2009

No Reason to Wait: Reducing Greenhouse Gas Emissions through the Clean Air Act

William Snape

6-1-2009

No Reason to Wait: Reducing Greenhouse Gas Emissions through the Clean Air Act

William Snape
American University Washington College of Law, wsnape@wcl.american.edu

No Reason to Wait: Reducing Greenhouse Gas Emissions Through the Clean Air Act

Climate Law Institute Working Paper Number 1

A CENTER FOR BIOLOGICAL DIVERSITY REPORT

No Reason to Wait: Reducing Greenhouse Gas Emissions Through the Clean Air Act

By Kassie Siegel, Bill Snape, and Matt Vespa
June 2009

Contact: Bill Snape, Senior Counsel
Center for Biological Diversity
bsnape@biologicaldiversity.org
202.536.9351

Front Cover:
Polar bear photo ©Thomas D.Mangelsen/Imagesofnaturestock.com
Coal-fired power plant photo by Phillip J. Redman, USGS
Highway traffic photo courtesy Creative Commons/Hagen123

Center for Biological Diversity Climate Law Institute
351 California St., Ste. 600
San Francisco, CA 94104
415.436.9682
www.biologicaldiversity.org
The Center for Biological Diversity is a national nonprofit conservation organization with more than 220,000 members and online activists dedicated to the protection of endangered species and wild places.

Table of Contents

> "If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO_2 will need to be reduced from its current 385 ppm to at most 350 ppm, but likely less than that . . . ."
>
> –Dr. James Hansen, NASA climate scientist, and co-authors, 2008.[1]

I. INTRODUCTION

In the United States, the legal and policy response to global warming has always lagged far behind the urgency of the problem as articulated by scientists and borne out in the real world. In the past five years, this mismatch has reached frightening proportions, with Arctic sea ice and glaciers rapidly retreating, rising and acidifying seas, stronger storms, more frequent and intense droughts and heat waves, looming species extinction and the climate related-deaths of 300,000 people each year. Leading scientists warn that atmospheric carbon dioxide levels have likely *already* exceeded safe levels and must therefore be reduced in the next few decades to no more than 350 parts per million from today's 385 parts per million to avoid triggering catastrophic, and irreversible, changes to the planet. Instead, emissions continue to grow and the world is on a pace to exceed even the worst-case scenarios modeled by the Intergovernmental Panel on Climate Change (IPCC). The need for action could not be more urgent. Nevertheless, the federal government has still yet to finalize, much less implement, *any* meaningful domestic greenhouse gas reduction plan.

The great irony of U.S. inaction is that we have the strongest and most successful domestic environmental laws in the world, and no modification of these laws is necessary to use them to address greenhouse gas emissions. Foremost among these laws is the Clean Air Act, which has a proven track record of effectively and efficiently reducing air pollution. The Clean Air Act works. For four decades, this seminal law has protected the air we breathe, saved thousands of lives each year and otherwise improved public health. According to the Environmental Protection Agency's (EPA) own data, the economic benefits of Clean Air Act regulation have exceeded the costs by at least 42 times. While written decades ago, the framework of the Clean Air Act can be deployed without changes to reduce carbon dioxide emissions and other forms of greenhouse pollution. As the Supreme Court's landmark decision in *Massachusetts v. EPA* demonstrated, there is simply no valid legal reason for the EPA to delay implementing greenhouse pollution reductions pursuant to Clean Air Act authorities.

Notwithstanding the fact that EPA currently has not only the full authority under the Clean Air Act, but the legal mandate, to begin requiring greenhouse emissions reductions immediately from nearly all major sources in the U.S., a decade of agency inaction under the statute has created a prevailing perception that the

[1] James Hansen et al., *Target Atmospheric CO_2: Where Should Humanity Aim?*, 2 OPEN ATMOSPHERIC SCIENCE J. 217, 217-18 (2008).

Clean Air Act is somehow "ill-suited" to addressing greenhouse emissions and that *new* legislation is needed before meaningful U.S. action to address greenhouse emissions can occur. However, a review of Clean Air Act provisions demonstrates that the law is in fact very well-suited to addressing greenhouse emissions, and if expeditiously implemented and enforced would result in emission reductions in the U.S. at least equal to, but likely exceeding, those under any climate legislation currently before Congress.

Nevertheless, the leading federal climate bill, the American Clean Energy and Security Act (H.R. 2454) (2009) (ACESA), the centerpiece of which is a cap-and-trade program, excludes (or "exempts") greenhouse gas emissions from the majority of the Clean Air Act's provisions.[2] Similarly, the Obama administration has asserted a strong preference for reducing emissions through new federal cap-and-trade legislation *instead of* rather than *in addition to* the Clean Air Act. We believe this is a false choice, as Clean Air Act greenhouse gas reduction measures can be implemented in a manner compatible with a cap-and-trade scheme as proposed in ACESA. The protections contained in the Clean Air Act not only ensure greenhouse emission reductions in the near term, but provide an important backstop to a cap-and-trade system.

[2] For a discussion of the ACESA's Clean Air Act exemptions for greenhouse gases, see CENTER FOR BIOLOGICAL DIVERSITY CLIMATE LAW INSTITUTE, ANALYSIS OF KEY PROVISIONS OF H.R. 2454, THE AMERICAN CLEAN ENERGY AND SECURITY ACT OF 2009 (ACESA), AS AMENDED JUNE 22, 2009 (2009), *available at* http://www.biologicaldiversity.org/programs/climate_law_institute/legislating_for_a_new_climate/index.html.

While there may be strong policy arguments for seeking congressional rather than purely executive branch action on emissions, new climate legislation should not displace existing Clean Air Act provisions. Unfortunately, the Clean Air Act exemptions contained in ACESA do just that. Yet because very few people, even in the relatively esoteric world of climate advocacy, are steeped in the details of how the Clean Air Act would reduce emissions, few are focused on what the current climate bill is giving up.

This paper sets forth a blueprint for achieving greenhouse gas emission reductions under the Clean Air Act. We hope this paper will help spur both faster action by the administration under current law, and support for removing the existing Clean Air Act exemptions from ACESA. The Clean Air act provides the successful foundation for the transition to a clean energy future. Any new climate bill must incorporate and build upon this foundation, rather than discarding it in favor of an entirely new, untested system, placing all our eggs in one precarious basket.

II. THE SCIENCE UNDERPINNING THE URGENT NEED FOR ACTION

Since the industrial revolution, atmospheric concentrations of CO_2 have risen from 280 parts per million (ppm) to 383 ppm in 2007.[3] As a result of these increases in CO_2 and other greenhouse gases, the air

[3] GLOBAL CARBON PROJECT, CARBON BUDGET AND TRENDS 2007 (2008), http://www.globalcarbonproject.org/carbontrends/index.htm.

temperature at the surface of the Earth has warmed by over 0.7°C (1.26°F).[4] Already, the world has experienced hundreds of thousands of climate-related deaths, dozens of species extinctions, widespread loss of coral reefs, more damaging storms, rising seas, and the significant retreat of glaciers and sea ice. Continued greenhouse emissions in line with current trends will continue to raise Earth's temperature by 4-6°C (7.2 -10.8°F), if not more, by the end of the century.[5]

The precise level at which global warming becomes "dangerous" is the subject of an ongoing dialogue. The European Union has adopted an objective to "limit global warming to less than 2°C [3.6°F] above the pre-industrial temperature as there is strong scientific evidence that climate change will become dangerous beyond this point."[6] While the 2°C target set by the EU may have seemed acceptable when first proposed in 1996, it has become clear that much smaller increases in global mean temperature will result in substantial environmental and socio-economic consequences.[7] However, the 2°C target is still a common and useful reference for comparing the different impacts the world will suffer depending on whether, how much, and how quickly greenhouse gas emissions are reduced.

The consequences of a 2°C temperature increase include the displacement of millions due to sea level rise, irreversible loss of entire ecosystems, the triggering of multiple climatic "tipping points" such as complete loss of summer Arctic sea ice and the irreversible melting of the Greenland ice sheet, loss of agricultural yields, and increased water stress for billions of people.[8] As dire as the projected impacts resulting from a 2°C average temperature increase are, increases above 2°C would result in impacts exponentially more devastating. Few of the ecosystems that support life on earth would be able to adapt to a 3°C temperature rise. At a 3°C temperature increase from pre-industrial levels, 22 percent of ecosystems would be transformed, losing 7 to 74 percent of their extent.[9] An additional 25 to 40 million people would be displaced from coasts due to sea level rise, an additional 1.2 – 3 billion people would suffer an increase in water stress, and 65 countries would lose 16 percent of their agricultural gross domestic product.[10]

The amount of warming the world will experience depends on total atmospheric concentrations of greenhouse gases, which in turn depends on future emissions.[11] This

[4] W.L. Hare, *A Safe Landing for the Climate*, *in* 2009 STATE OF THE WORLD: INTO A WARMING WORLD 13 (World Watch Institute, 2009).
[5] *Id.*
[6] *See, e.g.,* Press Release, Europa, Climate change: Commission sets out proposals for global pact on climate change at Copenhagen (Jan. 28, 2009), *available at* http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/141.
[7] *See, e.g.*, Joel B. Smith et al., *Assessing Dangerous Climate Change Though an Update of the Intergovernmental Panel on Climate Change (IPCC) "Reasons for Concern",* PROC. OF THE NAT'L ACAD. SCI., Feb. 26, 2009, at 1, *available at* http://www.pnas.org/content/early/2009/02/25/0812355106.abstract.
[8] Rachel Warren, *Impacts of Global Climate Change at Different Annual Mean Global Temperature Increases*, *in* AVOIDING DANGEROUS CLIMATE CHANGE 95, 98 (2006).
[9] *Id.* at 99.
[10] *Id.* at 96–97.
[11] Atmospheric greenhouse gas concentrations and emissions are usually expressed either in CO_2 concentrations or in CO_2eq concentrations, a

information informs us of the consequences of our actions, consequences which are still apparently unrealized by the vast majority of policymakers. If greenhouse gas concentrations are stabilized at the common policy reference target of 450 ppm CO_2eq, there is a 50% chance of exceeding a 2°C temperature increase, with a 30% probability that temperature would rise more than 3°C.[12]

The Intergovernmental Panel on Climate Change (IPCC) – the world's leading scientific authority on climate change – estimates developed countries need to reduce emissions to 25-40% below 1990 levels by 2020 and to 80-95% below 1990 levels by 2050 to stabilize atmospheric greenhouse gas concentrations at 450 ppm CO_2eq.[13] The emissions reductions goals in ACESA fall short of these targets: viewed in the most favorable light, reductions are 23% below 1990 levels by 2020 and 77% below 1990 levels by 2050.[14] Even if the bill were fully implemented, it would allow atmospheric greenhouse gas concentrations to exceed 450 ppm CO_2eq, and would therefore provide less than a 50/50 chance of avoiding catastrophic climate change.[15] We cannot settle for resting the fate of the planet on a coin toss.

Dr. James Hansen, the world's leading climate scientist, and many co-authors have concluded that present CO_2 levels are "already in the dangerous zone" and must be reduced to no more than 350 ppm CO_2:

> If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO_2 will need to be reduced from its current 385 ppm to at most 350 ppm, but likely less than that . . . . An initial 350 ppm CO_2 target may be achievable by phasing out coal use except where CO_2 is captured and adopting agricultural and forestry practices that sequester carbon. If the present overshoot of this target CO_2 is not brief, there is a possibility of seeding irreversible catastrophic effects.[16]

This finding has recently been reinforced by the U.S. Global Change Research Program, which concluded that "[t]o have a good chance (but not a guarantee) of avoiding temperatures above [2°C from pre-industrial] levels, it has been estimated that atmospheric concentrations of carbon dioxide would need to stabilize in the long

measure which accounts for the combined warming effect of all of the greenhouse gases.

[12] UNION OF CONCERNED SCIENTISTS, HOW TO AVOID DANGEROUS CLIMATE CHANGE: A TARGET FOR U.S. EMISSIONS 3 (Sept. 2007).

[13] S. Gupta et al., *Policies, Instruments and Co-operative Arrangements*, *in* CLIMATE CHANGE 2007: MITIGATION, CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT OF THE INTERNATIONAL PANEL ON CLIMATE CHANGE 776 (2007).

[14] WORLD RESOURCES INSTITUTE, EMISSION REDUCTIONS UNDER THE AMERICAN CLEAN ENERGY AND SECURITY ACT OF 2009 (May 19, 2009), *available at* www.wri.org/publication/usclimatetargets. This figure assumes significant supplemental reductions from investments to reduce international deforestation. Actual U.S. emissions reductions are less than these figures indicate, and are estimated to amount to no more than a 5% reduction below 1990 levels by 2020.

[15] UNION OF CONCERNED SCIENTISTS, *supra* note 12, at 3.

[16] Hansen et al., *supra* note 1, at 217.

term at around today's levels."[17] The federal government's continued delay in addressing the problem in the face of such urgency is inexplicable. Yet the tools exist today to begin ambitious greenhouse gas reduction measures. The remainder of this paper explores these tools and the benefits they can provide.

III. THE CLEAN AIR ACT

A. The Clean Air Act Has a Proven Track Record of Comprehensive and Cost-Effective Reduction of Air Pollutants

The Clean Air Act ("CAA" or "Act") is one of the nation's and the world's most important and successful environmental laws. Passed in 1970 in response to growing environmental awareness, the CAA uses a variety of complementary pollution control mechanisms to reduce pollution from all sectors of the U.S. economy. Title I of the Act provides for the regulation of stationary sources, while Title II provides for regulation of mobile sources. Title III contains general provisions related to reporting on the effectiveness of the Act, air quality monitoring, citizen suits, and other matters. Title IV, established by the 1990 amendments to the Act, adds a trading program to control SO_2, a primary acid rain precursor. Title V, also added by the 1990 amendments, increases the ability of state and federal regulators and citizen groups to monitor compliance with the Act by establishing a new operating permit system. Title VI requires the EPA to take a number of actions to protect the stratospheric ozone layer, which protects the Earth from harmful UVB radiation.

The Clean Air Act has provided indispensible benefits to this country for four decades. Study after study has shown that the substantial improvements in air quality achieved through the Act have not only resulted in enormous public health, ecological, and other benefits, but have also been accomplished so efficiently that the economic value of the benefits exceeds by many times the costs of the regulations.

Pursuant to Congressional directive, the EPA issued the first major report evaluating the Act's effectiveness in October 1997.[18] Focusing on the traditional "criteria pollutants" – sulphur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs), particulate matter

[17] U.S. GLOBAL CHANGE RESEARCH PROGRAM, GLOBAL CLIMATE CHANGE IMPACTS IN THE UNITED STATES 23 (2009). Discussions of temperature rise in this report are expressed as an increase in Fahrenheit relative to the 1980-1990 period and roughly equivalent to a 2°C temperature rise from pre-industrial levels. In the last 100 years, the Earth has warmed by over 0.7°C. W. L. Hare, *A Safe Landing for the Climate*, *in* WORLD WATCH INSTITUTE, 2009 STATE OF THE WORLD: INTO A WARMING WORLD 13 (2009).

[18] The EPA conducted the study in consultation with an outside panel of highly qualified experts known as the Advisory Council on Clean Air Act Compliance Analysis organized in 1991 under the auspices of EPA's Science Advisory Board. The study constructed and compared a "no-control scenario," in which federal, state, and local air pollution controls are frozen at the levels of stringency and effectiveness that existed in 1970, to a "control scenario" which assumes that all federal, state, and local rules promulgated pursuant to the CAA during 1970 to 1990 were implemented. The analysis achieved a level of validity, breadth, and integration that exceeded any effort to that time. EPA, THE BENEFITS AND COSTS OF THE CLEAN AIR ACT: 1970 TO 1990 (1997), *available at* http://www.epa.gov/air/sect812/.

(PM), and lead – the EPA found that emissions of SO_2 were 60 percent lower, emissions of VOCs 66 percent lower, emissions of NO_x 47 percent lower, emissions of CO 56 percent lower, emissions of PM from electric utilities 93 percent lower, and emissions of PM from industrial processes 76 percent lower in 1990 than they would have been without the CAA.[19] Emissions of airborne lead had been virtually eliminated.[20] The EPA modeled the impact of the resulting improvements in air quality on human health, including impacts such as respiratory symptoms, hospital admissions, asthma attacks, and chronic sinusitis from exposure to ozone; mortality,[21] bronchitis, hospital admissions, and lost work days from exposure to PM; hospital admissions for congestive heart failure from exposure to CO; respiratory illness from exposure to NO_x; changes in pulmonary function and respiratory symptoms from exposure to SO_2; and mortality, hypertension, coronary heat disease, strokes, and IQ loss from exposure to lead.[22] The EPA also modeled selected welfare effects including changes in crop yields from exposure to ozone, household soiling from PM, and visibility impairment from PM, NO_x and SO_2.[23]

The EPA concluded that the economic benefits of CAA implementation, valued in 1990 dollars, range from $5.6 trillion to $49.4 trillion with a central estimate of $22.2 trillion.[24] The costs of compliance with the CAA analyzed by EPA included changes in patterns of industrial production, capital investment, productivity, consumption, employment, and overall economic growth. Using a 5% discount rate, the EPA estimated the total costs of the CAA regulations to be $0.523 trillion. The economic value of the Act's benefits, therefore, was *42 times* greater than its costs. Subsequent analyses have continued to affirm both the effectiveness and efficiency of the CAA. As summarized recently, "[h]istorically, regulations under the CAA have proven to be effective, flexible, and cost efficient. . . . The Act grounds regulations in science and encourages technological development. It has also served as the basis for comprehensive monitoring and cataloging of national emissions. The Act sets up a public and transparent process, and it fosters coordination between federal agencies and with the states."[25]

[19] EPA, THE BENEFITS AND COSTS OF THE CLEAN AIR ACT: 1970 TO 1990 15-17 (1997), *available at* http://www.epa.gov/air/sect812/.
[20] *Id.*
[21] The EPA estimated that a person dying from PM exposure died on average 14 years earlier than they otherwise would have, and the loss of life is even greater for lead exposure.
[22] *Id.* at 31.
[23] *Id.* at 32.
[24] The EPA stressed that the quantification of health and environmental benefits was biased downwards for several reasons. First, limitations in air quality modeling prevented comprehensive estimates in changes in air quality. EPA, *supra* note 19, at 25-27. Second, a wide variety of beneficial impacts to both health and the environment could not be quantified economically. *Id.* at 30. Third, the valuation of many health effects included economic costs such as physician visits, medications costs, and lost work time, but excluded the value of what one would be willing to pay to avoid the associated pain and suffering, and thus the valuations almost certainly represent lower-bound estimates for these impacts. Moreover, many recent studies show that exposure to air pollution, particularly ozone and particulate matter, is actually far more dangerous and deadly than previously thought, again tending to show that the major EPA reports of the past decade almost certainly have *underestimated* the Act's benefits.
[25] I.M. CHETTIAR & J.A. SCHWARTZ, NEW YORK UNIVERSITY SCHOOL OF LAW, THE ROAD AHEAD:

B. EPA's Long-Awaited "Endangerment Finding" and the Duty to Implement Comprehensive and Cost-Effective Regulation to Reduce Greenhouse Gas Emissions

No changes are needed to the Clean Air Act prior to its successful deployment to reduce greenhouse gases, and in fact the EPA is legally obligated to do so with all deliberate speed. First petitioned to regulate greenhouse gas emissions from automobiles in 1999, the EPA under the Clinton and Bush administrations refused to do so, with Bush maintaining the dubious legal theory that greenhouse gases did not qualify as "air pollutants" under the Act's broad definition.[26] In 2007, the Supreme Court ruled in *Massachusetts v. EPA* that greenhouse gases do indeed meet the definition of "air pollutants" under the CAA and must be regulated if EPA determines that greenhouse gases "may reasonably be anticipated to endanger public health or welfare."[27] The Supreme Court directed the EPA to make this determination, known as the "endangerment finding," for greenhouse gases from automobiles.

The EPA ran out the clock between the April 2007 Supreme Court decision and the end of Bush's second term. Under Obama, however, the EPA issued a proposed endangerment finding for greenhouse emissions from automobiles on April 24, 2009.[28] An endangerment finding for emissions from automobiles has enormous legal and political significance because the finding required here is similar or identical to findings in other sections of the Act that trigger regulation of other mobile sources of greenhouse gases such as ships and aircraft, stationary sources, and the issuance of nationwide standards for greenhouse gases. While an endangerment finding for emissions from automobiles is not a prerequisite for action under other sections of the Act, it is widely viewed as the trigger for more comprehensive pollution reductions.

C. Reducing Pollution from Mobile Sources

The Clean Air Act's framework for reducing pollution from automobiles and other mobile sources of pollution has been implemented for decades with striking success. Overall ambient levels of automobile-related pollution are lower now than in 1970, even as economic growth and vehicle miles traveled have nearly tripled. The mobile source programs have resulted in millions of tons of pollution reduction and major reductions in pollution-related deaths. EPA's mobile source emissions typically have projected benefit-to-cost ratios of 5:1 to 10:1 or more with follow-up studies showing that long-term compliance costs are typically less than originally projected.[29] The

EPA'S OPTIONS AND OBLIGATIONS FOR REGULATING GREENHOUSE GASES Report No. 3. (2009), *available at* http://www.policyintegrity.org/publications/documents/TheRoadAhead.pdf.

[26] *See* CAA § 302(g); 42 U.S.C. § 7602(g) (2006).

[27] Massachusetts v. EPA, 127 S. Ct. 1438, 1462 (2007).

[28] Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202 of the Clean Air Act, 74 Fed. Reg. 18886 (Apr. 24, 2009).

[29] Transportation Conformity Rule Amendments To Implement Provisions Contained in the 2005 Safe, Accountable, Flexible, Efficient Transportation

mobile source program has led to the development and widespread commercialization of emission control technologies throughout the various mobile source categories. For each of the mobile source provisions, the Act provides for flexibility and a focus on feasibility.

On May 19, 2009, the Obama administration announced that it would issue a combined proposal to reduce greenhouse gas emissions from automobiles under the Clean Air Act and increase fuel economy standards under the Energy Policy and Conservation Act, a law which requires the Department of Transportation to set fuel economy standards at the "maximum feasible level." This proposal would increase the fuel economy standards from cars, SUVs and pick-up trucks from its current level of 25.3 mpg to 35.5 mpg in 2016, with accompanying reductions in greenhouse gas emissions due to decreases in gasoline consumption and other measures. This proposal, if finalized, will achieve the greatest increase in fuel economy and decrease in greenhouse gas emissions from U.S. automobiles in over three decades.[30]

The proposal for the regulation of greenhouse gas emissions from automobiles demonstrates that the EPA can quickly implement regulations which will successfully and cost- effectively reduce greenhouse emissions. Indeed, an EPA analysis found that a steady 4% per year reduction in CO_2 emissions for passenger vehicles would result in over $37 billion in net societal benefits, without even accounting for the benefits inherent in mitigating or avoiding the tremendous damages caused by climate change.[31]

Subsequent to *Massachusetts v. EPA*, the EPA has also received petitions from environmental groups as well as state and local governments to regulate greenhouse gas pollution from ocean-going vessels and other types of non-road vehicles under Section 213, as well as from airplanes under Section 231. Were the EPA to move expeditiously towards greenhouse gas reduction measures for these other sources along with the proposal for automobiles, the agency would be well on its way to a meaningful greenhouse gas emission reduction plan for the entire transportation sector. Since the transportation sector accounts for about a third of total U.S. greenhouse gas emissions, immediate action under the Clean Air Act for mobile sources would be substantial and meaningful progress towards achieving the emissions reductions that are necessary to avoid dangerous climate change.

D. Reducing Pollution from Stationary Sources

Emissions from the transportation sector are surpassed only by emissions from stationary sources, including power plants and industrial facilities, and these stationary

Equity Act: A Legacy for Users (SAFETEA-LU), 73 Fed. Reg. 4420, 4434 (Jan. 24, 2008).

[30] Nevertheless, even with these improvements U.S. fuel economy in 2016 will still be slightly lower that what China achieves today (35.8 mpg) and far lower than the currently effective European and Japanese standards (43.3 and 42.6 mpg, respectively).

[31] EPA, VEHICLE TECHNICAL SUPPORT DOCUMENT: EVALUATING POTENTIAL GHG REDUCTION PROGRAMS FOR LIGHT VEHICLES, DRAFT LD TSD 6 (June 16, 2008).

sources are addressed under the complementary programs in Title I of the CAA. Under the new source performance standards (or NSPS) program, the EPA sets baseline pollution reduction measures by emissions source, so that each type of facility must meet the same minimum standards nationwide. The EPA is required to set emission reduction standards at the level achievable through the "best" system of emissions reduction that has been "adequately demonstrated."[32] The new source review (NSR) program complements these national rules by requiring that new major sources of pollution examine and adopt site-specific pollution control measures through a permitting system. Pollution reduction requirements under new source review may be more ambitious than the new source performance standards, depending on the circumstances.

The criteria air pollutant program adds important tools to the basic requirements of NSPS and NSR for those substances which the EPA has designated as "criteria" pollutants. For each criteria air pollutant, the EPA sets national ambient air quality standards (NAAQS) to address the pollutant's impacts. The NAAQS are national standards specifying the total amount of pollution allowed in the ambient air (as opposed to the total amount of pollution that may be emitted from a given facility), and are set at a level sufficient to protect the public health and welfare. Each state then develops and implements a state implementation plan (SIP) to meet or maintain the NAAQS. The SIPs are a vital mechanism for engaging the states in pollution reduction, as many sources of pollution are found in areas of traditional state regulation such as land use and transportation planning. Through the SIP process, each state has the flexibility to choose the combination of pollution control measures that best fit its individual situation. To date the EPA has designated six criteria pollutants: particle pollution (PM), ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. As discussed below, criteria air pollutant designation for greenhouse gases would fully activate the CAA's tools and, combined with other provisions of the statute, provide a comprehensive system with a proven track record of success in pollution reduction.

1. New Source Performance Standards

The EPA sets minimum national standards for pollution reduction from industrial facilities through the new source performance standards program, found in section 111 of the Act. A stationary source is "any building, structure, facility, or installation which emits or may emit any air pollutant."[33] EPA must issue standards for the source if it finds that the source "causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare."[34] New facilities, and facilities undergoing major modifications or reconstruction, must comply with the standards.[35] The states are

[32] CAA § 111(a)(1); 42 U.S.C. § 7411(a)(1) (2006).

[33] CAA § 111(a)(3); 42 U.S.C. § 7411(a)(3).
[34] CAA § 111(b)(1)(A); 42 U.S.C. § 7411(b)(1)(A).
[35] *See* CAA § 111(a)(4); 42 U.S.C. § 7411(a)(4); 40 C.F.R. § 60.15(b). Despite the term "new source" in the nomenclature, NSPS can also apply to existing sources. For pollutants which have not been designated as either criteria air pollutants or

responsible for implementing the standards through their permitting processes, and the EPA prepares guidelines to assist the states in developing plans to do so.

To date, the EPA has issued new source performance standards for about 80 categories of industrial sources, including sources such as power plants, oil refineries, cement plants, and nitric acid plants.[36] Thus, the majority of sources which emit significant amounts of greenhouse gases are *already* subject to new source performance standards for other air pollutants.

The EPA must review and revise each NSPS as needed, and in no event less frequently than once every eight years.[37] For years now, states and environmental organizations have requested that the EPA include reduction measures for greenhouse gases when updating existing standards. To date, the EPA has refused to do so. In *New York v. EPA*, the State of New York and others challenged the EPA's failure to issue standards for greenhouse gases when updating the existing NSPS for steam generating units ("boilers") used by power plants and other industrial and commercial facilities.[38] Following the Supreme Court's decision in *Massachusetts v. EPA*, the D.C. Circuit remanded the decision to the agency for reconsideration – unfortunately, however, without an accompanying timeline for action.[39] With the two-year anniversary of the remand fast approaching, the EPA has still failed to revise the standards to incorporate greenhouse gas reductions. Because the agency lacks any legally defensible rationale for refusing to do so, and is required to act within a "reasonable" time, incorporation of greenhouse gas emission into the NSPS for boilers and other sources is all but inevitable under existing law.[40]

A high percentage of U.S. stationary source emissions are already encompassed by the existing NSPS categories. The boilers used

hazardous air pollutants, the EPA also issues standards for existing sources pursuant to section 111(d). Since we believe EPA should designate greenhouse gases as criteria air pollutants, we do not focus here on NSPS for existing sources, but in the absence of criteria air pollutant designation this section could provide important additional benefits.

[36] New Source Performance Standards are codified at 40 C.F.R. pt. 60. These standards are generally expressed as an emissions reduction level, but sometimes in the form of a design or work practice if EPA determines that a numerical standard is not possible. CAA §111(h)(1); 42 U.S.C. § 7411(h)(1).

[37] 42 U.S.C. § 7411(b)(1)(B).

[38] A boiler burns fuel to produce steam for electricity, heat, or both.

[39] New York v. EPA, No. 06-1322 (D.C. Cir. 2006) (challenging the final standards for fossil-fuel fired electric generating units); September 24, 2007 Order therein. *Contra* Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978; Standards of Performance for Industrial-Commercial- Institutional Steam Generating Units; and Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, 71 Fed. Reg. 9866 (February 27, 2006) (to be codified at 40 C.F.R. pt. 60, subparts Da, Db and Dc) (the challenged final rule).

[40] In a second case, the State of New York and others challenged the EPA's failure to include greenhouse gas standards in the revised NSPS for oil refineries. New York v. EPA, No. 08-1279 (D.C. Cir. 2008) (*New York v. EPA II*). The plaintiffs challenged the EPA's failure to issue standards for greenhouse gases in its final rule. Standards of Performance for Petroleum Refineries, 73 Fed. Reg. 35860 (June 24. 2008) (to be codified at 40 C.F.R. pt. 60, subpart J). In the final rule, the EPA rejected multiple requests to issue performance standards for greenhouse gases, despite acknowledging that petroleum refining operations are a significant source of greenhouse gases. 73 Fed. Reg. at 35858.

in the nation's electricity generation and industrial facilities together produce over 50% of total U.S. greenhouse gas emissions.[41] The NSPS category with the next largest volume of greenhouse gases, the petroleum refining industry, accounts for approximately 3% of annual greenhouse gas emissions.[42] Other large NSPS categories include Portland cement, currently under revision (though only for other pollutants), iron and steel production, and natural gas processing. One of the major advantages of the NSPS program is that greenhouse gas reduction measures from these important sources can begin immediately, since EPA need only develop one set of national standards for each source already under its supervision, and this standard can be promptly adopted and implemented by the states.

Moreover, EPA already has the information and expertise to issue NSPS rapidly for the major greenhouse gas source categories. Much of the work is already done; the agency has analyzed a variety of emissions reductions measures from major source categories, and has concluded that significant emissions reductions are available.[43] The NSPS program does not just require the use of existing common-sense measures, however; it is also meant to speed the development and deployment of new technologies to reduce pollution. As one court has held, the NSPS program "looks toward what may fairly be projected for the regulated future, rather than the state of the art at present."[44] The EPA, therefore, should set the NSPS to require steady, but ambitious, pollution reductions over time. The standards would be achieved through further efficiency improvements, fuel switching, the development of new technology, and other means.

While the existing NSPS categories capture a high percentage of stationary source emissions, new NSPS categories can and should also be developed for sources that are not yet included. For example, the EPA currently addresses methane emissions from livestock manure ponds only through voluntary measures, though effective greenhouse gas reduction measures are available, including switching from wet to dry manure management practices to methane capture and combustion techniques. If EPA lists a new category of stationary sources, either on its own or in response to a petition, it has one year to propose standards.[45] Once standards are proposed, EPA has one year to finalize them.[46] Although new standards might face political opposition and lawsuits from the affected industries, numerous such challenges to EPA regulations have been brought by many parties in the past, and well-crafted regulations should ultimately survive such challenges.

The Obama administration should begin updating existing NSPS immediately to incorporate greenhouse gas reduction

[41] EPA, TECHNICAL SUPPORT DOCUMENT FOR THE ADVANCED [sic] NOTICE OF PROPOSED RULEMAKING FOR GREENHOUSE GASES; STATIONARY SOURCES, SECTION VII, JUNE 5, 2008 FINAL DRAFT 13, 15 (2008).
[42] *Id*. at 18.
[43] *Id.* at 15-41.
[44] National Asphalt Pavement Ass'n v. Train, 539 F.2d 775, 785-86 (D.C. Cir. 1976) (quoting Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 391 (D.C. Cir. 1973), *cert. denied*, 417 U.S. 921 (1974)).
[45] 42 U.S.C. § 111(b)(1)(B).
[46] *Id.*

measures to achieve the substantial benefits available today, beginning with steam generating units and moving expeditiously to other existing NSPS categories as well as relevant new categories of sources.

2. New Source Review

Another of EPA's primary pollution reduction tools is the new source review (NSR) program, which requires preconstruction review and permitting of any new or modified major stationary pollution source. The NSR program consists of two sub-programs, Prevention of Significant Deterioration (PSD) and nonattainment NSR (NNSR). The PSD program applies to non-criteria air pollutants, and to criteria air pollutants in areas currently meeting the NAAQS. NNSR applies to emissions of criteria pollutants in non-attainment areas. Because greenhouse gases are not currently designated as criteria air pollutants, they are only subject to PSD, and this section therefore focuses on the PSD program. The two subprograms are structurally similar, however, although the NNSR program contains more ambitious pollution reduction measures. If and when the EPA designates greenhouse gases as criteria air pollutants and sets NAAQS below current greenhouse gas concentrations, the more ambitious NNSR targets would apply.

The PSD program requires that any new "major emitting facility" obtain a permit setting forth pollution control measures prior to construction. Permits are also required for major modifications to existing facilities. The statutory language provides: "[n]o major emitting facility . . . may be constructed . . . unless . . . the proposed facility is subject to *the best available control technology for each pollutant subject to regulation under this Act* emitted from . . . such facility."[47] In the wake of *Massachusetts v. EPA*, environmental organizations have requested that the EPA consider greenhouse gases in PSD permits for coal fired power plants. The Bush administration refused to do so, under the highly dubious legal theory that greenhouse gas emissions are not "subject to regulation" under the Act, despite numerous arguments to the contrary.[48] Indeed, following the endangerment finding and regulation of greenhouse gases from automobiles under section 202 (or under any other section), greenhouse gases simply cannot be considered anything other than "subject to regulation" for purposes of the application of the PSD program. Accordingly, the EPA must soon require that all new and modified major emitting facilities incorporate the "best available control technology" (BACT) to reduce their emissions.

Under the Clean Air Act, a "major emitting facility" is defined to include any source "with the potential to emit two hundred and fifty tons per year or more *of any air pollutant*."[49] The Supreme Court's ruling in *Massachusetts v. EPA* confirmed that

[47] CAA § 165(a), (a)(4) (emphasis added); 42 U.S.C. § 7475(a), (a)(4).
[48] Memorandum from Stephen L. Johnson, Administrator, U.S. EPA, to Regional Administrators (Dec. 18, 2008), *available at* http://www.epa.gov/nsr/documents/psd_interpretive_memo_12.18.08.pdf. The Obama administration has remanded this policy for further consideration; however, it has not yet rescinded it.
[49] CAA § 169(1) (emphasis added); 42 U.S.C. § 7479(1).

greenhouse gases are indeed "air pollutants." An expansion of the PSD program to encompass new sources which meet this threshold only for greenhouse gases and were therefore not previously obtaining permits, could follow. The EPA under the Bush administration estimated that the total number of permits issued could increase from its current level of 200-300 permits per year to 2,000-3,000 permits per year – *assuming that the EPA undertook no permit streamlining measures*.[50] If the EPA did begin to expand the program, either on its own initiative or in response to a citizen suit, the agency could, and almost certainly would, tailor the permitting process to minimize the administrative steps required of smaller sources while maximizing common sense and cost-effective greenhouse gas reduction measures. The EPA has already analyzed measures to do so, including reducing the number of sources covered though regulatory changes, phasing in the applicability of PSD to smaller sources, developing streamlined approaches to implementing the BACT requirement, and issuing general permits for numerous similar sources.[51]

Much of the rhetoric from those who oppose greenhouse gas regulation centers around the PSD program. Opponents of regulation begin by exaggerating the likely scale of the program expansion, with some making the inaccurate claim that over a million new sources might require permits. Opponents then assert that expanding the program will be administratively burdensome, economically costly, and will hurt small business. Yet the EPA can and should prioritize review for the largest sources and issue streamlining measures for the smaller sources that simplify the process while still obtaining actual pollution reductions. Moreover, smaller emitters may have a disproportionate share of low-cost, near term mitigation options.[52] In fact, many greenhouse gas reduction measures are actually cost-positive, meaning that the emitter can reduce pollution and save money at the same time.[53] And as discussed above, existing Clean Air Act pollution reduction measures have produced economic benefits worth many times the costs of the regulations. Given the astronomical cost of damages from continued unabated greenhouse gases,[54] there is every reason to believe greenhouse gas reductions under the Act will produce similar or greater benefits.

E. Criteria Air Pollutant Designation, National Ambient Air Quality Standards,

[50] Advance Notice of Proposed Rulemaking, Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44354, 44499 (July 30, 2008). This estimate, from an administration categorically opposed to controls of greenhouse gases under the Clean Air Act, and determined to portray any such pollution reduction as economically burdensome, is likely high.

[51] Advance Notice of Proposed Rulemaking, Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44503.

[52] J.K. Stolaroff et al., *Design issues in a mandatory greenhouse gas emissions registry for the United States*, ENERGY POLICY (forthcoming 2009), doi:10.1016/j.enpol.2009.04.028, at 2.

[53] *See, e.g.*, JOANNA PRATT & JOE DONAHUE, U.S. EPA, CLEAN ENERGY LEAD BY EXAMPLE GUIDE: STRATEGIES, RESOURCES, AND ACTION STEPS FOR STATE PROGRAMS, *available at* http://www.epa.gov/cleanenergy/energy-programs/state-and-local/index.html.

[54] *See, e.g.*, NICHOLAS STERN, THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW (Cambridge Univ. Press 2007) (2006).

and State Implementation Plans for Greenhouse Gases

The program established by sections 108-110 of Title I is in many ways the heart of the modern Clean Air Act, and is designed to work in a complementary and additive manner with many of the Act's other provisions. Section 108 requires the EPA to list air pollutants that are emitted by many sources and that cause or contribute to air pollution problems. Pursuant to section 109, the EPA is then required to set national ambient air quality standards (NAAQS) for each such "criteria pollutant" as necessary to protect the public health and welfare. Under section 110, each state must develop and implement a state implementation plan (SIP) to meet the NAAQS through emissions controls for pollution sources within the state. Other complementary programs, including the mobile source, NSPS and NSR programs discussed above, aid the states in meeting the NAAQS with complementary pollution reduction measures.

The standard for designating criteria air pollutants is similar to the endangerment finding under section 202. A criteria pollutant is one which (A) may reasonably be anticipated to endanger public health or welfare, (B) which is emitted from numerous sources, and (C) for which the EPA plans to issue air quality criteria.[55] In a seminal court decision called *NRDC v. Train*, the D.C. Circuit Court of Appeals held that when the provisions of subpart (A) and (B) have been met, listing the pollutant and proceeding with the additional requirements of sections 108-110 is mandatory.[56] Designation of greenhouse gases as criteria air pollutants, therefore, appears not only highly beneficial but also legally mandatory.[57]

Following criteria air pollutant designation, the agency is required, within 12 months, to issue "air quality criteria" which specify all of each pollutant's known effects on the public health and welfare. The EPA then sets primary NAAQS for criteria air pollutants which, "allowing for an adequate margin of safety, are requisite to protect the public health" and secondary NAAQS that are "requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air."[58] Based on current science, briefly discussed above, we believe the EPA should set a NAAQS of no more than 350 ppm for CO_2 and appropriate limits for the other greenhouse gases as necessary to protect public health and welfare, with downward revisions if and when science so dictates.[59]

[55] CAA § 108(a)(1); 42 U.S.C. § 7408(a)(1).

[56] NRDC v. Train, 545 F.2d 320, 328 (2d Cir. 1976) (*Train*).

[57] *See, e.g.*, Thomas D. Peterson, Robert B. McKinstry, Jr., & John C. Dernbach, *Developing a Comprehensive Approach to Climate Change Policy in the United States: Integrating Levels of Government and Economic Sectors*, 26 VA. ENVTL. L. J. 227 (2008); *see also* I.M. CHETTIAR & J.A. SCHWARTZ, *supra* note 25.

[58] 42 U.S.C. § 7409(b). Health effects from greenhouse gases are due to their impact on the atmosphere rather than direct inhalation, and the EPA has requested comment on how this characteristic impacts the establishment of the NAAQS. Advance Notice of Proposed Rulemaking, Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44478. We believe the science and the law support the establishment of both primary and secondary NAAQS for greenhouse gases.

[59] The Clean Air Act defines air pollutant as "any air pollutant agent or combination of such agents . . . .",

A NAAQS for greenhouse gases would also provide the functional equivalent of a cap on total U.S. emissions. Such a cap is an often-cited benefit of a cap-and-trade system, but could just as readily be established under this provision of the Clean Air Act. A NAAQS would be translated into an effective cap on total emissions through the state implementation planning process, which is triggered by the adoption of the NAAQS.

Once EPA has set the NAAQS for greenhouse gases, states typically have three years to develop a SIP.[60] A SIP is a comprehensive strategy devised by a state to achieve or maintain the NAAQS. In the case of traditional air pollutants, the SIP process generally begins with an inventory of the state's emission sources for each pollutant, and is followed by the selection of a suite of measures to obtain or maintain the designated standards. A SIP includes emissions limitations, monitoring requirements, enforcement mechanisms, and schedules for compliance, with each state able to choose the combination of measures most beneficial given its particular circumstances.[61] Public comment and involvement are built into the SIP process, and the final product must then be approved by the EPA.[62] SIP implementation fully activates state governments to achieve the federal standard, an important component of effective pollution reduction because many major sources of greenhouse gases, such as land use and transportation planning, are largely under state control.

Once SIPs are completed, reductions are aided by conformity programs which require federal agencies to ensure that their actions conform to the SIP requirements for each NAAQS pollutant.[63] Given that federal actions touch on every aspect of our carbon-based economy, this mechanism allows the integration of the NAAQS target into all aspects of federal decisionmaking.

Greenhouse gases are "globally well-mixed," with harm caused by the total atmospheric concentration of each pollutant. This is in contrast to most traditional air pollution, where harm is caused by increased local concentrations of the pollutant. While this distinction means that the NAAQS and SIP framework would operate somewhat differently than for other air pollutants, such differences need not be a barrier to implementation; in fact, the globally well-mixed nature of greenhouse gases makes implementation easier in some important respects. Under a NAAQS for greenhouse gases, the EPA and the states would establish an emissions trajectory to ensure the

42 U.S.C. § 7602(g) (CAA § 302(g)), and the EPA may regulate greenhouse gases individually or as a group. In its proposed endangerment finding, the EPA has proposed to treat the six greenhouse gases, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) as a group. Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 18886, 18895 (Apr. 24, 2009).

[60] 42 U.S.C. § 7410(a)(1).

[61] 42 U.S.C. § 7410(a)(2).

[62] If a state fails to submit a SIP that demonstrates attainment or maintenance of the NAAQS, EPA applies a variety of means to encourage compliance, culminating in the preparation of a Federal Implementation Plan ("FIP") in extreme cases where states have yet to comply two years after the original deadline. *See, e.g.*, 42 U.S.C. §§ 7509, 7410, 7602.

[63] 42 U.S.C. §§ 7401 et seq.

country's contribution to obtaining the NAAQS, and each state would then contribute its share of the necessary emissions reductions. For example, to stabilize at 450 ppm CO_2eq, emissions must be reduced to 25-40 percent below 1990 levels by 2020 and to 80- 95 percent below 1990 levels by 2050.[64] To accord with the recommendations of leading climate scientists, the EPA would set the NAAQS for carbon dioxide at no more than 350 parts per million, which would require steeper emissions reductions. EPA and the states would need to establish limits (on an annual or other basis) along an appropriate trajectory to achieve the NAAQS. State emission limits could be based on population, gross domestic product, or other factors.

The establishment of a cap-and-trade system to reduce greenhouse emissions currently enjoys enormous political momentum. Such a system could be incorporated within the NAAQS/SIPs program.[65] Doing so has significant benefits beyond establishment of a free standing cap-and-trade program because the Act requires that a greenhouse gas NAAQS must be science-based and set at a level sufficient to protect the public health and welfare. There is great risk that the scientific guidance already provided by the Clean Air Act would not be replicated through new legislation, where the cap would simply be set by Congress or diluted by free offsets pursuant to political pressures without this important protection.

While establishing NAAQS and SIPs for greenhouse gases will raise some new issues, we believe that it is well within the EPA's expertise and statutory authority, and would provide substantial additional benefits. One of the primary benefits of the SIP process is the activation of all fifty state governments to meet national greenhouse gas targets to protect the public from warming impacts. Many greenhouse gas reductions require action in areas that have traditionally been regulated by states and municipalities, such as land use policies; building codes for residential, commercial and industrial facilities; transportation; utility and agriculture regulation; forestry; and non-hazardous waste handling.[66] By influencing building codes, development patterns, efficiency requirements, and land use policies, states are able to control emissions from these types of projects. There is no

[64] Gupta et al., *supra* note 13.

[65] *See, e.g.*, 42 U.S.C. § 7410(a)(2) (CAA § 110(a)(2)) (recognizing that states may use economic incentives such as fees, marketable permits, and auctions of emission rights to achieve the NAAQS); I.M. CHETTIAR & J.A. SCHWARTZ, *supra* note 25, at 78-81.

[66] Holly Doremus & W. Michael Hanemann, *Of Babies and Bathwater, Why the Clean Air Act's Cooperative Federalism Framework Is Useful for Addressing Global Warming*, 50 ARIZ. L. REV. 799, 827-28 (2008); Alice Kaswan, *A Cooperative Federalism Proposal for Climate Change Legislation: The Value of State Autonomy in a Federal System*, 95 DENV. U. L. REV. 791, 829 (2008). For example, one study found that residential and commercial buildings—structures that fit squarely within a state's jurisdiction—account for one-third of U.S. carbon emissions. MARILYN A. BROWN ET AL., SHRINKING THE CARBON FOOTPRINT OF METROPOLITAN AMERICA (May 2008), *available at* http://www.brookings.edu/reports/2008/05_carbon_footprint_sarzynski.aspx. Another study concluded that compact development patterns can reduce vehicle miles traveled, and the associated carbon emissions, by as much as 20-40 percent. REID EWING ET AL., GROWING COOLER: THE EVIDENCE ON URBAN DEVELOPMENT AND CLIMATE CHANGE, 10-11 (2007).

single action or system which can achieve the level of emissions reductions necessary to avert dangerous climate change; rather, we need to pursue reductions in a variety of contexts in a complementary fashion. The SIP process incorporates these critically important, but traditionally state-controlled areas of regulation into a unified greenhouse gas regulatory structure for the nation.

The SIP program also has the advantage that the federal government, the states, and emitters *already* know and use the existing system which has served the public well for decades. These parties have substantial capacity and expertise relating to the NAAQS and SIPs for traditional pollutants, which can and should be put to use reducing greenhouse gases. Moreover, existing state climate efforts could be incorporated into SIPs: as of August 2008, forty-seven states have completed or are completing a greenhouse gas inventory, thirty-eight are drafting or have drafted climate action plans, and eighteen states have adopted emissions reduction targets.[67] These existing efforts could be readily rolled into SIPs; some states have already adopted many of the specific elements required in a SIP.[68]

Mobilizing the states through the SIP process is critically important both in the presence as well as in the absence of a cap-and-trade program for greenhouse gases, because the SIPs can fill the gaps in proposed federal emission trading strategies. Cap-and-trade strategies will inevitably address some, but not all, emission sources, and the importance of reaching sources traditionally under state and local control to achieve necessary reductions cannot be overemphasized.[69] Rather than leave everything to an untested emissions market, state and local planning strategies can target areas, such as land use and building codes, for which trading schemes are not ideally suited.

The SIP process can also integrate state and federal action. Federal review of SIPs will ensure consistency among states, address interstate leakage concerns by requiring all states to take action, and vertically integrate rapidly expanding state and local climate change programs, as well as international programs, into a comprehensive national program.[70]

The autonomy given to the states and the existing significant latitude to experiment with control methods and technologies through the SIP process also encourage

[67] U.S. Environmental Protection Agency, State and Local Governments, State Planning and Measurement, http://www.epa.gov/climatechange/wycd/stateandlocalgov/state_planning.html#three (last visited Nov. 23, 2008); Doremus, *supra* note 66, at 826.

[68] Adaptation Planning – What U.S. States and Localities are Doing, http://www.pewclimate.org/working-papers/adaptation (last visited Oct. 26, 2008); *see also* Robert B. McKinstry & Thomas D. Peterson, *Symposium – The Business of Climate Change: Challenges and Opportunities for Multinational Business Enterprises: The Implications of the New "Old" Federalism in Climate-Change Legislation: How to Function tin a Global Marketplace When States Take the Lead*, 20 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 61, 73 (2007).

[69] Doremus, *supra* note 66, at 799.

[70] *See* Thomas D. Peterson et al., *Developing a Comprehensive Approach to Climate Change Policy in the United States that Fully Integrates Levels of Government and Economic Sectors*, 26 VA. ENVTL. L.J. 227, 229, 264 (2008).

innovation.[71] Many believe that states' greater flexibility allows them to innovate with less severe consequences and to use this ability to experiment to provide models for future action. In addition to allowing states to experiment, the SIP framework allows states to learn from each other's successes and failures, and provides opportunity for greater collaboration among states.[72]

Mandatory state planning also allows policy choices to respond to local variation in challenges and opportunities in a cost-effective manner. Each state differs in climate, resources, industry mix, transportation, and legal structures for local government, public finance, and utility regulation. Individualized consideration of the mix of greenhouse gas emission reduction measures, strategies and market and non-market approaches appropriate for each state can produce a more effective and efficient result than a federal approach alone.[73]

There is every reason to believe that the economic benefits of greenhouse gas reductions through the SIP process will be equally or more cost-effective than the traditional air pollutant reductions. Not only do greenhouse gas reduction measures result in economic benefits through avoidance of climate change damages, but the many measures targeting energy efficiency and reduced reliance on fossil fuels result in substantial savings over time.[74] In a preliminary analysis based on data from 20 states with completed climate action plans, the Center for Climate Strategies estimated that "the U.S. could reduce greenhouse gas emissions to 10% below 1990 levels by 2020 at an estimated net economic savings of $20.8 billion in 2012 and $85 billion in 2020, from 2009 to 2020 cumulative savings of $535.5 billion, through implementing a climate plan involving all U.S. states and economic sectors."[75]

While the benefits of greenhouse gas NAAQS and SIPs are many, use of the program to address greenhouse gases has been criticized. The criticisms in the political arena are often quite general, including assertions that "greenhouse gases are different," and therefore "Clean Air Act regulation won't work." While it is true that greenhouse gases are globally well mixed and emitted from a wider variety of sources than most traditional air pollutants, the logical leap that these qualities make greenhouse gases unsuited for control under the Clean Air Act is simply unsupported.
The fact that greenhouse gas concentrations are essentially uniform throughout the country will actually simplify and streamline implementation of the NAAQS/SIPs

[71] Alice Kaswan, *A Cooperative Federalism Proposal for Climate Change Legislation: The Value of State Autonomy in a Federal System,* 85 DENV. U. L. REV. 791, 800 (2008).
[72] Doremus, *supra* note 66, at 829.
[73] Robert McKinstry, Thomas D. Peterson, Adam Rose, & Dan Wei, *The New Climate World: Achieving Economic Efficiency in a Federal System for Greenhouse Gas Control Through State Planning Combined with Federal Programs,* 34 N.C. J. INT'L L. & COM. REG. 767, 814-815 (2009).

[74] *See, e.g.*, CALIFORNIA AIR RESOURCES BOARD, PROPOSED SCOPING PLAN 73 (Oct. 2008).
[75] CENTER FOR CLIMATE STRATEGIES, WHITE PAPER, CLIMATE CHANGE POLICY AS ECONOMIC STIMULUS: EVIDENCE AND OPPORTUNITIES FROM THE STATES 4 (Nov. 2008), *available at* http://www.climatestrategies.us/. The savings estimate did not include the potential for additional co-benefits such as energy independence and health and environmental protection.

program for greenhouse gases. Monitoring air quality for traditional pollutant levels at many points throughout the country requires considerable investment in equipment, staff time, and other resources. There is no need to do so for the greenhouse gases, and therefore no need to design, install, or maintain new monitoring equipment and systems. The globally well-mixed nature of greenhouse gases does not pose a barrier to implementation of the program, and in fact simplifies it in this significant respect.

The concern has also been raised that EPA would be unable to approve greenhouse gas SIPs because no single SIP, and indeed even all fifty SIPs combined, can on its own achieve a NAAQS, since total greenhouse gas concentrations depend on other countries' emissions as well.[76] The Clean Air Act, however, already contains a solution to this apparent quandary. Section 179B states that a SIP "shall be approved by the Administrator" if the state "establishes to the satisfaction of the Administrator that the implementation plan of such State would be adequate to attain and maintain the relevant national ambient air quality standards by the attainment date . . . *but for* emissions emanating from outside of the United States."[77] As discussed above, EPA must set a cap on total emissions and a cap for each state in order to attain the NAAQS. There is, therefore, no obstacle to the approval of SIPs: as long as each greenhouse gas SIP demonstrates measures to reduce pollution to below that cap, EPA must approve the SIP. In any event, the same short-sighted criticism has been leveled against all other actions to combat climate change, including the cap-and-trade systems now in place in Europe and contemplated by the current federal climate bill. The answer is not continued inaction in the face of an approaching catastrophe. Rather, the only rational response to a shared and world-wide threat is action by each nation to fulfill its global responsibilities.

While setting the emissions limits to achieve NAAQS for greenhouse gases will require EPA to make judgments and allocations, and is not without its complexities, those decisions would be made within a familiar framework. Additional criticisms that doing so would be "too complicated," "unworkable," or "politically infeasible" must be judged against the alternative; any new system established through legislation or otherwise would also have complexities, would lack the Clean Air Act's proven track record of success, would face political opposition, and could be subject to considerable manipulation and abuse. While we do not argue that the Clean Air Act (or any law) is perfect, we propose that it is in force today, has successfully and cost-effectively protected the air we breathe since its inception, and can and should be used to achieve science-based greenhouse emission reductions.

[76] Advance Notice of Proposed Rulemaking, Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44354, 44481 (July 30, 2008).

[77] 42 U.S.C. § 7509a(a)(2) (emphasis added); *see also* Christopher T. Giovinazzo, *Defending Overstatement: The Symbolic Clean Air Act*, 30 HARV. ENVTL. L. REV. 99, 154-55 (2006).

IV. OBSTACLES AND OPPORTUNITIES

While the Clean Air Act is well-suited to regulation of greenhouse gas pollution, and *if* lawfully and expansively implemented, would substantially contribute to reducing U.S. emissions, we are under no illusions about the obstacles that *actual* implementation of the Clean Air Act in this context would face. These obstacles range from political opposition, bureaucratic inertia, lack of agency resources, complexities in the statute, likely litigation, and simply the scale of the climate crisis itself. Nevertheless, we believe that each of these problems can be overcome. Moreover, most of these challenges would also occur under any scheme to regulate greenhouse gas pollution, whether under existing EPA authorities or pursuant to a cap-and-trade or other legislative proposal.

The primary obstacle to successfully deploying the Clean Air Act (or any greenhouse gas reduction scheme for that matter) is not its regulatory scheme but the disconnect between the shear scale, urgency and immediacy of the climate crisis and the public understanding of this reality. Without a more vitally concerned populace, we lack the necessary political will to swiftly enact real solutions. Since we have already overshot dangerous levels of CO_2 in the atmosphere, the emission reductions necessary to avoid catastrophic climate impacts are generally viewed as greater than what is politically or economically feasible. Yet a politically acceptable "solution" that does not actually reduce atmospheric CO_2 concentrations sufficiently is no solution at all. The disconnect between the scientific reality of the crisis and lack of commensurate leadership and concern means that true leadership on global warming policy is still perceived as a political risk. The political situation has resulted both in a slow (or nonexistent) response from EPA to its statutory duties, and a climate bill that is far weaker than what we need.

There is relatively widespread understanding and acceptance that the Clean Air Act is an appropriate and effective mechanism for reducing greenhouse emissions from mobile sources. Yet the ten-year time span between the filing of the 1999 petition to regulate greenhouse emissions from automobiles and the EPA's April 2009 proposed endangerment finding illustrates some of the barriers to swift implementation. The statute's lack of hard deadlines for action on mobile sources means that EPA is subject only to the general requirement under administrative law to act within a "reasonable" amount of time, and a recalcitrant agency can delay for years while states and public interest organizations seek redress from the courts. Even under an administration that wants to do the right thing, agency action can be significantly delayed due to scarce resources. Moreover, affected industries can and often do sue to block or delay pollution reduction regulations. Despite these obstacles, however, the Clean Air Act's mobile source provisions clearly can provide meaningful greenhouse pollution reductions, and well-crafted regulations should ultimately survive legal challenge. Fortunately, under the current draft of the ACESA, the EPA would retain its existing authority under the mobile source provisions, though the bill does miss

an important opportunity to set more ambitious deadlines for action.[78]

The NSPS program has enormous potential to reduce greenhouse emissions from many major polluting U.S. industries. Because such a high percentage of U.S. greenhouse emissions are concentrated in just a few types of sources, incorporating greenhouse gas emissions into these existing rules is one of the fastest, most direct, and most efficient ways to reduce them. The greatest barrier to effective implementation is political opposition from polluting industries. In response to this opposition, the EPA has continued to delay issuing greenhouse gas emission reduction rules, and the ACESA strips the EPA of it ability to set NSPS for about 85 percent of emissions sources.[79]

Similarly, most major greenhouse polluters already obtain permits under the PSD program, and EPA can and should require that new pollution sources be built subject to available greenhouse pollution controls. The law's requirement that new sources emitting over 250 tons of any pollutant obtain a permit should be viewed as an important opportunity to reduce emissions from medium-sized pollution sources where many of the most cost-effective emission reductions may be found. The EPA can and should prioritize review for the largest sources and issue streamlining measures for the smaller sources that simplify the process yet still obtain actual pollution reductions. Political opposition to the incorporation of greenhouse emissions into the PSD process is fierce, however, and the EPA continues to drag its heels. The ACESA would strip EPA of this vitally important authority.[80]

A number of objections that have been raised to criteria air pollutant designation and the establishment of NAAQS and SIPs for greenhouse gas emissions are discussed in some detail above. We believe that the program would work extremely well and provide important benefits on its own or in combination with a cap-and-trade system. Foremost among these benefits is the establishment of science-based NAAQS sufficient to protect the public health and welfare. Yet the agency has not moved forward with criteria air pollutant designation for greenhouse gases, and the ACESA would prohibit such designation.[81] And while the statute sets forth firm deadlines for nearly every step in the process, the agency has frequently missed these deadlines, sometimes by many years, for traditional air pollutants.

The overarching obstacle to Clean Air Act implementation for greenhouse gas emissions has been the fact that EPA has to date lacked the political will to carry out its duties, leading to delay under some provisions and inaction under others. Yet the fact that the agency has missed deadlines in the past is no reason to revoke the law. Even EPA's imperfect and oft-delayed implementation of the law with respect to traditional air pollutants has produced

[78] Under ACESA, EPA is required to set greenhouse gas standards for heavy duty vehicles by December 31, 2010, and standards for nonroad vehicles and engines by December 31, 2012.
[79] ACESA § 331. Under a separate provision, ACESA calls for specific performance standards for new coal-fired power plants, ACESA § 116 (adding Clean Air Act § 812); these rules, however, are so weak that they would allow conventional coal-fired power plants to be built for many years to come.
[80] ACESA § 331.
[81] *Id.*

enormous benefits. Forty years of accumulated experience in implementing the law can and should now be used to achieve the greenhouse emission reductions that are scientifically necessary to avoid dangerous climate change. Provided with appropriate leadership and direction, the talented staff at EPA can craft pollution reduction rules to solve the climate crisis through the Clean Air Act's proven and effective provisions.

Good faith implementation of the Clean Air Act should be used as the baseline against which new proposals are measured. Any new global warming solution bill should work together with the Clean Air Act to preserve the lives and health of our children and our planet. It is nonsensical to discard existing tools that can work today in favor of a new and untested system, leaving us no other options. Yet the ACESA would do just that in many important regards.

The Clean Air Act protects the air we breathe, saves lives, saves money, and provides a level playing field for all polluters. The law provides an effective, comprehensive system for greenhouse gas emission reductions that has a proven track record of success. Yet the opposition to the current proposal to repeal the majority of the Act's provisions with respect to greenhouse gas emissions has received little attention to date. We hope that this paper will play a role in changing that murmur to an outpouring of passionate support for and defense of what may be the world's most important environmental law.