

**Report on the Tools Available
Under the Clean Air Act to Immediately
Reduce Global Warming Pollution**



**U.S. Senate Committee on
Environment and Public Works
Majority Staff Report
January 2009**

EXECUTIVE SUMMARY

Global warming is the defining challenge of our generation. The scientific evidence for rising global temperatures has been called “unequivocal” by the United Nations Intergovernmental Panel on Climate Change. The world’s leading scientists have warned that global warming, left unchecked, will lead to rising sea levels, more frequent droughts and floods, loss of species, spreading disease and other impacts. Experts also tell us that there is a limited window of time in which to act to reduce greenhouse gas emissions and avoid the most dangerous effects of global warming.

Passage of a strong global warming bill as early as possible in the 111th Congress is a top priority. At the same time, the Clean Air Act (CAA) provides effective tools that will allow the incoming Administration to begin to address global warming emissions immediately while creating jobs and providing incentives for development of clean energy technologies.

This report outlines several steps that the Obama Administration could take immediately after Inauguration Day to begin reducing U.S. global warming emissions from mobile and stationary sources. The Supreme Court, in *Massachusetts v. EPA*, made clear that the Environmental Protection Agency has the authority to regulate global warming pollution under the Clean Air Act.

Key recommendations for immediate action include:

- ***Granting the California Waiver to Allow California and other States to Regulate Greenhouse Gas Emissions from Motor Vehicles (CAA section 209)***
- ***Issuing National GHG Emissions Standards for Vehicles (CAA section 202(a)(1))***
- ***Lowering the Carbon Content of Fuels (CAA Section 211)***
- **Setting performance-based GHG emissions standards for new and existing stationary sources. (CAA Section 111)**

All of these steps can be taken even before Congress passes any new legislation. The Clean Air Act provides sufficient flexibility to pursue significant reductions in emissions of global warming pollution while driving innovation, encouraging development of new, cost-effective emissions reduction technologies and creating new jobs. By pursuing these actions, the Obama Administration can implement significant national reductions in global warming pollution emissions prior to passage of a comprehensive global warming legislation.

INTRODUCTION

In 2007, the Supreme Court ruled, in *Massachusetts v. EPA*, that carbon dioxide and other greenhouse gases (GHG) are “air pollutants” under the Clean Air Act (CAA) and can be regulated if the EPA Administrator determines that they pose a danger to public health or the environment.

Science and the requirements of the CAA make it overwhelmingly clear that GHG are in fact dangerous pollutants – and the CAA gives the U.S. Environmental Protection Agency ample authority and a variety of tools for reducing GHG emissions. Action under the current law is therefore long overdue. At the same time, both President-elect Obama and Chairman Boxer also have made it clear that they intend to move forward with new legislation to create a comprehensive program to reduce GHG emissions.

Many of the technology-focused and performance-based provisions of the CAA have been especially effective at pushing the development and commercialization of new pollution-cutting technologies for cars, trucks, power plants and factories. Using the CAA to speed up technological innovation and to bring advanced technological solutions into widespread commercial use can be an essential part of the overall climate policy that new comprehensive legislation will create.

While Congress moves this legislation forward, the EPA can act quickly and decisively on several fronts. The Administrator can also complete the work already done by the agency to confirm that GHG emissions’ atmospheric impact presents a danger to human health and welfare and are thus subject to regulation under the CAA. The EPA can regulate those emissions, starting with the largest stationary emissions sources and additional mobile sources by creating national GHG standards for cars, trucks and other vehicles. The EPA must take the steps necessary to immediately reverse the Bush administration’s improper denial of California’s request for a waiver to implement its GHG automotive emissions standards. This will kick-start the move to clean technologies for automobiles.

The CAA confers upon EPA the authority and the tools to move forward with these initiatives sensibly and flexibly in ways that promote economic recovery and growth and avoid imposing unwieldy and unworkable requirements on small businesses or individuals. The testimony and comments of CAA experts presented to the committee and submitted to the EPA itself make clear that EPA has the latitude and discretion to design approaches that are environmentally effective and economically practical and flexible.

By coupling these initiatives under the current CAA with an overall legislative program to guarantee that the U.S. meets the GHG emissions reduction targets needed to combat the threat of global warming and climate change, the EPA can ensure that clean technology is moving forward to spur U.S. economic growth and create new high-tech jobs while meeting crucial environmental goals.

On September 23, 2008 the Senate Committee on Environment and Public Works conducted a hearing on the “Regulation of Greenhouse Gases under the Clean Air Act.” The hearing was the culmination of the committee’s examination of the extent to which the U.S. EPA, and the states, could use authorities under the existing Clean Air Act to bring about cost-effective reductions in U.S. greenhouse gas (GHG) emissions. This paper reflects the results of that examination and offers suggestions for how the various policy tools provided by the Clean Air Act can be used to achieve GHG reductions.

(Written testimony and a video record of the Committee’s September 23, 2008 hearing on “Regulation of Greenhouse Gases under the Clean Air Act” may be found here:

http://epw.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=6da87a8d-802a-23ad-4dc9-289c2f6b7e5a

Both President-elect Obama and Chairman Boxer have explicitly stated their respective commitments to enacting comprehensive GHG emissions legislation as a critical element of U.S. climate policy.

Many proponents of using existing Clean Air Act (CAA) authorities to reduce GHG emissions also support new comprehensive legislation; they believe that action under the current CAA both can build a “bridge” to, and be a complementary element of, the climate regime created by new comprehensive GHG emission legislation.

GHG EMISSIONS LEGISLATION

Since 2003, a variety of bills have been introduced in both the Senate and the House that would establish comprehensive GHG reduction programs covering about 80 to 85 percent of the GHG emissions generated by the U.S.

The bills would have mandated specific annual GHG emissions reductions targets for major GHG emissions sources. The targets would be implemented through a system of emissions allowances: to be in compliance GHG emissions source would be required to hold an allowance for each ton of GHG (in carbon dioxide-equivalents) emitted. Sources could trade allowances with each other and use allowances unused in previous years for purposes of compliance in future years. The first success in using this approach was when the Clean Air Act Amendments of 1990 applied it to combat acid rain by reducing the emissions of sulfur dioxide, the dominant precursor of acid deposition. That program proved to be so successful that the same approach was adopted for use by the U.S. EPA and several multi-state programs for addressing ozone smog, and by California and the Northeast States to address GHG emissions.

The acid rain program showed that the approach is uniquely effective in ensuring that the total amount of pollution required to be reduced will be achieved in fact. Thanks to the market dynamics that emissions allowances, together with the firm limit on total emissions, create, the approach, with very few exceptions, has been equally uniquely effective in ensuring that the required reductions are achieved at the lowest possible cost. Finally, by literally putting polluters under an emissions budget, the approach provides

one of the several factors necessary to spur technological innovation. These are the reasons behind the repeated decisions by state, federal and international policy-makers to rely on the approach to achieve ambitious pollution reduction objectives when the focus is on large-scale cumulative reductions over broad areas.

THE CLEAN AIR ACT AND TECHNOLOGY

At the same time, there is near consensus among experts that success in achieving the needed scale of GHG emissions reductions requires rapid and broad deployment of existing advanced technologies as well as continuous ongoing innovation. Hence, the need to combine the benefits of market-based emissions reduction programs and complementary regulatory measures that can bring this about.

Throughout its history the Clean Air Act has been an important factor in the development and deployment of key technologies critical to reducing air pollution. The CAA's mobile source programs, in tandem with California's path breaking efforts in this area, have a long and robust record of success in bringing forward new tailpipe emissions technologies and fuel clean-up that have resulted in dramatic improvements in America's air quality. Other CAA authorities have succeeded in producing significant technological change for power plants, factories and refineries, which has also been highly effective in improving and protecting America's air quality. The "technology-forcing" tools of the CAA have succeeded because they can be, and have been, wielded with flexibility and a focus on cost-effectiveness and feasibility. Finally, clean-up technologies and strategies have led to economic growth and the creation of new jobs. In California, for example, the pollution control industry has grown steadily in the last 30 years and studies such as "Energy Efficiency, Innovation and Job Creation in California" (David Roland-Holst, October 2008, University of California at Berkeley) have shown that energy efficiency programs of the sort that could play a role in meeting GHG emissions standards for stationary sources have led to the creation of 1.5 million new jobs in the past ten years.

The attributes of market-based programs that impose total-emissions budgets and those of the CAA's technology-focused programs suggest that a convergence of GHG emissions legislation and the well-designed implementation of CAA programs are not only theoretically possible but also potentially very fruitful in creating strong comprehensive climate policy for the U.S.

CRITICAL CAA PROGRAMS FOR CLIMATE POLICY

The immediate task, then, is to identify those CAA authorities that can be most effective as components of this integrated policy approach. Clearly, the first place to examine is those authorities that are most directly linked to promoting technological change.

The trigger for activating many of the CAA's regulatory tools to address GHG emissions is an "endangerment finding" for GHG under the relevant provisions of the CAA. Under the CAA the finding that a pollutant or class of pollutants poses a danger to public health and welfare is a matter of scientific inquiry, and the scientific record on GHG is now

beyond doubt that GHG emissions do contribute to the endangerment of public health and welfare. The global warming that is occurring, and that will continue to occur, as a result of the accumulation of human-made GHG in the atmosphere, affects human health, air quality, food production and agriculture, forestry, water resources, coastal resources, energy needs, infrastructure, and ecosystems and wildlife. The scientific evidence on climate change and its current and future impacts is extensive, even vast.

The Intergovernmental Panel on Climate Change (IPCC) stated in 2007:

“Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”

The IPCC also projects that continued GHG emissions at or above current rates will “cause further warming and induce many changes in the global climate system during the 21st century that would very likely [90 to 99 percent probability of occurrence] be larger than those observed during the 20th century.”

In the EPA Endangerment Analysis Technical Support Document that accompanied “Advanced Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions Under the Clean Air Act”, 73 Fed. Reg. 44354-44520 (July 30, 2008) [“ANPR”], the EPA itself has already produced a catalogue and discussion of harmful impacts on human health and welfare flowing from current and projected global warming. According to the EPA, climate change will increase the frequency and severity of heat waves and extreme weather events. Extreme weather events result in increased deaths, injuries, infectious diseases and stresses due to forced migrations. The increased frequency and severity of heat waves lead to more illness and death, particularly among the young, elderly and frail. Climate change expands the range of vector-borne and tick-borne diseases. The IPCC projects with virtual certainty declining air quality in cities due to warmer days and warmer nights. Ozone concentrations are expected to increase, exacerbating adverse health impacts and impeding attainment efforts.

Climate change will increase the scarcity of water and affect its distribution. In the West, where snowpack is the primary source of water for a great many communities, global warming will mean an earlier melting of the snow pack and less snow. Global warming will also increase droughts in some areas and deluges in others. Increased temperatures and longer growing seasons will elevate the risk of wildfires.

Finally, many species will go extinct as their habitat changes more rapidly than populations are able to shift ranges. Such extinctions have already occurred. Acidification of oceans resulting from absorption of increased levels of carbon dioxide from the atmosphere will also imperil and threaten with extinction a variety of oceanic species.

In view of this evidence – which is but a sample of the extensive amount available -- the EPA is already compelled to conclude that GHG emissions endanger public health and welfare.

Mobile Sources

EPA data confirms that the mobile source sector is responsible for approximately 36 percent of total U.S. GHG emissions, taking into consideration both tailpipe emissions and “upstream” transportation fuel emissions (*i.e.*, those generated by extraction, shipping, refining and distribution).

The volume and significance of this contribution to the overall U.S. GHG emissions “budget” have persuaded the various legislative authors of federal GHG emissions proposals to include the emissions attributed to the combustion of petroleum fuels under the overall GHG emissions limit.

At a January 7, 2009 experts’ briefing held by the Environment and Public Works committee, both Thomas Friedman, author of *Hot, Flat and Crowded*, a study on energy and climate policy and the economy, John Doerr, a seasoned and successful investor in advanced technology ventures, emphasized that the kind of price signal created by a GHG emissions limit for oil was an indispensable – although not necessarily sufficient by itself – to achieving technological progress.

Meanwhile, the CAA’s mobile source programs have yielded significant technological change in cleaning up tailpipe emissions and fuels. Both by themselves and in tandem with an overall GHG emissions budget, they can propel technological innovations that strengthen the economy, create good jobs and reduce GHG emissions.

Start by Granting the California GHG Waiver

In the case of GHG emissions, EPA can take swift action under section 209 of the CAA can be applied to authorize California to implement its program for reducing tailpipe GHG emissions. Thanks to section 177 of the CAA, in granting California the authority, the EPA will also allow 14 other states that have already adopted California’s program to impose the identical requirements limiting the tailpipe GHG emissions of new cars sold in their jurisdictions. In addition to this group, four other states are currently considering adopting the same program. California and the other participating states comprise approximately half of the U.S. population and their programs will accelerate the marketplace introduction of vehicles with reduced GHG emissions.

Granting California a waiver under section 209 – and thereby allowing other states to participate through section 177 – will serve as a perfect illustration of how the positive interaction of state and federal policymakers, as contemplated under the CAA, can work: in this case to reduce mobile source GHG emissions, spur technological innovation and achieve a range of policy benefits, from reducing global oil market exposure to creating jobs.

Issue National GHG Emissions Standards

Complementing the section 209 waiver to California, EPA should respond to the Supreme Court decision in *Massachusetts v. EPA*, by acting under CAA section 202(a)(1) to set a new national GHG emissions tailpipe standard for light duty vehicles (LDVs), which account for more than half of all mobile source emissions in the U.S. The standards EPA has set under section 202 have been generally regarded as successful over the past several decades – and section 202(a)(1) will serve U.S. policy well again. Under 202(a)(1), EPA, as it has in the past, will be in a position not only to establish a constructive technology-forcing policy for LDVs, but also do so while taking into account the long term demands of environmental and public health protection objectives; costs; benefits; technical feasibility including engineering, investment and operational lead time; safety impacts and energy policy objectives.

EPA in fact already has demonstrated the elements of such standards in the Technical Support Document (TSD) that accompanied its recent ANPR. EPA demonstrated in the TSD the extent to which it already has conducted the technical research establishing the feasibility and availability of technologies to cut tailpipe GHG emissions in LDVs. The TSD also reflects EPA’s assessment of the full range of factors cited above, and projected that standards applicable for a period that can extend over the next 10 to 15 years can put LDVs on a path to achieve critical GHG emissions targets by 2050, the time horizon that has been adopted by almost all recently introduced legislative proposals for climate policy.

At the same time, EPA’s CAA authorities extend to the remaining mobile source sub-sectors, which themselves make a significant contribution to mobile source GHG emissions. Heavy-duty trucks are responsible for 18 percent of U.S. mobile source GHG emissions, aviation for 11 percent and nonroad engines for 8 percent. At the very least, EPA should engage in a forward-leaning initiative to identify the opportunities, in particular through the adoption of new technology-forcing standards, to achieve GHG reductions in these sub-sectors.

Lower the Carbon in Fuels

Innovation in automotive technologies, although absolutely critical to stabilizing GHG concentrations over the long term, can be complemented with action under the CAA to change the composition of automotive fuels in order to reduce GHG emissions. This is another area where the price signal from overall GHG emissions reduction legislation may be too diffuse to promote sufficient responses in the area of fuels.

Section 211 of the CAA offers EPA the authority to adopt a national low-carbon fuel standard, one that can be set in a way that accounts for all of a fuel’s life cycle emissions as well as significant indirect GHG emissions impacts. The scope of section 211 also allows EPA to consider not only petroleum and conventional and advanced biofuels, but even electricity and hydrogen as well. As in the case of section 202, section 211 would permit – indeed require – that EPA take into account the full range of policy, technical

and economic issues whose consideration and resolution are instrumental to formulating a durable and effective fuels policy.

Climate Policy and Energy Policy

The CAA-centered approach to mobile source GHG emissions advocated here is completely compatible with the energy policies most recently established by the Energy Independence and Security Act of 2007 (EISA) and the regulatory action of the National Highway Traffic Safety Administration (NHTSA). Although the CAA polices on GHG emissions and fuels and the CAFÉ and Renewable Fuels Standard under EISA have complementary functions, the latter energy policies are by no means an adequate substitute or surrogate for a GHG emissions policy. This can be exemplified by the California policy which authorizes via its GHG emissions standard the regulation of not one, but four, GHGs.

Perhaps even more telling, the U.S. Supreme Court found, in *Massachusetts v. EPA*, that the EPA is required to regulate motor vehicle GHG emissions once the EPA determines that such emissions contribute to climate change. The Court further found, “[the fact] that DOT [Department of Transportation] sets mileage standards in no way licenses EPA to shirk its environmental responsibilities. EPA has been charged with protecting the public's ‘health’ and ‘welfare,’ 42 U.S.C. §7521(a)(1), a statutory obligation wholly independent of DOT's mandate to promote energy efficiency. See Energy Policy and Conservation Act, §2(5), 89 Stat. 874, 42 U.S.C. §6201(5). The two obligations may overlap, but there is no reason to think the two agencies cannot both administer their obligations and yet avoid inconsistency.” In addition, section 3 of EISA expressly states that nothing in that law affects the scope and authority of the nation’s environmental laws.

Thus, the authorities under the CAA are independently sufficient and sufficiently broad to permit the crafting of a wide-ranging, multifaceted mobile source GHG emission reduction program centered around the setting standards on a long-term basis (in striking contrast to DOT NHTSA’s much more limited authority to set fuel economy standards in increments of no more than five years). Such an approach, in turn, will allow for a focused and stable strategy that will yield substantial results, which function in part to ensure that the intended environmental benefits – and sought after technological innovation – occur.

Stationary Sources

The need for continual innovation to reduce GHG emissions from stationary sources is just as urgent as it is for mobile sources. While comprehensive GHG emissions reduction legislation is critical to ensuring that the mandated GHG emissions reductions are actually achieved, integrated technology policies are also necessary to drive innovation.

Specifically, the EPA can – and must – use current CAA authorities to set performance-based GHG emissions standards for new, high-emitting sources and for existing sources.

An obvious beginning point would be coal-fired power plants. In addition, as new large sources of GHG are proposed, EPA must use its authorities to ensure that the capital investment that these sources represent not lock in either massive GHG emissions increases or soon-to-be-outdated technologies.

Section 111 of the CAA establishes New Source Performance Standards (NSPS) for new sources and for modified sources. In the past, the NSPS has succeeded in constructive technology-forcing in the sense of bringing advanced existing or demonstrably cost-effective and feasible technologies into widespread application. NSPS can easily be used with the same success for technologies that reduce or prevent GHG emissions. In its ANPR, EPA stated that it has the capacity to issue new source performance standards for categories of sources – notably coal-fired power plants – for which such standards already have been set for other pollutants.

At the same time, EPA must ensure that substantial, long-term capital investment is not made in what amounts to massive GHG increases when new uncontrolled coal-fired power plants and similar new large uncontrolled sources are proposed and built. The CAA's New Source Review (NSR) program reflects Congress' recognition that the best opportunity to avoid air pollution from new facilities is before they are built or substantially modified. As result, EPA already has – and must use – tools such as its long-standing guidance authority to limit GHG emissions when prescribing emission limits for large new sources of air pollution such as coal-fired power plants. EPA must also update the NSR/Prevention of Significant Deterioration (PSD) program to clearly state that facilities subject to NSR/PSD are subject to Best Available Control Technology/Lowest Achievable Emission Rate emissions limits for GHG emissions.

EPA has the flexibility and legal discretion to ensure that neither NSPS nor NSR are applied rigidly or overly broadly, avoiding regulations that would impose onerous bureaucratic or compliance requirements on sources that are not cost-effective targets of regulation. As Mary D. Nichols, Chairman of the California Air Resources Board, told the committee on September 23, 2008: "... decades of experience ... have shown ... that there is ample flexibility to avoid [such] problems with these programs."

Moreover, EPA's CAA tools can be applied in ways that result in a variety of technological innovations and innovative strategies. For example, although New Source Performance Standards are typically set in terms of numerical emission standards expressed as performance levels, the NSPS offers the EPA enough flexibility to require efficiency improvements through the NSPS program. Often various market factors, including in some cases ratemaking practices and pricing, result in energy efficiency being underutilized. Energy efficiency, however, provides significant cost-effective opportunities for reducing GHG emissions quickly in the near term. Thus there is both a policy need and justification for aggressive efficiency requirements – and the NSPS mechanism can be used to establish such requirements. Additionally, the CAA specifies procedures by which NSPS can be applied to existing sources by the states following EPA guidelines. This makes the reach of NSPS strategies that much greater.

CONCLUSION

New legislation focused on mandating the achievement of specified near- and long-term GHG emissions reductions is almost certain to be a critical ingredient of U.S. climate policy. At the same time, existing authorities and tools under the current CAA can, and must, be applied to both mobile and stationary sources to jump-start GHG emissions reductions and the technological innovation and deployment needed to achieve and sustain those reductions.

###