The Clean Air Act Works: How the Landmark Pollution Law Can Benefit Our Climate, Health and Economy

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The Clean Air Act Works: How the Landmark Pollution Law Can Benefit Our Climate, Health and Economy

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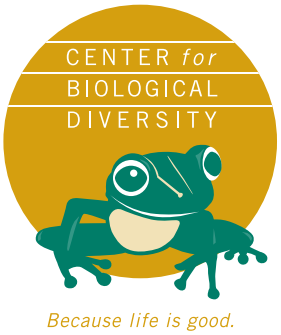

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The Center for Biological Diversity is a national nonprofit conservation organization with more than 320,000 members and online activists dedicated to the protection of endangered species and wild places.

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EXECUTIVE SUMMARY

The Clean Air Act works. For four decades, the Clean Air Act has delivered cleaner air while providing economic benefits that have exceeded costs by at least 30 times. Used to its fullest potential, the Clean Air Act can play a significant role in achieving the deep cuts in carbon pollution needed to avoid the worst impacts of climate change. *The Clean Air Act Works* sets forth the science on the urgent need to reduce greenhouse gas pollution, highlights the Clean Air Act's proven track record for comprehensive and cost-effective reductions in air pollution, discusses actions taken by the Environmental Protection Agency (EPA) thus far and details additional action that EPA should take to achieve further needed pollution reductions.

Climate change is already happening, and unless we act quickly and decisively to ensure that global carbon pollution peaks in 2015 and drops rapidly thereafter, we will likely be committed to serious and irreversible consequences. Although EPA has now begun to use the Clean Air Act's powerful tools to control carbon pollution from mobile sources like cars and trucks as well as stationary sources like oil refineries and power plants, these actions have been too slow and too tentative in light of current science. New proposed regulations fall far short of what is technologically feasible and, despite the immediate need to reduce emissions, implementation is frequently deferred for several years.

As this report explains, EPA can and must move quickly to:

- Further tighten emissions standards for cars and trucks;
- Control emissions from other mobile sources like ships and airplanes;
- Adopt stringent performance standards for carbon pollution from industrial facilities under the Clean Air Act's New Source Performance Standards program;
- Apply the Act's new source permitting programs in a manner that achieves significant reductions from a wide range of sources; and
- Set a science-based cap on greenhouse gas concentrations in the atmosphere.

The Clean Air Act is under intense assault from polluters and their allies in Congress precisely because it is such a powerful tool for reducing carbon pollution. Indeed, outright repeal of EPA's Clean Air Act authority hangs in the balance during the 112th Congress. Yet time and again, the economic doomsday scenarios promoted by polluters have failed to materialize. Study after study has found that a shift to a cleaner economy creates new jobs and that meeting improved environmental standards often results in unforeseen innovation and commercialization that enhances productivity, reduces the net cost of compliance and increases international competitiveness.

The primary obstacle to successfully deploying the Clean Air Act is not its regulatory structure but the lack of political will to implement the Act to its fullest potential. The science demands that EPA end its heel-dragging and maximize use of the Clean Air Act's many tools to reduce pollution and increase efficiency.

I. INTRODUCTION

The need for deep and rapid action to reduce carbon pollution could not be more urgent. 2010 was the second hottest year on record, with climate disruptions witnessed around the world, another extreme low summer sea-ice minimum in the Arctic and increased runoff from the Greenland ice sheet at a rate far in excess of recent worst-case estimates. To avoid even greater impacts resulting in widespread and irreversible environmental and economic damage, global emissions must peak by 2015 and decrease significantly by 2020 and thereafter. With so much time already squandered, continued delay in taking meaningful actions to reduce greenhouse gas pollution will foreclose the ability to prevent catastrophe tomorrow.

Fortunately, the United States has strong and successful environmental laws that can be used today to achieve significant reductions in greenhouse gas pollution. Foremost among these laws is the Clean Air Act. For four decades, the Clean Air Act has delivered cleaner air, saved tens of thousands of lives each year and proven time and again that clean air and economic growth are mutually reinforcing. Since 1970, the Clean Air Act has reduced key air pollutants that cause smog and particulate pollution by more than 60 percent while the economy has more than tripled.[1] Moreover, the economic benefits of Clean Air Act regulation — in the form of saved lives, reduced hospital admissions and greater workforce productivity — have exceeded costs by at least 30 times.[2]

The proven, cost-effective mechanisms to reduce air pollution under the Act apply with equal force to greenhouse gases. The Supreme Court affirmed in *Massachusetts v. Environmental Protection Agency* that the Environmental Protection Agency (EPA) has both the authority and responsibility under the Clean Air Act to take action to reduce carbon dioxide (CO_2) and other greenhouse gas pollutants. Since the Supreme Court's landmark decision, EPA has used its Clean Air Act authority to increase fuel efficiency for automobiles — an action estimated to result in approximately 960 million metric tons of CO_2 equivalent reductions and savings of 1.8 billion barrels of oil. The Clean Air Act also enables EPA to reduce emissions from other mobile sources such as ships and aircraft, set performance standards for stationary sources of pollution like oil refineries and cement plants, and to establish a national pollution limit for greenhouse gases. By providing a comprehensive set of tools to reduce air pollution from a diverse array of sources, full and swift implementation of the Clean Air Act can achieve desperately needed reductions in greenhouse gas emissions, increase energy independence and facilitate the transition to a cleaner, more efficient low-carbon economy.

Despite the urgent need to combat climate change and the significant societal and economic benefits flowing from reducing greenhouse gas pollution, the Clean Air Act is under intense assault from polluters and their allies in Congress. Parroting the same disproven assertions used against the Clean Air Act for decades, polluters are aggressively seeking to strip EPA of its authority to reduce greenhouse gas pollution on the grounds that any such regulations would, in the words of Representative Joe Barton (R-TX), "put the

[1] Heather Zichal, *So What Does the Clean Air Act Do?* WHITE HOUSE BLOG (Feb. 9, 2011), http://www.whitehouse.gov/blog/2011/02/09/so-what-does-clean-air-act-do.

[2] EPA, THE BENEFITS AND THE COSTS OF THE CLEAN AIR ACT, 1970 TO 1990 (Oct. 1997).

American economy in a straitjacket."[3] Such doomsday predictions run counter to the facts. Study after study has found that a shift to a clean-energy economy creates new jobs, that upfront costs of environmental compliance are not responsible for decisions to relocate operations outside the United States, and that the estimated costs of compliance with new environmental protections are routinely overstated.[4] In fact, meeting improved environmental standards often results in unforeseen innovation and commercialization that enhances productivity, thereby reducing the net cost of compliance and increasing international competitiveness.[5] For this reason, trade associations representing 60,000 businesses recently wrote to Congress to oppose any effort to stop EPA's greenhouse gas regulations, citing a recent survey finding that 61 percent of small business owners agree that moving the country to clean energy is the way to restart the economy and make their businesses more competitive in the global economy.[6]

While outright repeal of the EPA's Clean Air Act authority hangs in the balance during the 112th Congress, pressure by polluters has already resulted in a response from EPA to its statutory duties that is far slower and more timid than warranted by the science. New proposed regulations fall far short of what is technologically feasible and, despite the immediate need to reduce emissions, implementation is frequently deferred for several years. The primary obstacle to successfully deploying the Clean Air Act is not its regulatory structure but the lack of political will to implement the Act to its fullest potential. It is not enough to simply parry the most far-reaching attacks against EPA and the Clean Air Act. EPA must be emboldened to end its heel-dragging and maximize use of the Clean Air Act's many tools to reduce pollution and increase efficiency.

This paper sets forth the science on the urgent need to reduce greenhouse gas pollution, highlights the Clean Air Act's proven track record for comprehensive and cost-effective reductions in air pollution, and then discusses EPA's actions thus far and what further action EPA should take to achieve additional needed reductions in greenhouse gas pollution.

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[3] John Broder, *Republicans Assail E.P.A. Chief on Emission Limits*, N.Y. TIMES (Feb. 9, 2011).

[4] *See, e.g.,* ELI BERMAN & LINDA BUI, ENVIRONMENTAL REGULATION AND PRODUCTIVITY: EVIDENCE FROM OIL REFINERIES 1, 5 (May 1999); Micheal E. Porter & Claas van der Linde, *Toward a New Conception of the Environmental-Competitiveness Relationship*, 9 J. ECON. PERSPECTIVES 97 (1995); EPA WHITE PAPER, EMPIRICAL EVIDENCE REGARDING THE EFFECTS OF THE CLEAN AIR ACT ON JOBS AND ECONOMIC GROWTH (2011).

[5] *Id.*

[6] American Business for Clean Energy et al., Letter to President Obama from Business Organizations (Dec. 2010), *More Than 60,000 Firms in U.S. Business Groups Urge Congress to Support EPA, Caution That Clean Air Act Rule Delays Could Drive Up Business Costs, http://www.americanbusinessforcleanenergy.org/*

II. THE SCIENCE UNDERPINNING THE URGENT NEED FOR ACTION

Climate change is happening much more quickly than previously predicted.[7] Concentrations of greenhouse gases, which trap heat in our atmosphere, are the highest the Earth has seen in 10 million to 15 million years. Since the industrial revolution, atmospheric concentrations of CO_2 have risen from 280 parts per million (ppm) to ~389 ppm. This increase in atmospheric concentrations of CO_2 has already resulted in significant impacts and poses unacceptable future risks. Observed climate impacts include a 0.8°C increase in surface temperature rise, a 30-percent increase in ocean acidity, increased frequency of floods, droughts and other extreme weather events, tens of thousands of climate-related deaths, declines and population extirpations of numerous species, widespread coral bleaching events, a ~50-percent decline in Arctic summer sea-ice extent and thickness since the 1950s to 1970s, the near-global retreat of alpine glaciers and the accelerating loss of the Greenland and west Antarctic ice sheets.[8] In addition, the full extent of temperature rise and associated impacts resulting from current CO_2 concentrations has yet to be experienced but is unavoidable due to inertia in the climate system.[9]

Based on observed impacts, future warming, and paleoclimatic evidence, leading climate scientist Dr. James Hansen and others 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 "[i]f humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted."[10] More than half the countries in the world have now adopted the 350 ppm target.

Reducing atmospheric concentrations of CO_2 to 350 ppm also provides a reasonable chance of limiting temperature rise to 1.5°C above preindustrial levels.[11] While limiting global average temperature rise to 2°C was once characterized as the threshold between

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[7] Hans-Martin Füssel, *An Updated Assessment of the Risks from Climate Change Based on Research Published Since the IPCC Fourth Assessment Report*, 97 CLIMATIC CHANGE 469, 471 (2009).

[8] Rachel Warren, *Impacts of Global Climate Change at Different Annual Mean Global Temperature Increases*, *in* AVOIDING DANGEROUS CLIMATE CHANGE 93 (2006); C. Parmesan, *Ecological and Evolutionary Responses to Recent Climate Change*, 37 ANNUAL REVIEW OF ECOLOGY EVOLUTION & SYSTEMATICS 637 (2006); J. Stroeve et al, *Arctic Sea Ice Extent Plummets in 2007*, 89 EOS TRANSACTIONS 13 (2008); R. Kwok & D. A. Rothrock, *Decline in Arctic sea Ice Thickness from Submarine and ICESat Records: 1958-2008*, 36 GEOPHYSICAL RES. LETTERS L15501 (2009); Hansen, *supra* note 8, at 218.

[9] G.A. Meehl et al., *Global Warming Projections, in* CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 763 (2007); V. Ramanathan & Y. Feng, *On Avoiding Dangerous Anthropogenic Interference with the Climate System,* 105 PROC. OF THE NAT'L ACAD. SCI. 14245, 14247 (2008); Hansen, *supra* note 8, at 225.

[10] Hansen, *supra* note 8, at 217. Coral scientists have determined that reducing CO_2 below 350 ppm is needed to prevent the irreversible decline of reefs worldwide and protect the livelihoods of the nearly half billion people worldwide that depend on them. J.E.N. Veron, *The Coral Reef Crisis: The Critical Importance of <350 ppm CO_2*, 58 MARINE POLLUTION BULLETIN 1428 (2009).

[11] FRANK ACKERMAN ET AL., ECONOMICS FOR EQUITY & THE ENV'T, THE ECONOMICS OF 350: THE BENEFITS AND COSTS OF CLIMATE STABILIZATION 41 (2009) (change in temperature translated from 1990 levels to change from pre-industrial levels by adding 0.6°C).

acceptable and "dangerous" climate change, the latest assessments finding an increase in the severity of impacts from a 2°C rise in temperature now more accurately put the 2°C target as the threshold between dangerous and "extremely dangerous" climate change.[12] 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.[13] 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. Indeed, many ecosystems that support life on earth would be unable to adapt to a 3°C increase in temperature.[14]

Unfortunately, both national and international efforts to reduce greenhouse gas pollution have fallen far short of meeting a trajectory that would stabilize atmospheric concentrations of CO_2 at 350 ppm and limit average global temperature rise to 1.5, much less 2°C. At the conclusion of the 2009 United Nations Climate Change Conference in Copenhagen, major economies, including the United States and China, made nonbinding pledges to reduce their emissions by varying amounts by 2020. Referred to as the "Copenhagen Accord," the pledges took varying forms. For example, the European Union pledged to reduce its emissions by 20 percent below 1990 levels and increase reductions to 30 percent below 1990 levels provided that other developed countries made a similar commitment. The United States pledged to reduce emissions by 17 percent below 2005 levels by 2020 (or less than 4 percent below 1990 levels), "in conformity with anticipated U.S. energy and climate legislation, recognizing that the final target will be reported to the Secretariat in light of enacted legislation." China pledged to lower its CO_2 emissions per unit of gross domestic product (GDP) by 40 percent to 45 percent by 2020 compared to the 2005 level.[15]

The United Nations Environment Programme (UNEP) analyzed the Copenhagen Accord and

[12] 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; Keith Anderson & Alice Bows, *Beyond 'Dangerous' Climate Change: Emission Scenarios for a New World*, 369 PHIL. TRANS. R. SOC. 20, 23 (2011).

[13] Warren, *supra* note 8, at 98.

[14] *Id.* at 99. For example, 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. 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. *Id.* at 96–97.

[15] *See* UNFCCC, *Appendix I - Quantified Economy-Wide Emissions Targets for 2020*, http://unfccc.int/home/items/5264.php (last visited Feb. 15, 2011). A carbon intensity reduction cannot accurately be represented in terms of reductions on a 1990 base year, due to wide variation in GDP projections. Because the projected GDP for China in 2020 varies between 1.5 and 5.1 trillion U.S. dollars, China's intensity reduction pledge may represent anywhere from a 15 percent decrease to a 204 percent increase in emissions versus 1990 levels. USCAN, *Who's On Board With the Copenhagen Accord*, http://www.usclimatenetwork.org/policy/copenhagen-accord-commitments#Note9 (last visited Feb. 15, 2011).

found that, depending on the strictness of the rules surrounding pledge implementation, the Copenhagen Accord would result in a temperature increase of between 2.5 – 5°C by the end of the century.[16] A similar analysis concluded that the Copenhagen Accord pledges would result in warming of 3.2°C by the end of the century and CO_2 concentrations of 650 ppm.[17] Temperature increases of this magnitude would result in widespread catastrophic impacts that far exceed what can rationally be considered safe. To prevent this outcome, the UNEP identified a number of actions to potentially limit temperature rise to 1.5/2°C, including more ambitious emission reduction pledges and strict accounting rules for credits for forestry activities to avoid loopholes that would undermine the effectiveness of pledges.[18]

Although some climatic changes are now unavoidable, aggressive reductions in emissions can still avoid the worst of the global warming impacts currently predicted to occur by the end of the century. To have a reasonable chance of meeting this goal, however, global emissions must peak within the next few years and drop very sharply thereafter.[19] With science requiring deep and immediate reductions in carbon pollution and the success of international climate negotiations dependent on greater and more meaningful engagement by the United States, the federal government must maximize the use of the tools at its disposal to reduce greenhouse gas pollution. The remainder of this paper explores these tools and the many benefits they 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 That Applies Equally to Greenhouse Gas Pollution

The Clean Air Act is one of our most important and successful environmental laws. Passed in its modern form in 1970 and signed into law by President Nixon in response to growing environmental awareness, the Act uses a variety of complementary mechanisms to reduce pollution. The Clean Air Act has provided indispensible benefits to this country for four decades. Just last year, reduced pollution resulting from the Clean Air Act is estimated to have saved over 160,000 lives; avoided more than 100,000 hospital visits; enhanced productivity by preventing 13 million lost workdays; and kept kids healthy and in school, avoiding 3.2 million lost school days due to respiratory illness and other diseases caused or exacerbated by air

[16] UNITED NATIONS ENVIRONMENTAL PROGRAM, THE EMISSIONS GAP REPORT, ARE THE COPENHAGEN PLEDGES SUFFICIENT TO LIMIT WARMING TO 2°C OR 1.5°C? 15 (Nov. 2010).

[17] CLAUDINE CHEN ET AL., CLIMATE ANALYTICS, CLIMATE ACTION TRACKER BRIEFING PAPER: CANCUN CLIMATE TALKS – KEEPING OPTIONS OPEN TO CLOSE THE GAP 9(Jan. 2011).

[18] UNITED NATIONS ENVIRONMENTAL PROGRAM, *supra* note 16, at 18.

[19] N. RANGER ET AL., MITIGATING CLIMATE CHANGE THROUGH REDUCTIONS IN GREENHOUSE GAS EMISSIONS 12 (Aug. 2010), found that emissions pathways that offer at least 50 percent probability of global average temperature being no more than 1.5°C above its preindustrial level in the long term, with a temporary overshoot of no more than 100 years to 2ºC or less, must peak no later than 2015. Similarly, the IPCC CLIMATE CHANGE 2007: SYNTHESIS REPORT, at Table 5.1, found that mitigation scenarios that stabilize atmospheric CO_2 at 350 to 400 ppm require global emissions to peak between 2000 and 2015.

pollution.[20] Moreover, 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 these benefits exceeds by many times the costs of regulation. Over the period of 1990 to 2020, the economic value of the Act's benefits is projected to exceed the cost of protection by a factor of more than 30 to 1.[21]

Despite the Clean Air Act's proven legacy of social and economic benefit, throughout the Act's history, polluters have repeatedly cried wolf over the economic effects of prospective regulation. For example, in the debate on the 1970 Clean Air Act, Lee Iacocca, then president of the Ford Motor Company, warned that compliance with new regulations would require huge price increases for automobiles, force U.S. automobile production to a halt after Jan. 1, 1975, and "do irreparable damage to the U.S. economy."[22] Similar dire predictions were made during the 1990 Clean Air Act debate, with industry analysts predicting that burdens on the U.S. industry would exceed $100 billion.[23] In reality, costs were nowhere near these amounts. For example, in one study of the pulp and paper sector, actual costs of compliance were $4.00 to $5.50 per ton as compared to original industry estimates of $16.40.[24]

Even by EPA's own estimates, costs of regulatory compliance are frequently overstated. This is because cost estimates routinely underestimate the potential that technological change, including innovation and commercialization, minimize pollution abatement costs. In addition, because investments in pollution controls often increase productivity, looking only at the direct cost of installing a particular control technology can overstate the true net costs of environmental regulation. For example, during the phaseout of ozone destroying CFCs, one company, Nortel, invested $1 million to purchase and employ new hardware but ultimately saved $4 million in chemical waste disposal costs and CFC purchases.[25] Moreover, money spent on pollution and installation of control technology creates jobs and spurs innovation. Following the passage of the Clean Air Act and other environmental laws, the environmental technology sector experienced dramatic growth, generating an $11 billion trade surplus in 2008.[26] Accordingly, subsequent analyses have continued to affirm both the effectiveness and efficiency of the Clean Air Act. As recently summarized, "[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

[20] EPA, THE BENEFITS AND COSTS OF THE CLEAN AIR ACT: 1990 TO 2020; PRELIMINARY DRAFT REPORT (2010), *available at* http://www.epa.gov/air/sect812/prospective2.html.
[21] *Id.* at Table 5-5.
[22] Micheal E. Porter & Claas van der Linde, *Toward a New Conception of the Environmental-Competitiveness Relationship*, 9 J. ECON. PERSPECTIVES 97, 107 (1995).
[23] *Id.*
[24] *Id.*
[25] Eban Goodstein & Hart Hodges, *Behind the Numbers: Polluted Data*, AMERICAN PROSPECT (Nov. 1, 1997), *available at* http://www.prospect.org/cs/articles?article=polluted_data.
[26] EPA WHITE PAPER, EMPIRICAL EVIDENCE REGARDING THE EFFECTS OF THE CLEAN AIR ACT ON JOBS AND ECONOMIC GROWTH (2011), *available at* http://democrats.energycommerce.house.gov/index.php?q=news/waxman-and-rush-release-epa-analysis-detailing-how-the-clean-air-act-is-good-for-jobs-and-the-e.

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."[27]

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. In fact, the Clean Air Act legally obligates EPA to reduce carbon pollution. 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 that greenhouse gases did not qualify as "air pollutants" under the Act's broad definition.[28] In 2007, the Supreme Court ruled in *Massachusetts v. EPA* that greenhouse gases do indeed meet the definition of "air pollutants" under the Clean Air Act and must be regulated if EPA determines that greenhouse gases "may reasonably be anticipated to endanger public health or welfare."[29] The Supreme Court directed EPA to make this determination, known as the "endangerment finding," for greenhouse gases from automobiles.

EPA ran out the clock between the April 2007 Supreme Court decision and the end of Bush's second term. Under Obama, EPA issued a final endangerment finding for greenhouse gas emissions from automobiles on Dec. 15, 2009. The endangerment finding recognized that "greenhouse gases in the atmosphere may reasonably be anticipated both to endanger public health and to endanger public welfare."[30] 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 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.[31] The mobile source program has led to the development and widespread commercialization of technological

[27] I.M. CHETTIAR & J.A. SCHWARTZ, NEW YORK UNIVERSITY SCHOOL OF LAW, THE ROAD AHEAD: EPA'S OPTIONS AND OBLIGATIONS FOR REGULATING GREENHOUSE GASES Report No. 3. (2009), *available at* http://www.policyintegrity.org/publications/documents/TheRoadAhead.pdf.

[28] *See* Clean Air Act § 302(g), 42 U.S.C. § 7602(g) (2006).

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

[30] Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496, 66497 (Dec. 15, 2009).

[31] Transportation Conformity Rule Amendments To Implement Provisions Contained in the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), 73 Fed. Reg. 4420, 4434 (Jan. 24, 2008).

advances, such as the catalytic converter, that propelled the United States to a world leadership position in exporting environmental control technologies. For each of the mobile source provisions, the Act provides for flexibility and a focus on feasibility.

Transportation accounts for 72 percent of domestic oil use and is the fastest-growing source of greenhouse gas emissions since 1990. In 2007, mobile sources accounted for 29 percent of all U.S. greenhouse gas pollution. Regulation of greenhouse gases from mobile sources both improves energy security by reducing dependence on foreign oil and significantly reduces greenhouse gas emissions.[32]

1. Light-duty Vehicles

On April 1, 2010, the Obama administration issued a combined rule 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."[33] This rule increased the fuel economy standards for cars, SUVs and light 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. EPA's vehicle rule will achieve the greatest increase in fuel economy and decrease in greenhouse gas emissions from U.S. automobiles in more than three decades.

EPA's regulation of automobiles demonstrates that the Clean Air Act can successfully and cost-effectively reduce greenhouse gas pollution. The vehicle rule, which addresses mobile sources accounting for 23 percent of all U.S. greenhouse gas emissions, will result in approximately 960 million metric tons of CO_2 equivalent emissions reductions and 1.8 billion barrels of oil savings.[34] EPA analysis also found that a steady 4 percent per year reduction in CO_2 emissions for passenger vehicles would result in more than $37 billion in net societal benefits, without even accounting for the benefits inherent in mitigating or avoiding the tremendous damages caused by climate change.[35]

While the new fuel economy standards are a marked improvement from current levels, they still do not take full advantage of the demonstrated technological potential for fuel efficiency. Even with the new standards, U.S. fuel economy in 2016 will still be slightly lower than 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). Given the urgency of the climate crisis and the significant economic and social benefits resulting from improved fuel efficiency, EPA must maximize every opportunity to reduce greenhouse gas pollution. As EPA looks to developing fuel economy standards for 2017-2025 model years, much greater ambition is needed.

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[32] EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2007 (2009), *available at* .http://epa.gov/climatechange/emissions/downloads09/GHG2007entire_report-508.pdf.

[33] Light-Duty Vehicle Greenhouse Gas Emission Standard and Corporate Average Fuel Economy Standards; Final Rule, 75 Fed. Reg. 25324 (May 7, 2010).

[34] *Id.* at 25328.

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

2. Heavy-duty Vehicles

On-road heavy duty vehicles, a class of vehicles that includes the largest pick-up trucks, semi trucks, buses and vocational vehicles, comprise only 4 percent of vehicles on the road, but consume 20 percent of the fuel. They also contribute 6 percent of total U.S. greenhouse gas emissions and are the fastest-growing segment of the transportation sector. On Nov. 30, 2010, EPA and the National Highway Traffic Safety Administration (NHTSA) proposed a rule to increase fuel efficiency and reduce greenhouse gas emissions for on-road heavy duty vehicles.[36] Because fuel economy for trucks varies depending on the type of load carried, the standards are expressed in "gallons per thousand ton-mile." Under the proposed rule, the standards would be phased in gradually for the 2014 to 2018 model years and improve fuel efficiency by between 7 percent and 20 percent depending on vehicle type. EPA estimates that the standards would save 500 million barrels of oil and 250 million metric tons of greenhouse gas.[37] The cost to implement the proposed changes would be $7.7 billion while resulting in benefits estimated at $49 billion, with $35 billion from fuel savings alone.

While a positive first step, the proposed rules for heavy-duty vehicles leave significant room for improvement. The proposed increase in fuel efficiency for heavy-duty vehicles is based on using only a fraction of the technology already available today. Developing fuel economy standards intended to be met seven years from now based solely on existing technologies — and only a portion of these — fails to encourage technological innovation as required by the Clean Air Act, as well as by the Energy Policy Conservation Act and Energy Independence Security Act that govern fuel economy standards. In proposing a final rule, higher efficiency standards are needed to spur innovation, achieve further needed reductions in emissions and ensure that, in accordance with the law, improvements represent the maximum feasible levels. As fuel economy improvements rapidly pay for themselves, there is no legitimate excuse for the modest nature of EPA's proposed improvements for heavy-duty vehicles.

3. Other Mobile Sources

Following *Massachusetts v. EPA*, the EPA received petitions from environmental groups and state and local governments to regulate greenhouse gas pollution from oceangoing vessels, other types of nonroad vehicles and airplanes. EPA has yet to take action on these petitions and should move expeditiously toward developing standards for these sources.

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. Under the new source performance standards (NSPS) program, EPA sets baseline pollution reduction measures by emissions source, so that each type of facility must meet the same minimum pollution standards nationwide. EPA is required to set these

[36] Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 75 Fed. Reg. 74152 (Nov. 30, 2010).

[37] Press Release, EPA & DOT, EPA Propose the Nation's First Greenhouse Gas and Fuel Efficiency Standards for Trucks and Buses: A win for the environment, economy and energy efficiency (Oct. 25, 2010).

standards at the level achievable through the "best" system of emissions reduction that has been "adequately demonstrated."[38] 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.

1. New Source Performance Standards

To date, EPA has issued new source performance standards for pollutants emitted from about 80 categories of industrial sources, including sources such as power plants, oil refineries, cement plants and nitric acid plants.[39] Thus, the majority of sources that emit significant amounts of greenhouse gases are *already* subject to new source performance standards for air pollutants other than greenhouse gases. The Clean Air Act requires EPA to review and revise each NSPS as needed, and in no event less than once every eight years.[40] For years, states and environmental organizations requested that EPA include reduction measures for greenhouse gases when updating existing standards. In 2006, the State of New York and others challenged the EPA's failure to issue standards for greenhouse gases when updating the existing NSPS for electric generating units ("EGUs") used by power plants.[41] In 2008, a similar challenge was brought following EPA's failure to include greenhouse gas standards in the revised NSPS for oil refineries.[42] Finally, in December 2010, EPA settled both of these cases, agreeing to develop final NSPS for EGUs by May 2012 and for refineries by November 2012. Boilers and refineries are respectively the first and second largest source category of greenhouse gas emissions.

The NSPS program does not just require the use of existing common-sense measures; 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."[43] In developing NSPS for EGUs and oil refineries, EPA should therefore 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.

In addition to EGUs and oil refineries, other source categories also present significant cost-effective opportunities to reduce greenhouse gas pollution. As just one example, the Government Accountability Office recently concluded that 40 percent of natural gas estimated to be vented and flared on onshore federal leases could be economically captured using available technology, increasing federal royalty payments by $23 million annually and reducing greenhouse gas pollution by an

[38] Clean Air Act § 111(a)(1), 42 U.S.C. § 7411(a)(1) (2006).

[39] 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. Clean Air Act § 111(h)(1), 42 U.S.C. § 7411(h)(1) (2006).

[40] Clean Air Act § 111(b)(1)(B), 42 U.S.C. § 7411(b)(1)(B).

[41] An EGU, or boiler, burns fuel to produce steam for electricity, heat, or both.

[42] *New York v. EPA,* No. 08-1279 (D.C. Cir. 2008) (*New York v. EPA II*).

[43] *National Asphalt Pavement Ass'n v. Train*, 539 F.2d 775, 785-86 (D.C. Cir. 1976).

amount equivalent to 16.5 million metric tons of CO_2 — the annual emissions equivalent of 3.1 million cars.[44] Consideration of standards to address this wasteful source of greenhouse gas emissions should be incorporated into EPA's current review of performance standards for the oil and gas sector.[45] EPA should also work to develop and announce a planned release schedule for performance standards for other source categories responsible for significant quantities of greenhouse gas pollution. 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.

2. New Source Review

Another of EPA's primary pollution reduction tools, the new source review (NSR) program, requires preconstruction review and permitting of any new or modified major stationary pollution source and consists of two sub-programs, Prevention of Significant Deterioration (PSD) and nonattainment NSR (NNSR), applicable to areas exceeding limits established for criteria pollutants. Because greenhouse gases are not currently designated as criteria pollutants, they fall under the PSD program. The PSD program requires that any new "major emitting facility" obtain a permit prior to construction that defines and requires the use of the best available pollution control measures "for each pollutant subject to regulation" under the Act.[46] The Clean Air Act defines a "major emitting facility" to include certain categories of sources with the potential to emit more than 100 tons per year of any air pollutant, and all other sources that potentially emit more than 250 tons per year of any air pollutant.[47] Because the Supreme Court's ruling in *Massachusetts v. EPA* confirmed that greenhouse gases are indeed "air pollutants," once greenhouse gases have become "subject to regulation," new sources that potentially emit more than 100/250 tons of greenhouse gas pollution are required to obtain a PSD permit and adopt the best available control technology to minimize emissions.

Because stationary sources typically emit far more greenhouse gas pollution than other air pollutants, EPA estimated that applying the 100/250-ton PSD permitting trigger to greenhouse gases would subject more than 80,000 previously unregulated new and modified sources to PSD review.[48] To avoid what EPA characterized as an unmanageable increase in permitting, EPA finalized the "Tailoring Rule" on June 3, 2010, which initially limits permitting to very large sources of carbon pollution.[49] To justify this phased-in

[44] GOVERNMENT ACCOUNTABILITY OFFICE, FEDERAL OIL AND GAS LEASES: OPPORTUNITIES EXIST TO CAPTURE VENTED AND FLARED NATURAL GAS, WHICH WOULD INCREASE ROYALTY PAYMENTS AND REDUCE GREENHOUSE GASES (Oct. 2010).

[45] *See* 75 Fed. Reg. 39934 (July 13, 2010) (announcing public meeting for determination by January 31, 2011 of whether to review NSPS for oil and gas sector).

[46] Clean Air Act § 165(a), (a)(4) (emphasis added), 42 U.S.C. § 7475(a), (a)(4).

[47] Clean Air Act § 169(1) (emphasis added), 42 U.S.C. § 7479(1).

[48] Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31514, 31538 (June 3, 2010).

[49] *Id*. Title V of the Clean Air Act establishes an operating permit system for existing facilities to

approach, EPA stated that the regulatory burden and private costs resulting from immediate implementation of the Clean Air Act's requirements would produce "absurd results" and that under the "administrative necessity" and "one step at a time" doctrines, EPA may deviate from express statutory language by implementing the PSD program only as quickly and as comprehensively as administrative resources allow.[50] In the Tailoring Rule, EPA also maintained that greenhouse gases become "subject to regulation" for purposes of triggering the PSD program on Jan. 2, 2011, the first date on which vehicles governed by the Light Duty Vehicle Rule could be introduced into commerce.

Under the Tailoring Rule's phased approach, as of Jan. 2, 2011, the PSD permitting program applies only to newly constructed sources that (a) already need a permit due to emissions of other pollutants, and (b) have the potential to emit 75,000 tons of CO_2e per year. On July 1, 2011, greenhouse gas permitting will also apply to newly constructed sources that have the potential to emit at least 100,000 tons of CO_2e per year, regardless of whether they also require a PSD permit because of their emission of other pollutants. In addition, existing sources that emit or have the potential to emit at least 100,000 tons per year of CO_2e and that undertake a modification increasing their net emissions of GHGs by at least 75,000 tons CO_2e per year will also be subject to PSD requirements. EPA also committed to complete an additional rulemaking by July 1, 2012, to consider the phase-in of PSD permitting for additional sources emitting lesser amounts of CO_2e, beginning by July 1, 2013. The Tailoring Rule, however, also provides that PSD greenhouse gas permitting will not apply to sources emitting less than 50,000 tons of CO_2e per year until at least April 30, 2016, under any circumstances.

EPA can and should extend PSD permitting to a greater number of stationary carbon pollution sources much more quickly than the Tailoring Rule sets out. However, even EPA's extremely modest proposal to gradually phase in greenhouse gas permitting has faced vociferous attacks by polluters in court, in Congress and the media. Yet the Tailoring Rule initially applies only to a small number of very large new and modified sources of greenhouse gas pollution, many of which are already subject to permitting due to other emitted pollutants.[51] In addition, many greenhouse gas reduction measures are actually cost-positive, even without taking the full consequences of climate change into account, meaning that the emitter can reduce pollution and save money at the same time.[52] Indeed, 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,[53] greenhouse gas reductions under the Act cannot but produce enormous benefits.

monitor compliance with applicable regulatory requirements and does not itself require adoption of pollution control technologies.

[50] *Id.* at 31516.

[51] *Id.* at 31540.

[52] *See, e.g.*, JOANNA PRATT & JOE DONAHUE, U.S. EPA, CLEAN ENERGY LEAD BY EXAMPLE GUIDE: STRATEGIES, RESOURCES, AND ACTION STEPS FOR STATE PROGRAMS (2009), *available at* http://www.epa.gov/cleanenergy/energy-programs/state-and-local/index.html.

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

E. National Ambient Air Quality Standards and State Implementation Plans for Greenhouse Gases

The Clean Air Act requires EPA to set national ambient air quality standards (NAAQS) for "criteria pollutants" as necessary to protect the public health and welfare. Once a NAAQS is set, each state must develop and implement a state implementation plan (SIP) to meet the NAAQS. In the case of other 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.[54] Complementary federal programs, including the mobile source, NSPS and NSR programs discussed above, can aid the states in meeting a NAAQS for each pollutant in question.

In December 2009, the Center for Biological Diversity and 350.org petitioned EPA to 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.[55] While establishing NAAQS and SIPs for greenhouse gases raises novel issues,[56] it is well within the EPA's expertise and statutory authority and would provide substantial benefits. For example, the SIP process actively engages all 50 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 nonhazardous waste handling.[57] State and local government can effectively adjust building codes, development patterns, efficiency requirements, and land-use policies to reduce carbon pollution. While no single action or system will achieve the level of emissions reductions necessary to avert

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[54] Clean Air Act § 110(a)(2), 42 U.S.C. § 7410(a)(2).

[55] Center for Biological Diversity & 350.org, Petition to Establish National Pollution Limits for Greenhouse Gases Pursuant to the Clean Air Act (Dec. 2, 2009), *available at* http://www.biologicaldiversity.org/programs/climate_law_institute/global_warming_litigation/clean_air_act/pdfs/Petition_GHG_pollution_cap_12-2-2009.pdf. Preeminent climate scientist Dr. James Hansen and others have signed a letter in support of the petition. http://salsa.democracyinaction.org/o/2167/t/5243/p/dia/action/public/?action_KEY=2773

[56] Concerns over the feasibility of a NAAQS for greenhouse gases are addressed in the Center's petition to EPA and the Center's white paper, No Reason to Wait, Reducing Greenhouse Gas Emission Through the Clean Air Act, *available at* http://www.biologicaldiversity.org/programs/climate_law_institute/legislating_for_a_new_climate/pdfs/NoReasonToWait.pdf.

[57] 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.

dangerous climate change, concerted efforts to pursue reductions in a variety of contexts in a complementary fashion can have dramatic results. The SIP process allows for the integration of federal, state and local action for a comprehensive national program to address climate change. Informed by a science-based national pollution limit, the Clean Air Act's other successful pollution reduction programs, such as new source review and new source performance standards for stationary sources, and greenhouse gas reduction rules for automobiles and other mobile pollution sources, will provide the essential blueprint for the United States' greenhouse gas reduction efforts. Accordingly, EPA should establish a NAAQS for greenhouse gases.

IV. CONCLUSION

The Clean Air Act works. The law provides an effective, comprehensive system to reduce carbon pollution that spurs innovation and technological advancement, increases efficiency and global competitiveness, and reduces dependence on fossil fuels. Time and again, economic doomsday scenarios promoted by polluters over the history of the Act have failed to materialize. Rather than yield to the shrill demands of polluters and their lobbyists, Congress and EPA should instead utilize the Act to its fullest potential.