healthy future for our kids.

Today, the Environmental Protection Agency and the Obama administration answered the call, releasing a proposal to limit industrial carbon pollution from new power plants. The proposal builds on successful laws in California, Oregon, and Washington that prevent the construction of conventional new coal plants and catalyze the transition from coal to clean energy.

The days of free, unlimited carbon dumping are coming to a close, and not a minute too soon. These pollution limits form the core of any sound, efficient policy framework for addressing climate change. More importantly, they tell an essential truth that we've been sweeping under the rug for too long: a future of unlimited carbon pollution and disruptive climate change is not good enough for our kids. We'll build something better.

If we mean it, there's much more to come.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

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### **Earth Day Network**

FOR IMMEDIATE RELEASE:

March 27, 2012

Contact: Bryan Buchanan (202) 518-0044 x 14, [buchanan@earthday.org](mailto:buchanan@earthday.org)

### **Obama's Move to Limit Power Plant Emissions is a Breath of Fresh Air**

*Statement of Kathleen Rogers, President, Earth Day Network*

Earth Day Network applauds the EPA and Obama administration for taking a strong step forward in their commitment to clean air and the protection of the health of Americans. The Carbon Pollution Standard for New Power Plants is literally a breath of fresh air.

Never before have there been national limits on carbon pollution from future power plants, and these new standards will further the goal of creating a cleaner environment and safer energy sector.

Since 2009, greenhouse gas pollution has been officially designated as a threat to human health and the environment, and this new standard will help to limit exposure to this harmful pollutant, which has been shown to lead to long-lasting climate changes. These climate changes would be particularly detrimental to the elderly, children, and those with heart and respiratory problems. Now, any power plants built after 12 months from the issuance of this rule will be required to meet these standards, which are flexible, achievable and in line with the already-emerging trends in the energy sector.

This commitment to clean air and the reduction of greenhouse gas pollution will ensure that Americans and their children will be able to breathe easy in the future.

###

### **Earthjustice**

March 27, 2012

Contact: Raviya Ismail, Earthjustice, (202) 745-5221, [rismail@earthjustice.org](mailto:rismail@earthjustice.org)

### **EPA Proposes Landmark Standards to Curb Industrial Carbon Pollution from New Coal-Fired Power Plants**

*Strong step forward to protect the public*

**Washington, D.C.** — Today the U.S. Environmental Protection Agency proposed new standards that will limit industrial carbon pollution from new coal-fired power plants. The following statement is from Earthjustice President Trip Van Noppen:

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

"The Environmental Protection Agency is proposing precedent-setting standards to limit industrial carbon pollution from new coal-fired power plants, a strong step that will protect the health and welfare of Americans and fight global warming.

"The coal industry has long protested such standards, refusing to modernize and resisting newer technologies. EPA's proposal will not only provide public health benefits, but also should spark innovation.

"Scientists recognize the strong link between burning fossil fuels like coal and global warming. Doctors, nurses and other health experts have long linked rising temperatures to increased smog that in turn causes more asthma and other lung diseases.

"We applaud President Obama and EPA Administrator Jackson for proposing these landmark standards to address pollution from new plants that will save lives in the future. We urge the administration to also begin the process of developing new standards to address carbon pollution from existing coal plants."

###

### **Environment America**

For Immediate Release  
Tuesday, March 27, 2012

#### **[Obama Administration to Protect Americans' Health by Setting Carbon Pollution Standards for New Power Plants](#)**

The U.S. Environmental Protection Agency (EPA) today proposed historic new limits on carbon pollution from new power plants. Carbon pollution fuels global warming, which leads to poor air quality that triggers asthma attacks and other respiratory problems. Scientists also predict that global warming will lead to more devastating floods, more deadly heat waves and the spread of infectious diseases. Coal-fired power plants are the largest single source of carbon pollution in the U.S., yet there are currently no federal limits on this pollution from power plants. The standard proposed today will correct that for new power plants by limiting their emissions of carbon pollution.

Nathan Willcox, Environment America's Federal Global Warming Program Director issued the following statement in response to today's announcement:

"Today's proposal from the Obama administration is an historic step in protecting Americans' health and our environment. By setting the first-ever standards for the largest source of the carbon pollution that fuels global warming, President Obama and EPA Administrator Jackson are standing up for Americans—and putting our health above the demands of the polluter lobby.

"Along with the steps being taken to cut other dangerous power plant pollutants such as soot, smog, mercury and other toxic pollutants and the new standards for fuel efficiency, these carbon pollution

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

standards will mark historic progress in protecting our health, reducing waste, and encouraging job creating innovation in the clean energy economy.

"Americans understand the value of clean air, and while the polluter lobby can be expected to trot out the same tired attacks and tactics, they won't stop the progress and they will have to clean up their act.

"Now that standards have been proposed, we look forward to demonstrating the strong public support for clean air and healthy families, and to making sure that the proposed standards are finalized later this year. We also look forward to working with Administrator Jackson and EPA to address carbon pollution from existing power plants. The health and safety of current and future generations depends on us tackling this problem."

###

### **Environmental Defense Fund**

#### **EDF applauds historic clean air standards for power plants**

Proposed limits on carbon pollution will protect Americans' health and strengthen economy

Contacts: Sharyn Stein, 202-572-3396, [sstein@edf.org](mailto:sstein@edf.org) or Megan Ceronsky, 202-650-2277, [mceronsky@edf.org](mailto:mceronsky@edf.org)

(Washington, DC – March 27, 2012) Environmental Defense Fund (EDF) is giving a "standing ovation" to today's announcement of clean air standards for fossil fuel power plants, the single largest source of carbon pollution in the nation.

"EPA deserves a standing ovation for today's historic action to protect Americans' health, strengthen our economy, and address the clear and present danger of carbon pollution," said EDF President [Fred Krupp](#). "The bottom line for our nation is that cleaner power will cut harmful carbon pollution, protect our children from dangerous smog and other serious climate impacts, and help secure a safe and prosperous future."

The U.S. Environmental Protection Agency's (EPA) proposed standards would establish the first nationwide limits on climate-destabilizing pollution from new power plants, essentially halving the emission rate for new coal plants relative to uncontrolled levels. EPA's new standards are similar to clean air standards [adopted in a number of states \[PDF\]](#).

U.S. [power plants emit about 40% of the carbon pollution \[PDF\]](#) in the United States and are one of the largest greenhouse gas emission sources in the world. They are responsible for 2.3 billion tons of heat-trapping carbon dioxide pollution annually, far exceeding other pollution sources.

EPA recently released [national greenhouse gas emissions data](#) identifying the largest emission sources in the U.S.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

A wide variety of solutions are available today to meet the proposed standards, including more efficient use of existing electricity resources, electricity powered by the wind and the sun, highly efficient natural gas plants, and coal plants that permanently capture and store carbon pollution.

Today's proposal will provide power companies with the certainty they need to invest now-sidelined resources in cleaner, safer and more efficient solutions to meet U.S. electricity needs – creating jobs in the process.

Research by the [U.S. Global Change Research Program](#) indicates that continued emissions of carbon pollution and other heat-trapping gases are very likely to cause increasingly grim impacts on American communities, including:

- Rising levels of ground-level ozone pollution – commonly known as smog -- which causes an increased risk of respiratory infections, more asthma attacks, and more premature deaths
- An increase in the number and severity of heat waves, and an increased risk of illness and death from extreme heat
- More intense rainstorms, hurricanes, and storm surges
- More wildfires and increasingly frequent and severe droughts
- Increases in insect pests and in the prevalence of diseases transmitted by food, water, and insects

EPA's proposal was required under a [Settlement Agreement](#) with EDF, NRDC, Sierra Club and numerous states including New York, California, Connecticut, Delaware, Maine, New Mexico, Oregon, Rhode Island, Vermont, and Washington, the Commonwealth of Massachusetts, the District of Columbia, and the City of New York.

The new standards follow the lead of [states across the country \[PDF\]](#) that have established or are developing limits on the carbon pollution from new power plants, including Oregon, Washington, California, Montana, Minnesota, and New York.

You can read more about the [importance of the new standards \[PDF\]](#) and see more about the [effects of climate change](#) on EDF's website.

###

**Fresh Energy**

**[New EPA carbon pollution standard benefits public health, the economy, the planet](#)**

POSTED 03.28.2012 BY [J. DRAKE HAMILTON](#)

## **Statements in Support of the EPA’s Historic Carbon Pollution Standards**

After many delays, the [U.S. Environmental Protection Agency](#) (EPA) on March 27 proposed the first [Clean Air Act](#) standard for carbon pollution from new power plants. In her announcement, EPA Administrator Lisa P. Jackson stated, “Right now there are no limits to the amount of carbon pollution that future power plants will be able to put into our skies—and the health and economic threats of a changing climate continue to grow. We’re putting in place a standard that relies on the use of clean, American made technology to tackle a challenge that we can’t leave to our kids and grandkids.”

### **FIRST-EVER FEDERAL LIMIT ON CARBON POLLUTION**

Never before has the U.S. set nationwide limits on the amount of carbon pollution a power plant can emit. The EPA in 2009 determined that greenhouse gas pollution threatens Americans’ health and welfare by leading to long lasting changes in our climate that can have a range of negative effects on human health and the environment. The American Lung Association has concluded that climate change is particularly detrimental to the elderly, children, and people with heart and respiratory problems. The new standard will help limit this dangerous pollutant.

The proposed standards will provide power companies with the certainty they need to invest in cleaner, safer, and more efficient solutions to meet U.S. electricity needs like efficiency, wind power, and solar energy.

###

### **Green for All**

FOR IMMEDIATE RELEASE

#### **Statement from Green For All on New Carbon Pollution Standard**

**Mar 27, 2012**

**Oakland, CA** – Green For All CEO Phaedra Ellis-Lamkins today issued the following statement in response to the Environmental Protection Agency’s decision to cut dangerous carbon pollution from new power plants.

“It’s been 40 years since the passage of the Clean Air Act, yet many power plants have continued to emit unlimited amounts of pollution into the air. Today, we are proud to stand by the Obama Administration and the Environmental Protection Agency’s lifesaving decision to stand up for the countless numbers of people who suffer severe health issues due to dangerous carbon pollution.

Each year coal-powered power plants throughout our country pump more than two billion tons of carbon dioxide into our air. This new rule will help protect our health, encourage innovation and create jobs. The magnitude of the health benefits from this decision will one day be measured in the prevention of hundreds of thousands of cases of childhood asthma symptoms, and staggering health costs.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

We applaud this decision which could be one of the biggest public health and environmental accomplishments of President Obama's administration."

###

### **League of Conservation Voters**

27 Mar 2012 | Lea Brumfield

Earlier today, the [Obama administration proposed historic new standards](#) that would – for the first time ever – limit the industrial carbon pollution from power plants that contributes to global warming.

The EPA's new clean air safeguards will help improve the quality of our air and protect our children's health, while also helping to spark new innovations in clean energy technologies.

LCV President Gene Karpinski released the following [statement](#) on the new standards for industrial carbon pollution:

"Today is a historic day for public health and the environment. The EPA's first-ever national standards for industrial carbon pollution from power plants that contribute to global warming will protect public health, spur innovation in clean technologies and hold polluters accountable. We strongly commend the Obama administration for continuing to prioritize strong clean air safeguards that will protect the health of our children today and protect the planet for generations to come."

Before the EPA can finalize these new standards, they are accepting comments from the general public.

[Will you take a minute to express your strong support for these historic new clean air standards?](#)

###

### **League of Women Voters**

FOR IMMEDIATE RELEASE Contact: Kelly Ceballos

March 27, 2012 202-263-1331

kceballos@lww.org

#### **League Praises Decision to Continue to Put People Before Polluters**

**Washington, DC** – League of Women Voters national President, Elisabeth MacNamara issued the following statement regarding the Obama Administration's new rules, released earlier today, regulating carbon emissions for future power plants. "EPA's action on new fossil-fuel power plants is a necessary and long-delayed first step in controlling the carbon pollution that is harming our health," she said. "EPA and the Administration deserve credit for taking this important step. Carbon pollution's biggest contributor comes from power plants in the United States," added MacNamara. This rule ensures that there is a uniform national limit on the amount of carbon emissions that new power plants will emit,

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

and falls in line with steps that states across the U.S. and industry officials are already working to implement.

"Today the EPA took an historic step towards protecting our children and the environment," MacNamara said. "As with the Cross State Air Regulations and the Mercury and Air Toxics Standards, the Obama Administration continues to show their commitment to put people before polluters. The League looks forward to encouraging the public to participate by adding their comments on this historic standard, and to the Administration issuing additional standards for existing dirty coal plants in the future," concluded MacNamara.

###

### **National Audubon Society**

#### **Audubon's Mike Daulton Comments on EPA's Historic Rules Limiting Carbon Pollution** ***"EPA has hit a home run for the planet"***

Published: Mar 27, 2012

Washington, D.C. -

"The EPA has hit a home run for the planet. The Obama administration's new air pollution standards announced today are essential for limiting global carbon pollution that is already endangering the health of our children and families, as well as wildlife and the natural world.

"The warning signs are clear. Audubon scientists have proven warming trends driven by carbon pollution have already disrupted bird migration patterns across the country. Nearly 60 percent of the 305 species found in winter across North America are shifting their ranges northward by an average of 35 miles. Like canaries in the coal mine, these birds are showing us that our shared environment is in peril.

"Audubon strongly supports EPA's historic, first-ever rules to limit harmful carbon pollution from power plants. This is a great step forward toward a clean energy future."

Background: EPA Proposes Historic Limits to Industrial Carbon Pollution WaPo  
[http://www.washingtonpost.com/national/health-science/epa-to-impose-first-greenhouse-gas-limits-on-power-plants/2012/03/26/gIQAIJTscS\\_story.html](http://www.washingtonpost.com/national/health-science/epa-to-impose-first-greenhouse-gas-limits-on-power-plants/2012/03/26/gIQAIJTscS_story.html)

###

### **National Wildlife Federation:**

#### **EPA Proposes Historic Limits to Industrial Carbon Pollution**

Washington, DC (March 27, 2012) – Today the U.S. Environmental Protection Agency (EPA) announced the first-ever national carbon pollution limits for new power plant smokestacks. These long-awaited new air pollution standards are essential for reining in the climate change-causing carbon pollution that is

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

increasingly endangering the nation's public health and wildlife. The new air pollution standards are the result of a [2007 Supreme Court ruling](#) that found carbon dioxide and other air pollution from cars, power plants, and other sources is subject to the Clean Air Act. Despite that ruling and a subsequent 2011 Supreme Court ruling reinforcing the decision, it is expected that a number of big polluting utilities and coal interests will fight the standard.

[Joe Mendelson](#), initiator and co-counsel in the 2007 Supreme Court case and NWF climate and energy policy director, said:

"This is a milestone in the fight to rein in climate change that seriously threatens people and wildlife. Species extinctions, worsening air quality, and extreme weather are impacting our families, property, and conservation heritage.

"The Obama Administration is the first White House to turn the tide on carbon pollution. Today's action is much needed and grounded in sound science. It will draw a groundswell of support in the months ahead.

"In proposing to put strict limits on industrial carbon pollution from new power plants, the EPA is taking a big step toward protecting the world our children will inherit and unlocking a future of low-polluting, climate-friendly and affordable electricity."

###

### **Natural Resources Defense Council**

FOR IMMEDIATE RELEASE

Press contact: Suzanne Struglinski, [sstruglinski@nrdc.org](mailto:sstruglinski@nrdc.org), 202-289-2387;

Elizabeth Heyd, [eheyd@nrdc.org](mailto:eheyd@nrdc.org), 202-289-2424

### **New Carbon Pollution Standard is Good for Our Health, Our Economy and Our Planet NRDC Hails "Historic, Win-Win-Win Proposition"**

WASHINGTON (March 27, 2012) – The following is a statement from Frances Beinecke, president of Natural Resources Defense Council, on the industrial carbon pollution standard proposed by the Obama administration.

"This historic step is a win-win-win proposition.

"It's good for our health because it's a critical step toward protecting the most vulnerable among us—including the elderly and our children—from smog worsened by carbon-fueled climate change.

"It's good for our economy because it will lead to cleaner, more modern, more efficient power plants.

"It's good for our planet because it will help head off the catastrophic effects of climate change.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

"This Environmental Protection Agency action means any new coal plants built in America must use modern, state-of-the-art carbon pollution controls."

"The logical next step is to improve the aging fleet of existing coal-fired power plants, which remain the major source of industrial carbon pollution in our country."

Please see Frances Beinecke's blog about this historic

proposal:[http://switchboard.nrdc.org/blogs/fbeinecke/new\\_limits\\_on\\_carbon\\_pollution.html](http://switchboard.nrdc.org/blogs/fbeinecke/new_limits_on_carbon_pollution.html)

and this blog by NRDC's Climate and Clean Air Program Policy Director David

Doniger:[http://switchboard.nrdc.org/blogs/ddoniger/cleaner\\_power\\_starts\\_today\\_epa.html](http://switchboard.nrdc.org/blogs/ddoniger/cleaner_power_starts_today_epa.html)

Please also see NRDC's new web page: "A Step in the Right Direction for Clean Air"

<http://www.nrdc.org/air/carbon-emissions/default.asp>

###

### **Operation Free**

Secure America with Clean Energy

FOR IMMEDIATE RELEASE

March 27, 2012

CONTACT: Benjamin Lowe, [\(607\) 280-5693](tel:6072805693) [ben@trumanproject.org](mailto:ben@trumanproject.org)

### **Military Leaders: Congress Should Let DoD Continue to Lead on Clean Energy** *Operation Free Campaign Applauds EPA, DoD on Working to Keep America Safe*

In response to a hearing held today by the Senate Committee on Environment and Public Works, Operation Free campaign manager Lauren Wolfe released the following statement:

"Operation Free is proud to join security leaders of both parties in recognizing that America's reliance on oil is a serious threat to our national security. The Department of Defense and Environmental Protection Agency are leading the fight to develop and demonstrate sustainable technologies. We applaud their efforts to share knowledge and expertise.

"It makes complete sense that, for the sake of our security, the EPA and the Pentagon would work hand in hand. America's oil dependence leaves us dangerously vulnerable. America sends over \$1 billion per day overseas for oil. Our voracious demand for this single source of fuel ensures high oil prices in a global market, draining our economy and enabling our enemies. Every time the price of a barrel of oil goes up five dollars, Iran makes an additional \$7.9 billion annually.

"The military is demonstrating clear leadership in developing energy solutions. The rest of government must follow the military's example by taking bold action, such as the new EPA CAFE standards that will strengthen car and light truck mileage to 54.5 miles per gallon standard by 2025, and the first national limits on carbon emissions from new electric plants. Agreements like the Memorandum of Understanding recently signed by DoD and the EPA ensure that the energy we rely on will be generated more securely, and used more efficiently.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

“We must secure America with clean energy. Our civilian leaders must move past partisan politics and match the military’s commitment to clean energy. We call on Congress to support every effort to develop clean, secure, domestic sources of energy for the sake of the security of the United States of America.”

Learn more at [www.OperationFree.net](http://www.OperationFree.net). Operation Free is an advocacy campaign of the [Truman National Security Project](#).

###

### **Sierra Club**

FOR IMMEDIATE RELEASE:

March 27, 2012

Contact: Maggie Kao, 202-675-2384

### **Sierra Club Applauds Protections for Dangerous Carbon Pollution** *Standards Would Protect Public Health from Dangerous Carbon*

Washington, D.C. – Today the Obama Administration issued draft language to establish the first-ever carbon pollution protections for new power plants. Carbon pollution is the main contributor to climate disruption and is linked to life-threatening air pollution like smog – which triggers asthma attacks – making it a serious hazard to Americans’ health and future. Once finalized, these protections will ensure that new power plants will meet public health standards and protect Americans from dangerous pollution.

#### **In response, Michael Brune, Executive Director of the Sierra Club, issued the following statement:**

“The Sierra Club applauds President Obama and EPA Administrator Lisa Jackson’s announcement today to establish new safeguards under the Clean Air Act to protect Americans from dangerous carbon pollution. Their action today follows the actions of thousands of families and activists over the last several years to prevent 166 dirty coal plants from polluting their communities, air and water.

“These first-ever carbon pollution standards for new power plants mean that business as usual for the nation’s biggest sources of carbon pollution, dirty coal-burning utilities, is over. Cleaning up dangerous carbon pollution from new power plants and modernizing the way we power our nation will help secure Americans’ health and future, and prevent against life-threatening air pollutants like dirty soot, toxic mercury and smog.

“Most of all, these carbon pollution protections mark the end of an era for antiquated, dirty coal plants and continue the momentum behind clean energy to ensure healthier kids, families and workers, as well as much-needed job creation and a more secure climate future.”

###

## Statements in Support of the EPA’s Historic Carbon Pollution Standards

### **Union of Concerned Scientists**

#### **EPA Proposes First-Ever Carbon Standards for New Power Plants**

Statement by Kevin Knobloch, President, Union of Concerned Scientists

WASHINGTON (March 27, 2012)—The Environmental Protection Agency (EPA) today will release proposed standards to limit carbon emissions from new power plants, according to press reports.

Rachel Cleetus, a climate economist at the Union of Concerned Scientists (UCS) will [post updates on the rules throughout the day on her blog](#).

Below is a statement by UCS president Kevin Knobloch:

“The EPA is taking a historic step to trim carbon emissions and help create a cleaner, healthier and more modern energy future. The administration is taking prudent action to address the dangers of unchecked climate change that an overwhelming majority of scientists have been warning us about for years.

“Carbon emissions alter our climate and harm Americans’ health. Fortunately, we have the technology to reduce them. Turning on more renewable energy can curb our emissions and put innovative technology – and more Americans -- to work.

“This rule, while not perfect, signals that more of our future energy needs will be met by clean, affordable, and reliable sources of energy. At the same time, EPA also must focus on the main source of power plant carbon emissions—existing coal-fired plants, many of them more than 50 years old, which are responsible for nearly 40 percent of U.S. carbon emissions.

“While much more needs to be done to truly address the challenge of climate change, the EPA’s actions today are another welcome step.”

###

### **Voces Verdes, Presente, National Hispanic Medical Association**

Contact: Monica Cevallos, Dewey Square (202) 772-0461

FOR IMMEDIATE RELEASE

**Latinos Can “Breathe Easier” Thanks to EPA’s Proposed Carbon Pollution Standard**  
Hispanic Organizations and Citizens Express Support for New Safeguards that Will Hold Industrial Polluters Accountable and Help Protect the Communities’ Health

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

*San Francisco, CA* (March 27, 2012) – Today, Voces Verdes, Presente, the National Hispanic Medical Association, their allies and members applauded the Environmental Protection Agency's and Obama Administration's release of a proposal to limit industrial carbon pollution from new power plants, which is critical to protecting public health.

“Power plants release more than two billion tons of dangerous carbon pollution and other pollutants into the air every year. This new standard announced by the Obama Administration and the EPA will establish the first national limits on carbon pollution from new power plants and move our country forward toward protecting public health, particularly children's health, from the harmful effects of climate change, including air pollution,” said Dr. Elena Rios, President of the National Hispanic Medical Association (NHMA). “As doctors, nurses, and health professionals, we know that carbon pollution is particularly dangerous for children because it makes smog pollution worse, which triggers asthma attacks and permanently damages and reduces the function of children's lungs.”

Latino organizations are showing their support for the new carbon rules recognizing that EPA is doing its job under the Clean Air Act -- and holding power plants accountable for the amount of pollution they spew into the air.

In addition to strictly limiting industrial carbon pollution and protecting public health, many say these new standards will also spark innovation in clean technologies and create clean energy jobs here in America.

“This new rule to limit industrial carbon pollution from power plants, like the recently issued clean car standards, will cut carbon pollution and will help spur innovation and create jobs,” says Guillermo Garcia of Voces Verdes. “In both of these cases, the new technologies necessary to make reductions in harmful carbon pollution will encourage innovation leading to clean technology manufacturing jobs.”

“As the nation's largest online Latino advocacy group, Presente is very pleased that EPA has announced these new standards to protect our health by limiting carbon pollution that causes global warming,” said Arturo Carmona, Executive Director of Presente. “This is a critical issue for Latino communities who will feel the impacts of climate change closely and directly whether from worsening smog, harsher summers, or worsening drought.” Carmona added, “Presente will be active in bringing Latino voices to weigh in on the importance of this standard in the weeks to come.”

Read online at: <http://www.vocesverdes.org/index.html>

###

## Statements in Support of the EPA's Historic Carbon Pollution Standards

### **World Resources Institute:**

STATEMENT: EPA Proposes First-Ever Standards to Limit Greenhouse Gas Emissions for Power Plants  
March 27, 2012

Location: WASHINGTON, D.C.

Tags: [climate change](#) [climate legislation](#) [EPA](#) [power plants](#) [united states](#) [policy](#)

**The U.S. Environmental Protection Agency today [introduced standards](#) to limit greenhouse gas emissions for new power plants.** These standards, called New Source Performance Standards, would limit emissions from new power plants to no more than 1,000 pounds of carbon dioxide per megawatt of electricity produced. This action is based the EPA's authority under the Clean Air Act, which was passed with bi-partisan support in Congress and was upheld by the U.S. Supreme Court.

### **Following is a statement by Kevin Kennedy, U.S. Climate Director, World Resources Institute:**

"For the first time, EPA has proposed standards to reduce harmful carbon pollution from power plants. The power sector produces [one-third](#) of U.S. greenhouse gas emissions, and it's critical to reduce these emissions if we're going to prevent the worst impacts of climate change.

"These standards will ensure that any new power plants will be designed to protect people's health and the planet. A quarter of the nation's fossil fuel-based generation capacity is more than 40 years old, and many plants are approaching retirement. Any plants built today would likely be standing in 2050 and beyond, making strong rules for new plants an important part of the picture.

"We commend EPA for this step to advance the Administration's commitment to reduce U.S. emissions by [17 percent](#) below 2005 levels by 2020. Today's announcement follows the Administration's introduction of [historic standards](#) for light-duty vehicles in November 2011.

"Moving forward, it will be important for EPA to address carbon emissions for existing power plants as well. Existing plants represent a significant opportunity to improve efficiency and reduce U.S. greenhouse gas emissions. We can achieve these reductions at low cost while providing power plants flexibility in complying with them."

###

### **American Lung Association**

[Obama Administration to Protect Americans' Health by Setting Carbon Pollution Standards for New Power Plants](#)

For Immediate Release

Tuesday, March 27, 2012

The U.S. Environmental Protection Agency (EPA) today proposed historic new limits on carbon pollution from new power plants. Carbon pollution fuels global warming, which leads to poor air quality that

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

triggers asthma attacks and other respiratory problems. Scientists also predict that global warming will lead to more devastating floods, more deadly heat waves and the spread of infectious diseases. Coal-fired power plants are the largest single source of carbon pollution in the U.S., yet there are currently no federal limits on this pollution from power plants. The standard proposed today will correct that for new power plants by limiting their emissions of carbon pollution.

Nathan Willcox, Environment America's Federal Global Warming Program Director issued the following statement in response to today's announcement:

"Today's proposal from the Obama administration is an historic step in protecting Americans' health and our environment. By setting the first-ever standards for the largest source of the carbon pollution that fuels global warming, President Obama and EPA Administrator Jackson are standing up for Americans—and putting our health above the demands of the polluter lobby.

"Along with the steps being taken to cut other dangerous power plant pollutants such as soot, smog, mercury and other toxic pollutants and the new standards for fuel efficiency, these carbon pollution standards will mark historic progress in protecting our health, reducing waste, and encouraging job creating innovation in the clean energy economy.

"Americans understand the value of clean air, and while the polluter lobby can be expected to trot out the same tired attacks and tactics, they won't stop the progress and they will have to clean up their act.

"Now that standards have been proposed, we look forward to demonstrating the strong public support for clean air and healthy families, and to making sure that the proposed standards are finalized later this year. We also look forward to working with Administrator Jackson and EPA to address carbon pollution from existing power plants. The health and safety of current and future generations depends on us tackling this problem."

###

### **American Public Health Association**

FOR IMMEDIATE RELEASE

For more information, please contact APHA Communications at (202) 777-2509 or [mediarelations@apha.org](mailto:mediarelations@apha.org).

#### **American Public Health Association cheers new clean air standard for power plants**

*Statement from Georges Benjamin, MD, FACP, FACEP (E), Executive Director*

*Washington, D.C., March 27, 2012* — "The American Public Health Association welcomes a new standard for new power plants released today by the U.S. Environmental Protection Agency that will strengthen the Clean Air Act, reduce carbon pollution and protect public health.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

“Reducing carbon dioxide emissions from power plants — the nation’s single largest source of carbon pollution — will help limit the gases that contribute to climate change, which poses serious, long-term health consequences.

“Climate change and rising temperatures expose more Americans to conditions that result in illness and death due to respiratory illness, heat-related stress and insect-borne diseases. These maladies fall most heavily on our most vulnerable communities, including children, older adults, those with serious health conditions and poor people.

“APHA applauds EPA for issuing this new standard and strengthening public health protections under the Clean Air Act.”

###

### **American Thoracic Society News Release**

For more information, contact:

Nathaniel Dunford

212-315-8620

ndunford@thoracic.org

#### **American Thoracic Society Applauds EPA's Proposed Carbon Pollution standards**

Yesterday, the U.S. Environmental Protection Agency proposed, for the first time, national power plant carbon pollution standards for new power plants.

Nicholas S. Hill, MD, President of the American Thoracic Society, congratulated the EPA for proposing Clean Air Act standards to control carbon pollution for power plants. Dr. Hill stated, “The ATS believes that global climate change is real and likely to have important adverse health effects on human health, including respiratory health.”

Dr. Hill noted that the ATS recently published in the Proceedings of the American Thoracic Society a workshop report: Respiratory Health Effects of Global Climate Change. The workshop report explores the respiratory health effects of global climate change, which include:

- changing pollen releases impacting asthma and allergic rhinitis,
- heat waves causing critical care–related diseases,
- climate-driven air pollution increases exacerbating asthma and chronic obstructive pulmonary disease,
- desertification increasing particulate matter (PM) exposures,
- and climate-related changes in food and water security impacting infectious respiratory disease through malnutrition (pneumonia, upper respiratory infections).

Because of the strength of the existing data from multiple scientific disciplines, trends in weather patterns, sea temperatures and ice measurements around the globe, and the breadth and severity of likely climate-forced human health issues, the ATS takes the following positions:

- 1) The ATS endorses the findings of the 4th Intergovernmental Panel on Climate Change;

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

- 2) The ATS supports research to explore the human health effects of climate change:
- 3) The ATS supports state, federal and international policy coordination to develop adaptive strategies to respond to the predicted human health effects of climate change;
- 4) The ATS encourages Congress and the President to propose and adopt national and international policies to reduce the emissions of greenhouse gasses.

"The EPA's proposed rules are important and timely and we look forward to reviewing them and providing further comment," said Dr. Hill.

About the American Thoracic Society

Founded in 1905, the American Thoracic Society is the world's leading medical association dedicated to advancing pulmonary, critical care, and sleep medicine. The Society's 15,000 members prevent and fight respiratory disease around the globe through research, education, patient care and advocacy.

###

### **Health Care Without Harm**

March 27, 2012, 2:19 p.m. EDT

#### **Health Care Without Harm Praises EPA for Greenhouse Gas Standards GHG Must Be Reined in to Protect Human Health, Cohen States**

WASHINGTON, DC, Mar 27, 2012 (MARKETWIRE via COMTEX) -- Health Care Without Harm praised the Environmental Protection Agency for its first-ever first Clean Air Act standard for carbon pollution from new power plants.

"Greenhouse gases must be reined in to protect human health and reduce health care costs," stated Gary Cohen, President and Founder of Health Care Without Harm. "The United States is in the middle of an epidemic of chronic disease that incurs \$1.3 trillion in health care costs each year. These costs are unsustainable -- and there is now no doubt that greenhouse gases contribute heavily to them."

Greenhouse gases are a major contributor to heat, smog and poor air quality. Smog and small particles contribute to illnesses such as heart disease, lung disease, and asthma. Those more susceptible to heat and smog -- children and the elderly -- are at particular risk.

"We should be passing laws that protect the nation's vulnerable populations," said Cohen. "But the powerful utilities have spent millions to convince Congress to take no action on greenhouse gases to protect the nation's health."

Greenhouse gases are associated with a number of health and climate-related problems worldwide. In the United States, the National Oceanic and Atmospheric Administration has already attributed some tornado outbreaks to climate change, one of the effects of unfettered greenhouse gases. Other climate-related events documented in the U.S. include a rise in the number and intensity of heat waves, and

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

spreading insect vectors that carry disease. As these effects progress, communities will rely more heavily on the health care system to deal with more patients, sicker patients, and new diseases and illnesses not common in this country. It will cost millions for the nation's health system to meet the challenges of climate change, a cost the already financially burdened sector cannot afford.

"We can't allow this issue to be caught up in electoral politics," said Cohen. "Saving lives and improving health has to be high on our nation's agenda. This monumental rule should be seen for the results it is intended to achieve -- improvements in the health of our nation."

HCWH is an international coalition of more than 500 organizations in 53 countries, working to transform the health care industry worldwide, without compromising patient safety or care, so that it is ecologically sustainable and no longer a source of harm to public health and the environment. For more information on HCWH, see [www.noharm.org](http://www.noharm.org).

### **BlueGreen Alliance**

FOR IMMEDIATE RELEASE

CONTACTS: Eric Steen, [erics@bluegreenalliance.org](mailto:erics@bluegreenalliance.org), 612-466-4488

### **BlueGreen Alliance Applauds New Clean Air Protections**

WASHINGTON, D.C. (March 28, 2012) The U.S. Environmental Protection Agency (EPA) issued rules to limit carbon pollution for new power plants, which will protect the environment, reduce greenhouse gas emissions to fight climate change, and spur our economy to innovate, move to cleaner, renewable sources of energy, and become more energy efficient in the years to come. The BlueGreen Alliance released the following statement from Executive Director David Foster:

"The standard announced by the EPA is key to moving America to a cleaner, more efficient economy. Over the last 40 years, safeguards like these have spurred us to innovate — resulting in less waste, more efficiency, and greater economic competitiveness. Today's rule ensures that new power plants will be built cleaner and more efficient, creating jobs and reducing greenhouse gas emissions and ensuring that the nation is competitive in the 21<sup>st</sup> century economy.

"Now it is critical that Congress move forward with complementary policies that spur innovation and deployment of clean technologies, including measures to address global competitiveness, create clear market signals for clean technology deployment, and help to ignite the revitalization of our manufacturing sector."

Read the BlueGreen Alliance Statement [\*Protecting Our Health and Safety, Building a Stronger Economy\*](#) on the organization's support for power plant greenhouse gas protections.

###

## Statements in Support of the EPA's Historic Carbon Pollution Standards

### Ceres

FOR IMMEDIATE RELEASE

Contact: [Peyton Fleming](mailto:peyton.fleming@ceres.org) — Ceres | [fleming@ceres.org](mailto:fleming@ceres.org) | phone: 617-247-0700 x 120 | cell: 617-733-6660

#### **U.S. EPA's issuance of the first-ever Carbon Pollution Standard for New Power Plants**

Statement by Mindy S. Lubber, president of Ceres and director of the Investor Network on Climate Risk  
For more information, contact

Mar 27, 2012

Ceres applauds the Environmental Protection Agency (EPA) for releasing, for public comment, its historic proposal to limit carbon pollution from new power plants under the Clean Air Act.

Ceres supports this new standard because it will provide certainty to businesses and investors, clarify the risks and opportunities for the U.S. electric power sector, and serve as a long-term market signal to drive greater investment in lower-carbon electric power generation.

The new standard reinforces what forward-looking businesses and investors in the Ceres network already know, namely that climate change poses real financial risks and opportunities and that the future growth of the electric power sector depends on investing in cleaner technologies and more efficient resources -- investments that create jobs and economic opportunities.

###

### **E2, ASBC, Main Street Alliance**

For Immediate Release

Contact: Contact: Richard Eidlin, American Sustainable Business Council, 303.478.0131

Over 125,000 American businesses support the EPA's new Carbon Pollution Standard

*Diverse group of business organizations strongly believe new standard can boost economy and create jobs*

Washington, DC - March 27, 2012 - Today a diverse group of business organizations representing over 125,000 businesses across the country issued the following statement expressing strong appreciation for the Environmental Protection Agency's new carbon pollution standard for new power plants. The statement, signed by the American Sustainable Business Council, Environmental Entrepreneurs (E2) and Main Street Alliance, reads as follows:

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

“As organizations with members who hail from all sectors of the U.S. economy, we are pleased to see that the Environmental Protection Agency (EPA) has released, for public comment, its much anticipated proposal to limit industrial carbon pollution from new power plants under the Clean Air Act.

We represent a diverse set of business interests who support the implementation of strong federal clean air standards. Our partnering businesses range in size from Fortune 500 companies to the small businesses that make up the backbone of the economy and constitute more than 125,000 businesses and more than 300,000 individual business leaders, entrepreneurs, and investors.

As representatives of the business community, we understand the importance of certainty and clear market signals and believe a national standard to reduce carbon pollution from new power plants will both clarify risks and opportunities for U.S. businesses, while also leading to technological innovation and investment in the domestic clean energy market. Investing in cleaner technologies and more efficient resources can be a pathway to profit and prosperity, boosting economic growth and creating jobs while also providing competitive returns to investors. We look forward to reviewing the proposal and identifying opportunities for increased investment in innovative low and no-carbon technologies as well as new energy infrastructure and energy efficiency.

For example, the U.S. electric sector is one of the most capital-intensive industries in the country, routinely investing between \$80 and \$110 billion per year on capital infrastructure projects. In fact, the Bureau of Labor Statistics shows that for every \$1 million of investment in a construction project 11 new jobs are created. For an infrastructure project requiring \$200 million worth of investment, this equates to 2,200 jobs. When multiplied by dozens of projects around the country, an investment in clean energy infrastructure becomes a meaningful step towards economic recovery and growth. EPA's proposal, once finalized, will help create the necessary market drivers for this kind of investment.

Furthermore, we reject efforts to undermine EPA's authority to fulfill its legal obligation to develop and implement clean air standards under the CAA. Derailing or delaying such standards leads to increased uncertainty and undermines the potential for capital investment and economic growth, weakening the opportunities presented to U.S. businesses by the growing \$243 billion global clean energy market. If we intend to grow the economy, we need to use all the tools at our disposal to encourage the transition to a clean energy economy. Today's release and announcement by EPA to limit industrial carbon pollution from new power plants under the Clean Air Act is a strong step in the right direction.”

###

## Statements in Support of the EPA's Historic Carbon Pollution Standards

### **Small Business Majority**

FOR IMMEDIATE RELEASE

Contact: Erin Musgrave, Communications Director, Small Business Majority  
[\(831\) 477-0453](tel:8314770453), [emusgrave@smallbusinessmajority.org](mailto:emusgrave@smallbusinessmajority.org)

### **New Greenhouse Gas Rules Can Create Opportunities for Small Businesses**

Statement by John Arensmeyer, CEO, Small Business Majority, about rules proposed today by the Environmental Protection Agency that would limit greenhouse gas emissions from new power plants:

March 27, 2012

*\*\*Small business owners in select states available for comment\*\**

Rules proposed today by the Environmental Protection Agency that would limit greenhouse gas emissions from new power plants will help spur innovation and provide opportunities for small businesses to grow. What's more, rules such as these are supported by a majority of small businesses—our primary job creators.

[National opinion polling](#) we released in September found 76 percent of small business owners support the EPA regulating carbon emissions under the Clean Air Act. Another 87 percent believe improving innovation and energy efficiency are good ways to increase prosperity for small businesses.

The Clean Air Act, under the direction of the EPA, has had a successful 40-year record of safeguarding our economic interests, along with the public health. It has created an atmosphere conducive to entrepreneurship, spurred the innovation of new American technologies and supported a massive increase in our nation's gross domestic product.

Small business owners know the future of small business depends on change and innovation, which is why they support bold policies that will provide new business opportunities for increased investment in low and no-carbon technologies, as well as those that promote energy efficiency. They realize change and innovation will help stimulate our flagging economy.

###

### **The Clean Energy Group**

Clean Air Policy Initiative

### **Clean Energy Group's Clean Air Policy Initiative Statement on EPA's Proposed Carbon Pollution Standard for New Power Plants**

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

March 27, 2012

The members of the Clean Energy Group's Clean Air Policy Initiative continue to believe that federal legislation is the most effective tool to create a long-term price signal to reduce greenhouse gas (GHG) emissions. We supported EPA's endangerment finding, and we have supported EPA's regulation of GHGs under the federal Clean Air Act.

We are committed to working constructively with EPA and other stakeholders on policies that encourage the reduction of GHG emissions from the electric generating sector. EPA's action today represents a modest step that provides the industry with business and regulatory certainty. We appreciate EPA's decision to make the standard prospective in nature so that it only applies to brand new units and does not apply to units under development, modifications, or to existing units. We do not anticipate that the proposed GHG performance standards for new sources will directly affect our members' investment plans. Further, based on our review of recent projections by the U.S. Energy

Information Administration and current market dynamics, the proposed GHG performance standards for new sources will not impact the reliability of the electric system.

### **CONTACT**

Michael Bradley  
Executive Director  
The Clean Energy Group  
978-369-5533  
mbradley@mjbradley.com

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### **Public Service Enterprise Group (PSEG)**

FOR IMMEDIATE RELEASE  
March 27, 2012

Contact: Mike Jennings  
973-430-6406

### **STATEMENT BY PSEG CHAIRMAN AND CEO RALPH IZZO ON THE EPA'S PROPOSED CARBON POLLUTION STANDARDS**

"While we would have preferred that Congress enact legislation limiting greenhouse gas emissions, the EPA took an important step today in addressing the significant environmental threat posed by climate change.

"The Agency's action establishes a logical and modest standard for new electric power plants and provides the industry with much needed regulatory certainty. The EPA provides a framework for the industry to confront this problem in a cost effective manner.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

"We understand that the EPA continues to evaluate regulatory options for already existing plants that may be affected by the Clean Air Act and we look forward to working with the Agency to evaluate the best approaches for achieving meaningful greenhouse gas reductions in as flexible and economic manner as possible."

*Public Service Enterprise Group (NYSE:PEG) is a publicly traded diversified energy company with annual revenues of more than \$12 billion, and three principal subsidiaries: PSEG Power, Public Service Electric and Gas Company (PSE&G) and PSEG Energy Holdings. For more information, visit [www.pseg.com](http://www.pseg.com).*

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### **Evangelical Environmental Network**

#### **Press Release**

#### **Evangelicals Praise Historic Carbon Pollution Standards**

Contact: Alexei Laushkin, 202-352-9920, [alaushkin@creationcare.org](mailto:alaushkin@creationcare.org)

On March 27, 2012 the U.S. Environmental Protection Agency (EPA) proposed the first ever national power plant carbon pollution standards for electric generating stations.

"This is an historic step in the right direction to overcome global warming. It starts returning American leadership to our moral responsibility for the poor around the world, those most threatened by climate change's impacts. However, comprehensive legislation is still needed, and we hope the President will state clearly that passing such legislation will be a top priority," stated the Rev. Mitch Hescoc, EEN's President.

The carbon pollution standard will do the following:

- Empowers American utilities as the world's leader for future electricity produced in the safest and cleanest fashion;
- Combined with MATS and Air Transport Rule, save the lives and protect the health of millions of our children;
- Help capture the true total cost of electric generation.

The New Source Carbon Pollution Standard is an important step in reducing carbon. We urge the Administration, Congress, industry, and the American people to work toward a market based policy solution to reduce current carbon pollution and insure a safer and healthier world for all God's children.

###

## Statements in Support of the EPA's Historic Carbon Pollution Standards

### Religious Action Center

#### New Climate Standards Welcomed by Reform Movement

*Rabbi David Saperstein: "These standards represent an important shift in support from coal and other fossil fuels that pose serious environmental and health risks - especially to our nation's poorest communities - and will spur innovation in green technologies, creating new jobs and strengthening our economy."*

Contact: Sean Thibault or Susan Paykin

202.387.2800 | news@rac.org

WASHINGTON, D.C., March 27, 2012 -- In response to the U.S. Environmental Protection Agency issuing the first ever greenhouse gas limits for power plants, Rabbi David Saperstein, Director of the Religious Action Center of Reform Judaism, issued the following statement:

"Climate change is one of the greatest social justice challenges of our time and as a leading global emitter of greenhouse gases, the United States must take bold steps to reduce climate-altering pollution and shift to clean, renewable energy sources. As such, we welcome the EPA's new limits on greenhouse gas emissions. These vital regulations will place a check on new coal-fired power plants that contribute so significantly to the climate crisis.

The EPA's new rule, called the New Source Performance Standards, will prevent any new power plant from emitting more than 1,000 pounds of carbon dioxide per megawatt of electricity produced. With conventional coal plants currently emitting more than 1,800 pounds of carbon dioxide per megawatt, we have already waited too long for pollution controls to set higher technology standards. These standards represent an important shift in support from coal and other fossil fuels that pose serious environmental and health risks - especially to our nation's poorest communities - and will spur innovation in green technologies, creating new jobs and strengthening our economy.

We read in *Midrash*, "Do not corrupt or destroy my world; for if you corrupt it, there will be no one to set it right after you" (*Kohelet Rabbah* 7:13). Greenhouse gases and climate change not only pollute the air we breathe – compromising the breath that sustains us -- but the water we drink and the land on which we rely for food and shelter. In the past few months we have witnessed increasingly frequent extreme weather events including devastating floods, droughts, and hurricanes, both at home and abroad. Climate change is a both an environmental and a moral crisis, and our response must be rooted in our compassion for all of God's creation and all of human kind. The rule issued today also reflects this value.

Although today's stricter greenhouse gas standards apply only to new, rather than existing, facilities, they are a needed first step. There is still much to be done to develop a comprehensive climate policy that also accounts for the U.S.' moral responsibility as the largest emitter of carbon pollution in the world. We applaud Administration's continued efforts toward that goal."

###

## Statements in Support of the EPA's Historic Carbon Pollution Standards

### **Catholics United**

#### **[PRESS RELEASE: Catholics United Applauds Greenhouse Gas Health Standards](#)**

*Posted March 27, 2012*

#### **New rule improves air quality, shows commitment to reversing life-threatening effects of climate change**

WASHINGTON – Today the Environmental Protection Agency announced the Carbon Pollution Standard, commonly known as a “greenhouse gas rule,” a measure that will impose limits of the emission of carbon from coal-fired power plants. The new standard will protect the health of every American and will help ensure future generations are able to live in a cleaner, more sustainable environment. The rule is another step in addressing the increasing dangers of climate change.

Catholics United welcomes this ruling, as care for God’s creation is a central component of Catholic social teaching. Pope Benedict XVI, commonly known as “the Green Pope” as he has made the environment one of his top concerns, often speaks out in favor of protecting the earth and limiting the effects of global climate change.

“Catholics United welcomes the EPA’s greenhouse gas rule” said James Salt, executive director of Catholics United, “This White House has demonstrated the courage to address the great moral challenges of our day, even in an election year. Care for creation is a central moral concern for many people of faith.”

Other Catholic voices, including men and women religious, also lauded the move.

“We can no longer delay bold action to reduce greenhouse gas emissions,” said Sr. Karen Donahue, a justice coordinator for the Sisters of Mercy of the Americas from Michigan. “We commend the EPA for taking this important step to reduce emissions that are fueling global warming and catastrophic climate change.”

Founded in 2004, Catholics United is a non-profit, non-partisan organization dedicated to promoting the message of justice and the common good found at the heart of the Catholic Social Tradition. For more information about Catholics United, follow us on our Facebook page ([www.facebook.com/CatholicsUnited](http://www.facebook.com/CatholicsUnited)) or on our blog at [www.OurDailyThread.org](http://www.OurDailyThread.org)

###

### **Interfaith Power & Light**

#### **Statement on EPA's Proposed Carbon Pollution Safeguard**

**Contact:** Andrée Duggan, 415-561-4891 x11, [andree@theregenerationproject.org](mailto:andree@theregenerationproject.org)

The Rev. Canon Sally G. Bingham, President and Founder of Interfaith Power & Light, has issued the following statement in response to EPA’s proposed carbon pollution safeguards.

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

"Interfaith Power & Light applauds the EPA's landmark action to limit industrial carbon pollution from new power plants. This is an important step toward safeguarding the health of our communities, our climate, and our children's future."

###

### **Connecticut DEEP Commissioner**

March 27, 2012

#### **Statement of DEEP Commissioner Daniel C. Esty on EPA's Proposed Carbon Pollution Standards**

*Commissioner Daniel C. Esty of the Connecticut Department of Energy and Environmental Protection (DEEP) today issued the following statement concerning the Environmental Protection Agency (EPA) release of first-ever national standards to cover greenhouse gas (GHG) emissions from new fossil fuel fired power plants (also known as New Source Performance Standards):*

"EPA took an important step forward today in proposing standards for new fossil fuel power plants that will control greenhouse gas (GHG) emissions linked to climate change. While Connecticut already participates in a program to limit these emissions, I am confident EPA's requirements for new power plants can successfully co-exist with our program – the Regional Greenhouse Gas Initiative."

"EPA's proposed standards are both reasonable and achievable. These standards will help move Connecticut and the entire nation to a cleaner, cheaper and more reliable energy future."

"Until such time that Congress adopts comprehensive climate legislation, it is critical for Connecticut and other states – with the support of EPA – to play a strong role in addressing climate change. Our approach must be guided by common sense, so that we can achieve the critical goals of protecting our environment, promoting affordable renewable energy and growing our economy."

#### ***News from Attorney General Eric T. Schneiderman***

FOR IMMEDIATE RELEASE

March 27, 2012

Albany Press Office / 518-473-5525  
New York City Press Office / 212-416-8060  
[nyag.pressoffice@ag.ny.gov](mailto:nyag.pressoffice@ag.ny.gov)

#### **A.G. SCHNEIDERMAN COMMENDS EPA FOR TAKING ACTION TO LIMIT GREENHOUSE GAS POLLUTION FROM NEW POWER PLANTS**

*Proposed Climate Protection Regulations In Response To Settlement With Schneiderman-led*

## Statements in Support of the EPA's Historic Carbon Pollution Standards

### *Coalition Of States*

NEW YORK –Attorney General Eric T. Schneiderman today commended the federal Environmental Protection Agency (EPA) for proposing regulations that will limit the amount of greenhouse gas emissions allowable from new fossil fuel power plants. EPA's action follows a settlement reached by a coalition of states led by Attorney General Schneiderman that required the Agency to finalize limits on power plant emissions of carbon dioxide and other greenhouse gases. That settlement also commits the EPA to proposing greenhouse gas emissions limits for existing power plants.

The climate protection benefits of the regulations proposed by EPA today would be substantial over time. Under the regulations, greenhouse gas emissions of new coal-fired power plants would be reduced by approximately 50 percent over the life of the plants.

“Addressing the threat posed by climate change is one of the most important challenges of our time – one that demands attention, leadership and action at all levels of government and by the private sector. I commend EPA for issuing these common-sense and cost-effective regulations that will result in substantial reductions in greenhouse gas emissions from new fossil fuel power plants,” said **Attorney General Schneiderman**. “EPA has a continuing legal obligation to take the next step and require existing fossil fuel power plants – the largest producers of global warming pollution – to reduce their emissions. The Agency's action today is an important step forward in confronting the public health, environmental and economic dangers posed by climate change, but we must remain vigilant in order to meaningfully reduce its scale and adverse effects on behalf of the people of New York.”

In March 2011, under Attorney General Schneiderman's leadership, New York and its coalition completed a settlement of the *New York v. EPA* litigation that required the Agency to finalize greenhouse gas emission standards for new and modified power plants, as well as existing power plants. The proposed standards announced by EPA today limiting the amount of these emissions from new power plants, partly fulfill EPA's commitments. Large quantity greenhouse gas emissions pollute the atmosphere by adding heat-trapping gasses that are raising the average temperature of the earth, which in turn is changing the climate in New York and around the globe.

EPA's action is in response to a 2006 lawsuit filed by New York and a coalition of state and local governments in the U.S. Court of Appeals for the District of Columbia Circuit that challenged EPA's failure to comply with the legal mandate of the federal Clean Air Act to limit emissions of carbon dioxide and other greenhouse gases as air pollutants emitted by power plants.

Fossil fuel-fired power plants are the largest source of greenhouse gas emissions in the United States contributing to climate change, responsible for 40 percent of the nation's man-made carbon dioxide emissions in addition to emitting other pollutants that contribute to smog, acid rain and haze as well as the mercury contamination of lakes, streams and fish.

Since 2011, Attorney General Schneiderman has taken aggressive action to protect the air New Yorkers breathe. Last month, the Attorney General led a coalition of more than a dozen states in arguing before

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

the D.C. Circuit Court in defense of related EPA regulations requiring certain large stationary sources of greenhouse gas pollution to reduce their emissions. Also last month, the Attorney General, leading a coalition of 11 states, filed a lawsuit to compel the EPA to safeguard New Yorkers' lungs by promptly revise national air quality standards for air pollution from soot. Attorney General Schneiderman has previously acted in defense of clean air in New York by:

- filing a lawsuit against a Pennsylvania power plant emitting dangerous sulfur dioxide in violation of the federal Clean Air Act;
- leading a coalition of attorneys general from Connecticut, Delaware, Maryland, and Massachusetts, against efforts in the U.S. House of Representatives to remove critical environmental regulations that protect New York communities from toxic pollution; and
- calling on the EPA to protect New York's air by implementing a proposed rule that would slash the amount of air pollution currently allowed to cross state lines.

This matter is being handled by Assistant Attorneys General Morgan Costello and Michael Myers and Chief Scientist Alan Belenz, under the supervision of the Attorney General's Environmental Protection Bureau Chief Lemuel M. Srolovic and Executive Deputy Attorney General for Social Justice Janet Sabel.

###

### **NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

For Release: IMMEDIATE Contact: Emily DeSantis  
Tuesday, March 27, 2012 (518) 402-8000

#### **NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION COMMISSIONER JOE MARTENS STATEMENT ON EPA POLLUTION STANDARD FOR NEW POWER PLANTS**

"EPA's proposal to require all new power plants across the country to incorporate cleaner and more efficient technologies to reduce carbon pollution should allow New Yorkers and Americans to breathe easier knowing that this move will slow climate change and related public health risks. With this action, EPA joins New York and other states participating in the Regional Greenhouse Gas Initiative in reducing power plant emissions. EPA's proposal also complements the New York greenhouse gas emission standards that DEC has proposed under the recently enacted Power New York Law. EPA should follow up this action with a proposal for reducing emissions from existing plants nationwide."

###

## **Statements in Support of the EPA's Historic Carbon Pollution Standards**

**Former Colorado Governor Bill Ritter, Jr**

### **Historic Clean Air Standards for New Power Plants**

Coloradoans know that clean air and clean energy is not a red state issue or a blue state matter but a bipartisan *Made in the USA* solution to provide healthier communities and a stronger economy. Here in Colorado we have worked together, Republicans and Democrats, to deliver a steady flow of cost-effective clean energy that will protect public health and create jobs. From Logan County wind farms to clean energy job training programs at Red Rocks Community College, Coloradoans are pioneering a strong clean energy economy.

It is welcome news, indeed, to see our nation moving forward with clean air standards to limit the harmful carbon pollution from new coal burning power plants as coal plants are the highest emitting source of air pollution in our country. The proposed emission standards for carbon pollution will unleash smart investments in cleaner, homegrown energy that will limit dangerous pollution and build a modern clean energy economy for the 21st Century.

###

# **Summary of Expert Opinions on the Existence of a Threshold in the Concentration-Response Function for PM<sub>2.5</sub>-related Mortality**

## **Technical Support Document (TSD)**

**June 2010**

Compiled by:  
U.S. Environmental Protection Agency  
Office of Air Quality Planning and Standards  
Health and Environmental Impact Division  
Air Benefit-Cost Group  
Research Triangle Park, North Carolina

### **Contents:**

- A. HES comments on 812 Analysis (2010)
- B. American Heart Association Scientific Statement (2010)
- C. Integrated Science Assessment for Particulate Matter (2009)
- D. CASAC comments on PM ISA and REA (2009)
- E. Krewski et al. (2009)
- F. Schwartz et al. (2008)
- G. Expert Elicitation on PM Mortality (2006, 2008)
- H. CASAC comments on PM Staff Paper (2005)
- I. HES comments on 812 Analysis (2004)
- J. NRC (2002)

## A. HES Comments on 812 Analysis (2010)

**U.S. Environmental Protection Agency - Science Advisory Board (U.S. EPA-SAB). 2010. Review of EPA's DRAFT Health Benefits of the Second Section 812 Prospective Study of the Clean Air Act. EPA-COUNCIL-10-001. June. Available on the Internet at <[http://yosemite.epa.gov/sab/sabproduct.nsf/0/72D4EFA39E48CDB28525774500738776/\\$File/EP A-COUNCIL-10-001-unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/0/72D4EFA39E48CDB28525774500738776/$File/EP A-COUNCIL-10-001-unsigned.pdf)>.**

Pg 2: "The HES generally agrees with other decisions made by the EPA project team with respect to PM, in particular, the PM mortality effect threshold model, the cessation lag model, the inclusion of infant mortality estimation, and differential toxicity of PM."

Pg 2: "Further, the HES fully supports EPA's use of a no-threshold model to estimate the mortality reductions associated with reduced PM exposure."

Pg 6: "The HES also supports the Agency's choice of a no-threshold model for PM-related effects."

Pg 13: "The HES fully supports EPA's decision to use a no-threshold model to estimate mortality reductions. This decision is supported by the data, which are quite consistent in showing effects down to the lowest measured levels. Analyses of cohorts using data from more recent years, during which time PM concentrations have fallen, continue to report strong associations with mortality. Therefore, there is no evidence to support a truncation of the CRF."

### **HES Panel Members**

**Dr. John Bailar**, Chair of the Health Effects Subcommittee, Scholar in Residence, The National Academies, Washington, DC

**Dr. Michelle Bell**, Associate Professor, School of Forestry and Environmental Studies, Yale University, New Haven, CT

**Dr. James K. Hammitt**, Professor, Department of Health Policy and Management, Harvard School of Public Health, Boston, MA

**Dr. Jonathan Levy**, Associate Professor, Department of Environmental Health, Harvard School of Public Health, Boston, MA

**Dr. C. Arden Pope, III** Professor, Department of Economics, Brigham Young University, Provo, UT

**Mr. John Fintan Hurley**, Research Director, Institute of Occupational Medicine (IOM), Edinburgh, United Kingdom, UK

**Dr. Patrick Kinney**, Professor, Department of Environmental Health Sciences, Mailman School of Public Health, Columbia University, New York, NY

**Dr. Michael T. Kleinman**, Professor, Department of Medicine, Division of Occupational and Environmental Medicine, University of California, Irvine, Irvine, CA

**Dr. Bart Ostro**, Chief, Air Pollution Epidemiology Unit, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, Oakland, CA

**Dr. Rebecca Parkin**, Professor and Associate Dean, Environmental and Occupational Health, School of Public Health and Health Services, The George Washington University Medical Center, Washington, DC

## **B. Scientific Statement from American Heart Association (2010)**

**Brook RD, Rajagopalan S, Pope CA 3rd, Brook JR, Bhatnagar A, Diez-Roux AV, Holguin F, Hong Y, Luepker RV, Mittleman MA, Peters A, Siscovick D, Smith SC Jr, Whitsel L, Kaufman JD; on behalf of the American Heart Association Council on Epidemiology and Prevention, Council on the Kidney in Cardiovascular Disease, and Council on Nutrition, Physical Activity and Metabolism. (2010). “Particulate matter air pollution and cardiovascular disease: an update to the scientific statement from the American Heart Association.” *Circulation*. 121: 2331-2378.**

Pg 2338: “Finally, there appeared to be no lower-limit threshold below which PM<sub>10</sub> was not associated with excess mortality across all regions.”

Pg 2350: “There also appears to be a monotonic (eg, linear or log-linear) concentration-response relationship between PM<sub>2.5</sub> and mortality risk observed in cohort studies that extends below present-day regulations of 15 µg/m<sup>3</sup> for mean annual levels, without a discernable “safe” threshold.” (cites Pope 2004, Krewski 2009, and Schwartz 2008)

Pg 2364: “The PM<sub>2.5</sub> concentration– cardiovascular risk relationships for both short- and long-term exposures appear to be monotonic, extending below 15 µg/m<sup>3</sup> (the 2006 annual NAAQS level) without a discernable “safe” threshold.”

Pg 2365: “This updated review by the AHA writing group corroborates and strengthens the conclusions of the initial scientific statement. In this context, we agree with the concept and continue to support measures based on scientific evidence, such as the US EPA NAAQS, that seek to control PM levels to protect the public health. Because the evidence reviewed supports that there is no safe threshold, it appears that public health benefits would accrue from lowering PM<sub>2.5</sub> concentrations even below present-day annual (15 µg/m<sup>3</sup>) and 24-hour (35 µg/m<sup>3</sup>) NAAQS, if feasible, to optimally protect the most susceptible populations.”

Pg 2366: “Although numerous insights have greatly enhanced our understanding of the PM-cardiovascular relationship since the first AHA statement was published, the following list represents broad strategic avenues for future investigation: ... Determine whether any “safe” PM threshold concentration exists that eliminates both acute and chronic cardiovascular effects in healthy and susceptible individuals and at a population level.”

### **Scientific Statement Authors**

**Dr. Robert D. Brook, MD**

**Dr. Sanjay Rajagopalan, MD**

**Dr. C. Arden Pope, PhD**

**Dr. Jeffrey R. Brook, PhD**

**Dr. Aruni Bhatnagar, PhD, FAHA**

**Dr. Ana V. Diez-Roux, MD, PhD, MPH**

**Dr. Fernando Holguin, MD**

**Dr. Yuling Hong, MD, PhD, FAHA**

**Dr. Russell V. Luepker, MD, MS, FAHA**

**Dr. Murray A. Mittleman, MD, DrPH, FAHA**

**Dr. Annette Peters, PhD**

**Dr. David Siscovick, MD, MPH, FAHA**

**Dr. Sidney C. Smith, Jr, MD, FAHA**

**Dr. Laurie Whitsel, PhD**

**Dr. Joel D. Kaufman, MD, MPH**

### C. Integrated Science Assessment for Particulate Matter (2009)

**U.S. Environmental Protection Agency (U.S. EPA). 2009. Integrated Science Assessment for Particulate Matter (Final Report). EPA-600-R-08-139F. National Center for Environmental Assessment – RTP Division. December. Available on the Internet at <<http://cfpub.epa.gov/ncea/cfm/recorddisplay.cfm?deid=216546>>.**

Pg 1-22: “An important consideration in characterizing the public health impacts associated with exposure to a pollutant is whether the concentration-response relationship is linear across the full concentration range encountered, or if nonlinear relationships exist along any part of this range. Of particular interest is the shape of the concentration-response curve at and below the level of the current standards. The shape of the concentration-response curve varies, depending on the type of health outcome, underlying biological mechanisms and dose. At the human population level, however, various sources of variability and uncertainty tend to smooth and “linearize” the concentration-response function (such as the low data density in the lower concentration range, possible influence of measurement error, and individual differences in susceptibility to air pollution health effects). In addition, many chemicals and agents may act by perturbing naturally occurring background processes that lead to disease, which also linearizes population concentration-response relationships (Clewel and Crump, 2005, 156359; Crump et al., 1976, 003192; Hoel, 1980, 156555). These attributes of population dose-response may explain why the available human data at ambient concentrations for some environmental pollutants (e.g., PM, O<sub>3</sub>, lead [Pb], ETS, radiation) do not exhibit evident thresholds for health effects, even though likely mechanisms include nonlinear processes for some key events. These attributes of human population dose-response relationships have been extensively discussed in the broader epidemiologic literature (Rothman and Greenland, 1998, 086599).”

Pg 2-16: “In addition, cardiovascular hospital admission and mortality studies that examined the PM<sub>10</sub> concentration-response relationship found evidence of a log-linear no-threshold relationship between PM exposure and cardiovascular-related morbidity (Section 6.2) and mortality (Section 6.5).”

Pg 2-25: “2.4.3. PM Concentration-Response Relationship

An important consideration in characterizing the PM-morbidity and mortality association is whether the concentration-response relationship is linear across the full concentration range that is encountered or if there are concentration ranges where there are departures from linearity (i.e., nonlinearity). In this ISA studies have been identified that attempt to characterize the shape of the concentration-response curve along with possible PM “thresholds” (i.e., levels which PM concentrations must exceed in order to elicit a health response). The epidemiologic studies evaluated that examined the shape of the concentration-response curve and the potential presence of a threshold have focused on cardiovascular hospital admissions and ED visits and mortality associated with short-term exposure to PM<sub>10</sub> and mortality associated with long-term exposure to PM<sub>2.5</sub>.

“A limited number of studies have been identified that examined the shape of the PM cardiovascular hospital admission and ED visit concentration-response relationship. Of these studies, some conducted an exploratory analysis during model selection to determine if a linear curve most adequately represented the concentration-response relationship; whereas, only one study conducted an extensive analysis to examine the shape of the concentration-response curve at different concentrations (Section 6.2.10.10). Overall, the limited evidence from the studies evaluated supports the use of a no-threshold, log-linear model, which is consistent with the observations made in studies that examined the PM-mortality relationship.

“Although multiple studies have previously examined the PM-mortality concentration-response relationship and whether a threshold exists, more complex statistical analyses continue to be developed to analyze this association. Using a variety of methods and models, most of the studies evaluated support the

use of a no-threshold, log-linear model; however, one study did observe heterogeneity in the shape of the concentration-response curve across cities (Section 6.5). Overall, the studies evaluated further support the use of a no-threshold log-linear model, but additional issues such as the influence of heterogeneity in estimates between cities, and the effect of seasonal and regional differences in PM on the concentration-response relationship still require further investigation.

“In addition to examining the concentration-response relationship between short-term exposure to PM and mortality, Schwartz et al. (2008, 156963) conducted an analysis of the shape of the concentration-response relationship associated with long-term exposure to PM. Using a variety of statistical methods, the concentration-response curve was found to be indistinguishable from linear, and, therefore, little evidence was observed to suggest that a threshold exists in the association between long-term exposure to PM<sub>2.5</sub> and the risk of death (Section 7.6).”

#### Pg 6-75: “6.2.10.10. Concentration Response

The concentration-response relationship has been extensively analyzed primarily through studies that examined the relationship between PM and mortality. These studies, which have focused on short- and long-term exposures to PM have consistently found no evidence for deviations from linearity or a safe threshold (Daniels et al., 2004, 087343; Samoli et al., 2005, 087436; Schwartz, 2004, 078998; Schwartz et al., 2008, 156963) (Sections 6.5.2.7 and 7.1.4). Although on a more limited basis, studies that have examined PM effects on cardiovascular hospital admissions and ED visits have also analyzed the PM concentration-response relationship, and contributed to the overall body of evidence which suggests a log-linear, no-threshold PM concentration-response relationship.

“The results from the three multicity studies discussed above support no-threshold log-linear models, but issues such as the possible influence of exposure error and heterogeneity of shapes across cities remain to be resolved. Also, given the pattern of seasonal and regional differences in PM risk estimates depicted in recent multicity study results (e.g., Peng et al., 2005, 087463), the very concept of a concentration-response relationship estimated across cities and for all-year data may not be very informative.”

#### Pg 6-197: “6.5.2.7. Investigation of Concentration-Response Relationship

The results from large multicity studies reviewed in the 2004 PM AQCD (U.S. EPA, 2004, 056905) suggested that strong evidence did not exist for a clear threshold for PM mortality effects. However, as discussed in the 2004 PM AQCD (U.S. EPA, 2004, 056905), there are several challenges in determining and interpreting the shape of PM-mortality concentration-response functions and the presence of a threshold, including: (1) limited range of available concentration levels (i.e., sparse data at the low and high end); (2) heterogeneity of susceptible populations; and (3) investigate the PM-mortality concentration-response relationship.

“Daniels et al. (2004, 087343) evaluated three concentration-response models: (1) log-linear models (i.e., the most commonly used approach, from which the majority of risk estimates are derived); (2) spline models that allow data to fit possibly non-linear relationship; and (3) threshold models, using PM<sub>10</sub> data in 20 cities from the 1987-1994 NMMAPS data. They reported that the spline model, combined across the cities, showed a linear relation without indicating a threshold for the relative risks of death for all-causes and for cardiovascular-respiratory causes in relation to PM<sub>10</sub>, but “the other cause” deaths (i.e., all cause minus cardiovascular-respiratory) showed an apparent threshold at around 50 µg/m<sup>3</sup> PM<sub>10</sub>, as shown in Figure 6-35. For all-cause and cardio-respiratory deaths, based on the Akaike’s Information Criterion (AIC), a log-linear model without threshold was preferred to the threshold model and to the spline model.

“The HEI review committee commented that interpretation of these results required caution, because (1) the measurement error could obscure any threshold; (2) the city-specific concentration-response curves

exhibited a variety of shapes; and (3) the use of AIC to choose among the models might not be appropriate due to the fact it was not designed to assess scientific theories of etiology. Note, however, that there has been no etiologically credible reason suggested thus far to choose one model over others for aggregate outcomes. Thus, at least statistically, the result of Daniels et al. (2004, 087343) suggests that the log-linear model is appropriate in describing the relationship between PM<sub>10</sub> and mortality.

“The Schwartz (2004, 078998) analysis of PM<sub>10</sub> and mortality in 14 U.S. cities, described in Section 6.5.2.1, also examined the shape of the concentration-response relationship by including indicator variables for days when concentrations were between 15 and 25 µg/m<sup>3</sup>, between 25 and 34 µg/m<sup>3</sup>, between 35 and 44 µg/m<sup>3</sup>, and 45 µg/m<sup>3</sup> and above. In the model, days with concentrations below 15 µg/m<sup>3</sup> served as the reference level. This model was fit using the single stage method, combining strata across all cities in the case-crossover design. Figure 6-36 shows the resulting relationship, which does not provide sufficient evidence to suggest that a threshold exists. The authors did not examine city-to-city variation in the concentration-response relationship in this study.

“PM<sub>10</sub> and mortality in 22 European cities (and BS in 15 of the cities) participating in the APHEA project. In nine of the 22 cities, PM<sub>10</sub> levels were estimated using a regression model relating co-located PM<sub>10</sub> to BS or TSP. They used regression spline models with two knots (30 and 50 µg/m<sup>3</sup>) and then combined the individual city estimates of the splines across cities. The investigators concluded that the association between PM and mortality in these cities could be adequately estimated using the log-linear model. However, in an ancillary analysis of the concentration-response curves for the largest cities in each of the three distinct geographic areas (western, southern, and eastern European cities): London, England; Athens, Greece; and Cracow, Poland, Samoli et al. (2005, 087436) observed a difference in the shape of the concentration-response curve across cities. Thus, while the combined curves (Figure 6-37) appear to support no-threshold relationships between PM<sub>10</sub> and mortality, the heterogeneity of the shapes across cities makes it difficult to interpret the biological relevance of the shape of the combined curves.

“The results from the three multicity studies discussed above support no-threshold log-linear models, but issues such as the possible influence of exposure error and heterogeneity of shapes across cities remain to be resolved. Also, given the pattern of seasonal and regional differences in PM risk estimates depicted in recent multicity study results (e.g., Peng et al., 2005, 087463), the very concept of a concentration-response relationship estimated across cities and for all-year data may not be very informative.”

### **Authors of ISA**

**Dr. Lindsay Wichers Stanek** (PM Team Leader)—National Center for Environmental Assessment (NCEA), U.S. Environmental Protection Agency (U.S. EPA), Research Triangle Park, NC

**Dr. Jeffrey Arnold**—NCEA, U.S. EPA, Research Triangle Park, NC (now at Institute for Water Resources, U.S. Army Corps of Engineers, Washington, D.C)

**Dr. Christal Bowman**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. James S. Brown**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Barbara Buckley**—NCEA, U.S. EPA, Research Triangle Park, NC

**Mr. Allen Davis**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Jean-Jacques Dubois**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Steven J. Dutton**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Tara Greaver**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Erin Hines**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Douglas Johns**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Ellen Kirrane**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Dennis Kotchmar**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Thomas Long**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Thomas Luben**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Qingyu Meng**—Oak Ridge Institute for Science and Education, Postdoctoral Research Fellow to NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Kristopher Novak**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Joseph Pinto**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Jennifer Richmond-Bryant**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Mary Ross**—NCEA, U.S. EPA, Research Triangle Park, NC

**Mr. Jason Sacks**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Timothy J. Sullivan**—E&S Environmental Chemistry, Inc., Corvallis, OR

**Dr. David Svendsgaard**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Lisa Vinikoor**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. William Wilson**—NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Lori White**—NCEA, U.S. EPA, Research Triangle Park, NC (now at National Institute for Environmental Health Sciences, Research Triangle Park, NC)

**Dr. Christy Avery**—University of North Carolina, Chapel Hill, NC

**Dr. Kathleen Belanger**—Center for Perinatal, Pediatric and Environmental Epidemiology, Yale University, New Haven, CT

**Dr. Michelle Bell**—School of Forestry & Environmental Studies, Yale University, New Haven, CT

**Dr. William D. Bennett**—Center for Environmental Medicine, Asthma and Lung Biology, University of North Carolina, Chapel Hill, NC

**Dr. Matthew J. Campen**—Lovelace Respiratory Research Institute, Albuquerque, NM

**Dr. Leland B. Deck**—Stratus Consulting, Inc., Washington, DC

**Dr. Janneane F. Gent**—Center for Perinatal, Pediatric and Environmental Epidemiology, Yale University, New Haven, CT

**Dr. Yuh-Chin Tony Huang**—Department of Medicine, Division of Pulmonary Medicine, Duke University Medical Center, Durham, NC

**Dr. Kazuhiko Ito**—Nelson Institute of Environmental Medicine, NYU School of Medicine, Tuxedo, NY

**Mr. Marc Jackson**—Integrated Laboratory Systems, Inc., Research Triangle Park, NC

**Dr. Michael Kleinman**—Department of Community and Environmental Medicine, University of California, Irvine

**Dr. Sergey Napelenok**—National Exposure Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Dr. Marc Pitchford**—National Oceanic and Atmospheric Administration, Las Vegas, NV

**Dr. Les Recio**—Genetic Toxicology Division, Integrated Laboratory Systems, Inc., Research Triangle Park, NC

**Dr. David Quincy Rich**—Department of Epidemiology, University of Medicine and Dentistry of New Jersey, Piscataway, NJ

**Dr. Timothy Sullivan**—E&S Environmental Chemistry, Inc., Corvallis, OR

**Dr. George Thurston**—Department of Environmental Medicine, NYU, Tuxedo, NY

**Dr. Gregory Wellenius**—Cardiovascular Epidemiology Research Unit, Beth Israel Deaconess Medical Center, Boston, MA

**Dr. Eric Whitsel**—Departments of Epidemiology and Medicine, University of North Carolina, Chapel Hill, NC

**Peer Reviewers**

**Dr. Sara Dubowsky Adar**, Department of Epidemiology, University of Washington, Seattle, WA

**Mr. Chad Bailey**, Office of Transportation and Air Quality, Ann Arbor, MI

**Mr. Richard Baldauf**, Office of Transportation and Air Quality, Ann Arbor, MI

**Dr. Prakash Bhave**, National Exposure Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Mr. George Bowker**, Office of Atmospheric Programs, U.S. EPA, Washington, D.C.

**Dr. Judith Chow**, Division of Atmospheric Sciences, Desert Research Institute, Reno, NV

**Dr. Dan Costa**, U.S. EPA, Research Triangle Park, NC

**Dr. Ila Cote**, NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Robert Devlin**, National Health and Environmental Effects Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Dr. David DeMarini**, National Health and Environmental Effects Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Dr. Neil Donahue**, Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA

**Dr. Aimen Farraj**, National Health and Environmental Effects Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Dr. Mark Frampton**, Department of Environmental Medicine, University of Rochester Medical Center, Rochester, NY

**Mr. Neil Frank**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Mr. Tyler Fox**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Jim Gauderman**, Department of Environmental Medicine, Department of Preventive Medicine, University of Southern California, Los Angeles, CA

**Dr. Barbara Glenn**, National Center for Environmental Research, U.S. EPA, Washington, D.C.

**Dr. Terry Gordon**, School of Medicine, New York University, Tuxedo, NY

**Mr. Tim Hanley**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Jack Harkema**, Department of Pathobiology and Diagnostic Investigation, Michigan State University, East Lansing, MI

**Ms. Beth Hassett-Sipple**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Amy Herring**, Department of Biostatistics, University of North Carolina, Chapel Hill, NC

**Dr. Israel Jirak**, Department of Meteorology, Embry-Riddle Aeronautical University, Prescott, AZ

**Dr. Mike Kleeman**, Department of Civil and Environmental Engineering, University of California, Davis, CA

**Dr. Petros Koutrakis**, Exposure, Epidemiology and Risk Program, Harvard School of Public Health, Boston, MA

**Dr. Sagar Krupa**, Department of Plant Pathology, University of Minnesota, St. Paul, MN

**Mr. John Langstaff**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Meredith Lassiter**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Mr. Phil Lorang**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Karen Martin**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Ms. Connie Meacham**, NCEA, U.S. EPA, Research Triangle Park, NC

**Mr. Tom Pace**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Jennifer Peel**, Department of Environmental and Radiological Health Sciences, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, CO

**Dr. Zackary Pekar**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Mr. Rob Pinder**, National Exposure Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Mr. Norm Possiel**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Sanjay Rajagopalan**, Division of Cardiovascular Medicine, Ohio State University, Columbus, OH

**Dr. Pradeep Rajan**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Mr. Venkatesh Rao**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Ms. Joann Rice**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Mr. Harvey Richmond**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Ms. Victoria Sandiford**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Stefanie Sarnat**, Department of Environmental and Occupational Health, Emory University, Atlanta, GA

**Dr. Frances Silverman**, Gage Occupational and Environmental Health, University of Toronto, Toronto, ON

**Mr. Steven Silverman**, Office of General Council, U.S. EPA, Washington, D.C.

**Dr. Barbara Turpin**, Department of Environmental Sciences, Rutgers University, New Brunswick, NJ

**Dr. Robert Vanderpool**, National Exposure Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Dr. John Vandenberg (Director)**—NCEA-RTP Division, U.S. EPA, Research Triangle Park, NC

**Dr. Alan Vette**, National Exposure Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Ms. Debra Walsh** (Deputy Director)—NCEA-RTP Division, U.S. EPA, Research Triangle Park, NC

**Mr. Tim Watkins**, National Exposure Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Dr. Christopher Weaver**, NCEA, U.S. EPA, Research Triangle Park, NC

**Mr. Lewis Weinstock**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Ms. Karen Wesson**, Office of Air Quality Planning and Standards, U.S. EPA, Research Triangle Park, NC

**Dr. Jason West**, Department of Environmental Sciences and Engineering, University of North Carolina, Chapel Hill, NC

**Mr. Ronald Williams**, National Exposure Research Laboratory, U.S. EPA, Research Triangle Park, NC

**Dr. George Woodall**, NCEA, U.S. EPA, Research Triangle Park, NC

**Dr. Antonella Zanobetti**, Department of Environmental Health, Harvard School of Public Health, Boston, MA

#### **D. CASAC comments on PM ISA and REA (2009)**

**U.S. Environmental Protection Agency - Science Advisory Board (U.S. EPA-SAB). 2009. Review of EPA's Integrated Science Assessment for Particulate Matter (First External Review Draft, December 2008). EPA-COUNCIL-09-008. May. Available on the Internet at <[http://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/73ACCA834AB44A10852575BD0064346B/\\$File/EPA-CASAC-09-008-unsigned.pdf](http://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/73ACCA834AB44A10852575BD0064346B/$File/EPA-CASAC-09-008-unsigned.pdf)>.**

Pg 9: "There is an appropriate discussion of the time-series studies, but this section needs to have an explicit finding that the evidence supports a relationship between PM and mortality that is seen in these studies. This conclusion should be followed by the discussion of statistical methodology and the identification of any threshold that may exist."

**U.S. Environmental Protection Agency Science Advisory Board (U.S. EPA-SAB). 2009. Consultation on EPA's Particulate Matter National Ambient Air Quality Standards: Scope and Methods Plan for Health Risk and Exposure Assessment. EPA-COUNCIL-09-009. May. Available on the Internet at <[http://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/723FE644C5D758DF852575BD00763A32/\\$File/EPA-CASAC-09-009-unsigned.pdf](http://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/723FE644C5D758DF852575BD00763A32/$File/EPA-CASAC-09-009-unsigned.pdf)>.**

Pg 6: "On the issue of cut-points raised on 3-18, the authors should be prepared to offer a scientifically cogent reason for selection of a specific cut-point, and not simply try different cut-points to see what effect this has on the analysis. The draft ISA was clear that there is little evidence for a population threshold in the C-R function."

**U.S. Environmental Protection Agency - Science Advisory Board (U.S. EPA-SAB). 2009. Review of *Integrated Science Assessment for Particulate Matter (Second External Review Draft, July 2009)*. EPA-CASAC-10-001. November. Available on the Internet at <[http://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/151B1F83B023145585257678006836B9/\\$File/EPA-CASAC-10-001-unsigned.pdf](http://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/151B1F83B023145585257678006836B9/$File/EPA-CASAC-10-001-unsigned.pdf)>.**

Pg 2: "The paragraph on lines 22-30 of page 2-37 is not clearly written. Twice in succession it states that the use of a no-threshold log-linear model is supported, but then cites other studies that suggest otherwise. It would be good to revise this paragraph to more clearly state – well, I'm not sure what. Probably that more research is needed."

#### **CASAC Panel Members**

**Dr. Jonathan M. Samet**, Professor and Chair, Department of Preventive Medicine, University of Southern California, Los Angeles, CA

**Dr. Joseph Brain**, Philip Drinker Professor of Environmental Physiology, Department of Environmental Health, Harvard School of Public Health, Harvard University, Boston, MA

**Dr. Ellis B. Cowling**, University Distinguished Professor At-Large Emeritus, Colleges of Natural Resources and Agriculture and Life Sciences, North Carolina State University, Raleigh, NC

**Dr. James Crapo**, Professor of Medicine, Department of Medicine, National Jewish Medical and Research Center, Denver, CO

**Dr. H. Christopher Frey**, Professor, Department of Civil, Construction and Environmental Engineering, College of Engineering, North Carolina State University, Raleigh, NC

**Dr. Armistead (Ted) Russell**, Professor, Department of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA

**Dr. Lowell Ashbaugh**, Associate Research Ecologist, Crocker Nuclear Lab, University of California, Davis, Davis, CA

**Prof. Ed Avol**, Professor, Preventive Medicine, Keck School of Medicine, University of Southern California, Los Angeles, CA

**Dr. Wayne Cascio**, Professor, Medicine, Cardiology, Brody School of Medicine at East Carolina University, Greenville, NC

**Dr. David Grantz**, Director, Botany and Plant Sciences and Air Pollution Research Center, Riverside Campus and Kearney Agricultural Center, University of California, Parlier, CA

**Dr. Joseph Helble**, Dean and Professor, Thayer School of Engineering, Dartmouth College, Hanover, NH

**Dr. Rogene Henderson**, Senior Scientist Emeritus, Lovelace Respiratory Research Institute, Albuquerque, NM

**Dr. Philip Hopke**, Bayard D. Clarkson Distinguished Professor, Department of Chemical Engineering, Clarkson University, Potsdam, NY

**Dr. Morton Lippmann**, Professor, Nelson Institute of Environmental Medicine, New York University School of Medicine, Tuxedo, NY

**Dr. Helen Suh MacIntosh**, Associate Professor, Environmental Health, School of Public Health, Harvard University, Boston, MA

**Dr. William Malm**, Research Physicist, National Park Service Air Resources Division, Cooperative Institute for Research in the Atmosphere, Colorado State University, Fort Collins, CO

**Mr. Charles Thomas (Tom) Moore, Jr.**, Air Quality Program Manager, Western Governors' Association, Cooperative Institute for Research in the Atmosphere, Colorado State University, Fort Collins, CO

**Dr. Robert F. Phalen**, Professor, Department of Community & Environmental Medicine; Director, Air Pollution Health Effects Laboratory; Professor of Occupational & Environmental Health, Center for Occupation & Environment Health, College of Medicine, University of California Irvine, Irvine, CA

**Dr. Kent Pinkerton**, Professor, Regents of the University of California, Center for Health and the Environment, University of California, Davis, CA

**Mr. Richard L. Poirot**, Environmental Analyst, Air Pollution Control Division, Department of Environmental Conservation, Vermont Agency of Natural Resources, Waterbury, VT

**Dr. Frank Speizer**, Edward Kass Professor of Medicine, Channing Laboratory, Harvard Medical School, Boston, MA

**Dr. Sverre Vedal**, Professor, Department of Environmental and Occupational Health Sciences, School of Public Health and Community Medicine, University of Washington, Seattle, WA

**Dr. Donna Kenski**, Data Analysis Director, Lake Michigan Air Directors Consortium, Rosemont, IL

**Dr. Kathy Weathers**, Senior Scientist, Cary Institute of Ecosystem Studies, Millbrook, NY

## E. Krewski et al. (2009)

**Krewski, Daniel, Michael Jerrett, Richard T. Burnett, Renjun Ma, Edward Hughes, Yuanli Shi, Michelle C. Turner, C. Arden Pope III, George Thurston, Eugenia E. Calle, and Michael J. Thun with Bernie Beckerman, Pat DeLuca, Norm Finkelstein, Kaz Ito, D.K. Moore, K. Bruce Newbold, Tim Ramsay, Zev Ross, Hwashin Shin, and Barbara Tempalski. (2009). Extended follow-up and spatial analysis of the American Cancer Society study linking particulate air pollution and mortality. *HEI Research Report, 140*, Health Effects Institute, Boston, MA.**

Pg 119: [About Pope et al. (2002)] “Each 10- $\mu\text{g}/\text{m}^3$  increase in longterm average ambient  $\text{PM}_{2.5}$  concentrations was associated with approximately a 4%, 6%, or 8% increase in risk of death from all causes, cardiopulmonary disease, and lung cancer, respectively. There was no evidence of a threshold exposure level within the range of observed  $\text{PM}_{2.5}$  concentrations. “

**Krewski (2009). Letter from Dr. Daniel Krewski to HEI’s Dr. Kate Adams (dated July July 7, 2009) regarding “EPA queries regarding HEI Report 140”. Dr. Adams then forwarded the letter on July 10, 2009 to EPA’s Beth Hassett-Sipple. (letter placed in docket #EPA-HQ-OAR-2007-0492).**

*Pg 4: “6. The Health Review Committee commented that the Updated Analysis completed by Pope et al. 2002 reported “no evidence of a threshold exposure level within the range of observed  $\text{PM}_{2.5}$  concentrations” (p. 119). In the Extended Follow-Up study, did the analyses provide continued support for a no-threshold response or was there evidence of a threshold?”*

“Response: As noted above, the HEI Health Review Committee commented on the lack of evidence for a threshold exposure level in Pope et al. (2002) with follow-up through the year 1998. The present report, which included follow-up through the year 2000, also does not appear to demonstrate the existence of a threshold in the exposure-response function within the range of observed  $\text{PM}_{2.5}$  concentrations.”

### **HEI Health Review Committee Members**

**Dr. Homer A. Boushey, MD**, Chair, Professor of Medicine, Department of Medicine, University of California–San Francisco

**Dr. Ben Armstrong**, Reader, in Epidemiological Statistics, Department of Public Health and Policy, London School of Hygiene and Tropical Medicine, United Kingdom

**Dr. Michael Brauer, ScD**, Professor, School of Environmental Health, University of British Columbia, Canada

**Dr. Bert Brunekreef, PhD**, Professor of Environmental Epidemiology, Institute of Risk Assessment Sciences, University of Utrecht, The Netherlands

**Dr. Mark W. Frampton, MD**, Professor of Medicine & Environmental Medicine, University of Rochester Medical Center, Rochester, NY

**Dr. Stephanie London, MD, PhD**, Senior Investigator, Epidemiology Branch, National Institute of Environmental Health Sciences

**Dr. William N. Rom, MD, MPH**, Sol and Judith Bergstein Professor of Medicine and Environmental Medicine and Director of Pulmonary and Critical Care Medicine, New York University Medical Center

**Dr. Armistead Russell**, Georgia Power Distinguished Professor of Environmental Engineering, School of Civil and Environmental Engineering, Georgia Institute of Technology

**Dr. Lianne Sheppard, PhD**, Professor, Department of Biostatistics, University of Washington

**F. Schwartz et al. (2008)**

**Schwartz J, Coull B, Laden F. (2008). The Effect of Dose and Timing of Dose on the Association between Airborne Particles and Survival. *Environmental Health Perspectives*. 116: 64-69.**

Pg 67: “A key finding of this study is that there is little evidence for a threshold in the association between exposure to fine particles and the risk of death on follow-up, which continues well below the U.S. EPA standard of 15  $\mu\text{g}/\text{m}^3$ .”

Pg 68: “In conclusion, penalized spline smoothing and model averaging represent reasonable, feasible approaches to addressing questions of the shape of the exposure–response curve, and can provide valuable information to decisionmakers. In this example, both approaches are consistent, and suggest that the association of particles with mortality has no threshold down to close to background levels.”

## G. Expert Elicitation on PM-Mortality (2006, 2008)

**Industrial Economics, Inc., 2006. *Expanded Expert Judgment Assessment of the Concentration-Response Relationship Between PM<sub>2.5</sub> Exposure and Mortality*. Prepared for the U.S.EPA, Office of Air Quality Planning and Standards, September. Available on the Internet at <[http://www.epa.gov/ttn/ecas/regdata/Uncertainty/pm\\_ee\\_report.pdf](http://www.epa.gov/ttn/ecas/regdata/Uncertainty/pm_ee_report.pdf)>.**

Pg v: “Each expert was given the option to integrate their judgments about the likelihood of a causal relationship and/or threshold in the C-R function into his distribution or to provide a distribution “conditional on” one or both of these factors.”

Pg vii: “Only one of 12 experts explicitly incorporated a threshold into his C-R function.<sup>3</sup> The rest believed there was a lack of empirical and/or theoretical support for a population threshold. However, three other experts gave differing effect estimate distributions above and below some cut-off concentration. The adjustments these experts made to median estimates and/or uncertainty at lower PM<sup>2.5</sup> concentrations were modest.”

“<sup>3</sup> Expert K indicated that he was 50 percent sure that a threshold existed. If there were a threshold, he thought that there was an 80 percent chance that it would be less than or equal to 5 µg/m<sup>3</sup>, and a 20 percent chance that it would fall between 5 and 10 µg/m<sup>3</sup>.”

Pg ix: “Compared to the pilot study, experts in this study were in general more confident in a causal relationship, less likely to incorporate thresholds, and reported higher mortality effect estimates. The differences in results compared with the pilot appear to reflect the influence of new research on the interpretation of the key epidemiological studies that were the focus of both elicitation studies, more than the influence of changes to the structure of the protocol.”

Pg 3-25: “3.1.8 THRESHOLDS

The protocol asked experts for their judgments regarding whether a threshold exists in the PM<sub>2.5</sub> mortality C-R function. The protocol focused on assessing expert judgments regarding theory and evidential support for a population threshold (i.e., the concentration below which no member of the study population would experience an increased risk of death).<sup>32</sup> If an expert wished to incorporate a threshold in his characterization of the concentration-response relationship, the team then asked the expert to specify the threshold PM<sub>2.5</sub> concentration probabilistically, incorporating his uncertainty about the true threshold level.

“From a theoretical and conceptual standpoint, all experts generally believed that individuals exhibit thresholds for PM-related mortality. However, 11 of them discounted the idea of a population threshold in the C-R function on a theoretical and/or empirical basis. Seven of these experts noted that theoretically one would be unlikely to observe a population threshold due to the variation in susceptibility at any given time in the study population resulting from combinations of genetic, environmental, and socioeconomic factors.<sup>33</sup> All 11 thought that there was insufficient empirical support for a population threshold in the C-R function. In addition, two experts (E and L) cited analyses of the ACS cohort data in Pope et al. (2002) and another (J) cited Krewski et al. (2000a & b) as supportive of a linear relationship in the study range.

“Seven of the experts favored epidemiological studies as ideally the best means of addressing the population threshold issue, because they are best able to evaluate the full range of susceptible individuals at environmentally relevant exposure levels. However, those who favored epidemiologic studies generally acknowledged that definitive studies addressing thresholds would be difficult or impossible to conduct, because they would need to include a very large and diverse population with wide variation in exposure and a long follow-up period. Furthermore, two experts (B and I) cited studies documenting difficulties in detecting a threshold using epidemiological studies (Cakmak et al. 1999, and Brauer et al., 2002,

respectively). The experts generally thought that clinical and toxicological studies are best suited for researching mechanisms and for addressing thresholds in very narrowly defined groups. One expert, B, thought that a better understanding of the detailed biological mechanism is critical to addressing the question of a threshold.

“One expert, K, believed it was possible to make a conceptual argument for a population threshold. He drew an analogy with smoking, indicating that among heavy smokers, only a proportion of them gets lung cancer or demonstrates an accelerated decline in lung function. He thought that the idea that there is no level that is biologically safe is fundamentally at odds with toxicological theory. He did not think that a population threshold was detectable in the currently available epidemiologic studies. He indicated that some of the cohort studies showed greater uncertainty in the shape of the C-R function at lower levels, which could be indicative of a threshold.

“Expert K chose to incorporate a threshold into his C-R function. He indicated that he was 50 percent sure that a threshold existed. If there were a threshold, he thought that there was an 80 percent chance that it would be less than or equal to  $5 \mu\text{g}/\text{m}^3$ , and a 20 percent chance that it would fall between 5 and  $10 \mu\text{g}/\text{m}^3$ .”

**Roman, Henry A., Katherine D. Walker, Tyra L. Walsh, Lisa Conner, Harvey M. Richmond, Bryan J. Hubbell, and Patrick L. Kinney. (2008). “Expert Judgment Assessment of the Mortality Impact of Changes in Ambient Fine Particulate Matter in the U.S.” *Environ. Sci. Technol.*, 42(7):2268-2274.**

Pg 2271: “Eight experts thought the true C-R function relating mortality to changes in annual average  $\text{PM}_{2.5}$  was log-linear across the entire study range ( $\ln(\text{mortality}) = \beta \times \text{PM}$ ). Four experts (B, F, K, and L) specified a “piecewise” log-linear function, with different  $\beta$  coefficients for PM concentrations above and below an expert-specified break point. This approach allowed them to express increased uncertainty in mortality effects seen at lower concentrations in major epidemiological studies. Expert K thought the relationship would be log-linear above a threshold.”

Pg 2271: “Expert K also applied a threshold, T, to his function, which he described probabilistically. He specified  $P(T > 0) = 0.5$ . Given  $T > 0$ , he indicated  $P(T \leq 5 \mu\text{g}/\text{m}^3) = 0.8$  and  $P(5 \mu\text{g}/\text{m}^3 < T \leq 10 \mu\text{g}/\text{m}^3) = 0.2$ . Figure 3 does not include the impact of applying expert K’s threshold, as the size of the reduction in benefits will depend on the distribution of baseline PM levels in a benefits analysis.”

### **Experts:**

**Dr. Doug W. Dockery**, Harvard School of Public Health

**Dr. Kazuhiko Ito**, Nelson Institute of Environmental Medicine, NYU School of Medicine, Tuxedo, NY

**Dr. Dan Krewski**, University of Ottawa

**Dr. Nino Künzli**, University of Southern California Keck School of Medicine

**Dr. Morton Lippmann**, Professor, Nelson Institute of Environmental Medicine, New York University School of Medicine, Tuxedo, NY

**Dr. Joe Mauderly**, Lovelace Respiratory Research Institute

**Dr. Bart Ostro**, Chief, Air Pollution Epidemiology Unit, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, Oakland, CA

**Dr. Arden Pope**, Professor, Department of Economics, Brigham Young University, Provo, UT

**Dr. Richard Schlesinger**, Pace University

**Dr. Joel Schwartz**, Harvard School of Public Health

**Dr. George Thurston**—Department of Environmental Medicine, NYU, Tuxedo, NY

**Dr. Mark Utell**, University of Rochester School of Medicine and Dentistry

## H. CASAC comments on PM Staff Paper (2005)

**U.S. Environmental Protection Agency - Science Advisory Board (U.S. EPA-SAB). 2005. EPA's Review of the National Ambient Air Quality Standards for Particulate Matter (Second Draft PM Staff Paper, January 2005). EPA-SAB-CASAC-05-007. June. Available on the Internet at <[http://yosemite.epa.gov/sab/sabproduct.nsf/E523DD36175EB5AD8525701B007332AE/\\$File/SAB-CASAC-05-007\\_unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/E523DD36175EB5AD8525701B007332AE/$File/SAB-CASAC-05-007_unsigned.pdf)>.**

Pg 6: "A second concern is with methodological issues. The issue of the selection of concentration-response (C-R) relationships based on locally-derived coefficients needs more discussion. The Panel did not agree with EPA staff in calculating the burden of associated incidence in their risk assessment using either the predicted background or the lowest measured level (LML) in the utilized epidemiological analysis. The available epidemiological database on daily mortality and morbidity does not establish either the presence or absence of threshold concentrations for adverse health effects. Thus, in order to avoid emphasizing an approach that assumes effects that extend to either predicted background concentrations or LML, and to standardize the approach across cities, for the purpose of estimating public health impacts, the Panel favored the primary use of an assumed threshold of 10 µg/m<sup>3</sup>. The original approach of using background or LML, as well as the other postulated thresholds, could still be used in a sensitivity analysis of threshold assumptions.

"The analyses in this chapter highlight the impact of assumptions regarding thresholds, or lack of threshold, on the estimates of risk. The uncertainty associated with threshold or nonlinear models needs more thorough discussion. A major research need is for more work to determine the existence and level of any thresholds that may exist or the shape of nonlinear concentration-response curves at low levels of exposure that may exist, and to reduce uncertainty in estimated risks at the lowest PM concentrations."

### CASAC Panel Members

**Dr. Rogene Henderson**, Scientist Emeritus, Lovelace Respiratory Research Institute, Albuquerque, NM

**Dr. Ellis Cowling**, University Distinguished Professor-at-Large, North Carolina State University, Colleges of Natural Resources and Agriculture and Life Sciences, North Carolina State University, Raleigh, NC

**Dr. James D. Crapo**, Professor, Department of Medicine, Biomedical Research and PatientCare, National Jewish Medical and Research Center, Denver, CO

**Dr. Philip Hopke**, Bayard D. Clarkson Distinguished Professor, Department of Chemical Engineering, Clarkson University, Potsdam, NY

**Dr. Jane Q. Koenig**, Professor, Department of Environmental Health, School of Public Health and Community Medicine, University of Washington, Seattle, WA

**Dr. Petros Koutrakis**, Professor of Environmental Science, Environmental Health, School of Public Health, Harvard University (HSPH), Boston, MA

**Dr. Allan Legge**, President, Biosphere Solutions, Calgary, Alberta

**Dr. Paul J. Liroy**, Associate Director and Professor, Environmental and Occupational Health Sciences Institute, UMDNJ - Robert Wood Johnson Medical School, NJ

**Dr. Morton Lippmann**, Professor, Nelson Institute of Environmental Medicine, New York University School of Medicine, Tuxedo, NY

**Dr. Joe Mauderly**, Vice President, Senior Scientist, and Director, National Environmental Respiratory Center, Lovelace Respiratory Research Institute, Albuquerque, NM

**Dr. Roger O. McClellan**, Consultant, Albuquerque, NM

**Dr. Frederick J. Miller**, Consultant, Cary, NC

**Dr. Gunter Oberdorster**, Professor of Toxicology, Department of Environmental Medicine, School of Medicine and Dentistry, University of Rochester, Rochester, NY

**Mr. Richard L. Poirot**, Environmental Analyst, Air Pollution Control Division, Department of Environmental Conservation, Vermont Agency of Natural Resources, Waterbury, VT

**Dr. Robert D. Rowe**, President, Stratus Consulting, Inc., Boulder, CO

**Dr. Jonathan M. Samet**, Professor and Chair, Department of Epidemiology, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD

**Dr. Frank Speizer**, Edward Kass Professor of Medicine, Channing Laboratory, Harvard Medical School, Boston, MA

**Dr. Sverre Vedal**, Professor of Medicine, School of Public Health and Community Medicine University of Washington, Seattle, WA

**Mr. Ronald White**, Research Scientist, Epidemiology, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD

**Dr. Warren H. White**, Visiting Professor, Crocker Nuclear Laboratory, University of California -Davis, Davis, CA

**Dr. George T. Wolff**, Principal Scientist, General Motors Corporation, Detroit, MI

**Dr. Barbara Zielinska**, Research Professor, Division of Atmospheric Science, Desert Research Institute, Reno, NV

## **I. HES Comments on 812 Analysis (2004)**

**U.S. Environmental Protection Agency - Science Advisory Board (U.S. EPA-SAB). 2004. Advisory on Plans for Health Effects Analysis in the Analytical Plan for EPA's Second Prospective Analysis – Benefits and Costs of the Clean Air Act, 1990-2020. Advisory by the Health Effects Subcommittee of the Advisory Council on Clean Air Compliance Analysis. EPA-SAB-COUNCIL-ADV-04-002. March. Available on the Internet at <[http://yosemite.epa.gov/sab%5CSABPRODUCT.NSF/08E1155AD24F871C85256E5400433D5D/\\$File/council\\_adv\\_04002.pdf](http://yosemite.epa.gov/sab%5CSABPRODUCT.NSF/08E1155AD24F871C85256E5400433D5D/$File/council_adv_04002.pdf)>.**

Pg 20: “The Subcommittee agrees that the whole range of uncertainties, such as the questions of causality, shape of C-R functions and thresholds, relative toxicity, years of life lost, cessation lag structure, cause of death, biologic pathways, or susceptibilities may be viewed differently for acute effects versus long-term effects.

“For the studies of long-term exposure, the HES notes that Krewski et al. (2000) have conducted the most careful work on this issue. They report that the associations between PM<sub>2.5</sub> and both all-cause and cardiopulmonary mortality were near linear within the relevant ranges, with no apparent threshold. Graphical analyses of these studies (Dockery et al., 1993, Figure 3 and Krewski et al., 2000, page 162) also suggest a continuum of effects down to lower levels. Therefore, it is reasonable for EPA to assume a no threshold model down to, at least, the low end of the concentrations reported in the studies.”

### **HES Panel Members**

**Dr. Bart Ostro**, California Office of Environmental Health Hazard Assessment (OEHHA), Oakland, CA

**Mr. John Fintan Hurley**, Institute of Occupational Medicine (IOM), Edinburgh, Scotland

**Dr. Patrick Kinney**, Columbia University, New York, NY

**Dr. Michael Kleinman**, University of California, Irvine, CA

**Dr. Nino Künzli**, University of Southern California, Los Angeles, CA

**Dr. Morton Lippmann**, New York University School of Medicine, Tuxedo, NY  
**Dr. Rebecca Parkin**, The George Washington University, Washington, DC

**Dr. Trudy Cameron**, University of Oregon, Eugene, OR

**Dr. David T. Allen**, University of Texas, Austin, TX

**Ms. Lauraine Chestnut**, Stratus Consulting Inc., Boulder, CO

**Dr. Lawrence Goulder**, Stanford University, Stanford, CA

**Dr. James Hammitt**, Harvard University, Boston, MA

**Dr. F. Reed Johnson**, Research Triangle Institute, Research Triangle Park, NC

**Dr. Charles Kolstad**, University of California, Santa Barbara, CA

**Dr. Lester B. Lave**, Carnegie Mellon University, Pittsburgh, PA

**Dr. Virginia McConnell**, Resources for the Future, Washington, DC

**Dr. V. Kerry Smith**, North Carolina State University, Raleigh, NC

**Other Panel Members**

Dr. John Evans, Harvard University, Portsmouth, NH Dr. Dale Hattis, Clark University, Worcester, MA  
Dr. D. Warner North, NorthWorks Inc., Belmont, CA Dr. Thomas S. Wallsten, University of Maryland,  
College Park, MD

**J. NRC – Committee on Estimating the Health Risk Reduction Benefits of Proposed Air Pollution Regulations (2002)**

**National Research Council (NRC). 2002. Estimating the Public Health Benefits of Proposed Air Pollution Regulations. Washington, DC: The National Academies Press.**

Pg 109: “**Linearity and Thresholds**

“The shape of the concentration-response functions may influence the overall estimate of benefits. The shape is particularly important for lower ambient air pollution concentrations to which a large portion of the population is exposed. For this reason, the impact of the existence of a threshold may be considerable.

“In epidemiological studies, air pollution concentrations are usually measured and modeled as continuous variables. Thus, it may be feasible to test linearity and the existence of thresholds, depending on the study design. In time-series studies with the large number of repeated measurements, linearity and thresholds have been formally addressed with reasonable statistical power. For pollutants such as PM<sub>10</sub> and PM<sub>2.5</sub>, there is no evidence for any departure of linearity in the observed range of exposure, nor any indication of a threshold. For example, examination of the mortality effects of short-term exposure to PM<sub>10</sub> in 88 cities indicates that the concentration-response functions are not due to the high concentrations and that the slopes of these functions do not appear to increase at higher concentrations (Samet et al. 2000). Many other mortality studies have examined the shape of the concentration-response function and indicated that a linear (nonthreshold) model fit the data well (Pope 2000). Furthermore, studies conducted in cities with very low ambient pollution concentrations have similar effects per unit change in concentration as those studies conducted in cities with higher concentrations. Again, this finding suggests a fairly linear concentration-response function over the observed range of exposures.

“Regarding the studies of long-term exposure, Krewski et al. (2000) found that the assumption of a linear concentration-response function for mortality outcomes was not unreasonable. However, the statistical power to assess the shape of these functions is weakest at the upper and lower end of the observed exposure ranges. Most of the studies examining the effects of long-term exposure on morbidity compare subjects living in a small number of communities (Dockery et al. 1996; Ackermann-Liebrich 1997; Braun-Fahrlander et al. 1997). Because the number of long-term effects studies are few and the number of communities studied is relatively small (8 to 24), the ability to test formally the absence or existence of a no-effect threshold is not feasible. However, even if thresholds exist, they may not be at the same concentration for all health outcomes.

“A review of the time-series and cohort studies may lead to the conclusion that although a threshold is not apparent at commonly observed concentrations, one may exist at lower levels. An important point to acknowledge regarding thresholds is that for health benefits analysis a key threshold is the population threshold (the lowest of the individual thresholds). However, the population threshold would be very difficult to observe empirically through epidemiology, because epidemiology integrates information from very large groups of people (thousands). Air pollution regulations affect even larger groups of people (millions). It is reasonable to assume that among such large groups susceptibility to air pollution health effects varies considerably across individuals and depends on a large set of underlying factors, including genetic makeup, age, exposure measurement error, preexisting disease, and simultaneous exposures from smoking and occupational hazards. This variation in individual susceptibilities and the resulting distribution of individual thresholds underlies the concentration-response function observed in epidemiology. Thus, until biologically based models of the distribution of individual thresholds are developed, it may be productive to assume that the population concentration-response function is

continuous and to focus on finding evidence of changes in its slope as one approaches lower concentrations.

### **EPA's Use of Thresholds**

“In EPA’s benefits analyses, threshold issues were discussed and interpreted. For the PM and ozone National Ambient Air Quality Standards (NAAQS), EPA investigated the effects of a potential threshold or reference value below which health consequences were assumed to be zero (EPA 1997). Specifically, the high-end benefits estimate assumed a 12-microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) mean threshold for mortality associated with long-term exposure to  $\text{PM}_{2.5}$ . The low-end benefits estimate assumed a 15- $\mu\text{g}/\text{m}^3$  threshold for all PM-related health effects. The studies, however, included concentrations as low as 7.5  $\mu\text{g}/\text{m}^3$ . For the Tier 2 rule and the HD engine and diesel-fuel rule, no threshold was assumed (EPA 1999, 2000). EPA in these analyses acknowledged that there was no evidence for a threshold for PM.

“Several points should be noted regarding the threshold assumptions. If a threshold is assumed where one was not apparent in the original study, then the data should be refit and a new curve generated with the assumption of a zero slope over a segment of the concentration-response function that was originally found to be positively sloped. The assumption of a zero slope over a portion of the curve will force the slope in the remaining segment of the positively sloped concentration-response function to be greater than was indicated in the original study. A new concentration-response function was not generated for EPA’s benefits analysis for the PM and ozone NAAQS for which threshold assumptions were made. The generation of the steeper slope in the remaining portion of the concentration-response function may fully offset the effect of assuming a threshold. These aspects of assuming a threshold in a benefits analysis where one was not indicated in the original study should be conveyed to the reader. The committee notes that the treatment of thresholds should be evaluated in a consistent and transparent framework by using different explicit assumptions in the formal uncertainty analyses (see [Chapter 5](#)).”

Pg 117: “Although the assumption of no thresholds in the most recent EPA benefits analyses was appropriate, EPA should evaluate threshold assumptions in a consistent and transparent framework using several alternative assumptions in the formal uncertainty analysis.”

Pg 136: “Two additional illustrative examples are thresholds for adverse effects and lag structures.<sup>2</sup> EPA considers implausible any threshold for mortality in the particulate matter (PM) exposure ranges under consideration (EPA 1999a, p. 3-8). Although the agency conducts sensitivity analyses incorporating thresholds, it provides no judgment as to their relative plausibility. In a probabilistic uncertainty analysis, EPA could assign appropriate weights to various threshold models. For PM-related mortality in the Tier 2 analysis, the committee expects that this approach would have resulted in only a slight widening of the probability distribution for avoided mortality and a slight reduction in the mean of that distribution, thus reflecting EPA’s views about the implausibility of thresholds. The committee finds that such formal incorporation of EPA’s expert judgments about the plausibility of thresholds into its primary analysis would have been an improvement.

“Uncertainty about thresholds is a special aspect of uncertainty about the shape of concentration-response functions. Typically, EPA and authors of epidemiological studies assume that these functions are linear on some scale. Often, the scale is a logarithmic transformation of the risk or rate of the health outcome, but when a rate or risk is low, a linear function on the logarithmic scale is approximately linear on the scale of the rate or risk itself. Increasingly, epidemiological investigators are employing analytic methods that permit the estimation of nonlinear shapes for concentration-response functions (Greenland et al. 1999). As a consequence, EPA will need to be prepared to incorporate nonlinear concentration-response functions from epidemiological studies into the agency’s health benefits analyses. Any source of error or

bias that can distort an epidemiological association can also distort the shape of an estimated concentration-response function, as can variation in individual susceptibility (Hattis and Burmaster 1994; Hattis et al. 2001).”

Pg 137: “In principle, many components of the health benefits model need realistic probabilistic models (see Table 5-1 for a listing of such components), in addition to concentration-response thresholds and time lags between exposure and response. For example, additional features of the concentration-response function—such as projection of the results from the study population to the target populations (which may have etiologically relevant characteristics outside the range seen in the study population) and the projection of baseline frequencies of morbidity and mortality into the future—must be characterized probabilistically. Other uncertainties that might affect the probability distributions are the estimations of population exposure (or even concentration) from emissions, estimates of emissions themselves, and the relative toxicity of various classes of particles. Similarly, many aspects of the analysis of the impact of regulation on ambient concentrations and on population exposure involve considerable uncertainty and, therefore, may be beneficially modeled in this way. Depending on the analytic approach used, joint probability distributions will have to be specified to incorporate correlations between model components that are structurally dependent upon each other, or the analysis will have to be conducted in a sequential fashion that follows the model for the data-generating process.

“EPA should explore alternative options for incorporating expert judgment into its probabilistic uncertainty analyses. The agency possesses considerable internal expertise, which should be employed as fully as possible. Outside experts should also be consulted as needed, individually or in panels. In all cases, when expert judgment is used in the construction of a model component, the experts should be identified and the rationales and empirical bases for their judgments should be made available.”

#### **NRC members**

**Dr. JOHN C. BAILAR, III** (*Chair*), (emeritus) University of Chicago, Chicago, Illinois

**Dr. HUGH ROSS ANDERSON**, University of London, London, England

**Dr. MAUREEN L. CROPPER**, University of Maryland, College Park

**Dr. JOHN S. EVANS**, Harvard University, Boston, Massachusetts

**Dr. DALE B. HATTIS**, Clark University, Worcester, Massachusetts

**Dr. ROGENE F. HENDERSON**, Lovelace Respiratory Research Institute, Albuquerque, New Mexico

**Dr. PATRICK L. KINNEY**, Columbia University, New York, New York

**Dr. NINO KÜNZLI**, University of Basel, Basel, Switzerland; as of September 2002, University of Southern California, Los Angeles

**Dr. BART D. OSTRO**, California Environmental Protection Agency, Oakland

**Dr. CHARLES POOLE**, University of North Carolina, Chapel Hill

**Dr. KIRK R. SMITH**, University of California, Berkeley

**Dr. PETER A. VALBERG**, Gradient Corporation, Cambridge, Massachusetts

**Dr. SCOTT L. ZEGER**, Johns Hopkins University, Baltimore, Maryland



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
ENFORCEMENT AND  
COMPLIANCE ASSURANCE

December 16, 2011

MEMORANDUM

**SUBJECT:** The Environmental Protection Agency's Enforcement Response Policy For Use Of Clean Air Act Section 113(a) Administrative Orders In Relation To Electric Reliability And The Mercury and Air Toxics Standard

**FROM:** Cynthia Giles, Assistant Administrator of the Office of Enforcement and Compliance Assurance *Cynthia Giles*

**TO:** Regional Administrators (EPA Regions I-X)  
Regional Counsel (EPA Regions I-X)  
Regional Enforcement Division Directors (EPA Regions I-X)  
Air Division Directors (EPA Headquarters and Regions I-X)

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**I. STATEMENT OF POLICY**

It is the EPA's obligation to ensure compliance with environmental laws designed to protect public health and welfare. Where there is a conflict between timely compliance with a particular requirement and electric reliability, the EPA intends to carefully exercise its authorities to ensure compliance with environmental standards while addressing genuine risks to reliability in a manner that protects public health and welfare.

Pursuant to Section 112 of the Clean Air Act ("CAA"), the EPA finalized national emission standards for hazardous air pollutants ("NESHAP") from electric generating units ("EGUs") in December 2011. These standards, commonly known as the "Mercury and Air Toxics Standards" ("MATS"), adopt emission limits on mercury, acid gases and other toxic pollutants for affected coal and oil-fired EGUs. Many existing sources will comply with the MATS by controlling their emissions, while others (typically older, smaller, less efficient units) may choose to cease operations rather than install control technologies.

The EPA believes that all affected sources will be able to comply with the MATS within the compliance period specified by Section 112(i)(3) of the CAA (including, as applicable, any

extensions permitted under Section 112(i)(3)(B)) (the “MATS Compliance Date”). The EPA’s analysis projects only a modest level of retirements, and the Agency does not anticipate that such retirements will lead to resource constraints that would adversely affect electric reliability.

Nonetheless, the EPA acknowledges that there may be isolated instances in which the deactivation or retirement of a unit or a delay in installation of controls due to factors beyond the owner’s/operator’s control could have an adverse, localized impact on electric reliability that cannot be predicted or planned for with specificity at the present time. In such instances, sources could find themselves in the position of either operating in noncompliance with the MATS or halting operations and thereby potentially impacting electric reliability.

The EPA is issuing this policy memorandum to describe its intended approach regarding the use of Section 113(a) administrative orders (“AOs”) with respect to sources that must operate in noncompliance with the MATS for up to a year to address a specific and documented reliability concern. This enforcement policy is limited in application to units that are critical for reliability purposes. Some sources will be able obtain a broadly available one-year extension pursuant to Section 112(i)(3)(B). A source that qualifies for a one year extension from its permitting authority may also qualify for an AO at the end of its extension, provided that it falls within the terms of this policy. The EPA believes that there are likely to be few, if any, cases in which it is not possible to mitigate a reliability issue within four years, and that there are likely to be fewer, if any, cases in which it is not possible to mitigate a reliability issue within the further year contemplated under this policy.

This policy does not address situations where a reliability critical unit needs more than one year to come into compliance after the MATS Compliance Date. The policy also does not address delays in installations of controls and/or other instances of noncompliance with the MATS for units that are not reliability critical. The EPA intends to handle such scenarios as it has in the past, by assessing each situation on a case-by-case basis, at the appropriate time, to determine the appropriate enforcement response and resolution.

As set forth below, in light of the complexity of the electric system and the local nature of many reliability issues, the EPA will, for purposes of using its Section 113(a) AO authority in this context, rely for identification and/or analysis of reliability risks upon the advice and counsel of reliability experts, including, but not limited to, the Federal Energy Regulatory Commission (“FERC”), Regional Transmission Operators (“RTOs”), Independent System Operators (“ISOs”) and other Planning Authorities as identified herein, the North American Electric Reliability Corporation (“NERC”) and affiliated regional entities, and state public service commissions (“PSCs”) and public utility commissions (“PUCs”). The EPA will work with these and other organizations, as appropriate, to ensure that any claims of reliability risks are properly characterized and evaluated.

The EPA is committed to achieving compliance with the MATS while ensuring electric reliability.

*The policies established in this document supplement other applicable policies, and are intended to assist government personnel in determining the appropriate response to noncompliance. These policies and procedures are not intended to, nor do they, constitute a rulemaking by the EPA. These policies and procedures do not create a right or a benefit, substantive or procedural, that is enforceable at law or in equity by any person. The EPA reserves the right to act at variance with these policies and to change them at any time without public notice. Further, nothing in this document should be construed to affect the EPA's analysis of, or reaction to, an imminent and substantial endangerment to human health.*

## **II. SUMMARY OF LEGAL REQUIREMENTS AND AUTHORITIES**

Section 112 of the CAA establishes compliance deadlines for existing sources to meet standards promulgated under that provision, such as those included in the MATS rule.<sup>1</sup> Specifically, Section 112(i)(3)(A) provides:

After the effective date of any emissions standard, limitation or regulation promulgated under this section and applicable to a source, no person may operate such source in violation of such standard, limitation or regulation except, in the case of an existing source, the Administrator shall establish a compliance date or dates for each category or subcategory of existing sources, which shall provide for compliance as expeditiously as practicable, but in no event later than 3 years after the effective date of such standard.

*See, also* 40 CFR 63.9984.

The CAA and its implementing regulations provide specific conditions under which extensions may be granted to this three year compliance period and under which other compliance time periods may apply. *See, e.g.*, Section 112(i)(3)(B), (4)-(6). In particular, Section 112(i)(3)(B) provides:

The Administrator (or a State with a program approved under subchapter V of this chapter) may issue a permit that grants an extension permitting an existing source up to 1 additional year to comply with standards under subsection (d) of this section if such additional period is necessary for the installation of controls.

Section 113 of the CAA authorizes the Administrator to bring enforcement actions against sources in violation of CAA requirements, seeking injunctive relief, civil penalties and, in certain circumstances, other appropriate relief. The EPA also has the discretion to agree to negotiated

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<sup>1</sup> Except as otherwise provided under Section 112(i)(3)(B), the MATS requires compliance within three years of the effective date, the statutory maximum.

resolutions including, for example, expeditious compliance schedules with enforceable compliance milestones.

### **III. THE EPA'S ENFORCEMENT RESPONSE TO BRING RELIABILITY-CRITICAL UNITS INTO COMPLIANCE**

The EPA generally does not speak publicly to the intended scope of its enforcement efforts, particularly years in advance of the date when a violation may occur. The Agency is doing so now with respect to the MATS to provide confidence with respect to electric reliability. EGUs may be needed to operate to maintain the reliability of the electric grid when they would prefer, or could be required, to halt operations temporarily (until controls can be installed) or indefinitely (through deactivation of a unit). This policy describes the EPA's intended enforcement response in such instances. The policy is informed, as are our enforcement actions in general, by the need to find an appropriate balance between critical public interests, bearing in mind the resources and process time required for any enforcement response.

Some sources may take all steps necessary to comply with the MATS, but may nevertheless be needed to operate in noncompliance with the MATS to address concerns with electric reliability. In the event that such sources are interested in receiving a schedule to come into compliance while operating, the EPA intends, where necessary to avoid a serious risk to electric reliability, and provided the criteria set forth herein are met, to issue an expeditious case-specific AO to bring a source into compliance within one year. *See* Section 113(a). Any such AOs would be issued on or after (not before) the MATS Compliance Date and would be limited to units that are required to run for reliability purposes that (A) would otherwise be deactivated, or (B) due to factors beyond the control of the owner/operator, have a delay in installation of controls or need to operate because another unit has had such a delay.<sup>2</sup>

The Agency is cognizant that early planning will play a key role in allowing for the identification, and timely mitigation, of any potential reliability issues. The EPA expects that owners/operators will begin compliance planning early, and will provide early notice of their compliance plans to the appropriate reliability entities. We further expect that entities with responsibility for reliability planning and coordination will develop and maintain system-wide reliability plans for the units within their purview, and that this regional reliability planning will provide early identification of units that are critical for reliability purposes. Early notice and planning can discourage delays in coming into compliance, encourage timely action to avoid or mitigate reliability concerns, and minimize the need for issuance of AOs of the type described herein.

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<sup>2</sup> The EPA does not intend to seek civil penalties for violations of the MATS that occur as a result of operation for up to one year in conformity with an AO issued in connection with this policy, unless there are misrepresentations in the materials submitted in a request for an AO.

The EPA also recognizes the need for advance planning with regard to the future availability of any reliability critical EGUs to operate as needed to maintain electric reliability. Accordingly, although an AO cannot be issued under Section 113(a) prior to the MATS Compliance Date, the EPA intends – where the owner/operator has timely submitted a complete request and has provided appropriate cooperation – to give the owner/operator as much advance written notice as practicable of the Agency’s plans with regard to such an AO.

To qualify for an AO in connection with this policy, an owner/operator should, at a minimum, take the following steps.<sup>3,4</sup>

- A. Provide early notice of compliance plans. Within one year after the effective date of the MATS, an owner/operator should provide written notice of its compliance plans, with regard to each EGU it owns or operates, that identifies (a) the units it plans to deactivate and the anticipated dates of deactivation and (b) the units for which it intends to install pollution control equipment or otherwise retrofit and the anticipated schedule for completion of that work, to the Planning Authority for the area in which the relevant EGU or EGUs are located.<sup>5</sup>
- B. Timely request an AO for a unit that may affect reliability due to deactivation. In addition to the elements identified in III(A) above, for a unit that is required to run for reliability purposes that would otherwise be deactivated:
  1. An owner/operator should, no less than 180 days prior to the MATS Compliance Date, submit electronically to (a) the Director of the Air Enforcement Division in the EPA’s Office of Enforcement and Compliance Assurance, and (b) the Regional Administrator of the EPA Region in which the EGU is located, with a copy to FERC, at an office of its designation, (collectively, “AO Request Recipients”) a written request for an enforceable compliance schedule in an AO for the unit, which includes information responsive to each of the elements specified in III(D) below.
  2. At the same time the unit owner/operator submits its request for an AO, an owner/operator should also provide notice that it is seeking such an AO to (a) the Planning Authority, (b) any state PUCs/PSCs with regulatory jurisdiction with

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<sup>3</sup> The EPA will evaluate each request for an AO for a unit that is required to run for reliability purposes on a case-by-case basis.

<sup>4</sup> Any notice, request or other submission discussed in this memorandum should conform to the standard business practice of the receiving entity for the submission of information, including any requirements governing submission of Confidential Business Information and/or other confidential information.

<sup>5</sup> Planning Authority is the entity defined as such in the “Glossary of Terms Used in NERC Reliability Standards,” available at:

[http://www.nerc.com/docs/standards/rs/Reliability\\_Standards\\_Complete\\_Set.pdf](http://www.nerc.com/docs/standards/rs/Reliability_Standards_Complete_Set.pdf), or any successor term thereto approved by FERC, and includes, in relevant jurisdictions, RTOs and ISOs.

regard to the relevant EGU,<sup>6</sup> (c) any state, tribal or local environmental agency with permitting authority under Titles I and V of the CAA, and any tribal environmental agency that does not have such authority, with jurisdiction over the area in which the EGU is located (collectively, “AO Notice Recipients”).

- C. Timely request an AO for a unit that may affect reliability due to delays related to the installation of controls. In addition to the elements identified in III(A) above, for a unit that is required to run for reliability purposes that, due to factors beyond the control of the owner/operator, has a delay in installation of controls or needs to operate because another unit has had such a delay:
1. An owner/operator should, within a reasonable time of learning of a delay that it believes may result in a unit being unable to comply by the MATS Compliance Date, provide to the Planning Authority for the area in which the relevant EGU or EGUs are located, written notice of the units impacted by the delay, the cause of the delay, an estimate of the length of time of the delay, and the timeframe during which it contemplates operation in noncompliance with the MATS.
  2. An owner/operator should, within a reasonable time of learning that it is critical to reliability to operate a unit described in the preceding paragraph in noncompliance with the MATS after the MATS Compliance Date, submit electronically to the AO Request Recipients a written request for an enforceable compliance schedule in an AO for the unit, which includes information responsive to as many of the elements specified in III(D) below as it is possible to provide at that time.
  3. At the same time the unit owner/operator submits its request for an AO, an owner/operator should also provide notice that it is seeking such an AO to the AO Notice Recipients.
- D. Submit a complete request for an AO. The following elements should be included in a request for an AO in connection with this policy:<sup>7</sup>
1. Copies of the early notice provided to the Planning Authority pursuant to III(A) or an explanation of why it was not practicable to have provided such notice and a demonstration that such notice was provided as soon as it was practicable.

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<sup>6</sup> PUCs/PSCs may also wish to obtain the information identified in III(A), either by requesting that an owner/operator over which the PUC/PSC has jurisdiction provide such information directly, or by requesting such information from the relevant Planning Authority.

<sup>7</sup> The EPA may request additional information from the unit owner/operator. The speed with which the EPA evaluates a request and its ultimate response will be related to the timeliness, completeness, and quality of the submittal.

2. Written analysis of the reliability risk if the unit were not in operation, which demonstrates that operation of the unit after the MATS Compliance Date is critical to maintaining electric reliability, and that failure to operate the unit would: (a) result in the violation of at least one of the reliability criteria required to be filed with FERC, and, in the case of the Electric Reliability Council of Texas (“ERCOT”), with the Texas PUC,<sup>8</sup> or (b) cause reserves to fall below the required system reserve margin.
3. Written concurrence with the analysis in III(D)(2) by, or a separate and equivalent analysis by, the Planning Authority for the area in which the relevant EGU or EGUs are located, or, in the alternative, a written explanation of why such concurrence or separate and equivalent analysis cannot be provided, and, where practicable, any related system wide analysis by such entity.
4. Copies of any written comments from third parties directed to, and received by, the owner/operator in favor of, or opposed to, operation of the unit after the MATS Compliance Date.
5. A plan to achieve compliance with the MATS no later than one year after the MATS Compliance Date, and, where practicable, a written demonstration of the plan to resolve the underlying reliability problem and the steps and timeframe for implementing it, which demonstrates that such resolution cannot be effected on or before the MATS Compliance Date.
6. An identification of the level of operation of the unit that is required to avoid the documented reliability risk in III(D)(2) and, consistent with that level, a proposal for operational limits and/or work practices to minimize or mitigate any HAP emissions to the extent practicable during any operation not in full compliance with the MATS.

In evaluating a request for an AO submitted in contemplation of this policy, although the EPA’s issuance of an AO is not conditioned upon the approval or concurrence of any entity, the EPA intends to consult, as necessary or appropriate on a case-by-case basis, with FERC and/or other entities with relevant reliability expertise.

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<sup>8</sup> Because ERCOT oversees intrastate transmission of electricity solely within Texas and does not provide for interstate transmission, ERCOT files reliability criteria with the Texas PUC.

## Response

# Response to Cox Letter: “Miscommunicating Risk, Uncertainty, and Causation: Fine Particulate Air Pollution and Mortality Risk as an Example”

Neal Fann,<sup>1</sup> Amy D. Lamson,<sup>1</sup> Susan C. Anenberg,<sup>1</sup> Karen Wesson,<sup>1</sup> David Risley,<sup>2</sup> and Bryan J. Hubbell<sup>1</sup>

In his critique of our article, Dr. Cox makes a strong assertion: my co-authors and I have miscommunicated the level of uncertainty in our analysis by failing to account explicitly for the possibility that there is no causal relationship between PM<sub>2.5</sub> exposure and premature death—thereby undermining our key claim that PM<sub>2.5</sub> continues to pose a burden to public health.<sup>(1,2)</sup> We disagree. We argue here that: (1) there is an expert consensus opinion that there exists a causal relationship between PM<sub>2.5</sub> exposure and premature death; (2) the evidence Dr. Cox offers in support of his view of causality is insufficient; and (3) quantifying the PM<sub>2.5</sub> mortality burden by applying risk coefficients that incorporate varying degrees of certainty regarding causality in fact strengthens our conclusion that “recent levels of PM<sub>2.5</sub> . . . pose a nontrivial risk to public health.”<sup>(3)</sup>

In its synthesis of the clinical, toxicological, and epidemiological evidence regarding long-term PM<sub>2.5</sub> exposure and the risk of premature mortality, the U.S. EPA noted in its Integrated Science Assessment (ISA) that “[c]ollectively, the evidence is sufficient to conclude that **a causal relationship exists between long-term exposures to PM<sub>2.5</sub> and mortality**” (bold in original).<sup>(4)</sup> This statement reflects both the EPA’s understanding of the current state of the science as well as that of the independent Clean Air Scientific Advisory Committee, comprised of expert health and exposure scientists.<sup>(5)</sup> In its recent synthesis scientific

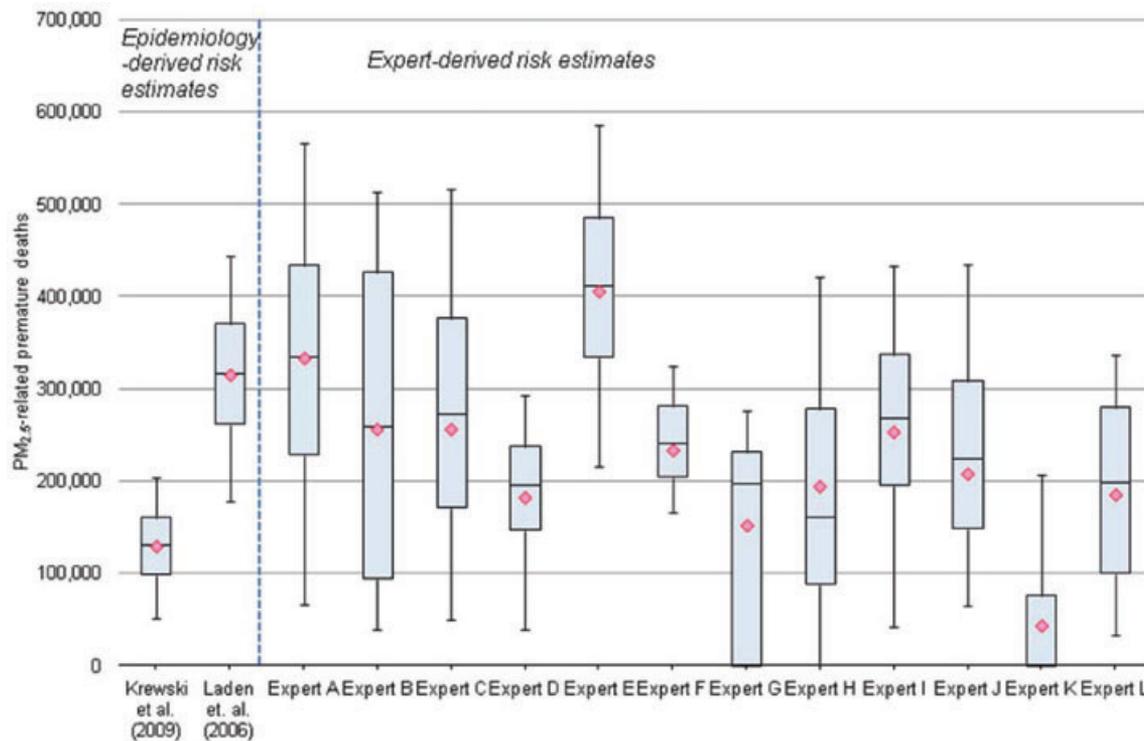
statement, the American Heart Association (AHA) observed that “many credible pathological mechanisms . . . lend biological plausibility to [the] findings” that PM<sub>2.5</sub> exposure increases the risk of premature death. The AHA concluded that “the overall evidence is consistent with a causal relationship between PM<sub>2.5</sub> exposure and cardiovascular morbidity and mortality.”<sup>(6)</sup> Thus, we did not explore the conceptual and empirical basis supporting a causal relationship between PM<sub>2.5</sub> exposure and premature death because we understood this matter to have been resolved in the literature.

Dr. Cox refers to a handful of articles to support his contention that premature death may not be causally related to PM<sub>2.5</sub> exposure. Among these is U.S. EPA<sup>(8)</sup> which we explore in greater depth later, as well as Ostro *et al.*<sup>(7)</sup> and Koop and Tole (2004).<sup>(9)</sup> As we indicate in the article, we quantified mortality related to long-term exposure to PM<sub>2.5</sub> by applying risk coefficients drawn from an extended analysis of the American Cancer Society (ACS) cohort (Krewski *et al.*<sup>(10)</sup>), as well as an extended analysis of the Harvard Six Cities (H6C) cohort (Laden *et al.*<sup>(11)</sup>). As these are each long-term exposure studies applying the Cox proportional hazards model, the relevance of model specification in the Ostro *et al.* time series seems less relevant here. We also note that this approach to using ACS and H6C is consistent with recent advice from the EPA Science Advisory Board in the context of the Agency’s assessment of the benefits and costs of the Clean Air Act Amendments of 1990.<sup>(12)</sup>

When referencing the analysis by Koop and Tole<sup>(9)</sup>, Dr. Cox notes that the study “attempt[s]

<sup>1</sup>U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, USA.

<sup>2</sup>U.S. Environmental Protection Agency, Office of Atmospheric Programs, Washington, DC, USA.



**Fig. 1.** The estimated number of PM<sub>2.5</sub>-related premature deaths attributable to 2005 levels of annual mean PM<sub>2.5</sub>, quantified using epidemiological and expert-derived effect coefficients.

to account more objectively for model uncertainty (via Bayesian model averaging)...and [suggests] the probability of a nonzero statistical C-R coefficient..." However, the authors themselves caution that their "findings do not necessarily imply that air pollution does not have adverse health effects ... [r]ather, our results indicate that there is no reliable statistical evidence for a link between air pollution and mortality in the particular daily time series data set that we consider." Indeed, other time series studies including Katsouyanni *et al.*<sup>(13)</sup> extensively assessed alternate models, finding that results were robust to a wide range of degrees of freedom.<sup>(13)</sup> Moreover, the consistency of the findings of time series studies across a large number of urban areas provides further evidence of the causal relationship between PM<sub>2.5</sub> exposure and premature mortality.

Finally, Dr. Cox observes that the participants of the 2006 PM<sub>2.5</sub> expert elicitation assigned a less than 100% probability to the chance that long-term exposure to PM<sub>2.5</sub> causes premature mortality. Indeed, 10 of 12 experts reported a causal probability of  $\geq 90\%$ .<sup>(3)</sup> In an attempt to illustrate the sensitivity of our original findings to the use of risk

coefficients that formally incorporate a quantitative probability regarding causality, we apply the risk coefficients drawn from this expert elicitation (Fig. 1). This assessment applies the analytical inputs specified in the Fann *et al.*<sup>(1)</sup> article—including the air quality estimates, population values, and baseline mortality rates.

Clearly depicted in this figure is that the mean value quantified using risk coefficients from each expert is well above zero. Indeed, the mass of the distribution is at or above the Krewski *et al.*<sup>(10)</sup> derived value noted in the abstract to the Fann *et al.*<sup>(1)</sup> paper. The 5th percentile values for 9 of 12 experts, and lower interquartile range for 10 of 12 experts, are greater than zero. These results suggest that while a value of zero is possible, it is rather unlikely—and thus supports the key findings of our article.

In reference to the assertion that PM<sub>2.5</sub> exposure is causally related to premature death, Dr. Cox notes that the "[b]elief that one can prolong large numbers of lives through well-understood preventative actions is surely exciting and gratifying." On this point we can surely agree. Pope *et al.*<sup>(14)</sup> recently found that PM<sub>2.5</sub> reductions—a result largely attributable to well-understood preventative

actions stipulated in the Clean Air Act—yielded significant improvements in life expectancy. While our paper makes clear that there remains a health burden to PM<sub>2.5</sub>, we can be assured that future improvements in PM<sub>2.5</sub> air quality will provide substantial public health benefits.

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June 4, 2012

2828 University Avenue SE, Suite 200  
Minneapolis, MN 55414

U.S. House of Representatives  
Science, Space, and Technology Committee  
Subcommittee on Energy and Environment

1020 19th Street NW, Suite 600  
Washington, D.C. 20036

330 Townsend Street, Suite 205  
San Francisco, CA 94107

Dear Members of the Committee:

In anticipation of your hearing on June 6, "EPA's Impact on Jobs and Energy Affordability," I wish to convey the foundational belief of the BlueGreen Alliance that good jobs and a clean environment are inextricably linked.

Ever since its inception, opponents have wrongly charged that the vital public health functions of the Environmental Protection Agency (EPA) have come at a cost to the American economy and, in particular, have caused significant job loss. Between 1970 and 2009, total emissions of the six principal air pollutants fell by 63 percent, and private sector jobs and GDP grew by 86 percent and 204 percent respectively.

Pollution is a form of waste and a sign of inefficiency. The environmental safeguards of the last 40 years have repeatedly resulted in waste reduction, energy efficiency, and greater economic competitiveness — creating thousands of new jobs and making existing jobs more secure.

In a global economy, where our international competitors are leading in the development of clean energy technologies and deployment, retreating from this basic understanding is tantamount to surrendering our economic future. All too often people are offered a false choice between having good jobs or a clean environment. The truth is we don't have to choose between jobs and the environment; we can and must have both.

The BlueGreen Alliance supports the reasonably structured Carbon Pollution Standard for the reasons you can find articulated on our website:

<http://www.bluegreenalliance.org/news/publications/bluegreen-alliance-testimony-at-epa-greenhouse-gas-rule-hearings>

While we strongly advocated for a comprehensive, legislative approach to America's energy and climate policy, we must not use the failure of action as an excuse to turn our backs from what currently can and must be done. Nor can we use this as an excuse to turn our backs on fiercely advocating for a comprehensive solution.

We appreciate the opportunity to provide comment for this hearing, and will certainly answer any questions or concerns you might have.

Sincerely,



David Foster  
Executive Director  
BlueGreen Alliance



March 14, 2011

The Honorable John Boehner  
Speaker of the House  
U.S. Capitol  
Washington, DC 20515

The Honorable Fred Upton  
Chair – House Committee on Energy & Commerce  
2125 Rayburn House Office Building  
Washington, DC 20515

The Honorable Nancy Pelosi  
House Minority Leader  
U.S. Capitol  
Washington, DC 20515

The Honorable Henry Waxman  
Ranking Member – House Committee on Energy & Commerce  
2322A Rayburn House Office Building  
Washington, DC 20515

Re: H.R. 910 – Upton-Inhofe Act

Dear Speaker Boehner, Minority Leader Pelosi, Chairman Upton and Ranking Member Waxman:

We are writing to oppose H.R. 910, which would harm America's economic future by restricting the ability of the Environmental Protection Agency (EPA) to regulate greenhouse gases under the Clean Air Act.

Over the last 40 years, the EPA has been as much a protector of our economy as of the public's health. Indeed, standards under the Clean Air Act are a key component in helping to ensure that we move our economy forward and create jobs. From our scientific research, we know that most small business owners support clean energy strategies that not only reduce pollution but enable us to transition to a robust 21<sup>st</sup> century clean energy economy.

A national poll that we released last year found that 61% of small business owners agree that moving the country towards clean energy is a way to restart the economy and make their businesses more competitive. Our survey also found that two-thirds of small businesses are already taking steps to conserve energy and many are interested in doing even more. Moreover, the EPA recently released a report showing that over the past 40 years the Clean Air Act has resulted in \$2 trillion in economic benefits due to factors such as lower healthcare costs and reduced employee absenteeism.

Despite this success, some in Congress are seeking to undermine the EPA's authority to enforce the Clean Air Act, when they should instead focus on passing legislation that will create jobs and boost business opportunities for employers across the nation. H.R. 910 will not help small businesses innovate and create jobs, nor will it help our economy thrive.

We urge you to help small businesses succeed by opposing this bill and continuing to support the EPA and its responsible enforcement of the Clean Air Act so that small businesses, and the millions of workers they employ, can keep taking advantage of its numerous benefits.

Sincerely,

A handwritten signature in black ink that reads "John C. Arensmeyer". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

John Arensmeyer  
Founder & CEO



June 4, 2012

**Board of Directors**

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Robert Glicksman  
David Hunter  
Thomas McGarity  
Catherine O'Neill  
Amy Sinden  
Sidney Shapiro  
Rena Steinzor

The Honorable Ralph M. Hall, Chairperson  
House of Representatives Committee on Science, Space, and Technology  
Washington, DC 20515

The Honorable Eddie Bernice Johnson, Ranking Member  
House of Representatives Committee on Science, Space, and Technology  
Washington, DC 220515

**Advisory Council**

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Frances Beinecke  
Eula Bingham  
W. Thompson Comerford, Jr.  
Sally Greenberg  
John Passacantando  
Henry Waxman  
Robert Weissman

Dear Chairperson Hall and Ranking Member Johnson:

I am writing to call to your attention three documents, appended, in advance of your upcoming hearing entitled "EPA's Impact on Jobs and Energy Affordability: Understanding the Real Costs and Benefits of Environmental Regulations," to be conducted on June 6, 2012, at 2:00 p.m. before the Subcommittee on Energy and Environment.

- Sidney Shapiro et al., *Saving Lives, Preserving the Environment, Growing the Economy: The Truth About Regulation* (CPR White Paper 1109, 2011), also available at [http://www.progressivereform.org/articles/RegBenefits\\_1109.pdf](http://www.progressivereform.org/articles/RegBenefits_1109.pdf). The discussion on pages 15 through 18 of the white paper summarizes the existing economics literature demonstrating that strong regulations are compatible with economic growth and job creation.
- Frank Ackerman and Lisa Heinzerling, *CPR Perspective: Cost-Benefit Analysis*, Center for Progressive Reform, also available at <http://www.progressivereform.org/perspCostbenefit.cfm>. This web perspective provides a concise summary of the book *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection* (Georgetown Environmental Law & Policy Institute 2002), one of the most comprehensive critiques of the use of cost-benefit analysis in regulatory decision-making in existence.
- John Applegate et al., *Comments Regarding Executive Order on OMB Regulatory Review*, March 16, 2009, also available at [http://www.progressivereform.org/articles/CPR\\_Comments\\_New\\_EO\\_Reg\\_Review.pdf](http://www.progressivereform.org/articles/CPR_Comments_New_EO_Reg_Review.pdf). These comments were submitted in response to President Barack Obama's February 2009 invitation for public recommendations on a new Executive Order governing regulatory review. The discussion on pages 12 through 16 of the comments provides additional criticisms of the theoretical underpinnings and practice of cost-benefit analysis in regulatory decision-making.



The documents were produced by Member Scholars with the Center for Progressive Reform (CPR), a nonprofit research and educational organization with a network of

Member Scholars working to protect health, safety, and the environment through analysis and commentary. More information about CPR can be found at the organization's website: <http://www.progressivereform.org>.

If you have any additional questions regarding these documents, or the issues of regulatory policy and cost-benefit analysis, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "James Goodwin". The signature is written in a cursive style with a large initial "J" and a distinct "G".

James Goodwin, J.D., M.P.P.  
Policy Analyst  
Center for Progressive Reform

Clean Science  
Climate Change  
Corporate Accountability & Tort Reform  
Environmental Protection  
Food, Drug, Product Safety  
Regulatory Policy  
Secrecy in Government  
Worker Safety

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## CPR Perspective: Cost-Benefit Analysis

### Pricing the Priceless: Cost-Benefit Analysis of Health, Safety, and Environmental Protection

by [Frank Ackerman](#) and [then-Member Scholar Lisa Heinzerling](#)

#### Background

Conservative economists and other policymakers have long questioned the wisdom of protective health, safety, and environmental regulation, arguing that the "free market" will provide the level of protection that people are willing to support and that the government should interfere with the market only in limited circumstances. This campaign to cut back on regulation has as its centerpiece the use of "cost-benefit analysis," performed by economists as a supposedly neutral, mathematically precise way of determining whether protections should be initiated or continued.

Cost-benefit analysis seeks to translate all relevant considerations into monetary terms. Economists "monetize" both the costs of regulation, such as the money spent to install a scrubber on a power plant to reduce air pollution, and the benefits of regulation, such as saving human lives and preventing disease. When benefits of regulation will happen in the future, the economists first quantify those benefits in dollars. Then they "discount" their value to reflect how much we would have to invest today to have that much money when the benefit is delivered. To see the drastic effects discounting can have, look at our easy calculator, "[Honey, I Shrank the Future](#)." (Excel file download.)

The consideration of the costs of environmental protection is not unique to cost-benefit analysis. Development of environmental regulations has almost always involved consideration of economic costs, with or without formal cost-benefit techniques. What is unique to cost-benefit analysis, and far more problematic, is the other side of the balance – the monetary valuation of life, health, and nature itself.

Cost-benefit analysis sets out to do for government what the market does for business: add up the benefits of a public policy and compare them to the costs. The two sides of the ledger, however, raise very different issues.

The first step in a cost-benefit analysis is to calculate the costs of a public policy. The costs of protecting human health and the environment through the use of pollution control devices and other approaches are, by their very nature, measured in dollars. Thus, at least in theory, the cost side of cost-benefit analysis is relatively straightforward. (In practice, it is not quite that simple, and often costs are dramatically overstated in advance of regulation; see CPR's Perspectives on [Estimating Regulatory Costs](#) for more detailed discussion.

More problematic is the second step in the analysis: monetizing the benefits achieved by the regulation. Since there are no natural prices for a healthy environment, cost-benefit analysis requires the creation of artificial ones. Economists create artificial prices for health and environmental benefits by studying what people would be willing to pay for them. One popular method, called "contingent valuation," is essentially a form of opinion poll. Researchers ask a cross-section of the affected population how much they would be willing to pay to preserve or protect something that can't be bought in a store.

An alternative method of attaching prices to unpriced things infers what people are willing to pay from observation of their behavior in other markets. To assign a dollar value to risks to human life, for example, economists usually calculate the extra wage - or "wage premium" - that is paid to some workers who accept more risky jobs. If workers understand the risk and voluntarily accept a more dangerous job, then they are implicitly setting a price on risk by accepting the increased risk of death in exchange for increased wages. What does this indirect inference about wages say about the value of a life? A common estimate in recent cost-benefit analyses is that avoiding a risk that would lead, on average, to one death is worth roughly \$6.3 million. (Some estimates are much lower than this, and go as low as \$1 million or less; some are much higher, reaching \$10 million or more.)

Finally, costs and benefits of a policy frequently occur at different times. Often, costs are incurred today, or in the near future, to prevent harm in the more remote future. When the analysis spans a number of years, future costs and benefits are *discounted*, or treated as equivalent to smaller amounts of money in today's dollars.

Discounting is a procedure developed by economists to evaluate investments that produce future income. The case for discounting begins with the observation that \$100, say, received today is worth more than \$100 received next year, even in the absence of inflation. For one thing, you could put your money in the bank today and earn a little interest by next year. Suppose that your bank account earns 3 percent interest. In that case, if you received the \$100 today rather than next year, you would earn \$3 in interest, giving you a total of \$103 next year. Likewise, in order to get \$100 next year you only need to deposit \$97 today. So, at a 3% *discount rate*, economists would say that \$100 next year has a *present value* of \$97 in today's dollars.

**The Issue**  
Whether the technique of "cost-benefit analysis" should replace other, longstanding approaches to making decisions about human health, safety, and the environment.

This application of discounting is essential, and indeed commonplace, for many practical financial decisions. If offered a choice of investment opportunities with payoffs at different times in the future, you can (and should) discount the future payoffs to the present in order to compare them to each other. The important issue for environmental policy is whether this logic also applies to outcomes far in the future, and to opportunities – like long life and good health – that are not naturally stated in dollar terms.

## What People Are Fighting About

Ever since Newt Gingrich's "Contract With America" threatened to impose a cost-benefit standard on federal regulation, particularly environmental regulation, debates over federal regulation have featured a battle between those who favor the existing system for setting regulatory standards and those who favor fundamentally reworking that system to impose a narrow economic test on regulations that protect health, safety, and the environment.

Proponents of cost-benefit analysis make two basic arguments in its favor. First, use of cost-benefit analysis ostensibly leads to more "efficient" allocation of society's resources by better identifying which potential regulatory actions are worth undertaking and in what fashion.

What's At Stake  
Whether policies protecting health, safety, and the environment will be rejected if they do not pass a narrow economic test which requires the translation of human lives, human health, and nature itself into dollars.

Yet how do we know that greater regulatory efficiency is needed? For many economists, this is an article of faith: greater efficiency is always a top priority, in regulation or elsewhere. But many advocates also raise a more specific argument, imbued with a greater sense of urgency. The government, it is said, often issues rules that are insanely expensive, out of all proportion to their benefits – a problem that could be solved by the use of cost-benefit analysis to screen proposed regulations. Thus much of the case *for* cost-benefit analysis depends on the case *against* current regulation.

The literature on risk regulation is filled with lengthy tables listing the costs per life saved of various federal regulations. The numbers on such tables are fantastic: according to these lists, we are often spending hundreds of millions, and sometimes billions, of dollars for every single human life, or even year of life, we save through regulation.

Numbers like these have been used to argue that current regulatory costs are not only chaotically variable but also unacceptably high. They have even been relied upon to claim that the existing regulatory system actually *kills people* by imposing some very costly life-saving requirements while other, less expensive and more effective life-saving possibilities remain untouched. Indeed, one often-cited study concluded that we could save as many as 60,000 more lives every year with no increase in costs, if we simply spent our money on the least rather than most expensive opportunities for saving lives.

However, when one looks behind these tables and carefully sorts through the data upon which they are based, one learns that such claims are not only extravagant, but false. Many of the highest costs per life saved were found for regulations that agencies never promulgated, yet the tables are used to show that the government has already run amok. In addition, all of the studies showing outlandishly high costs per life saved discounted future lives saved, producing a built-in bias against future-oriented regulation.

A second important set of arguments holds that cost-benefit analysis would produce a better regulatory process – more objective and more transparent, and thus more accountable to the public. Cost-benefit analysis has been offered as a means of preventing an agency from just doing anything it wants or, more invidiously, from benefiting politically favored groups through its decisions.

Another important goal, said to be promoted by cost-benefit analysis, is transparency of administrative procedures. Decisions about environmental protection are notoriously complex. They reflect the input of biologists, toxicologists, epidemiologists, economists, engineers, lawyers, and other experts whose work is complicated and arcane. In order for the public to be part of the process of decision making about the environment, these judgments must be offered and debated in language accessible to people who are not experts. Many advocates of cost-benefit analysis believe that their methodology provides such a language.

In fact, cost-benefit analysis is incapable of delivering what its proponents promise. First, cost-benefit analysis cannot produce more efficient decisions because the process of reducing life, health, and the natural world to monetary values is inherently flawed.

Efforts to value life illustrate the basic problems. Cost-benefit analysis implicitly equates the risk of death with death itself, when in fact they are quite different and should be accounted for separately in considering the benefits of regulatory actions. Cost-benefit analysis also ignores the fact that citizens are concerned about risks to their families and others as well as themselves, ignores the fact that market decisions are often very different from political decisions, and ignores the incomparability of many different types of risks to human life. The same kinds of problems arise in attempting to define in monetary terms the benefits of protecting human health and the environment.

Second, the use of discounting systematically and improperly downgrades the importance of environmental regulation. While discounting makes sense in comparing alternative *financial* investments, it cannot reasonably be used to make a choice between preventing harms to present generations and preventing similar harms to future generations. Nor can discounting reasonably be used even to make a choice between harms to the current generation; choosing between preventing an automobile fatality and a cancer death does not turn on prevailing rates of return on financial investments. In addition, discounting tends to trivialize long-term environmental risks, minimizing the very real threat our society faces from potential catastrophes and irreversible environmental harms, such as those posed by global warming and nuclear waste. Significantly, all of the studies suggesting that regulation kills people because it is so expensive employed discounting, which caused regulatory benefits to appear to shrink and regulatory costs to grow.

Third, cost-benefit analysis ignores the question of *who* suffers as a result of environmental problems and, therefore, threatens to reinforce existing patterns of economic and social inequality. Cost-benefit analysis treats questions about equity as, at best, side issues, contradicting the widely shared view that equity should count in public policy. In fact, poor countries, communities, and individuals are likely to express less "willingness to pay" to avoid environmental harms, simply because they have fewer resources. Therefore, cost-benefit analysis would justify imposing greater environmental burdens on them than on their wealthier counterparts. With this kind of

analysis, the poor get poorer.

Finally, cost-benefit analysis fails to produce the greater objectivity and transparency promised by its proponents. Cost-benefit analysis rests on a series of assumptions and value judgments that cannot remotely be described as objective. Moreover, the highly complex, resource-intensive, and expert-driven nature of this method makes it extremely difficult for the public to understand and participate in the process. Thus, in practice, cost-benefit analysis is anything but transparent.

Beyond these inherent flaws, cost-benefit analysis suffers from serious defects in practical implementation. Many benefits of public health and environmental protection have not been quantified and cannot easily be quantified given the limits on time and resources; thus, in practice, cost-benefit analysis is often akin to shooting in the dark. Even when the data gaps are supposedly acknowledged, public discussion tends to focus on the misleading numeric values produced by cost-benefit analysis while relevant but non-monetized factors are simply ignored. Finally, the cost side of cost-benefit analysis is frequently exaggerated, because analysts routinely fail to account for the economies that can be achieved through innovative efforts to meet new environmental standards.

Real-world examples of cost-benefit analysis demonstrate the strange lengths to which this flawed method can be taken. For example, the consulting group Arthur D. Little, in a study for the Czech Republic, concluded that encouraging smoking among Czech citizens was beneficial to the government because it caused citizens to die earlier and thus reduced government expenditures on pensions, housing, and health care. In another study, analysts calculated the value of children's lives saved by car seats, by estimating the amount of time required to fasten the seats correctly and then assigning a value to the time based on the mothers' actual or imputed hourly wage. These studies are not the work of some lunatic fringe; on the contrary, they apply methodologies that are perfectly conventional within the cost-benefit framework.

Decisions on the Table  
 -How should the federal government decide whether and how much health, safety, and environmental protection to provide?  
 -How should the government value human lives, health, and nature?  
 -How important are regulations that protect the future?

### CPR's Perspective

Two features of cost-benefit analysis distinguish it from other approaches to evaluating the advantages and disadvantages of environmentally protective regulations: the translation of lives, health, and the natural environment into monetary terms, and the discounting of harms to human health and the environment that are expected to occur in the future. CPR believes that these features of cost-benefit analysis make it a terrible way to make decisions about environmental protection, for both intrinsic and practical reasons.

CPR also believes that it is not useful to keep cost-benefit analysis around as a kind of regulatory tag-along, providing information that regulators may find useful even if not decisive. Cost-benefit analysis is exceedingly time- and resource-intensive, and its flaws are so deep and so large that this time and these resources are wasted on it. Moreover, given the intrinsic conflict between cost-benefit analysis and the principles of fairness that animate, or should animate, our national policy toward protecting people from being hurt by other people, the results of cost-benefit analysis cannot simply be "given some weight" along with other factors, without undermining the fundamental equality of all citizens – rich and poor, young and old, healthy and sick.

In developing policies to protect human health and the environment without relying on cost-benefit analysis, CPR believes that it is useful to distinguish between decisions about means and decisions about ends. CPR believes that it has sometimes proved useful to consult economic analysis in order to develop the most cost-effective *means* for carrying out a predetermined regulatory policy. Emissions trading programs, for example, came about in this way. (See CPR Perspective [Emissions Trading](#) for more detail.) CPR does not, however, believe that it is useful to try to set the *ends* of environmental policy through economic analysis. Trying to do so is what leads to the endless and unproductive battles over, for example, the monetary value of life, which we have described. Moreover, while economic costs should ordinarily play a role in developing regulatory policy, CPR believes that reliance on costs should be moderated by three other important principles: the [precautionary principle](#); a desire for technological innovation; and a [desire for fairness](#).

### Interested in Learning More?

A more detailed discussion of the issues explored here can be found in Frank Ackerman and Lisa Heinzerling, "Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection" (Georgetown Environmental Law & Policy Institute 2002), available [here](#).

Additional Resources in the CPR Perspectives Series Section		You may also be interested in these Publications and Books Related Resources	
The CPR Perspectives Series	CPR Perspective: Corporate Accountability for Information on Risk	CPR Perspective: Changing Corporate Behavior in a Socially Responsible Direction	
CPR Perspective: Information Quality	CPR Perspective: Devolution	CPR Perspective: Environmental Enforcement	CPR Perspective: Environmental Justice at Stake

New York Times

## E.P.A. Drops Age-Based Cost Studies

By KATHARINE Q. SEELYE and JOHN TIERNEY

Published: May 08, 2003

A Bush administration policy to base some regulations on a calculation that the life of each person older than 70 should be valued less than the life of a younger person has antagonized older Americans and environmental groups, and it has stirred tensions among federal agencies.

Instead of the traditional assumption that all lives saved from cleaner air are worth the same, administration officials in two environmental studies included an alternative method that used two values, \$3.7 million for the life a person younger than 70 and \$2.3 million for an older person, a 37 percent difference.

Critics call the policy the "senior death discount" and say the administration is turning on older Americans as a rationale to weaken environmental regulations.

Today, Christie Whitman, administrator of the Environmental Protection Agency, said her agency had never applied the policy in its decision making and never would.

"The senior discount factor has been stopped," Mrs. Whitman told reporters at a meeting here. "It has been discontinued. E.P.A. will not, I repeat, not, use an age-adjusted analysis in decision making."

John D. Graham, the regulations administrator at the Office of Management and Budget who has been the champion of the policy, said the calculation would not be used because it was based on an old study. Dr. Graham insisted he was committed to the principle of analyzing how many years of life would be added by a particular measure, not simply the number of lives.

He has proposed that all agencies' cost-benefit calculations include the "life expectancy" method and the simpler "statistical lives" approach.

"My instinct has always been to present policy makers and the public with both perspectives, so you can get a sense of the difference," he said.

The life-expectancy approach could bolster the case for health measures that benefit children, Dr. Graham said, and in some cases it could help the elderly.

"It can distinguish a regulation that may extend senior citizens' life by 5 or 10 years, compared to a regulation that will extend their life by only one year," he said.

A spokesman for the Office of Management and Budget, Trent Duffy, made clear that in considering the cost-benefit calculations the administration should not be seen as insensitive.

"The Bush administration's commitment to human life should not be questioned," Mr. Duffy said. "The Bush administration has been aggressive in protecting human life of all ages, from extending prenatal care benefits for pregnant women to filing a friend of the court brief against euthanasia in Oregon."

The life-expectancy analysis, intended to identify policies that would add the most years to people's lives, also accompanied two cost-benefit analyses at the E.P.A., as well as at other agencies in the Clinton administration. Critics say it has been used more aggressively under the leadership of Dr. Graham, a *bête noire* of environmentalists who has been urging rigorous cost-benefit analyses for all federal agencies.

For more than a month, the elderly and environmental groups have protested at hearings on the relatively arcane cost-benefit methodology. The "death discount" debate offers a window on tensions between Ms. Whitman's agency and Dr. Graham's, tensions worsened by Dr. Graham's broad power and authority. At stake are billions of dollars -- and thousands of lives -- as the government weighs the costs of regulating pollution against the benefits to health and the environment.

Environmentalists say the problem with Dr. Graham's approach is that it inflates the costs of regulations and diminishes the perceived benefits, making it easier for the administration to propose a relaxation of rules.

Carol M. Browner, the E.P.A. administrator in the Clinton administration, said that under the traditional method a particular air pollution regulation was shown to have benefits of \$77 billion but that the life-expectancy method, along with other more conservative assumptions, would lower the benefits, to \$8 billion.

"They are adjusting the calculations to say that the benefits of less pollution are much lower," Ms. Browner said.

Although similar analyses were conducted when she was administrator, she said, no decisions were based on them.

Dr. Graham, founder of the Harvard Center for Risk Analysis, said the life-expectancy analysis was being used merely to provide extra guidance, not set policy. He noted that the Food and Drug Administration had used it for nearly a decade.

Other experts said that moral and practical reasons gave priority to policies to protect younger people because those policies add the most years of life, but that those arguments were not easy for politicians to make when confronting elderly voters.

In an interview, Dr. Graham said the \$1.4 million difference was not longer considered valid because it was based on outdated studies in England and Canada that were not relevant here. He

insisted that the overall approach was valid and would be a factor in decision making at the E.P.A. and elsewhere.

Asked outside the meeting whether it was the elderly and environmentalists' protests that had prompted her to change her mind about the policy, Mrs. Whitman said: "It was never a question of changing our minds. We weren't the ones who . . ."

Mrs. Whitman said her agency's officials did not want to base any of their decisions on life-expectancy analysis.

"We are more comfortable with the traditional methodology we've been using because it has been peer reviewed, it's what we've been using right along, and a lot of environmental economists would say that is the more appropriate methodology to use," she said. "This life-span one is fine if you're talking about medical determinations. Does it make more sense to give scarce lung transplants to someone 75 or someone 17? That's when they use the life expectancy. But we don't think that that's as appropriate for the work that we do."

Representatives of environmental groups at the meeting today said Mrs. Whitman's announcement quelled critics who were going to speak against it. They were not impressed with her announcement, saying, as John Stanton, an air expert with the National Environmental Trust, put it, "She was as clear as mud."

Mrs. Whitman, however, acknowledged that Dr. Graham's method would still accompany her agency's studies, including those on President Bush's "Clear Skies" proposal.

Those methods, with higher costs and lower benefits, would be available to members of Congress.

Environmentalists said if the agency was not using the life-expectancy method, it should expunge it. Milton C. Weinstein, a professor at the Harvard School of Public Health and a pioneer of life-expectancy analysis, said it had become routine among medical researchers but still aroused controversy.

"There's an equity argument that every citizen should be entitled to an equal claim on resources and shouldn't be penalized for the fact that they've lived a larger portion of their life span," Professor Weinstein said. "But you can never save a life. You can only prolong it. When you give medical treatment or make the environment safer, the relevant question is how much of a life you can save. Most people, if given the choice between applying resources to save a 10-year-old or a 70-year-old, would choose the 10-year-old."

Many environmentalists have been skeptical of cost-benefit analyses and have accused Republicans of using them as an excuse not to regulate polluting industries and other environmental hazards. They spoke out against the appointment of Dr. Graham, one of the most prominent experts in regulatory cost-benefit analysis.



# EPA to Stop 'Death Discount' To Value New Regulations

By **JOHN J. FIALKA** | *Staff Reporter of THE WALL STREET JOURNAL*

BALTIMORE -- The Environmental Protection Agency said it no longer will use what has been derided as "the senior citizen death discount" when estimating the value of new environmental regulations.

The calculation had reduced health-benefit estimates by 37% for those over 70 years of age, in two recent cost-benefit analyses. One weighed President Bush's proposed Clear Skies Act, which aims to reduce power-plant pollution. The other calculated the health improvements brought about by a rule requiring lower-polluting engines on snowmobiles and other recreational vehicles.

Use of the calculation, which had been encouraged by the White House's Office of Management and Budget as a way to get more "science-based" measures of the value of regulatory changes, "has been stopped," EPA Administrator Christine Whitman announced at a meeting of senior-citizens' groups here. The announcement came one day after 21 environmental, health and religious groups complained about the calculation in a letter to the OMB.

Ms. Whitman noted that the EPA's primary decisions on both were based on the standard measure her agency uses on rules that prolong lives -- \$6 million per life -- and that the so-called discount was buried in footnotes and only used as a secondary method of analysis.

The method became a political problem after the U.S. Public Interest Research Group, a Washington-based environmental group, began briefing the elderly on the use of the "discount." Zach Corrigan, an attorney for the group, said "the senior citizen death discount" was "fuzzy math" being used to reduce estimated benefits of environmental improvements by billions of dollars.

**Write to** John J. Fialka at [john.fialka@wsj.com](mailto:john.fialka@wsj.com)

# The Failure of Electricity Deregulation: History, Status and Needed Reforms

By Tyson Slocum, Director  
Public Citizen's Energy Program  
www.citizen.org    tslocum@citizen.org

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For the last decade, the Federal Energy Regulatory Commission (FERC) has embarked on an experiment of electricity deregulation, replacing 100 years of cost-of-service regulated rates with prices in many parts of the country now set by market-based prices, thereby treating an essential service—electricity—as a commodity. Deregulation meant breaking up vertically-integrated companies and allowing newly deregulated power plants to sell power at the highest price they can charge, compared to the original model where prices were directly tied to costs, plus a reasonable, regulated profit. As a result, prices in deregulated states are higher and are climbing faster than in those states that remain regulated, as wholesale competition has failed to materialize. With deregulation's prioritization of profits providing a disincentive for investments in reliability, the number of workers in the utility business has been slashed by nearly 40% since 1990. Local offices where consumers could obtain assistance with their bills have been closed in order to increase profits, and lineman jobs have been slashed.

Consumers were sold deregulation after being assured that they would be able to “choose” their electricity supplier, as though electricity is like any other product (economists call this *gratuitous differentiation*, marketing an age-old commodity in superficial ways to create a false distinction in the product). The reality is that 90 percent of households in “retail choice” states have no ability to “choose” an alternative supplier because the retail market has suffocated under an uncompetitive wholesale market. And many of those ten percent of consumers that do “choose” an alternative supplier are actually getting their power from an unregulated retail affiliate of the old distributional utility.

States are actually moving to re-regulate their markets (Illinois, Michigan and Virginia all moved to re-regulate since 2007) due to skyrocketing prices in deregulated markets. But the federal government continues its aggressive push for market-based rates. In addition to raising prices, this federal move towards market-based rates has stripped states of their traditional roles, thereby concentrating more authority in the hands of the FERC, which has shown little interest in protecting the rights of consumers.

The crux of the problem lies with FERC's failure to regulate wholesale markets by refusing to review rates charged by power sellers. FERC allows power marketers and other suppliers to charge *market-based rates* without any regular review to ensure that such rates comply with the Federal Power Act's mandate that all rates be “just and reasonable”. FERC believes that the forces of “competition” automatically produce just

and reasonable rates. But because wholesale markets are not adequately competitive, power sellers are free to price-gouge consumers under FERC's plan. FERC has ignored pleas from states, including the states of Connecticut, Illinois and Montana, to address clear evidence of price-gouging by power sellers.

The circumstances proceeding the collapse of U.S. financial markets in 2008—and thereby requiring a \$1 trillion government bailout—is widely attributed to the lack of regulation over securitized debt derivative markets, combined with the 1999 repeal of structural regulations over the financial services industry. It is important to note that recent failures in both financial and electric power markets are directly the result of deregulation, and that restoring strong consumer and worker protections will mark a return to affordable and reliable energy that once made America's power system the envy of the world.

## **Background**

Unlike many other countries where electricity has traditionally been provided by a government monopoly, 72.6% of America's 120 million households receive their power from corporate-owned utilities, while 14.6% are served by municipally- or federally-owned utilities and rural cooperatives supply the remaining 12.8%.<sup>1</sup> Deregulation has not altered this balance, as it has mainly affected the ownership structures of corporate-owned utilities (customers of non-corporate utilities, however, have been negatively impacted by the uncompetitive wholesale markets resulting from the deregulation of corporate-owned utilities). So although power deregulation in the United States does not equate privatization (as deregulation has not forced the sale of public power utilities to corporations), other countries can study the American experience as the lessons learned from restructuring wholesale power markets are universal.

Electricity in America was traditionally supplied by regional monopolies that owned both the power plants and the transmission lines for the distribution of power. In exchange for allowing corporations to have a monopoly over electricity customers, states heavily regulated these companies, setting the rate of return of profit for the utilities based on the *cost of service*, and planned for future power needs. Although this system was often abused because of the enormous political power of the electric utilities and their ability to influence state policymakers, it was regarded as the most reliable and affordable electric system in the world.

The term deregulation refers to the breaking up of these monopolies at the state level, where the utilities' power plants were either sold to a third party or, more controversially, simply transferred to an unregulated affiliate of the utility (such as the case with Constellation Energy in Maryland and Exelon in Illinois).

Deregulation was triggered by a series of federal actions over several years, followed by decisions by America's largest states to pass laws ordering the separation of power plants from the distributional utility.

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<sup>1</sup> [www.eia.doe.gov/cneaf/electricity/esr/esr\\_sum.html](http://www.eia.doe.gov/cneaf/electricity/esr/esr_sum.html)

As soon as utilities break up their monopolies by selling their power plants, states cede regulatory authority over the electricity produced by those plants. Under Supreme Court interpretations of the 1935 Federal Power Act, states can regulate only the retail sale of electricity to *end consumers* (courts have ruled that wholesale sales of power are too fluid for individual states to handle, therefore classifying it as interstate sales subject to federal jurisdiction). Under regulation, the utilities generated electricity at their own plants, delivered that electricity over their own wires, and sold the product to end consumers. Regulating the retail price meant that states were, by extension, regulating the wholesale market, too, because the same company controlled both the wholesale and retail markets. But when states ordered the breakup of utility monopolies, many state lawmakers did not understand that they were severing their ability to regulate wholesale prices.

The federal government played an early, unintended role in encouraging deregulation. In response to the energy crisis of the 1970s, Congress passed the Public Utility Regulatory Policy Act (PURPA) in 1978. PURPA's purpose was to wean America off foreign oil by encouraging alternative fuels for generating electricity. PURPA required utilities to buy power from independent power producers (mostly small generators, or ones using renewable energy sources) at a price approved by regulators. To achieve PURPA's objective of encouraging alternative energy supplies, regulators in many states approved high prices for long-term PURPA contracts, which were passed on to consumers in the form of higher rates.

At the same time, many utilities were building or just bringing on-line nuclear power plants. These reactors experienced tremendous cost overruns due to significant construction costs, expensive compliance with safety regulations, and significant waste disposal expenses.

The Energy Policy Act of 1992 (EPACT) started to chip away at utilities' monopolies by expanding FERC authority to order utilities to allow independent power producers equal access to the utilities' transmission grid. Enron lobbied heavily in favor of this legislation because the company believed that by forcing utilities to open their transmission lines to independent power producers, the resulting competition would deliver lower prices for consumers. Together, PURPA and EPACT provided the first cracks in America's system of cost-of-service regulation and towards a market-based approach.

By the mid-1990s, large industrial consumers sought to escape the high costs of power in some parts of the country, such as California, that came as a result of building expensive nuclear power plants. At the same time, independent power producers such as Enron were actively lobbying to be able to sell power to these big consumers. Political pressure for deregulation mounted because the breakup of the utility industry meant huge amounts of money could be made by newly deregulated companies. No doubt, too, the meteoric rise of the dot.com industry in the early- and mid-1990s put pressure on the energy industry to increase their rates of return.

### **FERC Order 888: Impact on Deregulation and Reliability**

The federal government became more involved in 1996. Seeking to further compromise the utilities' monopoly, FERC issued Order 888, which was even more aggressive in its requirement that utilities open their transmission to independent producers. FERC's intent was to introduce competition at the wholesale level and to keep utilities from using their control of the transmission system to limit the entry of lower priced generation. But the primary result was to force many states to deregulate, or else their regulated monopolies would get priced out by utilities operating in other states who had access to the transmission lines.

Order 888 opened the door to independent power generators, which overwhelmed most states' ability to manage supply. This inability to plan for and manage supply prompted many states, including California, to fully deregulate their wholesale markets. In the three years following Order 888, 24 states had passed legislation requiring utilities to divest their generation (although by 2001, in response to fears after the California energy crisis, eight states—Arizona, Arkansas, Montana, Nevada, New Mexico, Oklahoma, Oregon and West Virginia—repealed or significantly delayed their deregulation laws).

The separation of power plants from transmission mandated by Order 888 had a radical impact on eroding reliability, and played a direct role in America's power blackout on August 14, 2003. Reliable planning and operation of a bulk supply system requires full coordination between generation and transmission and this functional separation made coordination much more difficult:

*By separating generation from transmission, reliability planning decisions no longer are made by a relatively small number of non-competing organizations; today, decisions are made by a large number of entities, most of which are competitors and each of which has more interest in profit than in power system reliability. Procedural rules established between and among the various parties are no longer matters of overall corporate policy, but rather of contractual arrangements based on the parties' financial self-interest... In many companies system planning departments were split up or disbanded. In the United States, reductions in personnel have been greater in the deregulated portions of the industry than in those still under regulation... New market areas were established that were inconsistent with the boundaries of responsible operating entities and/or the regional councils responsible for reliability standards and enforcement... On the day of the August 14, 2003 blackout, MISO [the Midwest Independent System Operator] had neither the authority nor technical means to operate a generation and transmission grid in the region. Since formal spot-markets had not been established, a large number of bilateral contract trades originated with deregulated power plants, complicating system operations. These deregulated power plants had little incentive to provide needed reactive power on the day of the blackout.<sup>2</sup>*

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<sup>2</sup> Jack Casazza, Frank Delea, and George Loehr, *Contributions of the Restructuring of the Electric Power Industry to the August 14, 2003 Blackout*, [www.crhnet.ca/casestudies/blackout/restructuring\\_contributions.pdf](http://www.crhnet.ca/casestudies/blackout/restructuring_contributions.pdf)

Deregulating markets also meant that power marketers now had incentive to sell power not in the local market near power plants, but to the highest bidder. As a result, the transmission grid—which was designed to accommodate the needs of local monopolies—is now being used for the freewheeling trading of electricity and movement of power over longer distances. Sending power over a much wider area strains a transmission system designed to serve local utilities.

In December 1999, FERC issued Order 2000 calling for the creation of regional transmission organizations (RTOs), entities to replace state control and operation of the transmission grid. Several regional grids have now been established (such as the nation's largest, PJM), and they are now the defining structures separating regulated states from deregulated ones. These RTOs, which are not part of government and are run by board of directors that are not elected and therefore unaccountable to consumers, have replaced states as the jurisdictional entities controlling transmission. FERC has delegated key responsibilities to these non-governmental organizations, including leaving them in charge of monitoring markets for Enron-style manipulation and making decisions about whether rates charged by power companies are just and reasonable. And these RTOs are not neutral arbiters, as they actively lobby to promote deregulation. PJM spends \$360,000 a year lobbying the federal government. ISO New England spent \$200,000 lobbying Congress and FERC in 2007, and the Midwest ISO spent more than \$100,000.<sup>3</sup>

In addition to acting as advocates, rather than umpires, of deregulation, RTOs are passing enormous costs on to consumers. In 2005, 85 percent of the \$815 million passed from ISO New England, Midwest ISO, New York ISO and PJM to market participants were administrative, rather than operational, costs.<sup>4</sup>

The independence of RTO market monitors is suspect. In April 2007, Joseph E. Bowring, PJM's market monitor, testified that PJM management routinely compromised his independence, forcing him “to modify the State of the Market Report...and delaying the release of a [Market Monitoring Unit] report regarding the regulation [of the market] based on management disagreements with our conclusions.”<sup>5</sup> Given the fact that FERC has delegated sweeping responsibilities, including enforcement of market based rates, to RTO market monitors, revelations that market monitors lack independence raises questions about whether or not consumers are being protected from companies intent on manipulating the market.

FERC's recent rulemaking on the effectiveness of RTOs neglected to include any analysis of whether prices charged to consumers in these regional, deregulated markets were “just and reasonable,” and failed to consider whether competition was working.<sup>6</sup>

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<sup>3</sup> <http://disclosures.house.gov/ld/ldsearch.aspx>

<sup>4</sup> *Analysis of Operational and Administrative Costs of RTOs*, American Public Power Association, February 2007, [www.appanet.org/files/PDFs/AnalysisCostofRTOs020507GDS.pdf](http://www.appanet.org/files/PDFs/AnalysisCostofRTOs020507GDS.pdf)

<sup>5</sup> Docket AD07-8, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11304232>

<sup>6</sup> FERC docket RM07-19, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11655633>

Indeed, the U.S. Government Accountability Office concluded that FERC “does not regularly review [an RTO’s actual expenses] for accuracy or reasonableness and is at risk of using and providing to the public inaccurate and incomplete information...there is no consensus about whether RTO markets provide benefits to consumers or how they have influenced consumer electricity prices. FERC officials believe RTOs have resulted in benefits; however, FERC has not conducted an empirical analysis of RTO performance or developed a comprehensive set of publicly available, standardized measures to evaluate such performance.”<sup>7</sup>

In August 2005, President Bush signed into law the Energy Policy Act of 2005, repealing the Public Utility Holding Company Act of 1935. This law, among other things, had limited the ability of utilities to merge and placed restrictions on the ownership of utilities by investment banks, petroleum companies and other non-utility entities. As a direct result of the repeal of this law, a wave of mergers and consolidation has hit the U.S. utility industry, further complicating the lack of adequate competition in wholesale power markets.

### **Current Status of Deregulation**

By 2000, 24 states and the District of Columbia had passed laws ordering or allowing their monopoly utilities to sell their power plants to other companies or transfer them to their own unregulated affiliates. But eight years later, ten states had repealed or delayed their deregulation laws in response to the California energy crisis of 2000-01 and other problems associated with deregulation (Arkansas, Arizona, Illinois, New Mexico, Nevada, Michigan, Oklahoma, Oregon, Virginia and West Virginia). Two additional deregulated states (Ohio and Pennsylvania) still retain retail price controls; as a result, most households in these two states are not yet exposed to the higher prices found in the deregulated wholesale market. That leaves only 12 U.S. states where consumers are exposed to the wholesale market: California, Connecticut, Delaware, Massachusetts, Maryland, Maine, Montana, New Hampshire, New Jersey, New York, Rhode Island, Texas and the District of Columbia. Thirty-seven percent of the American population lives in these 12 states.

On October 6, 2008, Michigan became the latest to reconsider deregulation when the state’s Governor signed into law Public Act 286 which repeals much of Michigan’s original 2000 deregulation, thereby effectively ending the state’s failed competition experiment.<sup>8</sup>

Since the end of the California energy crisis, the disparity of prices charged to consumers between those states that continue pushing ahead with deregulation and those that have not is startling. The 12 states that removed rate caps for household consumers—thereby pegging prices to wholesale deregulated markets—have experienced average annual growth of 5.5 percent since 2002. The 38 states that still regulate their rates have seen average annual growth of prices grow only 3.6 percent since 2002. As a result, the

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<sup>7</sup> “FERC Could Take Additional Steps to Analyze Regional Transmission Organizations’ Benefits and Performance,” GAO-08-987, September 2008, [www.gao.gov/new.items/d08987.pdf](http://www.gao.gov/new.items/d08987.pdf)

<sup>8</sup> [www.legislature.mi.gov/documents/2007-2008/publicact/pdf/2008-PA-0286.pdf](http://www.legislature.mi.gov/documents/2007-2008/publicact/pdf/2008-PA-0286.pdf)

average price in the 12 deregulated states is 14.2 cents per kilowatt hour, 49 percent higher than the average price of 9.5 cents in the 38 regulated states in June 2008.

**Average Retail Price of Household Electricity in Rate-Regulated States and Deregulated States Without Rate Caps (cents/kWh)**

<b>Residential Customers</b>	2002	2003	2004	2005	2006	2007	Jan-June '08	Average Annual Growth from 2002
38 Rate-Regulated States	7.7	7.9	8.1	8.4	9.1	9.3	9.5	+3.6%
12 Deregulated States Without Rate Caps in 2008	10.3	10.8	11.1	12.1	13.8	14.1	14.2	+5.5%
Difference between rate-regulated and deregulated states	+34%	+37%	+37%	+43%	+52%	+50%	+49%	

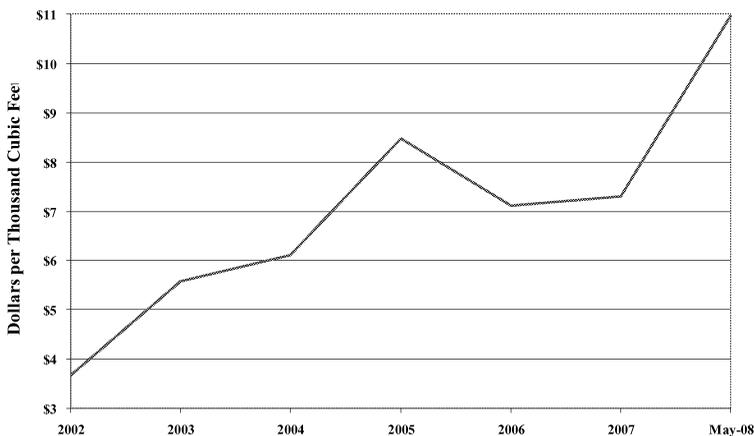
Note: The 12 deregulated states are CA, CT, DE, MA, MD, ME, MT, NH, NJ, NY, RI, TX and DC. Deregulated OH and PA are included with regulated states due to existing price caps.

Source: Calculations based on U.S. Energy Information Administration data [www.eia.doe.gov/cneaf/electricity/epm/epm\\_sum.html](http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html)

**Discrepancies Between Power Plant Fuels Raise Prices to Consumers**

Why are prices rising faster in deregulated states compared to regulated ones? America’s deregulated markets are structured using *Locational Marginal Pricing*, in which the price bid by the generator supplying the last megawatt of power to meet demand sets the price paid to all generators in the market. This clearing price is often set by natural gas “peaker” power plants, which are more expensive to operate than baseload generators like coal and nuclear. As a result, rates set in deregulated wholesale markets are based on the highest cost generator.

U.S. Natural Gas Electric Power Price



Contrast this model with the regulated one, in which rates reflect the *average* costs of all generators necessary to meet demand.

Warren Buffett, chairman and CEO of Berkshire Hathaway, told a national meeting of state regulators that “most of deregulation was a mistake” because, in

a deregulated market, “generators have a clear incentive to reduce power reserves.” The last thing they want, he continued, is excess capacity; they want “power supplies to be tight.”

In just the last few years, after the deregulation craze in which two dozen states and FERC embarked upon an untested theory of electric utility deregulation, market prices for natural gas have skyrocketed. Because natural gas plays a major role in setting the market price of electricity, companies with generation assets fueled by anything but natural gas are able to sell their power at natural gas prices, which far exceeds the cost to produce power from their non-natural gas sources. As a result, owners of non-natural gas facilities are reaping windfall profits, even though these nuclear, coal and hydro facilities are decades old and were initially paid for by ratepayers.

Indeed, the Bush Administration concludes that “customers in States with competitive retail markets for electricity experience the effects of changes in natural gas prices more rapidly than customers in States with regulated markets, because competitive prices are determined by the marginal cost of energy, and natural-gas-fired plants, with their higher operating costs, often set hourly marginal prices.”<sup>9</sup>

In 2007, an owner of a power plant in PJM with a marginal cost of \$30 per installed MW-year earned \$235,215 per installed MW-year in net revenue from the Energy Market alone (which does not include additional payments for reactive power and other reliability incentives)—a 293 percent increase from the \$59,776 per installed MW-year in net revenue that same facility earned in 2000.<sup>10</sup>

Rising natural gas prices vastly increase the marginal costs of power plants fueled by natural gas relative to competing fuels like coal. In 2006, the average cost for a coal power plant was \$1.69 per 10<sup>6</sup> Btu, while the average cost for a natural gas power plant was 311% higher, at \$6.94 per 10<sup>6</sup> Btu. As recently as 1999—the year many states passed

### **Revolving Door Competition**

Goldman Sachs, Constellation Energy, Exelon, Mirant, National Grid, Reliant Energy, Sempra and Wal-Mart have formed the Compete Coalition, which spent \$1 million in 2007 lobbying the federal government to promote deregulation. Collectively, the companies have paid over \$1.83 *billion* to settle allegations of market manipulation. Compete has hired a bi-partisan group of lobbyists from three firms that includes recently retired powerful government officials who will do the bulk of the organizing for the new coalition:

- William Massey, Democrat, commissioner for the Federal Energy Regulatory Commission from 1993-2004 and now a lobbyist with Covington & Burling.
- Don Nickles, a former Oklahoma GOP Senator, now the founding partner of the lobbying firm the Nickles Group.
- Robert Walker, former Pennsylvania GOP representative from 1976 to 1996 and a founder of the lobbying firm Wexler & Walker.
- Jack Howard, former deputy assistant for legislative affairs to President George W. Bush and a former senior aide to House Speakers Dennis Hastert, Newt Gingrich and former Senate Majority Leader Trent Lott. Howard now is president of the Wexler & Walker lobbying firm.
- Joel Malina, Democrat, a lobbyist with Wexler & Walker.

<sup>9</sup> *Annual Energy Outlook 2008*, U.S. Energy Information Administration [www.eia.doe.gov/oiaf/aeo/electricity.html](http://www.eia.doe.gov/oiaf/aeo/electricity.html)

<sup>10</sup> *2007 State of the Market Report*, Table 3-1, page 115, [www.pjm.com/markets/market-monitor/som.html](http://www.pjm.com/markets/market-monitor/som.html)

deregulation legislation—the average cost of a natural gas power plant was only \$2.57 per 10<sup>6</sup> Btu (compared to \$1.22 per 10<sup>6</sup> Btu for the average coal plant).<sup>11</sup>

The same is true for nuclear power plants that were built 30 years ago.<sup>12</sup> A recent presentation by the Nuclear Energy Institute<sup>13</sup> boasts of a similar cost gap between nuclear power and natural gas: nuclear power busbar cost averages \$23 per megawatt hour, compared to \$71.40 per megawatt hour for a 7,500 Btu natural gas fired power plant.

As a result, companies owning large fleets of unregulated plants are reaping record profits. A recent study finds

*PJM companies who own capacity which was formerly regulated will produce about \$4.2 billion per year more in profits than would be earned by typical regulated companies. The accumulated returns that investors have realized from expectations of increased earnings and historic returns as manifested in stock price increases and dividend payments is between \$32 and \$40 billion depending on the period used in computing returns. The accumulated market values of PJM companies that had constructed plants with ratepayer support have a premium above their book value that far exceeds the estimated premium for regulated companies. This surplus market to book ratio is between \$32 and \$50 billion.*<sup>14</sup>

A recent filing by AK Steel Corp illustrates this problem of power company profiteering, as the company argued to regulators in a deregulated state warning of

*the economic catastrophe that will strike the Commonwealth [of Pennsylvania], and is already hitting neighboring states, with the onset of market-only power pricing...lower cost energy alternatives to Pennsylvania abound. Kentucky, West Virginia and Indiana offer industries the increasingly valuable option of low, relatively fixed rates, keyed not to volatile natural gas driven prices, but to the costs of running base-load coal-fired units. There, the Commission still exercises its time-honored duty to assure that rates are just and reasonable, and that utilities receive a reasonable, and only a reasonable, rate of return on their generation investments.*<sup>15</sup>

In Maryland, higher electric rates caused an Alcoa smelter to close operations and lay off 600 workers.<sup>16</sup> In Pennsylvania, Allegheny Technologies announced plans to end a \$400 million investment because of that state's rising electricity costs.<sup>17</sup>

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<sup>11</sup> [www.eia.doe.gov/cneaf/electricity/epa/epat4p5.html](http://www.eia.doe.gov/cneaf/electricity/epa/epat4p5.html)

<sup>12</sup> It is important to note that the biggest cost of nuclear power is the capital costs, so building new nuclear plants won't guarantee price advantages because the costs to build new plants are so high.

<sup>13</sup> *Nuclear Energy 2006: A Solid Business Platform for Future Growth*, February 2006, [www.nei.org/filefolder/wall\\_street\\_briefing\\_2-2-06.pdf](http://www.nei.org/filefolder/wall_street_briefing_2-2-06.pdf)

<sup>14</sup> Edward Bodmer, "The Electric Honeypot: The Profitability of Deregulated Electric Generation Companies," February 2007, pgs 2-3, [www.ohiochamber.com/governmental/pdfs/Electric%20Honeypot.pdf](http://www.ohiochamber.com/governmental/pdfs/Electric%20Honeypot.pdf)

<sup>15</sup> June 15, 2006 comments of AK Steel Corp. In the Matter of Policies to Mitigate Electric Price Increases, Docket M-00061957, [www.puc.state.pa.us/PcDocs/617128.pdf](http://www.puc.state.pa.us/PcDocs/617128.pdf)

<sup>16</sup> Justin Blum, "Maryland Alcoa Plant to Start Layoffs in December," *The Washington Post*, November 24, 2005.

<sup>17</sup> Kim Leonard, "Regulators to re-examine electricity law," *Pittsburgh Tribune-Review*, December 3, 2006.

### **Complaints by Public Citizen and State Attorneys General**

Over the last year, there have been numerous challenges to FERC's broken deregulation scheme. But FERC has rejected all complaints, even those brought by state government officials. Public Citizen has sued FERC, arguing that the agency's market-based rate program is illegal because it violates the Federal Power Act's mandate that FERC review all rates and that they be "just and reasonable."<sup>18</sup> In December 2007, Public Citizen joined 40 other organizations challenging FERC's failure to regulate electric rates.<sup>19</sup> FERC rejected the request without holding a hearing just three months later.

FERC has made arguments before U.S. courts seeking to further restrict its ability to protect consumers by limiting the ability to challenge whether power contracts are "just and reasonable." A recent Supreme Court ruling determined that electric power contracts could not be modified, even in the face of market manipulation (in a case involving California and Enron-era price-gouging) thereby seriously restricting FERC's ability to carry out its congressional mandate to ensure that all wholesale electric rates are "just and reasonable."<sup>20</sup> Astonishingly, FERC recently supported power companies and energy traders in asking the U.S. Supreme Court to limit FERC's powers to protect consumers by claiming that the agency has no authority to modify rate contracts between sellers and buyers. Then FERC asked a court to curtail FERC's ability to protect consumers even more. The majority of FERC commissioners (with two dissenters) asked the D.C. Circuit to revise a March opinion to find that even non-parties to rate contract settlements are prohibited by the Federal Power Act from objecting that the rates are unjust and unreasonable.<sup>21</sup>

### ***Montana***

In response to the state's 1997 deregulation law, Montana Power—a utility with community roots dating to 1912—sold its 11 hydroelectric and 4 coal power plants to Pennsylvania-based PPL for \$767 million. This sale represented the bulk of all the power plants in the state of Montana. PPL created a subsidiary, PPL Montana, to run the power plants. PPL understood the importance of taking control of Montana's cheap hydro and coal facilities when the company boasted that the acquisition was "expected to provide a significant impact on future results of operations." While the subsidiary PPL Montana represents only 4.6 percent of the total assets of PPL Corp, it produced 19 percent of the company's profit from 2000-03, including 58 percent of PPL's 2001 profit. PPL Montana's cumulative four year profit of \$305 million means the company made \$850 off every Montana household (beginning in 2004, PPL ceased reporting PPL Montana's earnings separately, so continued analysis of the segment's profits is no longer possible).

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<sup>18</sup> *Cinergy v FERC*, Case 04-1168, US Court of Appeals for the District of Columbia Circuit.

<sup>19</sup> FERC docket AD07-7, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11530312>

<sup>20</sup> *Morgan Stanley Capital Group v. FERC*, [www.law.cornell.edu/supct/pdf/06-1457P.ZO](http://www.law.cornell.edu/supct/pdf/06-1457P.ZO)

<sup>21</sup> Rehearing petition filed August 8, 2008, in *Maine Public Utilities Commission et al. v. FERC*, 520 F.3d 464 (D.C. Cir. March 28, 2008).

In May 2006, FERC rejected appeals by Montana state officials who provided evidence that a single company, PPL, dominated the state's power market and therefore should not be allowed to charge market-based rates.<sup>22</sup>

Since then, NorthWestern Energy—which replaced Montana Power as the state's primary supplier of retail electricity—held an auction in January to procure power, and only three companies submitted bids: PPL Montana, Powerex (a subsidiary of BC Hydro) and Wall Street investment bank JP Morgan.

### ***New England***

FERC agreed with major power producers to implement a Forward Capacity Market in New England, allowing the New England ISO to levy a surcharge on consumers and hand the proceeds to all *existing* generators in the ISO. Under the agreement, New England consumers would be required to pay \$5 billion in transition payments to all existing power plant owners. The theory behind this plan is that some high-cost power plant owners are not earning big enough profits to provide an incentive to build new generation, so FERC wants to guarantee huge profits to power sellers to create an incentive to build more power plants. But the Forward Capacity Market is inefficient because companies are not required to use the proceeds of the surcharge to build new power plants; rather, they are free to spend the windfall profit on anything they see fit. Both the Massachusetts and Connecticut Attorney General charged that this scheme violates the Federal Power Act's mandate that all prices be "just and reasonable" and interferes with the rights of states to determine generation capacity adequacy.<sup>23</sup> FERC has rejected the states' requests, and the states appealed to the United States Court of Appeals for the District of Columbia Circuit.<sup>24</sup>

In September 2005, Connecticut Attorney General Richard Blumenthal (along with the Connecticut Office of Consumer Counsel, the Connecticut Industrial Energy Consumers and the Connecticut Municipal Energy Electric Cooperative) initiated a complaint against FERC's plan to allow the New England ISO to continue to allow Reliability Must Run charges for high-cost generators.<sup>25</sup> Under the plan, low-cost generators such as coal and nuclear continue to charge market-based rates largely set by the price of natural gas, while many high-cost generators opt-in to a system that guarantees them a rate-of-return. The patchwork of regulations ensures that overall market prices will be high while subsidizing the operations of inefficient high-cost generators, and the Connecticut Attorney General estimates costs to Connecticut consumers of \$1 billion in just one year. In its October 2006 order dismissing the complaint, FERC noted that the State of Connecticut must "bear the burden" of proving that generators are not charging "just and reasonable" rates<sup>26</sup>—a result that eviscerates consumer protections in the Federal Power Act. The burden of proof on whether rates are just and reasonable should be on the seller, not on consumers.

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<sup>22</sup> Docket ER99-3491, <http://elibrary.ferc.gov/>

<sup>23</sup> Docket ER03-563, <http://elibrary.ferc.gov/>

<sup>24</sup> *Maine PUC v. FERC*, Case No. 06-1403.

<sup>25</sup> Docket EL05-150, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10795073>

<sup>26</sup> Docket EL05-150, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11153458>

### ***Illinois***

A complaint filed by the Illinois Attorney General<sup>27</sup> concludes that Exelon, parent company of the state's largest distributional utility, ComEd, was charging households a 260 percent markup over costs in the power auction held in January 2007 to serve consumers for the next several years. Exelon's deregulated power plants won 95 percent of the 41-month contracts and 40 percent of the 29-month contracts.

In 2008, FERC dismissed complaints by the State of Illinois to further investigate manipulative bidding strategies by a power producer, Edison Mission Energy, without holding a hearing.<sup>28</sup>

### ***Maryland***

Maryland was in a similar situation as Illinois, as the largest distributional utility (Baltimore Gas & Electric) is controlled by a large holding company (Constellation Energy) that owns BGE's old power plants throughout the state. In a May 31, 2006 letter that Constellation Energy sent to Maryland State Senator Thomas V. Mike Miller, Jr and Delegate Michael E. Busch, Constellation Energy admits that it won 70 percent of the load obligations in the state's 2006 power auction.<sup>29</sup> Although Constellation Energy won 70 percent of the auction, the company will be "required to acquire energy products associated with...93% of the power needed to serve its BGE residential load obligations in the market at prevailing market rates" because Constellation claims that its fleet of Maryland-based power plants already has its output committed elsewhere. Constellation Energy argues that it is earning a profit margin of 3.1 percent on importing this power. But Constellation Energy fails to say how much it is earning exporting cheap power produced at its Maryland plants, or whether the company is merely "laundering" its energy product sales by selling the output of its Maryland power plants to Constellation Power Source, its power marketer, and then selling that output to its affiliate, BGE. The prices charged by Constellation Energy on the coal, nuclear and hydro power plants formerly controlled by BGE most likely are fetching windfall profits because these relative low-cost power sources are able to charge extremely high profits in a market where natural gas fired generation sets the price of electricity.

### ***New York***

New York's deregulated market has been beset by market manipulation and Enron-style economic withholding. A recent filing at FERC documents that "the impact on New York State's consumers of economic withholding during the 2006 Capability Year on was approximately \$157 million."<sup>30</sup> In testimony provided by the New York ISO expert witness David B. Patton concluded "that the [Installed Capacity] ICAP Spot Market Auctions during the 2006 Summer Capability Period have been characterized by economic withholding of Capacity to exercise market power," with power generators

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<sup>27</sup> Submitted to FERC on March 15, 2007 in docket EL07-47  
<http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11291035>

<sup>28</sup> Docket No. IN08-3, <http://elibrary.ferc.gov/>

<sup>29</sup> [www.sec.gov/Archives/edgar/data/1004440/000110465906038686/a06-12885\\_1ex99d1.htm](http://www.sec.gov/Archives/edgar/data/1004440/000110465906038686/a06-12885_1ex99d1.htm)

<sup>30</sup> Docket ER07-360, Page 2, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11236060>

reducing their output to exactly match new generation brought online by the New York Power Authority.<sup>31</sup>

Keyspan Corp, which controls over 6,600 MW of power plants in and around New York City, recently acknowledged that the company had received a “Civil Investigative Demand from the United States Department of Justice, Antitrust Division, requesting the production of documents and information relating to its investigation of competitive issues in the New York City electric energy capacity market.”<sup>32</sup>

### ***Texas***

In March, the Texas Public Utilities Commission determined that the largest generator, TXU, had manipulated the Texas market during the summer of 2005, and staff recommended the company pay a \$210 million penalty. The Texas market continues to be plagued by price spikes and high retail prices for consumers.

### **Market Power and Lack of Competition**

Absent these price discrepancies between power plant fuel types, deregulated markets would still be inferior to vertically-integrated ones due to the abundant problems of *market power*. Given the characteristics unique to electricity—high barriers to entry, inelastic demand, inability for storage and transmission constraints—competitive markets have been precluded from forming, as the various inherent constraints found in electricity markets allows for easy exercise of market power by generators.

There are two main methods of market power. One is *capacity withholding*, where a power plant owner intentionally shuts down one power plant or otherwise reduces generating capacity in order to raise prices at other power plants they control in the region. The generator is able to make more money from their operating power plants than if their shut-down power plant were still operating, thereby making more money selling less power. This is a common practice in U.S. markets, and federal regulators have spent the last 10 years unsuccessfully trying to end the practice.

A second way to exercise market power is through *strategic bidding*, where generators understand that all market participants can make more money if they engage in defacto collusion, coordinating their bids to ensure higher prices than if they competed against one another. The nature of electricity markets makes such strategic bidding relatively easy, and sophisticated American regulators have thus far been unable to effectively control this collusive behavior.

Public interest groups like Public Citizen are not alone in offering criticisms of deregulation’s failures. A regional alliance of large corporations, the *PJM Industrial*

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<sup>31</sup> [www.nyiso.com/public/webdocs/documents/regulatory/filings/2006/12/NYISO\\_Tariff\\_filing\\_re\\_ICAP\\_Mitigation\\_Measures122206.pdf](http://www.nyiso.com/public/webdocs/documents/regulatory/filings/2006/12/NYISO_Tariff_filing_re_ICAP_Mitigation_Measures122206.pdf)

<sup>32</sup> [www.sec.gov/Archives/edgar/data/1062379/000106237907000017/ks-8kjune62007.txt](http://www.sec.gov/Archives/edgar/data/1062379/000106237907000017/ks-8kjune62007.txt)

Customer Coalition (PJMICC), was forced to make the following conclusions in a recent white paper:

*Based on current wholesale and retail pricing trends, as well as the ongoing expiration of retail price caps, PJMICC members have serious concerns that the promise of electric utility restructuring is not being fulfilled...energy-intensive businesses simply do not have the luxury to take a principled, long-term view that markets will eventually produce “just and reasonable results.” Relying on declarations that market conditions will improve in the next few years is not a viable answer for businesses subjected to the press of global competition. Business decisions are being made today, based on many factors including energy costs. In deciding where to locate new businesses, close unprofitable businesses, and expand existing businesses, businesses require that every part of the supply chain be efficient and produce the lowest possible cost...Competition for the sake of competition, without close attention to producing benefits for ultimate end users, is not sound public policy.<sup>33</sup>*

This is echoed by the Cato Institute, a leading U.S. anti-government, free-market think tank which was recently forced to conclude:

*Politicians and policy analysts have almost totally disregarded a large body of academic literature regarding the efficiencies that are gained through vertical integration in the electricity sector. At the same time, those parties have enthusiastically embraced other studies that purport to estimate the benefits of switching to a so-called restructured regime consisting of independent generation and integrated transmission and distribution. The result has been the passage of electricity utility restructuring laws that may create production inefficiencies that shrink the net benefits of any move toward market provision of power supplies...They thus disregarded the benefits that might accrue from vertical integration.<sup>34</sup>*

## **Market Based Rates Fueling Investment in Existing, Rather Than New, Generation Capacity**

FERC argues that market-based rates are necessary to provide incentives to build new generation. The lure of strong returns from selling high-priced power in inadequately-competitive markets, the argument goes, will fuel investment in building new power plants. But the reality is that the profits earned from market-based rates—and the prospect of taping into those earnings by private equity firms and investment banks—have been invested in a frenzied bidding war over *existing* generation assets, resulting in an inefficient allocation of capital that promotes the “flipping” of valuable, existing power plants as though they were beachfront property. This type of “flipping” was not a feature of cost-of-service generation, as profits from the assets were not nearly as valuable. However, investment in new generation was always adequate to meet demand because of the utilities’ *obligation to serve* consumers.

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<sup>33</sup> *What Large Commercial & Industrial Customers Need From the PJM Marketplace*

<sup>34</sup> Robert J. Michaels, *Vertical Integration and the Restructuring of the U.S. Electricity Industry*, July 13, 2006, [www.cato.org/pubs/pas/pa572.pdf](http://www.cato.org/pubs/pas/pa572.pdf)

Repeal of the Public Utility Holding Company Act in 2005 has expanded the ability of non-utility companies to own power plants. These new entrants have had little interest in buying power plants for the purpose of making long-term investments to improve reliability or efficiency for the benefit of the consumer. Rather, their sole interest is to resell the power plants for a much higher price in a short amount of time. This process, repeated throughout the country, has resulted in inflated prices for power plants that the new owners attempt to recover from consumers.

Financial firms such as hedge funds are increasing their investments in generation, and seeking to conceal such investments. In a recent filing with FERC, a hedge fund is asking regulators to consider that an ownership stake in a power plant of 20% or less to not constitute “control” or to be an “affiliate” of that power plant.<sup>35</sup> Given the significant market turmoil accompanying the Wall Street financial crisis of 2008, it is safe to predict that many power producers will seek additional investors to help strengthen credit ratings and secure cash flow. Failure to properly label such investors as having “control” or to be an “affiliate” of a power plant into which they are significantly investing would deny the public proper transparency that is needed to ensure that hedge funds do not amass significant market power through controlling minority interests in a number of electric power facilities.

Recent, high-profiled examples of premium prices paid for existing fleets of generation assets show that companies have spent over \$100 billion “flipping” existing generation assets:

- In 2004, four private equity firms—The Blackstone Group, Hellman & Friedman, Kohlberg Kravis Roberts and Texas Pacific Group—purchased Texas Genco (a portfolio of over 14,000 megawatts) from CenterPoint for \$900 million in cash, and in October 2005, the consortium re-sold the plants to NRG for a \$4.9 billion profit.<sup>36</sup> In October 2008, Exelon made an unsolicited offer to purchase NRG for \$6.2 billion.
- In 2007, Kohlberg Kravis Roberts, Texas Pacific Group, Goldman Sachs, Lehman Bros, Citigroup and Morgan Stanley purchased TXU’s existing assets for \$46 billion.
- The Wall Street investment bank Goldman Sachs and its partners bought Orion Power Holdings and its power plants in New York, Pennsylvania and Ohio in 1998 and sold them three years later to Reliant Energy for a profit of \$1 billion.<sup>37</sup>
- Sempra Energy bought nine power plants in 2004 for \$430 million and sold two of them less than two years later for more than \$1.6 billion.<sup>38</sup>
- Duke Energy’s \$9 billion purchase of Cinergy’s existing assets.
- Warren Buffet’s Berkshire Hathaway purchased PacifiCorp for \$9.4 billion, and made an offer in October 2008 for Constellation Energy for \$4.7 billion.

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<sup>35</sup> FERC docket EL08-87, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11819317>

<sup>36</sup> Simon Romero, “The Deal That Even Awed Them In Houston,” *The New York Times*, November 23, 2005.

<sup>37</sup> Aaron Elstein, “Wall Street Buys Power Plants,” August 25, 2003, *Crain’s New York Business*, Vol. 19 No. 34.

<sup>38</sup> David Cay Johnston, “In Deregulation, Plants Turn Into Blue Chips,” *The New York Times*, October 23, 2006.

- In 2006, National Grid agreed to buy Keyspan for \$7.3 billion.
- In 2003, Goldman Sachs spent \$2.4 billion for Cogentrix Energy's existing fleet of plants.
- Northern Star Generation, an affiliate of American International Group, spent \$920 million for 25 of El Paso Corp.'s power plants in 2004.
- Teton Power, an affiliate of ArcLight Capital (which in turn is affiliated with John Hancock Life Insurance) paid over \$300 million for 12 of Aquila's power plants in 2004.
- In 2004, Sempra Energy teamed up with private equity firm Carlyle/Riverstone to form Topaz Power, which purchased nine power plants from AEP for \$430 million.
- Denali Power was formed by ArcLight Capital to acquire 12 power plants for \$558 million in 2004.
- In 2006, Duke Energy sold 6,300 MW of power facilities to LS Power for \$1.5 billion.
- In 2007, Spain's Iberdrola purchased Energy East For \$4.5 billion.
- In October 2008, Électricité de France arranged to purchase all of Lehman Bros. energy trading operations<sup>39</sup> and the April 2008 acquisition of Bear Stearns' generation assets by JP Morgan Chase, giving the combined JP Morgan-Bear Stearns control over nearly 9,000 MW of power generation in the United States.<sup>40</sup>

## **Needed Reforms**

It is clear that America's deregulation experiment has failed to deliver on its promises of delivering affordable or reliable service. Public Citizen provides the following reforms to restore accountability and transparency into electricity markets:

- Revoke market-based rate authority from all power producers, thereby returning U.S. markets to cost-of-service ratemaking, and instruct FERC to focus on its sole mandate under the Federal Power Act: enforcing "just and reasonable" rates where rates are directly tied to costs.
- Restore vertical integration of utilities. For those utilities that sold power plants to unrelated companies, it may be cost-prohibitive to attempt to re-acquire the facilities for a fair price. Therefore solutions include the approach the state of Delaware recently took, enacting legislation that forces the state's distributional utilities to conduct long-term, least-cost planning that must include a cost-benefit analysis comparing the benefits of acquiring existing power plants or building new generation and investing in demand-reduction incentives for consumers. California has begun the process of ordering its utilities to re-acquire generation,

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<sup>39</sup> FERC docket EC09-4, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11826886>

<sup>40</sup> FERC docket EC08-66, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11632783>

and therefore placing those power plants back into the regulated ratebase.<sup>41</sup> The federal government should also provide, where necessary, incentives and assistance to states to help utilities re-acquire generation assets divested during deregulation.

- For those utilities that simply transferred their power plants to their own affiliates, states should take steps to encourage the parent company to return those power plants to the regulated utility.
- States should establish Power Authorities for the purpose of having a public entity acquire or build generation capacity. For example, the New York Power Authority operates a fleet of hydro and fossil-fuel peaker plants that not only help serve the state's demand, but also act to limit the ability of for-profit power sellers to price-gouge consumers by offering peaker power at cost, thereby driving down wholesale prices.
- Allow for *intervener funding*, where utilities must pay for the expenses incurred by public interest groups and labor unions for intervening in the state and federal regulatory process. Currently, because the legal and other costs are so high, public interest firms are largely absent from the regulatory process. Indeed, current law authorizes such a program, but Congress has never appropriated money to fund it. The law states, in part: "There shall be an office in the Commission to be known as the Office of Public Participation... The Director shall also coordinate assistance available to persons intervening or participating or proposing to intervene or participate in proceedings before the Commission. The Commission may, under rules promulgated by it, provide compensation for reasonable attorney's fees, expert witness fees, and other costs of intervening or participating in any proceeding before the Commission..."<sup>42</sup>
- States must insist on regulators that will be accountable to citizens, not utility company special interests. Ending the ability of regulators to cash in through the revolving door of getting a lucrative job after serving on public utility commissions would help restore accountability. States should also explore the merits of allowing citizens to directly elect regulators, as long as candidates are not allowed to accept campaign contributions from utilities.
- Decentralized power sources such as distributed generation and wind and solar energy, should be promoted.
- Federal and state government investment in energy efficiency, such as building weatherization, should be promoted to reduce electricity demand.

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<sup>41</sup> [www.cpuc.ca.gov/PUBLISHED/NEWS\\_RELEASE/60770.htm](http://www.cpuc.ca.gov/PUBLISHED/NEWS_RELEASE/60770.htm)

<sup>42</sup> 16 USC § 825q-1

- State and local governments can explore government-owned power, which provides lower-cost and more reliable service for millions of Americans across the country.

### **Addendum: Climate Change Policy**

The electric power industry accounts for 40 percent of U.S. carbon dioxide emissions—with coal-fired power plants accounting for four-fifths of these discharges. The U.S. accounts for one-quarter of the world's carbon dioxide emissions, mainly because we are so inefficient in our energy consumption. Americans emit double the carbon dioxide per person than our major competitors in Europe and Asia<sup>43</sup> and our emissions as a share of our economic output exceed our competitors such as England, Germany and Japan by more than 30 percent.<sup>44</sup> The solution to addressing climate change is to implement policies that help working families use less energy by giving better incentives for energy efficiency and conservation, and empowering households to generate their own electricity from onsite renewables like solar.

Specific solutions promoted by Public Citizen include:

- **Enact a 30 percent renewable energy standard by 2020.** Mandating the incremental increase of America's reliance on wind, solar and other renewable technologies to account for 30 percent of our electricity production by 2020 must be a centerpiece of any reform. Thirty-two states currently have similar renewable energy standards, and mandating a national target will help reduce greenhouse gas emissions.
- **Establish a moratorium on new coal-fired power plants.** There are 150 proposed new coal power plants across the country. Establishing a moratorium on these projects would help open the door to increasing investment in clean alternatives and energy efficiency.
  - While **carbon sequestration** may have some feasibility in limited types of rock formations, too little is known about the long-term risks to groundwater and concerns about the CO<sub>2</sub> eventually escaping. For example, over 1,700 people died in 1986 after a limnic eruption released a huge cloud of naturally-formed carbon dioxide out of Cameroon's Lake Nyos. Could communities in America surrounding areas where thousands of tons of carbon dioxide from coal power plants are stored underground be at similar risk? No wonder that industry is insisting on liability immunity once the CO<sub>2</sub> is injected underground. Until more study is

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<sup>43</sup> [www.eia.doe.gov/pub/international/iealf/tableh1cco2.xls](http://www.eia.doe.gov/pub/international/iealf/tableh1cco2.xls)

<sup>44</sup> [www.eia.doe.gov/pub/international/iealf/tableh1pco2.xls](http://www.eia.doe.gov/pub/international/iealf/tableh1pco2.xls)

known of these and other risks, we cannot forge ahead with large-scale carbon sequestration.

- **Transfer all existing subsidies for the oil, coal and nuclear industries to energy efficiency and renewable energy incentives.** Residential energy use accounts for one-fifth of America’s carbon dioxide emissions. Working families do not always have the financial resources to make the necessary investments in home weatherization and other energy efficiency measures needed to reduce energy consumption. For decades, American energy policy has prioritized subsidizing energy production at the expense of energy efficiency. Shifting billions of dollars from profitable coal and oil companies to families would provide the financial incentives necessary to allow households to use less energy. Families should also get bigger incentives for installing home renewable energy systems, such as solar panels.
- **Strengthen appliance efficiency standards and building codes.** Mandating strong energy efficiency standards for water heaters, appliances and buildings will save energy and families money over the long-term.
- **Double federal grants for capital and operating costs to local governments to expand mass transit.** In 2006, the federal government spent only \$8.4 billion in assistance to local governments for operating and capital costs.<sup>45</sup> At the same time, many transit systems have scaled back service in the face of higher fuel costs. The federal government should double its contribution in order to fully fund America’s transit needs.
- **Provide generous subsidies for motorists to purchase super fuel-efficient vehicles, such as plug-in hybrids.**
- **Do not implement a cap and trade system until all of its problems are addressed.**

### **Problems with “Carbon Trading” Proposals**

Implementing an enforceable “cap” on allowable greenhouse gas emissions is a sound policy that will reduce harmful emissions. But introducing a carbon trading market like the one in Europe to supplement a carbon emissions cap is fraught with significant challenges.

In fact, carbon dioxide emissions have *increased* in Europe under its cap and trade system by 0.2 percent,<sup>46</sup> while greenhouse gas emissions *decreased* in the United States by 1.5 percent, where we do not even regulate greenhouse gas emissions!<sup>47</sup> This demand reduction is the response to higher market prices for energy.

Due to Enron’s “dream list” lobbying for emissions trading,<sup>48</sup> Vice President Dick Cheney’s National Energy Policy Development Group embraced emissions trading (but not the regulation of carbon).<sup>49</sup>

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<sup>45</sup> [www.apta.com/research/stats/factbook/](http://www.apta.com/research/stats/factbook/)

<sup>46</sup> [www.eia.doe.gov/emeu/international/carbondioxide.html](http://www.eia.doe.gov/emeu/international/carbondioxide.html)

<sup>47</sup> [www.eia.doe.gov/oiaf/1605/ggrpt/](http://www.eia.doe.gov/oiaf/1605/ggrpt/)

<sup>48</sup> [www.citizen.org/documents/Kelliher.pdf](http://www.citizen.org/documents/Kelliher.pdf)

<sup>49</sup> Page 3-3, [www.whitehouse.gov/energy/Chapter3.pdf](http://www.whitehouse.gov/energy/Chapter3.pdf)

Largely due to the single-handed efforts of the Enron Corp in the mid-1990s, America commoditized electricity by deregulating it in the 1990s with disastrous results. Companies like Enron also saw emissions trading markets as an opportunity to make enormous profits, but profits in carbon markets do not automatically translate into an efficient program to address global warming, as has been shown in Europe. In fact, energy companies in Europe made at least £2 billion at the expense of consumers, and will take a £1.5 billion profit a year simply from selling carbon dioxide credits.<sup>50</sup>

There are six general problems with carbon trading markets that must be addressed in order for such a system to work:

- Failure to set the correct “cap” renders the program ineffective at reducing greenhouse gas emissions
- Allocation of emissions credits should be auctioned to avoid over-compensating certain companies or industries able to exploit loopholes.
- Trading markets must be heavily regulated to avoid market manipulation, as currently-designed carbon trading markets mirror flawed natural gas and other manipulatable energy commodity markets.
- Strong enforcement must be established to police this new complex set of rules, which will require enormous administrative costs (which raises the question whether the money could be better spent making direct investments in energy efficiency and renewable energy).
- Firms that exceed their allocated emissions cap can simply purchase credits, thereby allowing them to continue polluting in the areas in which they operate.
- Carbon caps do not currently accommodate changes in the business cycle. Energy use—and emissions from their use—fluctuate with changes in economic growth. So a “cap” set during a period of strong economic growth will be too high if the economy subsequently slows down.

Europe’s cap and trade scheme has failed for two main reasons. First, Europe has struggled at establishing the right cap, bowing to the political and economic influence of polluting industries, consistently setting the cap too high and allowing most countries and industries to come in below their projected allowable emissions.

Second, the price of carbon emissions has proven to be incredibly volatile. For example, in April 2006 trading reached a high of €29.80 a metric ton, but by March 2008 it had fallen to €0.02.<sup>51</sup> This price volatility paralyzes a market, rendering participants unable to plan investments given the fact that the market price swings wildly between highs and lows.

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<sup>50</sup> David Derbyshire, “Power firms in £2bn carbon trade rip-off,” *The Daily Mail*, 15 June 2007, [www.dailymail.co.uk/news/article-462076/Power-firms-2bn-carbon-trade-rip-off.html](http://www.dailymail.co.uk/news/article-462076/Power-firms-2bn-carbon-trade-rip-off.html)

<sup>51</sup> [www.europeanclimateexchange.com](http://www.europeanclimateexchange.com)



June 5, 2012

Chairman Ralph Hall  
Ranking Member Eddie Bernice Johnson  
House Committee on Science, Space and Technology  
Washington, DC 20515  
Re: Hearing on EPA's Impact on Jobs and Energy Affordability

Dear Chairman Hall and Ranking Member Johnson:

OMB Watch would like to submit the following comments for the record of the hearing on Wednesday, June 6, 2012, on "EPA's Impact on Jobs and Energy Affordability." In our view, the very premise of the hearing – that EPA regulations adversely affect employment or energy prices and that more rigorous analysis of costs and benefits would avoid that impact – is fundamentally flawed. Instead, we believe the EPA – like other regulatory agencies – has a simple mission: to do the best it can to protect Americans from unreasonable risks to their health, safety, and welfare. Taken together, the evidence is compelling that EPA regulations do more than protect people; they underpin the proper functioning of our economy – including employment and energy prices. We submit these comments to set the record straight on the question of regulatory costs and their effect on employment.

OMB Watch is an independent, nonpartisan organization that promotes open, accountable government and health and safety standards that protect people and the environment. OMB Watch has monitored the Office of Management and Budget's (OMB) Office of Information and Regulatory Affairs (OIRA), EPA, and their interactions for more than 25 years. We co-chair the Coalition for Sensible Safeguards (CSS), an alliance of more than 75 consumer, small business, labor, scientific, research, good government, faith, community, health, and environmental organizations joined in the belief that our system of regulatory safeguards is essential to maintaining our quality of life and building a sustainable economy that works for all. Time constraints prevented CSS from reviewing this submission, so it is made on behalf of OMB Watch.

Research demonstrates that estimates of the costs of regulation, made at the time rules are adopted, more often than not *overstate* the economic impact of proposed rules. EPA recently commissioned a study comparing the estimated pre-promulgation costs of five EPA rules (*ex ante* costs) to retrospective estimates of regulatory costs for the same rules (*ex post* costs). Its preliminary findings indicate that EPA overestimated the costs of at least two of the rules examined.<sup>1</sup> The study also summarized existing studies examining the accuracy of *ex ante* cost

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<sup>1</sup> Retrospective Study of the Costs of EPA Regulations: An Interim Report of Five Case Studies National Center for Environmental Economics, March 2012, Prepared for Review by the SAB-EEAC in an Advisory meeting scheduled April 19-20, 2012,

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1742 Connecticut Ave. NW  
Washington, DC 20009

tel: 202.234.8494  
fax: 202-234.8584

email: [ombwatch@ombwatch.org](mailto:ombwatch@ombwatch.org)  
web: <http://www.ombwatch.org>

estimates. One study compared *ex ante* direct costs to *ex post* assessments for 28 EPA and OSHA regulations, finding that, in general, *ex ante* total costs are overestimated more often than underestimated.<sup>2</sup> Of the 13 EPA regulations examined, *ex ante* total costs were overestimated for seven rules, while only two rules had lower *ex ante* cost estimates. Similarly, a 2005 OMB study found that EPA *ex ante* unit cost estimates were accurate in six cases, overestimated in six cases and underestimated in six cases.<sup>3</sup> Requiring EPA to conduct more analysis of the costs of regulations, when such analyses are consistently inaccurate, is not sound policy.

EPA is not alone in overestimating the costs of its regulations. In a 1995 study, the now-defunct Congressional Office of Technology Assessment conducted retrospective case studies for eight past OSHA rulemakings – five involving health standards and three involving safety standards.<sup>4</sup> The cost estimates for OSHA's 1974 vinyl chloride standard considered during rulemaking exceeded \$1 billion, but a survey of the polyvinyl chloride production industry conducted after the standard went into effect concluded that the actual compliance costs were in the \$228-278 million range. OSHA's final cost estimate for its 1978 cotton dust standard projected annual compliance costs of \$283 million, but OTA concluded that actual costs amounted to only about \$82.8 million per year because, as a result of the standard, the textile industry modernized and productivity at its plants improved. OSHA estimated in the early 1980s that its occupational lead exposure standard would cost the industry \$125 million, but actual costs as assessed retrospectively by OTA amounted to only around \$20 million. Similarly, OSHA estimated in 1987 that its formaldehyde standard would impose \$11.4 million in costs on the industry, but actual costs were only \$6 million, in part because the industry moved rapidly to substitute low-formaldehyde resins. In each of these instances, OSHA achieved significant health benefits at a fraction of the predicted cost.

Researchers have suggested several reasons why agency estimates of the costs of regulations often overstate the economic impact of proposed rules.<sup>5</sup> First, agencies must rely on the potentially regulated industry for cost data, and regulated parties have little incentive to provide accurate information about the potential impact of regulations, since the larger the estimated regulatory costs, the less likely the rule is to be adopted. The Government Accountability Office (formerly the General Accounting Office) has found that most businesses

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[http://yosemite.epa.gov/sab/sabproduct.nsf/0/3A2CA322F56386FA852577BD0068C654/\\$File/Retrospective+Cost+Study+3-30-12.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/0/3A2CA322F56386FA852577BD0068C654/$File/Retrospective+Cost+Study+3-30-12.pdf).

<sup>2</sup> Harrington, W., R. D. Morgenstern, and P. Nelson, On the Accuracy of Regulatory Cost Estimates, *Journal of Policy Analysis and Management* 19(2): 297-322 (2000), available for purchase at <http://onlinelibrary.wiley.com/doi/10.1002/%28SICI%291520-6688%28200021%2919:2%3C297::AID-PAM7%3E3.0.CO;2-X/abstract>.

<sup>3</sup> U.S. Office of Management and Budget, Office of Information and Regulatory Affairs (OMB), *Validating Regulatory Analysis: 2005 Report to Congress on the Costs and Benefits of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities*, [http://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/2005\\_cb/final\\_2005\\_cb\\_report.pdf](http://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/2005_cb/final_2005_cb_report.pdf).

<sup>4</sup> Office of Technology Assessment (OTA), "Gauging Control Technology and Regulatory Impacts in Occupational Safety and Health," (1995).

<sup>5</sup> McGarity and Ruttenberg, "Counting the Costs of Health, Safety, and Environmental Regulation," 80 *Tex. L. Rev.* 1997 (2002).

have no meaningful way of estimating potential regulatory costs, so the estimates they submit are guesses.<sup>6</sup> Other researchers have demonstrated that cost estimates submitted to regulatory agencies in advance of rules too often ignore the fact that adoption of a new regulation creates an incentive for industry to innovate and develop less expensive ways to comply. Agencies routinely ignore the impact technological innovation has in reducing expected regulatory costs.

Similarly, research indicates that regulations can increase, rather than decrease, employment, albeit modestly. This is true largely for two reasons: first, regulations can directly or indirectly spur investment, innovation, and hiring. Second, effective environmental regulations can support the overall sustainable functioning of our economy.

The Economic Policy Institute has concluded, "[t]aken as a whole . . . the literature studying individual regulations and specific industries tends to show that the broad fear of substantial regulation-induced job loss at the industry level is unfounded."<sup>7</sup> They base this conclusion, in part, on a study of the effect of stringent air quality regulations in the Los Angeles area. Economists Eli Berman and Linda Bui found that the regulations "probably increased labor demand slightly" (and that there was "no evidence" they led to reductions in employment).<sup>8</sup> A different study of the employment impact of environmental regulations in four heavily-polluting sectors found that such rules had a small but positive effect in the petroleum and plastics sectors, and no statistically significant effect in the steel and pulp and paper sectors.<sup>9</sup>

Among the reasons regulations do not cause job losses is because they induce firms to hire additional abatement or compliance workers. Additionally, they often spur development of innovative technologies or processes. In fact, a Harvard Business School economist has argued that such gains can entirely offset the cost of compliance.<sup>10</sup> This is particularly likely to be true when – as is currently the case – corporations are holding significant capital reserves and unemployment is high. While individual corporations may be reluctant to invest in environmental technologies on their own, sector-wide upgrades of the type generated by EPA regulations are likely to drive capital investment, technological innovation, and, ultimately, increased hiring.

Strong environmental safeguards can also protect against job losses and other adverse effects of pollution. For example, the British Petroleum Deepwater Horizon disaster killed eleven workers and injured seventeen others before spilling nearly five million barrels of oil into

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<sup>6</sup> General Accounting Office, "Regulatory Burden: Measurement Challenges and Concerns Raised By Selected Companies" (Nov. 1996).

<sup>7</sup> Isaac Shapiro and John Irons, "Regulation, Employment, and the Economy: Fears of job loss are overblown," Economic Policy Institute Briefing Paper, April 2011.

<sup>8</sup> Eli Berman and Linda T.M. Bui, "Environmental Regulation and Labor Demand: Evidence from the South Coast Air Basin," *Journal of Public Economics* 79: 265, 293, 2001.

<sup>9</sup> Richard D. Morgenstern, William A. Pizer, and Jhih-Shayang Shih, "Jobs Versus the Environment: An Industry-Level Perspective," *Journal of Environmental Economics and Management* 43: 412-436, 2002.

<sup>10</sup> Michael Porter and C. Van der Linde, "Toward a New Conception of the Environment-Competitiveness Relationship," *Journal of Economic Perspectives* 9(4): 97-118, 1995.

the Gulf of Mexico. This was both an environmental disaster and an economic one: researchers estimate that over seven years, the damage from the blowout will have a more than \$8.5 billion impact on the Gulf Coast's economy, including lost wages, lost profits, and the loss of more than 22,000 jobs.<sup>11</sup> Separately, BP has already spent \$14 billion on clean-up costs.<sup>12</sup> Furthermore, EPA studies demonstrate that the single-year impacts of the 1990 Clean Air Act Amendments (to take only one example) can be measured not only as 160,000 lives saved, 130,000 heart attacks prevented, and 86,000 hospital admittances avoided – but also as the 13 million additional days of work and 3.2 million additional days of schooling which were possible because workers and students were healthier.<sup>13</sup>

We urge you to allow EPA to remain focused on its mission of protecting public health and the environment and not to compel the agency to squander its resources on additional layers of analysis that do not improve the health, safety, or welfare of the American people.

Thank you for the opportunity to submit these comments for the record.

Sincerely,

A handwritten signature in cursive script that reads "Randy S. Rabinowitz". The signature is written in black ink and is positioned above the typed name and title.

Randy Rabinowitz  
Director of Regulatory Policy, OMB Watch

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<sup>11</sup> U. Rashid Sumaila and Andrés M. Cisneros-Montemayor, "Impact of the *Deepwater Horizon* well blowout on the economics of US Gulf fisheries," *Canadian Journal of Fisheries and Aquatic Sciences* 69(3): 499-510, 2012.

<sup>12</sup> Dominic Rushe, "BP sues Halliburton for Deepwater Horizon oil spill clean-up costs," *The Guardian*, Jan. 3, 2012.

<sup>13</sup> U.S. Environmental Protection Agency, Office of Air and Radiation, "The Benefits and Costs of the Clean Air Act: 1990 to 2020," Final Report, Washington, D.C., EPA, March 2011, 7-9.

[washingtonpost.com](http://washingtonpost.com)

## Under Fire, EPA Drops the 'Senior Death Discount'

By Cindy Skrzycki

Tuesday, May 13, 2003; Page E01

The **Environmental Protection Agency** expected only good things to come of six "listening sessions" that it held around the country to examine how environmental problems such as poor air and water quality harm senior citizens.

Instead, by the time the last session was held in Baltimore last Wednesday the results could not have been more unexpected. The agency was battered by senior citizens, advocacy groups and environmental groups with complaints about how the administration was undervaluing lives of aging Americans in its regulatory analyses.

The acrimony that developed at meetings in Tampa, Pittsburgh, Iowa City, San Antonio and Los Angeles prompted EPA Administrator **Christine Todd Whitman** to cut her losses when she took the podium in Baltimore. Before any seniors could upbraid the agency again, Whitman said the EPA would no longer use the analysis that attaches less value to lives of senior citizens when it does calculations to figure out the benefits of environmental rules.

Normally, the EPA uses \$6.1 million as the value of life in all its calculations, regardless of age. The alternative approach first prominently used in a clean-air policy initiative early last year reduced that value to \$3.7 million per life, and then \$2.3 million for citizens over 70. Critics seized upon it as the "senior death discount."

One group circulated a flier before the Baltimore meeting saying the EPA calculated "Seniors are Worth 3/5 of a Person."

"EPA will not, I repeat, not, use age-adjusted analysis in decision making," Whitman said in Baltimore. She added that the agency has not based any of its policy decisions on the discount.

In an interview, **Albert M. McGartland**, director of the EPA's **National Center for Environmental Economics**, said, "We will continue using our standard methods, which have been thoroughly reviewed."

Environmental groups, in general, have been dismayed at the administration's approach to calculating the benefits of rules. They have criticized the use of "alternative analysis" in several major rulemakings at the EPA, which resulted in drastically lowered benefits. The effect on policymaking, they contend, is that rules would not have to be as stringent and would actually harm the most vulnerable groups.

The groups saw the EPA announcement last fall about the "listening sessions" as a chance to make their criticism in person.

Prepped by public interest groups such as **U.S. PIRG**, senior citizens quickly became familiar with one of the more arcane regulatory concepts being debated among economists and policymakers: cost-benefit analysis and the assumptions used to determine how many lives are saved, or lengthened, by various environmental rules -- and how much people are willing to pay for that protection.

Before the Tampa meeting last month, PIRG representatives worked to get such groups as **Florida Republicans for Environmental Protection** and the **Silver Haired Legislature** fired up about the issue. Seventeen seniors showed up at the microphone to gripe about the discount.

Environmental groups alerted their members. **David Certner**, director of federal affairs for **AARP**, got wind of the controversy and told the **Office of Management and Budget** that the group -- which represents an influential voting block -- was "deeply troubled" by the use of "a 37 percent discount to the life value of adults aged 70."

The Baltimore Sun published a piece by **Carol M. Browner**, EPA administrator in the Clinton administration, the day of the Baltimore meeting, saying the Bush administration was devaluing seniors and letting polluters off easy. The press in cities where the EPA held the sessions showcased seniors who gave the agency a piece of their minds.

The controversy also has heightened tensions between the EPA and the OMB over using more than one approach to value costs and benefits. Economists at the agency have expressed discomfort at what they call pressure from the OMB to use alternative calculations that lower benefits of rules.

**John D. Graham**, administrator of the OMB's office of information and regulatory affairs, said the age adjustment has been removed from an EPA proposal to curb pollution from a certain class of diesel engines. He said the OMB was responding to "technical concerns" from economists and academics about the results of the underlying academic study that supported the age adjustment.

"I share Governor Whitman's conviction that an age-adjustment factor should not be used at this time to support a primary or alternative benefit estimate," said Graham in a written response to questions. "OMB remains open to additional evidence that may be published in the future."

Graham said another approach is to use "life expectancy" analysis that is based on the number of years of life saved by rules, and thus can place more value on the years that are left for older people.

Critics of the administration are not convinced the problem has been fixed. They say the economic analysis promoted by Graham will shortchange benefits in other ways.

"They [the Bush administration] use a number of techniques that result in the loss of value of all lives," said **David Tuft**, director of special projects for **Breakthrough Technologies Institute**, a nonprofit that promotes technology with environmental benefits. "The agenda is to weaken the justification for rules."

The OMB counters that under the current administration and the Clinton administration, the government has been exploring the best ways to quantify health benefits, taking into account economics, including diverse technical points of view, as well as ethics, such as the value of life.

Some economists studying cost-benefit analysis wanted to continue the debate. "For EPA to give up on this is a surprise," said **Cass R. Sunstein**, a law professor at the **University of Chicago Law School** who is an expert in risk assessment. **Alan J. Krupnick**, a senior fellow at **Resources for the Future**, a think tank that focuses on environmental policy, said, "I wanted to hear a debate on what is the appropriate way of evaluating life-saving programs that affect different age groups and different stages of health."

Research co-authored by Krupnick is part of the reason the OMB dropped the senior death discount. The work showed that an earlier Canadian study he worked on, which found seniors less willing to pay to reduce the risk of death, did not hold true in the United States.

"Life as you get older is more precious. That's the crux of our [new] study," he said.

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