Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors

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Over the past several years the issue of global warming has become a national political priority and will likely remain one of the United States' and the world's most pressing and unresolved policy issues for many years. The U.S. Supreme Court's decision in Massachusetts v. EPA makes possible a national program to address climate change under the Clean Air Act (CAA). Even before Massachusetts v. EPA, the congressional shift in power had produced a flurry of bills coalescing around the need for strong national goals and mandatory GHG emissions reductions. While many of the bills before Congress in past sessions moved toward stronger emissions reduction goals and potentially broader and more inclusive policy approaches, they were relatively silent or short on details for the specific pathways necessary to achieve climate stabilization goals. For example, past bills did not fully describe how to:

1. Vertically integrate rapidly expanding state and local climate change programs, as well as international programs, into a comprehensive national program that addresses unique differences between states and regions as well as unique jurisdictional issues for each level of government;

2. Horizontally integrate a full range of effective sector based policies and measures (including non price instruments) with a cap and trade program (principally using a price instrument) across all economic sectors in order to achieve the lowest cost and highest co-benefit policy outcomes;

3. Implement a full range of near term actions, without undue delay, that capture immediate economic recovery and expansion opportunities. Consequently, federal legislation and rulemaking has needed to significantly clarify and expand the approach to policy integration and governance issues for the United States to make an effective commitment to climate stabili-
zation. Legislation introduced in the new (111th) session of Congress appears to be moving in these directions. On March 31, 2009, House Energy and Commerce Committee Chair Henry Waxman, and Energy and Environment Subcommittee Chair James Markey, released a draft of the much anticipated “American Clean Energy and Security Act of 2009” with four separate titles that provide a more integrated approach to climate policy than past bills. These include: 1) clean and renewable energy supply policies and measures; 2) energy efficiency policies and measures; 3) a federal cap and trade program and standards for direct control of greenhouse gases; and 4) economic transition programs. The general architecture of the bill is much more aligned with comprehensive policy approaches (including those developed by the states and localities) than any legislation that precedes it.

Recent state and existing federal laws provide useful federal guidance by providing a workable template for engineering full integration of governmental and economic needs with respect to climate change. In fact, most state plans were developed in anticipation of federal policy and the need for fully designed and integrated federal programs. By adapting and enhancing the existing framework of national standards, state programs and market-based systems found to a large extent in the CAA (and with adjustment), the United States could create a highly tested and widely approved approach to address climate change. At the same time, the United States could begin taking action quickly on critical near term policy opportunities while also building toward longer term policy strategies needed to support major shifts in emissions. The near term opportunities for use of the existing CAA, however, may not fully address greenhouse gas management needs and the need for targeted legislative enhancements, particularly in the long term.

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5. Unless otherwise noted, the original data for all graphs and charts in this Article were obtained from the Center for Climate Strategies, a non-partisan, independent nonprofit service organization that works directly with public officials and stakeholders to identify, design, and implement policies to address climate mitigation. The calculations provided the data and information embodied in the graphs were provided by employees and consultants for the Center and were cumulated for a meeting of state environmental leaders in 2007. Center for Climate Strategies, http://www.climatestrategies.us (last visited Feb. 15, 2009).

I. Accumulating Scientific Evidence Underscores the Urgent Need for an Integrated and Comprehensive National Approach to Reach Climate Stabilization Goals

Perhaps the greatest single factor driving changes in the call for action has been the continued ascension of scientific evidence through the Intergovernmental Panel on Climate Change (IPCC), and national science bodies such as the Academies of Science and American Meteorological Society. The most recent Fourth Assessment concludes that the causes of climate change in the last century are 90% certain to be human induced. In addition, warming is well underway, with about 1.5 degrees Fahrenheit increase in global average temperatures in the last four decades alone, and projected increases of 3.5 to 8 degrees Fahrenheit as early as 2050 without mitigation. This rate and magnitude of temperature change is unprecedented in human history. These changes will be mirrored by equally unprecedented adverse effects.

This was succinctly summarized by a group of the world’s climate change scientists in an amicus brief submitted to provide the Supreme Court with information on the state of climate science in Massachusetts v. EPA, as follows:

As practicing scientists who study the earth’s climate system, we and many in our profession have long understood that continued human-caused emission of greenhouse gases—primarily carbon dioxide (CO₂), but also methane (CH₄), nitrous oxide (N₂O), and fluorocarbons—would eventually warm the earth’s surface. Most were skeptical that we would see strong signs of human-induced climate change in our lifetimes. But by the beginning of this decade, we observed that global temperatures are rising, plant and animal ranges
are shifting, glaciers are in retreat globally, and arctic sea ice is retreating. Sea levels are rising and the oceans are becoming more acidic. To the extent that these changes result from human alteration of the atmosphere, we know that they are just the first small increment of climate change yet to come if human societies do not curb emissions of greenhouse gases.6

Because greenhouse gases are persistent and cumulative once emitted, effects will last over a century and continue unabated without any natural upward limitation on warming. The scientists noted above informed the Court that:

[D]elaying action to reduce greenhouse gas emissions will certainly result in greater buildup of greenhouse gases in the atmosphere, and thus we commit the earth to long-lasting climate change and associated damages decades before these damages can be measured. Reversing the impacts of climate change becomes vastly harder, or impossible, and more expensive as we allow greenhouse gas pollutants to accumulate in the atmosphere.7

In order to prevent some of the more dangerous impacts from climate change, scientists predict that we will likely need to reduce worldwide emissions by 75% to 85% by the year 2100, including reductions required for the United States, which currently emits 22% of the world’s GHGs with 5% of the population.8

II. The U.S. Failure to Seriously Address Climate Change at the National Level Has Adverse International Consequences

The response to this growing challenge has not been symmetrical. Worldwide, virtually all industrialized nations have agreed to adopt mandated targets and timetables for emissions reductions under a protocol (the Kyoto Protocol9) to the United Nations Framework Convention on Climate Change (UNFCCC),10 with the exception of the United States. Developing nations have set out these early commitments under a previous accord (the “Berlin Mandate”)11 that was incorporated into the express terms of the UNFCCC and requires developed nations to move first.12 The differential has confounded multinational companies with operations in both covered and uncovered nations, including many in the United States, and has lead to a global patchwork of compliance.

III. State Responses to Climate Change Show How to Attain Climate Stabilization Goals at a National Level, and Are an Essential Source of Learning on How to Address This Issue

Since 2000, 31 states have developed and implemented a variety of comprehensive climate action plans.13 These states, with dramatically different emissions growth rates, have established, or will establish, statewide emissions reduction targets. Numerical goals and targets for emissions reductions are typically developed through consensus-based planning processes and in depth economic feasibility analyses. The goals and targets vary, but all are moving toward climate stabilization levels using a range of tools.

State planning targets are consistent with long-term climate stabilization pathways recommended by the scientific community for the short term (through 2020). The targets provide a platform for the steeper reductions by 2050 to achieve stabilization of atmospheric levels of GHGs.14 State plans have been remarkably consistent in the level of achievable emissions reductions, at about 50% below projected emissions levels by 2020.15

State experience identifies the following six key action areas that are critical to achieving national GHG emissions reductions targets:

7. Id. at 29-30.
11. The Berlin Mandate was a decision reached by the Third Conference of Parties of the UNFCCC to require actions by developed nations to precede those by developing nations. This support of this decision by the United States State Department did not involve consultation with the United States Senate, and was cited by Senate members as a key barrier to approval of United States participation in the Kyoto Protocol.
12. UNFCCC, supra note 10, art. 4, para. 2 (“(a) Each of these Parties shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention . . . ; (b) In order to promote progress to this end, each of these Parties shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in subparagraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for the period referred to in subparagraph (a), with the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases . . . .”) (emphasis added).
13. A number of plans were developed before that date. However, these plans were far from comprehensive, did not involve stakeholder input, and were largely formulaic with no significant implementation.
14. Most of the long-term goals have been based upon the reductions ultimately needed to stabilize atmospheric levels.
15. This translates into reductions ranging from 10% below 1990 levels to a return to 2000 levels. The differences are due to the fact that growth rates from state to state vary.
16. Year 2000 data from WRI CAIT with analysis performed by the Center for Climate Strategies. Center for Climate Strategies, supra note 5.

17. Center for Climate Strategies, supra note 5.

18. Id.

- Energy efficiency and conservation
- Clean and renewable energy
- Transportation and land use efficiency
- Agriculture and forestry conservation
- Waste management and recycling
- Industrial process improvements.

States consistently find that meaningful progress in these critical action areas requires a combination of implementation mechanisms, particularly if high levels of public consensus and economic performance are desired. These mechanisms typically include a range of traditional approaches, as well as innovative means by which market forces can be mobilized, including:

- Codes and standards
- Voluntary and negotiated agreements
- Targeted spending
- Financial incentives
- Market based systems
- Technical assistance
- Pilots and demonstration projects
- Education and awareness

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16. Year 2000 data from WRI CAIT with analysis performed by the Center for Climate Strategies. Center for Climate Strategies, supra note 5.

17. Center for Climate Strategies, supra note 5.

18. Id.
• Reporting and disclosure
• Public recognition and reward\textsuperscript{20}

The combination of different actions and mechanisms across all relevant sectors is critical to meeting strong new targets. It also provides overall low costs of implementation by allowing the government to balance the costs and savings of individual actions to achieve an overall negative cost for achieving GHG emissions reduction. This comprehensive “portfolio” approach—characterized by 10 to 20 policy choices from each of six sectoral columns—is crucial to gaining political support for any climate-related action, as it provides an enormously flexible range of choices by which potential conflicts may be resolved.\textsuperscript{21}

If state climate action targets recently established by sixteen leadership states through completed action plans were emulated nationally, they would reduce U.S. GHG emissions by one third of total projected emissions by 2020 to the equivalent of 1990 levels. Preliminary estimates also suggest that national emulation of state efforts could provide the United States net economic savings of about 100 billion dollars (or about 31 billion dollars in savings during 2020 alone), based on an extrapolation to the national level from a series of extensive and openly-reviewed studies by the states conducted through public stakeholder processes and advanced economic analysis.\textsuperscript{22}

The portfolio based policy architecture developed by individual states is mirrored in the climate plans of virtually all nations in compliance with UNFCCC treaty obligations.\textsuperscript{23}

Key structural elements include:

1. Comprehensive emissions inventories and forecasts;
2. A common but differentiated system of targets and timetables for GHG reduction;
3. Comprehensive GHG reduction in all economic sectors and levels of government;
4. A variety of matching implementation mechanisms tailored to underlying sector-based actions that reduce GHGs; and
5. Reporting and measurement systems to support implementation.

Typically each jurisdiction covers major stationary source actions (usually a minority of total emissions) under a central policy instrument such as a tax, levy, cap and trade system, or combination. The remaining portion of emissions reductions (often the majority) from other emitting sources such as transportation, commercial and residential actions are covered through a set of decentralized policies and measures. Emissions reduction measures in these other sectors are often directed to areas where market imperfections make application of a cap and trade or tax less likely to be effective. The

\textsuperscript{19} Id.
\textsuperscript{20} Id.
\textsuperscript{21} See Ariz. Climate Change Advisory Group, Climate Change Action Plan 1 (2006), available at https://www.azclimatechange.gov/download/O40F9347.pdf. The Arizona Climate Action Plan was completed in 2006. Following an intensive consensus building process through joint fact-finding and policy development, the state developed a plan with 49 separate actions across all sectors, using a variety of implementation approaches. The plan achieved high levels of emissions reductions and net economic savings (estimated at $5.5 billion by 2020) by focusing on actions to reconfigure new economic growth to become cleaner and more efficient, rather than costly actions requiring retrofitting of existing infrastructure. Id. at 8. Despite the fact that Arizona has the highest estimated growth rate in GHG emissions in the United States, it was able to set reduction targets consistent with climate stabilization needs without negative impacts on economic growth. Results of the Arizona Climate Action Plan are available at www.climatestrategies.us.

\textsuperscript{22} Center for Climate Strategies, supra note 5 (compiling scale-up analysis of state leadership actions).
\textsuperscript{23} See Fourth IPCC Report, WGIII, supra note 8, at 31-33 (providing details on international GHG plans).
two approaches are merged in a comprehensive plan or portfolio of actions, tailored to the jurisdiction. Through this common framework, jurisdictions may engage in joint or reciprocal actions that capture geographic efficiencies. Due to the wide scope of policy actions within the plans, this approach requires an effective governance structure across sectors as well as horizontal and vertical levels of government.

**Estimated Scale Up of State Climate Plan Actions**

<table>
<thead>
<tr>
<th>Potential US 2020</th>
<th>% National GHG Plan Reductions</th>
<th>MMTCO₂e</th>
<th>Cost/ Cost Savings per Ton GHG Removed</th>
<th>Estimated Total Savings Below BAU 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Efficiency and Conservation* [RCI]</td>
<td>29%</td>
<td>1035</td>
<td>-$13/ton</td>
<td>12%</td>
</tr>
<tr>
<td>Clean and Renewable Energy** [ES]</td>
<td>29%</td>
<td>1020</td>
<td>$6/ton</td>
<td>12%</td>
</tr>
<tr>
<td>Transportation and Land Use Efficiency</td>
<td>16%</td>
<td>575</td>
<td>$13/ton</td>
<td>6%</td>
</tr>
<tr>
<td>Agriculture and Forestry Conservation, Waste Management &amp; Recycling</td>
<td>26%</td>
<td>933</td>
<td>$8/ton</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>3563</td>
<td>$3/ton</td>
<td>41%</td>
</tr>
</tbody>
</table>

* Includes efficiency in residential, commercial and industrial buildings as well as industrial process improvements.  
** Includes energy supply (improved conventional sources, renewables such as wind and solar) and demand management (e.g., reducing peak demand through pricing, etc.) programs.

IV. Past Federal Legislative Proposals Have Not Adequately Integrated State Climate Initiatives or Existing Mechanisms Available Under the CAA

As recently as 2008, none of the proposed federal bills introduced adopted the comprehensive portfolio approach. The bills failed to take advantage of the breadth of legal tools made available by the CAA or even to address how carbon dioxide and other GHGs will be integrated into that existing framework. New draft legislation is raising these issues more directly, but has not yet fully resolved them.

Past bills’ almost exclusive focus on emissions trading was driven by a number of assumptions that are founded upon the successful record of the acid deposition program, and other experiences, suggesting a cap and trade program may be able to achieve reductions at minimal cost. These successes contributed to the popular belief that “command and control” regulation found in the major environmental laws enacted between 1969 and 1990 does not work as well in terms of cost containment, and assumes the next generation of pollution controls need to be managed via cap and trade instead. This conclusion is based on the assumptions that (1) the measures employed in environmental laws before cap and trade do not achieve success in a cost-effective manner because they do not rely solely upon price based instruments, (2) the acid rain cap and trade program applicable to a single, highly regulated sector can readily be applied to emissions of GHGs across the whole economy, and (3) the cap and trade program was successful as a “stand alone” venture.

None of these assumptions ultimately hold up fully under scrutiny. Most notably, while the acid deposition cap and trade program established by Subchapter IV-A of the CAA succeeded in achieving very significant reductions of acid rain precursors at a minimal cost, its success was due to a number of unique circumstances. While a number of the characteristics of GHG emissions suggest that a trading system may be an effective tool to address climate change, there are important limitations that militate towards limiting its use to particular circumstances. An effective trading program requires careful consideration of where such a program can be effective. Many of the conditions that made the acid deposition cap and trade program so successful do not apply to GHG emissions.

Secondly, the assumptions that economic growth is primarily tied to energy prices, and that energy prices will necessarily rise due to climate policy, are incorrect. State actions provide substantial evidence on the economic benefits of climate mitigation. Recent state plans show net economic savings from the combined effects of specific, proven actions at the state level when combined with long-term transitions

24. Center for Climate Strategies, supra note 5.  
25. For example, the United Kingdom relies upon a “climate levy” imposing a tax on GHG emissions while allowing industry to opt into a cap in return for reduced tax rates. This is supplemented by policies covering transportation, residential and commercial activities. See Fourth IPCC Report, WGIII, supra note 8, at 28-29.  
26. S. 280, 110th Cong. (2007); S. 309, 110th Cong. (2007); S. 485, 110th Cong. (2007); H.R. 620, 110th Cong. (2007); H.R. 1590, 110th Cong. (2007). These bills are directed at all major sectors, as well as each of the six major GHGs covered by the Kyoto Protocol.
toward new technologies, systems and practices. The economic performance of these plans is driven both by the new energy economy and by opportunities to save energy and diversify supply through a host of reform actions. Today, energy prices are significantly higher than a decade ago when international treaty negotiations peaked, and they are widely expected to increase for the indefinite future.

V. The Existing CAA Provides a Possible Approach to Governance and Full Policy Coverage

Given the record of accomplishment among the states, it appears that successful climate change mitigation requires strong goals and diverse solutions that must involve all sectors and levels of government. The United States must construct a new approach based on a model that effectively incorporates the successful models used by states but also provides federal consistency. The following matrix illustrates the need to integrate economic sectors, policy instruments and levels of government into one holistic system.

<table>
<thead>
<tr>
<th>Economic Sector</th>
<th>Level of government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Supply</td>
<td>Local State Regional National</td>
</tr>
<tr>
<td>Residential, Commercial, Industrial</td>
<td></td>
</tr>
<tr>
<td>Transportation and Land Use</td>
<td></td>
</tr>
<tr>
<td>Agriculture and Forestry</td>
<td></td>
</tr>
<tr>
<td>Waste Management</td>
<td></td>
</tr>
</tbody>
</table>

With the Supreme Court’s determination in Massachusetts v. EPA, there is little doubt that the regulatory construct for addressing climate change at the federal level will build upon the CAA. Because it is very unlikely that Congress will amend the law to remove environmental protections, the focus has necessarily shifted from question of whether there will be a federal response under the CAA to the question of how that response should best be managed and what amendments would be required to make the federal response appropriately integrated it with international, state and local efforts.

Under the existing provisions of the CAA, EPA can implement an effective governance structure for GHGs. Such an approach depends both upon a willing EPA and the development of new regulations, an already time-consuming process that could face further delays incident to legal challenges. An effective approach could, potentially, consist of the following elements:

1. The establishment of an NAAQS at a level sufficient to prevent “dangerous anthropogenic climate change,”
2. The establishment of short, intermediate and long term emissions reduction goals necessary to maintain the NAAQS with corresponding sectoral and state elements;
3. National and regional performance or technology-based limits and cap and trade programs for some sectors;
4. SIPs designating additional measures necessary to achieve the emissions reduction goals;
5. Provisions to effectively engage individuals in implementation; and
6. Establishment of United States as a serious actor in the international community.

Equally importantly, provisions may be needed to integrate these measures and require specific EPA action and to reduce delays is desirable. Amending the CAA to incorporate specific directives and deadlines with the specificity normally found in regulations would be one mechanism to minimize delays and uncertainty. States could also contribute by adopting consistent deadlines and plans that could serve as SIPs if and when a federal system is in place. Cooperative ventures, already underway by several states, could also provide Congress with a model for action.

A. National Ambient Air Quality Standards for GHGs

The first step towards a coordinated federal approach under the CAA would be the establishment of NAAQS. After listing an air pollutant under section 108, the EPA Administrator is required by section 109 of the CAA to establish primary NAAQS which, “allowing an adequate margin of safety, are requisite to protect the public health,” as well as secondary NAAQS “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.” Although significant scientific uncertainties make the establishment of NAAQS for GHGs difficult, scientists

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32. UNFCCC, art. 2, supra note 10.
are currently addressing the issue by determining what level of GHGs will prevent “dangerous anthropogenic” climate change. Information currently suggests that the threshold should be established at a level that would seek to keep atmospheric concentrations of carbon dioxide below 450 ppmv and concentrations of total GHGs below 500 ppmv in carbon dioxide equivalents. There are uncertainties concerning the establishment of NAAQS for GHGs that may be resolved with better scientific information. Similar uncertainties arise with respect to most NAAQS, however, and the standards for existing criteria pollutants are often modified as better information becomes available. Indeed, the CAA specifically contemplates this process by requiring that the EPA review air quality criteria and standards every five years and make revisions as warranted.38

Leaving it to the EPA to establish NAAQS administratively may entail substantial delays. Progress is better assured if Congress specifies a 500 ppmv GHG NAAQS, allowing this figure to be reevaluated and revised consistent with evolving science and international accords, as already provided for in the CAA. This approach is already taken by the many states that establish ambitious long-term reduction goals.39

B. Short, Intermediate, and Long-Term Emissions Reduction Goals

The CAA requires the adoption and implementation of SIPs to achieve and maintain the NAAQS. The statute gives states considerable flexibility in the choice of regulated sources as well as legal and policy tools, so long as the SIP is capable of achieving and maintaining the NAAQS.40

Some suggest that SIPs are not an appropriate legal tool for regulating GHGs.41 The reasoning underlying this distincion is flawed insofar as it is based on the nature of pollutants regulated under the SIP mechanism in the past, all of which tend to have localized effects. GHGs, by contrast, have a relatively uniform concentration throughout the atmosphere. Most areas will be in compliance with the NAAQS for GHGs when and if they are promulgated. GHGs mix rapidly in the atmosphere, and their health and welfare impacts arise from average concentrations. GHGs reside in the atmosphere for long periods of time.42 Consequently, establishment of NAAQS for GHGs will require somewhat different SIP implementation mechanisms than those used for other criteria pollutants. NAAQS could be implemented either under the existing CAA through the promulgation of regulations calling for regulation of GHGs, or through a statutory amendment mandating such an approach. Because of the nature of GHG emissions, it would be appropriate for the EPA to establish specific numeric emissions reduction goals on a national basis that are phased in over time and that are horizontally and vertically differentiated among states, sectors, and policy implementation mechanisms.

Maintenance of the NAAQS would therefore require the establishment of total emissions reduction goals with corresponding emissions caps. Such an emissions-based approach to SIPs could be accommodated within the current structure of the CAA. While an emissions cap approach appears appropriate for GHGs, what the reduction goals and caps will look like raises a number of questions. These relate to what the ultimate goals and caps should be, how a cap for the United States relates to international emissions, whether and how the reductions should be phased in, and how reduction goals and caps should be allocated among the states. Again, the experience of the states is instructive.

Any approach to determining an emissions reduction goal must start with what is necessary to stabilize worldwide emissions to maintain the NAAQS. Most sources concur that worldwide emissions must be reduced 50 to 85% by 2050,43 and many states set long term emissions goals based on that number.44 The United States, which only contains 5% of the world’s population, emits 22% of the world’s emissions.45 Consequently, the emissions reductions goal, if based upon the assumption that each person in the world is entitled to emit an equal increment of GHGs, would be in the range of 94% to 96%

Neither the 75% nor the 96% emissions reduction goal can be achieved without realistic intermediate benchmarks to regulate GHG emissions. Control of Emissions From New Highway Vehicles and Engines, 68 Fed. Reg. 52,922, 52,924 (Sept. 8, 2003) (stating that the NAAQS regime is ill-suited to address GHGs in relation to global climate change); Nordhaus, supra note 37, at 61 (“It is difficult to see how the SIP mechanism could be used to control global concentrations. It appears to be fundamentally ill-suited to the task.”).

37. See, e.g., James E. Hansen, Scientific Reticence and Sea Level Rise, 2 Envtl. Res. Letters 1, 6 (2007), available at http://arxiv.org/ftp/physics/papers/0703/0703220.pdf. The actual level is a function both of GHG concentrations and the impacts of aerosols that reflect radiance and have a cooling impact. We are currently at a level above 380 ppmv carbon dioxide, while the total GHG levels, in carbon dioxide equivalents are about 50 ppmv higher, or 430 ppmv, but the aerosols create a negative (cooling) effect that roughly cancels out the effect of the non-carbon dioxide GHGs. Scientists do not expect that aerosols will increase and assuming they remain roughly the same a total GHG level of 500 ppmv would have the equivalent warming potential of the 450 ppmv level believed to protect against “dangerous” anthropogenic climate change. Interview with Gavin A. Schmidt, Goddard Institute for Space Studies, and Michael Mann, Pennsylvania State University (May 1, 2007).


39. See Cal. Exec. Order No. S-3-05 (June 1, 2005) (stating a goal to reduce emissions to 80% below 1990 levels by 2050); Comm. on the Env’t and the NE. Int’l, Comm. on Energy of the Conference of New England Governors and Eastern Canadian Premiers Climate Change Action Plan 2001, at 6-7 (Aug. 28, 2001) [hereinafter NEG/ECP Climate Change Action Plan] (providing the long term goals of the New England Governors and Eastern Canadian Premiers). Both of these reports are based upon the goal of stabilizing and then reducing emissions to prevent dangerous anthropogenic climate change.


41. In denying the petition to regulate GHG emissions at issue in Massachusetts v. EPA, the EPA suggested that the CAA was an inappropriate mechanism to
and immediate reduction incentives to guide the market. Intermediate reduction goals are particularly important. Because carbon dioxide accumulates, less radical reductions will be required later on if there are earlier reductions. For this reason, many states are facing the difficult question of what degree of reduction will ultimately be required for the United States and adopt intermediate goals appropriate for any of the most significant national reduction goals. Intermediate national goals could also be based upon those set forth in the NEG/ECP Climate Action Plan. Alternatively, goals could be derived by scaling up the various intermediate goals originating from the state planning processes. This latter approach would make it possible for states to coordinate their actions by specifying common goals, even before Congress acts.

There is sufficient flexibility built into the CAA to allow long-term and intermediate emissions reduction goals to be established administratively by regulation. While this is possible from a legal perspective, it may not be desirable from a policy perspective. Decisions of this importance arguably carry added political legitimacy if made by Congress. Specific targets and timetables will provide the framework around which U.S. actions to address climate change will be undertaken, and on which all sectors in the U.S. economy may rely. Perhaps more importantly, EPA action could be delayed by litigation challenging its authority and its choices of limitations. The goals could be similar to those stated in the proposed bills. Even if goals are established by Congress, however, the EPA must still be authorized to reassess and modify these goals based on actual progress, new scientific developments, and new international agreements.

Long-term goals and planning are not only necessary to achieve the emissions reductions required, but also to assist industry. Many capital investment decisions require a long-term horizon. Many capital goods and buildings have minimum life spans of 20 years, and some have life spans ranging up to 50 years. Capital investment decisions also require long lead times. The establishment of long-term goals, with opportunities to adjust in light of emerging science and actual experience, will enable capital investment decisions to be based on a long-term horizon.

After long-term and intermediate national emissions reductions goals are established, it is necessary to allocate those emissions reductions among states and sectors of the economy. This requires consideration of (1) the emissions reductions that will be achieved through national technology-based standards under the CAA, (2) emissions reductions that will be required under sectoral cap-and-trade systems, and (3) characteristics of the states that will govern the establishment of emissions reduction goals for state implementation plans. Finally, mechanisms must be established to modify these goals in light of actual experience. These mechanisms will be described below.

C. National Technology-Based Limits and Cap-and-Trade Programs for Some Sectors

Under the CAA, uniform national or multi-state performance or technology-based limitations or sectoral cap-and-trade programs will be established as primary tools for emissions reductions in industrial and mobile source sectors, where feasible and appropriate. Massachusetts v. EPA makes the promulgation of mobile source emissions standards under section 202 of the CAA appear likely at some point. Technology-based standards are particularly appropriate for mobile sources, for which cap and trade programs are difficult to administer. While California already has emissions standards, EPA recently denied California’s application for an exemption from preemption. Although the new Administration has ordered reconsideration of this decision, to prevent its recurrence, amendments to the CAA could require the adoption of standards at least as stringent as California’s, or require that the EPA adopt new federal standards on par with other major industrialized nations every five years.

46. The question of the ultimate emissions allocations among nations has bedeviled international negotiations and this issue is responsible, at least in part, for the United States failure to participate. The United States has taken the position that it is entitled to its existing “baseline” while developing nations contend that emissions should be allocated per capita or even that developing nations should have a greater share of future emissions, due to the fact that past emissions by the developed world have caused a significant part of the current problem. See Donald A. Brown, American Heat: Ethical Problems with the United States’ Response to Global Warming 203-221 (2002) (discussing international allocation issues); Donald Brown et al., White Paper on the Ethical Dimensions of Climate Change, 19-23 (2006), available at http://rockethics.psu.edu/climate/edcc-whitepaper.pdf (discussing issues for allocation among nations).

47. This approach is taken by California, which sets the goal of 80% reductions from 1990 levels by 2050. Cal. Exec. Order No. S-3-05 (June 1, 2005). The legislature endorsed this order in the California Global Warming Solutions Act of 2006, which set the goal of achieving 1990 emission levels by 2020, and which maintained and continued emission reductions beyond 2020. Cal. Health & Safety §§38550, 38551(b). This goal is endorsed by a growing number of college and university presidents. See Julian Dautremont et al., A Call for Climate Leadership: Progress and Opportunities in Addressing the Defining Challenge of Our Time (2007), available at www.presidentsclimatecommitment.org/pdf/climate_leadership.pdf.


49. Factors to consider in establishing uniform national or multi-state performance or technology-based limits include the economic importance of national or multi-state standards, the potential emissions reductions to be achieved through uniform performance or technology-based standards, the extent to which the creation of such standards would augment or disrupt existing state efforts to control emissions from the same class of sources, and the extent to which there are already performance or technology-based standards for other pollutants from the same sources under the CAA. The last factor would include technology-based standards for mobile sources and some stationary sources under sections 202 and 111 of the CAA and electric power sector cap and trade programs. Some of the bills before Congress would force the adoption of such standards for GHGs.


52. Federal corporate average fuel economy standards are significantly weaker than GHG emissions standards applicable in most major foreign automobile markets. See FENG AN & AMANDA SAUER, PEW CTR. ON GLOBAL CLIMATE CHANGE,
Two of the comprehensive bills before Congress in early 2007 would have required immediate adoption of the California standards and the adoption of more stringent motor vehicle regulations every five years.\(^5\) Congress could also consider repealing preemption of state mobile source standards, or broadening the California exemption from preemption to allow any state or group of states to establish more stringent mobile source standards if they exceed a certain population threshold.\(^5\)

In lieu of technology-based standards, sectoral cap-and-trade programs similar to the acid deposition cap-and-trade program could be established for the utility sector and most major industrial sectors.\(^5\) For GHG emissions, it makes most sense for caps to be established representing the emissions reductions needed to achieve climate stability through 2100, dropping in predictable amounts consistent with nationwide emissions reductions. Although the caps could initially be specified through 2100, provisions would need to be included for reassessment in light of new science and actual experience. In the establishment of caps and the allocation of credits, it would be important to include assurances that early reducers be given full credit for their reductions. This could be accomplished by treating their early reductions as “banked.”

Although a cap-and-trade program could be established under existing authority in the Clean Air Act, amendments to the CAA specifying caps and their reductions may be desirable. Changes in the law would remove any question regarding authority and could more precisely guide the EPA in implementation. Designation of long-term goals might be more readily achieved through statutory amendment. California and the states participating in the Regional Greenhouse Gas Initiative (RGGI) already initiated efforts to establish similar sectoral programs.\(^5\) Although state cap-and-trade programs deal solely with initial caps and do not include long-term reduction requirements, the existing model could be employed to establish long-term caps.

For some industrial sources, a cap-and-trade program may not be desirable. Such a program may be cumbersome for industries with many small emissions sources because of its needs for effective monitoring and reporting. For these sources, performance or technology-based standards could be established. While such standards might be established for new or modified sources under section 111 of the CAA, a different model establishing standards applicable to new and existing sources, similar to that employed in some cases by the Clean Water Act, may\(^5\) be more appropriate. While this approach might be employed by the EPA under section 110 of the CAA, as in the case of the CAIR,\(^5\) statutory amendments requiring such an approach and requiring periodic adjustments of these limitations could be included in CAA amendments.

Finally, any amendments to the CAA should necessarily address the problems created by NSR requirements and the need to integrate GHG emissions reductions with those for other pollutants. Delaying the requirements for conventional pollutants or otherwise authorizing states and the EPA to relax the requirements of NSR for projects replacing high emission technologies with low emission technologies would enhance efficiency and pollution reduction.\(^6\)

D. State Implementation Plans and Measures for Integration and Adjustment

All remaining emissions reductions could, potentially, be achieved through a reinvented version of state implementation plans (SIPs). Much as state climate plans do today, SIPs could address crucial demand reduction measures for utilities, other stationary sources, and mobile sources. SIPs could also independently address other sectors not directly addressed by the cap-and-trade and technology-based standards, such as commercial and residential heating, cooling, and hot water.\(^6\) The use of SIPs provides a higher level of certainty that legal and policy measures would be vertically integrated at federal, state, and local levels in an effective manner.

Establishment of the emissions reductions goals for SIPs requires calculations of (1) demand reductions for the utility sector, (2) reductions required to achieve the necessary national emissions reductions after consideration of reductions that will be achieved after application of technology-based standards and sectoral cap and trade programs, and (3) allocation of emissions reductions among the various

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54. Mobile sources represent an exception to the general rule against federal preemption of more protective state standards under the CAA. 42 U.S.C. §7416, ELR Stat. CAA §116.
55. Section 110(a)(2)(D) of the CAA, 42 U.S.C. §7410(a)(2)(D), authorizes states to include cap and trade programs in their state implementation plans. The EPA promulgated regulations establishing a trading mechanism in lieu of technology-based standards for the utility industry for a variety of pollutants in the Clean Air Interstate Rule (CAIR). See 70 Fed. Reg. 25162 (May 12, 2005).
60. For example, coal-fired utilities may spend hundreds of millions of dollars installing scrubbers to remove sulfur dioxide and nitrogen oxides, while increasing energy consumption and thus increasing GHG emissions. Abandoning a conventional coal-fired plant to a combined cycle coal gasification plant would increase efficiency while reducing emissions of all pollutants.
61. It may be possible to create federal technology standards for some of these sectors, but a statutory amendment would likely be required, similar to the “area source” mechanism for hazardous air pollutants under §112 of the CAA. 42 U.S.C. §7412(k), ELR Stat. CAA §112(k).
states. Some of these calculations will follow from the measures employed and others will best be informed from state experience. Current state climate action plans provide an excellent starting point for these allocation decisions by providing estimates of emissions reductions from specific, sector based actions agreed upon through rigorous stakeholder negotiation.

It would be useful for Congress to require that GHG SIPs draw, at least initially, from the same menu of legal and policy tools. State actions to date tend to be based on energy efficiency and conservation, clean and renewable energy, transportation and land use efficiency, agriculture and forestry conservation, waste management, and industrial processes. Within each category is a standard set of legal and policy tools. Many of these tools, in turn, are specific to particular economic sectors like electricity generation and transportation. This menu would put in front of any state the most comprehensive list of available choices that is available anywhere. It would thus help states choose the most appropriate and cost-effective options needed to meet emissions reductions targets. The “other” category is intended to include legal and policy choices that are not specifically identified on the menu but can nonetheless contribute to reduction of the state’s GHG emissions. The menu should, in turn, be periodically revised to specifically identify new legal and policy tools and otherwise reflect new experience and learning.

The “efficiency and conservation” category will necessarily include the calculation of electricity demand reduction measures. The electric utility sector will not achieve the proportional reductions required to stabilize carbon dioxide levels without reduction in demand, which continues to grow. Many of the measures that can be employed to reduce demand from the electric utility industry are best employed at the state and local level. These include measures such as green building, replacement of traffic lights and indoor lighting with LED bulbs and compact fluorescents, and other measures traditionally managed by state and local governments. Scaling up the demand reduction measures developed by state plans could be used to calculate emissions reductions in the utility sector that can be achieved through demand reduction. This scaling up could then be used to generate both the demand reduction goals for SIPs and the percentage of the emissions reductions necessary to meet utility caps.

Integration of demand reduction requirements into SIPs and integration of utility emissions reductions requirements with demand requirements could be accomplished through the promulgation of regulations under existing authority provided by the CAA. Statutory amendments specifying these procedures would facilitate implementation. Amendments would also be required to provide a more appropriate sanctioning mechanism for states failing to meet their demand reduction requirements. The elimination of transportation funding or the promulgation of a federal implementation plan as provided by the current version of the CAA are not appropriately targeted sanctions. A measure such as a standby federal tax on the sale of electricity sold within non-complying states or incentives such as providing the states with revenues from cap-and-trade auctions would provide more effective means to achieve compliance.

Before establishing emissions reductions goals for SIPs, it is necessary to calculate the emissions reductions that will be required. This will require calculation of the emissions reductions that will be achieved through emissions caps and technology-based standards, and then subtracting that number from the overall emissions reductions required across the United States.

The final calculation would involve allocation of the nationwide emissions reduction goals among the states. This will undoubtedly become the subject of much negotiation. Here, state experience can also provide instruction. Allocations must consider factors such as population and projected growth rates. The results of the state planning efforts suggest that very similar results can be achieved in states with dramatically different growth rates, so that this task will be less difficult than it might seem, whether the allocation is made via rulemaking or by Congressional action. Finally, the phasing of reductions will also be necessary. Overall reductions and appropriate caps should be phased to achieve reductions needed through 2100. These reductions could be paralleled by reductions in caps, with demand reduction measures allocated pro rata. It will likely be feasible to project technology-based emissions through 2020, so that the SIPs would be required to plan for necessary reductions to meet a 2020 goal with a roadmap to achieve the ultimate 2100 goal. Plan revisions and reallocation of goals by the EPA could be required periodically (five or ten years), so that a plan required in 2010 would need to achieve the reductions for 2025, one required in 2020 would need to achieve the reductions for 2035, and so forth.

Regardless of whether Congress mandates these changes or the EPA acts independently to create the system described above, additional measures would be desirable to assure that some of the problems with existing SIP implementation do not arise. For example, a measure for approval by third party certifiers might be provided. 66

62. A more detailed list of categories, as well as legal and policy tools, is contained in Robert B. McKinstry Jr. & Thomas D. Peterson, The Implications of the New “Old” Federalism in Climate-Change Legislation: How to Function in a Global Marketplace When States Take the Lead, 20 PAC. GLOBAL BUS. & DEV. L.J. 61, 72-80 (2007) (listing over 260 options for GHG reduction by states). 63. For example, two tools within the category of “clean and renewable energy” for the electricity generation sector are renewable energy portfolio standards and tax credits.

64. For example, if the initial goal requires a 10% reduction and half of those reductions can be achieved through the application of uniform federal standards, the SIPs will need to develop measures that account for the remaining half or 5% reduction.

65. The states with completed plans have varying economic growth rates. The business-as-usual extrapolation of emissions growth and the emissions reductions identified for 2020 and 2040 provide realistic individual goals for other states. These SIPs may be simpler to implement than existing SIPs because they will be based on emissions reductions rather than local air quality and would consequently not require considerations such as air dispersion modeling. Although consideration of demand changes from other states would be necessary, interference resulting from GHG emissions from other states would not create the same difficulties present under the current SIP process.
E. Provisions to Effectively Engage Individuals in Implementation

Any comprehensive effort must fully engage citizens and consumers in its implementation. The CAA contains a variety of provisions for citizen participation in its enforcement and implementation, including citizen suits. Beyond the availability of these mechanisms, the precision with which Congress directs agency and nongovernmental activities will have considerable bearing on the speed with which any legislation is implemented, and on the effectiveness of citizens in influencing its implementation. Fully engaging individuals also means fully engaging consumers by providing them with information, incentives, and the means necessary to make energy conservation and renewable energy both attractive and available.

F. Relation to International Actions

Unilateral action by the United States will not suffice to prevent “dangerous anthropogenic climate change.” Reductions by the rest of the developed and developing world are required to achieve the 85% reduction in emissions required. But proactive and unilateral action by the United States is a necessary prerequisite to international re-engagement, just as unilateral action by individual states has been necessary to induce federal action. In the UNFCCC, the United States and the rest of the developed nations of the world agreed to take the lead in reducing emissions. By failing to ratify the Kyoto Protocol, the United States undercut its ability to negotiate reductions required by the developing world. Without a significant unilateral commitment to meet this obligation, the United States will be unable to establish the bona fides necessary to induce others to achieve the obligations required.

VI. Conclusion

The task facing the United States in reducing GHG emissions to levels necessary to avoid dangerous interference with the climate is significant. The challenge is so great and so complex that no single tool will likely be able to do the job by itself, even if cap and trade or GHG emissions taxes. Still, there are a portfolio of legal and policy tools that, taken together, could result in the necessary emissions reductions even as GDP grows, new technology is developed, and the United States is freed from foreign energy dependence. The approach suggested here builds on those tools, but expands their range and purpose. Although this specific approach may not ultimately be adopted, something very similar is needed to craft an effective strategy for reducing GHG emissions. Harnessing the creativity and local knowledge of state governments is a crucial part of any effective approach. With the Supreme Court’s decision in Massachusetts v. EPA, it is clear that the CAA should be the vehicle for a federal approach. And by following the states, the United States can overcome the international impasse, lead by example, and regain its status as an international environmental leader.

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68. UNFCCC, supra note 10.
69. This is the implication of the "tit for tat" strategy in the Prisoners' Dilemma game in game theory. According to game theory, parties will cooperate in most instances, but if one fails to cooperate or reneges on a deal, as the United States did, the other party will retaliate and withdraw cooperation. However, if the first party reinitiates cooperation, the other will quickly forgive. See Robert Axelrod, THE EVOLUTION OF COOPERATION xi-xii (1984). U.S. action is, under this scenario, a necessary prerequisite for resumption of cooperation.
Comment on Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors

by Robert D. Brenner and Anna Marie Wood

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In the article Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors,1 Peterson, McKinstry, and Dernbach2 demonstrate the importance of a comprehensive approach to climate change policy in the United States. The article notes that climate change legislation proposed thus far fails to integrate state and local climate change programs with national and international efforts. The authors also assert that the proposals do not ensure integration across all economic sectors of the full range of measures and programs needed to achieve significant greenhouse gas (GHG) reductions. The authors suggest that, either through federal legislation or rulemaking, a comprehensive approach should be established to address governance issues and signal an effective commitment by the United States to address climate change.

The authors propose an approach to address this shortcoming using a combination of elements under the Clean Air Act (CAA),3 the most significant of which include: (1) the establishment of a national ambient air quality standard (NAAQS) for greenhouse gasses with short, intermediate and long term reduction goals implemented through state implementation plans (SIPs); (2) national and regional performance or technology based standards and cap-and-trade programs for some sectors; and (3) SIPs that include measures necessary to achieve additional GHG reductions.

Between the time the authors wrote their article and the publication of this comment, much has changed in a relatively short time period. In July, EPA issued an advanced notice of proposed rulemaking concerning the regulation of greenhouse gas emissions under the CAA (ANPR).4 The ANPR examined and solicited public comment on the CAA provisions that could be used to reduce emissions of GHGs, and the interconnection among these authorities. Then, in

2. Peterson, McKinstry & Dernbach are collectively referred to as “the authors” in this Comment.
November, the presidential election led to a change in political leadership in the United States. President Obama pledged to make addressing climate change a priority of his Administration. EPA Administrator Lisa Jackson recently stated that in addition to working closely with Congress on climate change legislation, EPA will move forward to comply with the Court’s decision in Massachusetts v. EPA6 “recognizing EPA’s obligation to address climate change under the Clean Air Act.” The new Administration is actively engaged in assessing mechanisms to address GHGs under the CAA. The science is compelling that swift action is necessary and a full and diverse portfolio of approaches and enabling technologies are needed to achieve significant GHG reductions.

The authors are correct concerning the importance of a coordinated and comprehensive approach to address climate change in the United States. However, to address this shortcoming through the establishment of a NAAQS for GHGs presents a number of technical, practical and legal difficulties. Conversely, several of the elements noted in the article present meaningful opportunities for EPA to begin addressing GHGs in the near term.

In considering the use of the CAA to address GHGs, we identify important factors to guide our thinking. We then briefly discuss the characteristics of GHGs, their impact on climate change and whether a NAAQS for GHGs is practical. We conclude by discussing the potential of other elements noted in the article to mitigate GHGs and important additional issues that should also be addressed.

I. Considerations for Using the Clean Air Act to Address Greenhouse Gases

In using the CAA to address GHGs, we believe it is useful to consider certain factors. First and foremost, reductions achieved using the CAA should be cost-effective and complement opportunities for greater reductions in the future, either through regulation or legislation. Because swift action is imperative, meaningful GHG reductions should be pursued as soon as possible and provide flexibility to meet requirements through market-based approaches, to the extent possible from a practical and legal perspective. The use of available technology and incentives for the development of new and emerging game-changing technologies to mitigate GHGs should also be encouraged.

The implications of controlling GHGs under the CAA for the New Source Review (NSR) and Title V permitting programs must be addressed. To facilitate capital planning and maximize operational and economic efficiencies, the interface between controlling GHGs and anticipated measures to address other traditional pollutants should also be considered.

Climate change legislation should also harmonize actions taken under the CAA with approaches contained in the legislation to minimize delay and uncertainty, build upon mitigation measures and programs in place and provide a tool to address governance and the integration of national, state, tribal and local climate change programs. For example, ensuring a common methodology and metric for GHG trading undertaken through international, national, state and regional GHG programs is important. Additionally, a planning mechanism similar to the SIP process that facilitates the coordination of GHG mitigation measures and measures progress towards achieving GHG reductions is also needed. Careful attention and consideration of public acceptance and participation and the states’ roles in implementing the range of measures needed to achieve significant reductions in GHGs are critical to the execution of a successful mitigation strategy.

The authors note a number of these factors in their article. With the foregoing factors in mind, below we examine the authors’ proposal to develop a comprehensive approach to climate policy in the United States.

II. The Characteristics of Greenhouse Gases and Climate Change: Potential Challenges in Establishing and Implementing a NAAQS for GHGs

The authors discuss the role the establishment of a NAAQS and SIPs could play as an initial step to develop a coordinated federal approach under the CAA. A concentration-based NAAQS is suggested (e.g., 450 ppmv for CO₂ or 500 ppmv for all GHGs based on CO₂ equivalents) coupled with the use of SIPs to establish short, intermediate and long-term emission reduction goals and implement additional measures. The authors acknowledge that significant scientific uncertainties present challenges for the establishment of a NAAQS but note that inherent in the NAAQS process are opportunities to resolve such uncertainties as science evolves during future NAAQS review cycles. The use of a NAAQS, however, presents a number of challenges that, even with more scientific certainty, may not be easily remedied in the absence of legislation.

EPA discussed the scientific, legal and program design challenges associated with establishing and implementing a GHG NAAQS in the ANPR.7 As compared to the criteria pollutants for which NAAQS already exist, GHGs are global, rather than local or regional in nature and have a much longer residence time. Moreover, the effects of climate change may be unequally distributed around the world. Significant GHG contributions from outside the United States would affect the ability of states to meet or maintain a NAAQS. Thus, if worldwide emissions continued to increase, global concentrations would also increase despite

7. See Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44477-86 (discussing the many challenges inherent in the establishment and implementation of a GHG NAAQS).
the best efforts of the United States. As a result, meeting or maintaining over the long term a NAAQS for GHGs might not be possible in the absence of worldwide action to stabilize GHG concentrations.

Given the nature of GHGs and the effects of climate change, a number of issues must be addressed. For example, would a NAAQS be established for CO₂ or all GHGs? Under the NAAQS, should EPA set a primary, public health-based or secondary, public welfare-based standard for GHGs, or both? Should the form of the NAAQS be concentration-based and if so, should the level be above current GHG concentrations in the atmosphere, or at or below current levels, in view of the statutory setting language? Would states be required to adopt measures to achieve or maintain GHG levels meeting the NAAQS regardless of foreign emissions, or could an alternative approach be defined for determining the states’ emission reduction requirements? What would be the costs of implementation? How would states be protected from unintended consequences (e.g., triggering the general requirements for nonattainment area plans) if they are considered nonattainment for the NAAQS because of contributions of GHGs from outside the United States?

States use SIPs as the primary tool to attain, maintain and enforce NAAQSs. A SIP contains the regulations, control requirements and other measures used by a state to meet its NAAQS obligations. SIPs are not typically designed to implement a national control program or strategy for global pollutants. Instead, SIPs are used to address criteria pollutants that are local or regional in nature. The actions taken by each state should enable the state to achieve or maintain the NAAQS for the local or regional pollutant. Conversely, the ability of a state to meet or maintain a concentration-based NAAQS for GHGs is inextricably linked to contributions of GHGs from sources in other states and outside the United States for which the state has limited, if any, ability to control.

The authors’ proposal, however, of a SIP-like planning tool to coordinate and integrate the full range of measures at the federal, local, state and tribal levels is a good one. As noted by the authors, the tool should be applied to achieve vertical integration and harmonization of state, local and tribal climate change programs with national and international efforts and ensure horizontal integration of measures and programs undertaken across all economic sectors. Even in the absence of an agreed-upon national emissions reduction target for GHGs, all levels of government should be collaborating and coordinating on strategies, plans and measures to achieve significant GHG reductions.

III. The Role of National and Regional Performance or Technology-Based Standards and Cap-and-Trade

The authors acknowledge the importance of taking near-term actions to mitigate GHGs without delay and point to performance or technology-based standards and the use of cap-and-trade where appropriate, as the primary tools for emission reductions in certain sectors. We agree.

In the wake of the Supreme Court’s decision in Massachusetts v. EPA and the change in political leadership, EPA is poised to address a number of issues that could result in a framework to begin addressing GHGs. If undertaken, the actions could provide the initial building blocks of a national strategy using the CAA and ultimately serve as a bridge to more comprehensive federal GHG legislation in the future. The authors correctly note that the new Administration has directed EPA to reconsider the California waiver. Moreover, in response to the FY 2008 Consolidation Appropriations Act, EPA proposed a rule that requires mandatory reporting of GHG emissions from large sources in the United States. EPA also proposed endangerment and cause-or-contribute findings for greenhouse gases under the CAA to address the endangerment issues raised in Massachusetts v. EPA.

In addition, proposals to reduce GHGs from light-duty vehicles and for New Source Performance Standards in certain key sectors could initiate the process of reducing GHGs. Section 111 provides flexibility to tailor emission standards to address GHG emissions. For example, as the ANPR notes, EPA has the authority to select the source categories for which to establish standards and could focus on GHG standards for source categories that emit the largest amount of GHGs, e.g., electric generating units, refineries and cement plants. It also states that the flexibility to include emissions trading and phased in declining performance standards based on current technology and/or two-phased or multi-phased performance standards for the future may also exist. The ability to implement a cap-and-trade approach for any given sector will require a careful reading of the specific text and context set forth in §111 and Title II of the CAA, and relevant case law. To the extent possible, cap-and-trade programs should be used to achieve greater emissions reductions, maximize flexibility and reduce costs for sources required to make GHG reductions. The actions EPA could take, coupled with those already underway by state, local and tribal governments, could result in significant GHG reductions.

8. Id. at 44485.
9. See 42 U.S.C.A. §7410, ELR S 40075 (providing the process by which states are required to adopt and implement a plan for meeting NAAQS set by the EPA); Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44420-47 (discussing various alternatives for reducing the GHG emissions of light-duty vehicles).
10. Id.
11. Id.
IV. Additional Issues to Consider

The authors note that any amendments to the CAA should address the New Source Review (NSR) program\(^\text{17}\) requirements and the integration of GHG emissions reductions with reductions required for other pollutants. The authors do not address, however, what could be done to the NSR and Title V Programs in the interim, particularly if GHGs become pollutants subject to regulation under the CAA prior to GHG legislation. Under these circumstances, the construction or modification of a major source with the potential to emit 100 or 250 tons per year of CO\(_2\) or GHGs could become subject to the Prevention of Significant Deterioration Program and Title V requirements immediately.\(^\text{18}\)

As noted in the ANPR, the mass CO\(_2\) emissions from many source types are orders of magnitude greater than other criteria pollutants.\(^\text{19}\) The existing thresholds for traditional pollutants capture a relatively limited number of new and modified sources each year. Applying the same size thresholds to CO\(_2\) and possibly all GHGs would pull in a very large number of sources.\(^\text{20}\) State, local and tribal permitting authorities may not have the capacity or resources to issue the increased number of permits. Similarly, the burden would also increase for the Title V program.\(^\text{21}\) For these reasons, the ANPR solicits comment on phasing in NSR and Title V requirements to address large sources in the near term and for additional sources over time. This mechanism could be used (and given available resources, may be administratively necessary) to manage the transition during the interim period. If Congress passes climate change legislation, it may want to consider other options to address NSR and Title V for GHGs.

V. Conclusion

We applaud and support the authors’ call to action and their goal of establishing a comprehensive approach to climate change policy in the United States. Their article provides valuable insights and proposals concerning the integration of existing state climate mitigation plans with a new national strategy. We agree that close coordination, collaboration and integration of the full range of mitigation measures is needed; a comprehensive plan could be developed by all levels of government voluntarily. Alternatively, Congress could decide to provide greater certainty through a set of planning requirements.

Using a concentration-based GHG NAAQS to serve as the basis for a comprehensive strategy, however, is fraught with scientific, technical and practical challenges. Instead, other policy tools noted by the authors (e.g., performance and technology-based standards, and cap-and-trade) appear to provide a more direct and near-term path to begin to mitigate GHGs under the CAA and could serve as a bridge to more comprehensive legislation to achieve the deep reductions in GHGs that will be necessary.

\(^\text{17.}\) The term “New Source Review” refers to both the attainment and nonattainment provisions of the NSR Program.
\(^\text{19.}\) Id.
\(^\text{20.}\) Id.
\(^\text{21.}\) Id. at 44511.
Comment on Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors

by Michael B. Gerrard

The article by Thomas D. Peterson, Robert B. McKinstry Jr., and John C. Dernbach (PM&D) has two central insights: (1) Any serious national effort to control emissions of greenhouse gases (GHGs) must continue to leave important roles to the states; and (2) It would be a mistake to put too many eggs in the cap-and-trade basket. A portfolio approach that utilizes many different regulatory techniques is important.

I certainly agree with PM&D about these insights, and they are correct that much of the current Congressional debate has given too little attention to these considerations. However, I have serious reservations about PM&D’s proposal to use the mechanism of the national ambient air quality standards (NAAQS) and state implementation plans (SIPs) as the way to give states the vital roles they deserve. I believe there are alternative methods that would be superior.

I. Importance of Continued State Action

During the eight long years of the presidency of George W. Bush, the states played a role similar to that of the isolated centers of learning in Europe during the medieval period. While the forces in power not only stalled progress but attempted to spread a paralytic poison, some of the hinterlands developed their own thriving centers of thought and innovation. In this way, A.D. 1001-1008 and A.D. 2001-2008 have something in common.

During the latter period, the states were not only laboratories of democracy—some of them were full-scale production facilities. California was in front, as it often is, with its Global Warming Solutions Act, A.B. 32; its Pavley Law, mandating stringent air quality standards for motor vehicles (if Washington would only get out of the way); and its application of the California Environmental Quality Act to GHGs. In the northeastern and mid-Atlantic states, the Regional Greenhouse Gas Initiative (RGGI) led the way with the first U.S. cap-and-trade program for GHGs. Several states pioneered with renewable portfolio standards for their electric utilities, and with all manner of other innovations, many of which are now being studied for incorporation into a federal program. The reports of the climate change task forces created in many of the states are a treasure trove of ideas and proposals.

PM&D are absolutely right that a federal cap-and-trade program will not in itself be sufficient to achieve the necessary emissions reductions. The form that the seemingly inevitable program will take is still uncertain, but it is unlikely to thoroughly cover certain sectors of the economy that play important roles in the GHG picture, notably buildings and agriculture. Those sectors are more naturally regulated (if at all) at the state and local levels.

4. For information on RGGI, see Pew Center on Global Climate Change, Regional Greenhouse Gas Initiative (RGGI), http://www.pewclimate.org/what_s_being_done/in_the_states/rggi/ (last visited May 31, 2009).
5. For examples of renewable portfolio standards, see Pew Ctr. on Global Climate Change, Climate Change 101: State Action 3 fig.2 (2009).
II. National Ambient Air Quality Standards

Having said that, I do not believe that the best way to foster state action is to adopt NAAQS for GHGs and then require states to develop and implement SIPs.

First of all, NAAQS seems to be an unnecessary but cumbersome step on the way to state plans. The underlying idea of the NAAQS/SIP architecture is that the areas of the country where NAAQS are exceeded would be required to undertake special measures to attain the standards. EPA determines the attainment status of each air quality control region for each criteria pollutant; and the states prepare SIPs, subject to federal approval, to move the nonattainment regions into attainment. But GHGs, especially carbon dioxide, are so thoroughly mixed in the atmosphere that every air quality control region in the country will be either in attainment or nonattainment, depending only on where the NAAQS is set. Thus we lose the central role of NAAQS in helping to determine which areas need improvement and which do not.

Moreover, the Clean Air Act envisions ongoing monitoring to see how each air quality control region is doing in achieving or maintaining attainment. This is intended as a feedback loop; as regions succeed in improving their air quality, they are rewarded by being subject to less stringent requirements. But no region’s own actions alone will have a discernable effect on the airborne levels of carbon dioxide in that region; those levels are determined by the cumulative actions of all the countries on the planet.

Determination of where to set NAAQS would be a thorny issue for EPA. PM&D suggest 500 ppmv in carbon dioxide equivalents. We are now slightly above 380 ppmv in carbon dioxide. As PM&D acknowledge, some major voices, led by Dr. James Hansen of NASA, argue that 350 ppmv of carbon dioxide is necessary. Whether the number is above or below 380 ppmv carbon dioxide makes all the difference in the attainment status of each air quality control region.

The attainment status of a locality also determines what technology standard applies to stationary sources in the locality. In attainment areas, it is lowest achievable emission rate (LAER). In nonattainment areas, it is best available control technology (BACT); in nonattainment areas, it is lowest achievable emission rate (LAER). Here too, this distinction makes no sense in the GHG context. To pick the most prominent technology, EPA will need to determine whether new coal-fired power plants will have to incorporate carbon capture and sequestration (CCS), and CCS may or may not be deemed to be BACT or LAER; but that determination will not be related to whether a particular plant is in an attainment or a nonattainment region.

Thus I believe the NAAQS step is unproductive for this process and should be skipped altogether.

III. State Implementation Plans

The next step proposed by PM&D is the preparation of SIPs. There is an appeal in requiring each state to develop its own plan to reduce GHG emissions. However, PM&D’s suggestion that each state be allocated a share of the nation’s GHG reduction burden is fraught with difficulty. PM&D suggest that this allocation “will undoubtedly become the subject of much negotiation,” and that “[a]llocations must consider factors such as population and projected growth rates.”

To return to the medieval analogy, I think this is an invitation to another Hundred Years’ War. Every state will be able to make a compelling case why it should have a low burden. Some states will cite their economic distress; others, their existing strong mass transit system, or their land use patterns that make mass transit impossible. If the decision is thrown to Congress, one might expect the outcome to more closely reflect the relative political power of individual members of the House and the Senate than the physical and economic attributes of each state. Occasionally Congress punts difficult decisions to independent appointed bodies, such as the Defense Base Closure and Realignment Commission (BRAC), which had the politically impossible task of deciding which military bases to close. But at least BRAC was given criteria to apply; it is not at all clear what criteria would be established for allocation of state GHG reduction mandates. For example, I have difficulty imagining how one would quantify the relative obligations of Delaware and North Dakota, states with similar populations but almost nothing else in common economically or geographically.

The SIP approach also invites considerable difficulties with respect to emissions leakage. Much of the electricity used in California is generated in Arizona and Nevada; which state’s SIP is responsible for reducing this electricity generation and use? Which state is responsible for reducing motor vehicle use, when there is a central city at the core but commuters arrive from more than one state (I am thinking here of New York, Washington, D.C., Philadelphia, and Chicago)? Answers can be devised to these questions, but they rob the state allocation process of some of the purity that might be apparent on first look.

If the NAAQS framework is preserved in conjunction with SIPs, then, at least the way the Clean Air Act is currently structured, SIPs for nonattainment areas must contain a long list of items. Among them are the adoption of all Reasonably Available Control Measures; provisions for Reasonable Future...
ther Progress; “general conformity” and “transportation conformity” provisions; and (impossibly, depending on where the NAAQS is set) attainment of NAAQS within five years of the effective date of the nonattainment designation (or ten years if EPA makes certain findings).  

IV. Alternative Approach to State Role

Though the Clean Air Act’s current SIP mechanism may not work, I agree with PM&D that a federal GHG system should preserve an important role for the states. This might be done through an opt-in system, which I describe below. The two questions to be addressed are:

1) How does a state get into the system?

2) What does a state get in return?

As to the first question, a state might be eligible if it adopted certain items from a menu of potential action items. Some of these items might become obsolete if the federal program establishes them on a national level, but surely some will survive. The menu might include a renewable portfolio standard, an energy efficiency portfolio standard, a California-level motor vehicle emissions standard, a low-carbon fuel standard; stringent standards for energy efficiency in buildings, forest preservation programs, and sustainable agriculture programs. These are just a few examples of what could be a long list. PM&D have listed many possible actions in their discussion of possible portfolios. The items on the menu would need to be weighted so that a given level or rate of GHG reduction would be achieved.

States that are eligible to opt into the system might then be entitled to a portion of the proceeds from the national sale of GHG emissions allowances. They might also be entitled to some flexibility structuring how they meet other requirements of the new law. For example, if the new law has technology standards for certain kinds of facilities, perhaps a state that has earned the opt-in designation could excuse some facilities from the standards or give them more time to comply. (Care would have to be exercised that this did not lead to environmental justice problems by allowing the excessive emissions of non-GHG pollutants that have adverse local impacts.)

The Clean Air Act, the Clean Water Act, and other federal environmental programs have many success stories based on technology standards, fuels controls, and other command-and-control strategies. A federal GHG law could do well by adopting a number of such strategies, but states might enjoy the ability to relax some of these command-and-control mandates in exchange for other actions that achieve comparable GHG reductions.

V. Conclusion

Regardless of the mechanisms that are ultimately adopted, PM&D have made a major contribution in highlighting the importance of continued state action and authority. In the legislative battles that are in our immediate future, we should recognize the central role that the states can play, and we should be slow to adopt provisions that could unduly pre-empt this role.

Comment on Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors

by Gary S. Guzy

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In marking the one year anniversary of the U.S. Supreme Court’s decision in Massachusetts v. EPA,1 in April 2007, then-Chair of the House Energy and Commerce Committee John Dingell argued that developing trends—without the adoption of rationalizing comprehensive federal climate legislation—would lead to a “glorious mess.”2 He was referring to the potential combination facing businesses of U.S. Environmental Protection Agency (EPA) piecemeal climate regulations, emerging state and regional programs, and the consequences of continuing litigation pursuing a wide variety of legal theories that could impose liabilities for greenhouse gas emissions. Are we able to find a path out of that mess?

Peterson et al. (the authors) set forth a wonderfully laudatory goal of leveraging and integrating state strategies, economic sectors, and policy instruments to create a robust regulatory platform for addressing climate change. Yet, several of the central weapons they seek to deploy, such as the Clean Air Act’s national ambient air quality standards (NAAQS) and state implementation planning process, clearly are not neat fits for this challenge. These approaches raise three kinds of concerns: can they practically be administered or accomplished; are they politically attainable; and in the end, would they provide sufficient tools to accomplish this task.

Current Clean Air Act provisions and emerging state programs at best serve as an important backstop to comprehensive congressional action to redress global warming, not as a necessarily essential component of it. One wonders whether, in pursuing the strategy set out by the authors, they might instead exacerbate the very glorious mess envisioned by Congressman Dingell, as compared to other tools that are available to take on this challenge.

One must question the political practicality of the solution envisioned. Many of the approaches examined by the authors would themselves require targeted and deeply detailed congressional action. These steps would require at least as broad, and arguably even greater, a measure of congressional support as comprehensive cap-and-trade climate legislation, given their highly detailed nature.

The centerpiece for a robust and effective policy response to climate change is most likely to be economy-wide cap-and-trade legislation that also fully addresses, integrates, and resolves existing Clean Air Act authorities. Otherwise, our approach will have neither the operational clarity nor the level of political buy-in that will be necessary to move an effective legislative response forward. A comprehensive cap-and-trade program is essential to incenting and deploying new technology. Neither targeted source control nor sectoral cap-and-trade programs would provide the broad-based incentives for the development of solutions that are necessary to address the scale of the greenhouse gas climate problem.

Similarly, a critical part of the climate solution must be supplied by robust, functioning, efficient markets that provide the means to deploy capital and encourage technology solutions. Simply weaving together existing state and regional trading programs would not provide two of the essential elements for making these markets a success. First, they would not, in themselves, provide either the depth or sufficient liquidity to promote adequate levels of trading.

the other hand, these markets should not be given free reign to operate on their own. Rigorous market oversight, designed to provide a level of transparency, integrity, and confidence in these markets, is also a critical component of their success. It is hard to imagine how that level of oversight could be supplied at the state level; rather, a carefully constructed federal program is necessary to ensure that a market accomplishes its environmental objectives and that participants have the confidence to partake in a robust fashion.

Despite this concern, it is important to recognize the significance of state activities as a backstop for inadequate federal action. Likewise, many of the features of federal legislation derive from pilots created by the states over the last several years. States should be encouraged to continue to serve as laboratories for innovation and should retain a role as a backstop in the event a federal scheme ultimately does not go far enough.

The authors’ fundamental tenant, that it is possible to set scientific goals at the same time as the science can—and is even encouraged to—continue to develop, is an important insight. The Clean Air Act NAAQS process has been uniquely successful in this regard. Likewise, the authors importantly recognize the significance of congressional action in some fashion in setting or ratifying the scientific basis of the fundamental emissions reduction targets, so as to provide political buy-in, long-range business planning certainty, and to help avoid state-by-state rulemaking litigation. Yet, that critical insight appears to be at tension with the multi-pronged and more disparate approach envisioned in the rest of this Article.

In envisioning complex systems, few things are likely to rival an attempt to apply the state implementation plan (SIP) process of implementing NAAQS to greenhouse gases. This challenge should not be underestimated. Certainly the SIP process is capable of accounting for extraneous contributions of pollutants, such as in the interstate transport provisions. But it is difficult to imagine Congress itself developing state-by-state goals or calculating and parceling out the appropriate compliance component derived from utility demand reduction state-by-state, as the authors suggest. There is no reason to think, as the authors also seem to argue, that it would be much faster or that it would root governmental action any more firmly in science to have Congress itself establish NAAQS. And if it is hard to imagine the current Congress digging into the details of state-based compliance programs for either maintaining or attaining a standard in the future, it is perhaps even more difficult to picture Congress developing the necessary detailed information and understanding to legislate firm granular backstops where EPA fails to take adequate action—akin to the highly proscriptive soft and hard hammers of the Resource Conservation and Recovery Act—as suggested by the authors.

A comprehensive cap-and-trade program looks far simpler in the end than these multiple state-based efforts. Combining such an approach with targeted source regulations, building on, for example, possible Title II findings regarding motor vehicles, is perhaps within reach and could be tremendously effective at combining firm action with cost effective compliance flexibilities. Likewise, there are also areas where states are uniquely qualified to contribute to a broad-based solution, particularly in charting plans to promote adaptation to manage unavoidable climate impacts.

Perhaps the greatest concern with the authors’ approach is that it could, in the end, divert pressure for comprehensive federal legislation, rather than build consensus for it. The recently introduced discussion draft by Chairmen Waxman and Markey, the American Clean Energy and Security Act of 2009, presents a viable approach to comprehensive cap-and-trade legislation that reconciles state and targeted source reduction efforts. That proposal pragmatically suspends state activities, recognizing that it will take concentrated and broad-based effort and support to enact and implement the kind of comprehensive program necessary to address effectively the greenhouse gas challenge. It may take time to iron out the details, but state programs still serve as a critical long-term backstop and potential laboratory of experimentation.

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Comment on Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors

by Raymond B. Ludwiszewski and Charles H. Haake

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Addressing global climate change through the regulation of greenhouse gas emissions is an issue of broad national and international concern, touching on many facets of this country’s environmental and economic well-being. Crafting a workable solution will require a coordinated and comprehensive approach, for only such an approach will maximize the environmental benefits of regulation while not imposing undue costs on already strained American businesses and consumers. Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors by Peterson, McKinstry, and Dernbach highlights two threshold questions that policymakers face in addressing greenhouse gas regulation. First, given that federal action to address greenhouse gas emissions is a virtual certainty, what role should be left for states and localities to play? Second, in crafting a federal response, do the existing authorities under the Clean Air Act provide a workable framework for greenhouse gas regulation, or is a new regulatory regime required?

On the first question, Peterson et al. suggest that states will continue to play a significant role in shaping climate change regulation in conjunction with federal action. The authors’ conclusion, however, begs the threshold question of which level of government—the state governments or the federal government—is best suited to enact requirements addressing climate change that balance the various competing interests and reach the optimal level of stringency.

The proper allocation of regulatory responsibility between the state and federal governments has been described by one commenter as the pursuit of the best “jurisdictional match.” Often this match is not made, thus resulting in a “jurisdictional mismatch”—that is, “[t]he federal government regulates in many areas where there is no clear analytical basis for federal regulation,” while “[a]t the same time, the federal government is relatively absent where a stronger federal presence could be justified.” This commenter concludes, correctly in our opinion, that “[g]lobal climate change policy is a prime example of increasing state activity where federal action would provide for a greater jurisdictional match.”

There are many reasons why the federal government is best suited to regulate greenhouse gas emissions. Deciding the optimum level of regulation entails an analysis of the relative costs and benefits of more stringent regulations; in other words, regulations will be set at the level where the benefits of additional stringency is outweighed by the additional costs to society. In the case of greenhouse gas emissions, often neither the costs nor the benefits of a state regulation are fully internalized within the regulating state, thus making that state

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4. Id. at 132.
5. Id. at 175.
the suboptimal body to weigh the costs and benefits of regulation. This is especially true for mobile sources like cars and trucks, as exemplified by California’s motor vehicle emissions program,6 which Peterson et al. reference in their article. For these sources, the “consumer states,” such as California and New York, which seek to impose limits on the level of greenhouse gases emitted from vehicles sold in those states, are different from the “producer states,” such as Michigan and Tennessee. Thus, the costs of motor vehicle emissions regulations are borne disproportionately by states other than the ones setting the regulations.

This result might be justifiable where the regulating state internalizes the benefit of its regulatory program. For example, California has traditionally regulated the emissions of pollutants that cause localized smog, such as hydrocarbons and oxides of nitrogen. Such regulations have provided the citizens of California (and the other states that have adopted the California program) with significant tangible benefits in the form of improvements in the quality of their air. Those states therefore have been able to fully internalize the benefits of their regulations. However, greenhouse gases like carbon dioxide do not stay localized, but rather disperse evenly throughout the atmosphere. Accordingly, carbon dioxide emissions in California have no greater impact on the climate in California than they do elsewhere in the world.7 For this reason, California has recognized that its proposed motor vehicle greenhouse gas regulations will not by themselves result in a release makes much difference. A molecule of CO2 from a cooking fire in Yellowstone or India is subject to the same laws of chemistry and physics in the atmosphere as a molecule from the exhaust pipe of a high-performance auto in Indiana or Europe.8 Comm. on SCI., ENG’G., & PUB. POLICY, NAT’L ACADEMY OF SCI., POLICY IMPAC-


6. Section 209(a) of the Clean Air Act preempts states from adopting or enforcing motor vehicle greenhouse gas regulations. 42 U.S.C. §7543(a), ELR STAT. CAA §209(a). However, §209(b) allows the state of California to receive a waiver of Clean Air Act preemption if the conditions of that statute are met. Id. §7543(b). Other states may then adopt the California program under §177 of the Act. Id. §7507.


8. The National Academy of Sciences asserts that:

“[G]reenhouse gases released anywhere in the world disperse rapidly in the global atmosphere. Neither the location of release nor the activity resulting in a release makes much difference. A molecule of CO2 from a cooking fire in Yellowstone or India is subject to the same laws of chemistry and physics in the atmosphere as a molecule from the exhaust pipe of a high-performance auto in Indiana or Europe.”


all of the relevant considerations—such as the anticipated environmental benefits, the costs borne by consumers, and the regulatory burdens imposed on industry.

The second question identified is how the federal government should structure its regulatory response to climate change. Peterson et al. are correct that, in light of the Supreme Court’s decision in Massachusetts v. EPA,10 federal action seems inevitable and that the Clean Air Act is the most likely avenue for such action. However, we fear that the authors overstate the extent to which the Clean Air Act provides a workable framework for regulating greenhouse gases like carbon dioxide. As former EPA Administrator Stephen L. Johnson stated in the Agency’s Advance Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions Under the Clean Air Act (ANPR),11 “the Clean Air Act, an outdated law originally enacted to control regional pollutants that cause direct health effects, is ill suited for the task of regulating global greenhouse gases.”12 This sentiment was echoed by the heads of the Departments of Agriculture, Commerce, Transportation, and Energy, who, in a very unusual move, published their opposition to regulating carbon dioxide under the Clean Air Act in the Federal Register along with the ANPR.13 From the other side of the political spectrum, Congressman John Dingell, then-Chairman of the House Energy and Commerce Committee, put it best when he said that the likely result of regulating carbon dioxide under the Clean Air Act would be a “a glorious mess.”14

As Peterson et al. point out, there are other sections of the Clean Air Act that contain “endangerment” language that is very similar to that construed by the Supreme Court in Massachusetts. Once EPA determines that carbon dioxide triggers an endangerment when emitted from a tailpipe, it is very difficult to understand why it does not trigger a similar finding when emitted from other regulated sources. However, applying these other provisions to carbon dioxide would be unworkable and demonstrates that the Act is not well-suited to regulating carbon dioxide.15

For example, one such section identified by Peterson et al. is §108, which governs the creation and attainment of national ambient air quality standards (NAAQS).16 These standards, or more stringent standards adopted by the states, are implemented through federally approved state implementation plans (SIPs). State and regional compliance with

12. Id. at 44355.
13. Id. at 44356-78.
15. Id. (statement of Raymond B. Ludwiszewski, partner, Gibson, Dunn & Crutcher LLP).
16. Peterson et al., supra note 1, at 10717.
NAAQS requirements is judged from the perspective of pollutant concentration in the ambient air. For traditional criteria pollutants, compliance with NAAQS depends in large part on local conditions such as local emissions, prevailing air flow conditions, and topography. If an area is a nonattainment area, it may be required to implement strict limits on emissions of the nonattainment pollutants in an effort to meet NAAQS concentrations.

This regulatory construct makes little sense in the context of greenhouse gas emissions. Because greenhouse gases disperse globally, it would be impossible for EPA to distinguish attainment from nonattainment areas for any greenhouse gas NAAQS. If NAAQS for greenhouse gases is set at a level below the current global atmospheric concentration, then EPA would be required to list all states as nonattainment areas. Under this scenario, a state could never achieve attainment status with its own efforts; rather, the ability of states to reach attainment would depend on the willingness not only of other states, but also of nations around the globe, to reduce their greenhouse gas emissions. Alternatively, if EPA set the greenhouse gas NAAQS at the current atmospheric concentrations, states would have to offset all new emissions—both from within their own borders, as well as far away venues like India and China—in their SIPs. Neither of these scenarios makes much sense.

Regulating greenhouse gases under the Clean Air Act would also trigger the new source review (NSR) program, which requires preconstruction review and permitting for major emitting facilities.17 The term “major emitting facility” is defined in the statute as a source that has the potential to emit at least 250 tons per year of a regulated pollutant or, if included on EPA’s select list of source categories, at least 100 tons per year of a regulated pollutant.18 Although the 100 to 250 tons per year levels of traditional pollutants is a threshold that generally limits permit requirements to large stationary sources, like electric utilities, chemical plants, and refineries, that threshold is not set high enough to capture only major stationary sources of the carbon dioxide. Rather, the 250 tons per year threshold will dramatically expand the number of facilities that would be forced to undergo the arduous preconstruction permitting process. Office and apartment buildings, hotels, enclosed shopping malls, large retail stores, warehouses, college buildings, and hospitals could become subject to the Clean Air Act permitting process for the first time. For example, the average office building in New York City emits 20 pounds of carbon dioxide per square foot. This average would indicate that any building over 25,000 square feet would be a major stationary source. Applying this threshold, EPA estimates that the number of sources subject to the NSR requirements would increase by 10 fold, and that the agency would have to process 2,000 to 3,000 permits per year.19 The notion that a landowner would have to engage climate scientists and emissions experts and develop air emissions studies and models in order to satisfy the requirements of NSR permitting program before being able to build a small office building or medical facility illustrates the inappropriateness of existing Clean Air Act programs to regulate greenhouse gases.

Both the current Administration and the new Congress have set climate change as their top environmental priority. Congressional leaders have signaled that they hope to have draft legislation out of committee by Labor Day, while the new EPA is working on complying with the mandate from Massachusetts v. EPA. As these initiatives move forward, it is incumbent that all sectors of the federal government work together on a coordinated national approach to climate change that properly balances all of the costs against all of the benefits. Doing so will require either new legislation or amendments to the Clean Air Act that specifically address greenhouse gases and that vest primary regulatory responsibility with the federal government. Any other approach threatens to impose unnecessary costs on businesses and consumers at a time when the economy can ill-afford it.