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Section of Environment, Energy, and Resources**

Using the Tools On-Hand: Addressing Greenhouse Gases under the Clean Air Act*

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ABSTRACT

It is now settled law as set out in Massachusetts v. EPA, 549 U.S. 497 (2007), that the U.S. Environmental Protection Agency (EPA) has the authority, and the obligation, to regulate greenhouse gases as pollutants under the Clean Air Act. While the U.S. Supreme Court's opinion caused much Sturm und Drang in some quarters as an overreach of congressional intent, this paper shows that the legislative history of the Clean Air Act envisioned its application to global pollutants such as long-lived greenhouse gases. In addition, the application of the Clean Air Act's provisions can be, in some respects, less complex than its current application to "traditional" criteria air pollutants like ground-level ozone and fine particulate matter.

*This article represents the opinions and legal conclusions of its authors and not necessarily those of the Massachusetts Office of the Attorney General or the NESCAUM member states. Opinions of the Massachusetts Attorney General are formal documents rendered pursuant to specific statutory authority.

I. Legislative History of the Clean Air Act

In September 1969, the future Democratic New York Senator Daniel Patrick Moynihan, while serving in President Richard Nixon's administration as counselor for urban affairs, wrote in a White House memo of the potential dangers of rising carbon dioxide levels (a potent greenhouse gas): "This could increase the average temperature near the earth's surface by 7 degrees Fahrenheit. This in turn could raise the level of the sea by 10 feet. Goodbye New York. Goodbye Washington, for that matter." This memo drew special attention in July 2010 when it was released among 100,000 other documents by the Nixon Presidential Library, perhaps because the memo represents high-level government recognition of the potential adverse impacts of climate change at an earlier stage than many today might realize. The memo itself predates the existence of the U.S. Environmental Protection Agency (EPA) as well as the 1970 Clean Air Act (CAA). The 1970 CAA (since amended in 1977 and 1990) represents the modern incarnation of federal air pollution control, and initiated such major regulatory programs as the National Ambient Air Quality Standards (NAAQS), State Implementation Plans (SIPs), and New Source Performance Standards (NSPS).¹

Of special note are the 1977 Clean Air Act Amendments, which provide additional and more extensive direct evidence that Congress was already cognizant of several climate threats and expected EPA to take steps under the CAA to prevent them. The hearings, reports, and debates show that Congress was aware of and concerned about theories, not yet proven, that human activities might unintentionally affect the world climate, and thereby seriously endanger human welfare. Four examples stand out. First, Congress established uniform "precautionary" criteria for EPA action under the standard-setting provisions of the Act (*i.e.*, §§108, 111, 112, 202, 211, and 231). Pub. L. No. 95-95, §401. *See* House Report ("HR") No. 95-564 (Conference report), at 183-84; House Report No. 95-294, at 43-51. Second, Congress enacted a new Part B of Title I of the Clean Air Act, directing EPA to conduct studies on "the cumulative effect of all substances, practices, processes, and activities which may affect the stratosphere, especially ozone in the stratosphere," and authorizing EPA to adopt regulations if necessary to avoid any endangerment to public health and welfare resulting from such effects. Pub. L. No. 95-95, §126. *See* HR95-564 at 147; Senate Report No. 95-127, at 60-64; HR95-294, at 94-103. Third, Congress enacted a new Part C of Title I, elaborating requirements to prevent significant deterioration of air quality in regions of the country that are in attainment of the NAAQS, and to improve visibility in national parks. Pub. L. No. 95-95 §127. *See* HR95-564, at 148; HR95-294, at 103-141. Fourth, Congress revised the definition of "air pollutant" to clarify EPA's jurisdiction over radioactive materials, and directed EPA to take action with respect to four theretofore unregulated pollutants and with respect to fine particulates. Pub. L. No. 95-95, §§120, 301, 403(a). *See* HR95-564 at 141, 184; HR95-294, at 36-43, 337-39. In each of these four examples, Congress expected EPA to study the problem and to take precautionary action with respect to it as necessary. In particular, the legislative history for the 1977 Amendments demonstrates Congress' intention that EPA not restrict itself to addressing acute risks, but that it must also address foreseeable chronic and long-term risks to public health and welfare, including the effects of greenhouse gases (GHGs) on the global climate.

Ozone Protection

In proposing and adopting the Ozone Protection provisions, Pub. L. No. 95-95, §126, enacting CAA §§150-59, Congress directed EPA to study the potential effects of changes in the

¹ U.S. EPA, *History of the Clean Air Act*, (December 19, 2008); available at http://www.epa.gov/air/caa/caa_history.html (accessed July 19, 2010).

stratosphere on climate, and if necessary to take regulatory action to address any risks found to be substantial. As stated in the House Report:

By using the phrase “stratosphere, especially ozone in the stratosphere” throughout section 107 of the bill [CAA §§150-59], the committee did intend to focus special attention on the potential ozone depletion problem. However, the committee also recognized the tremendous complexity of the stratosphere; the limited state of present knowledge about the effects of human activity on the stratosphere and the effect of stratospheric changes on the conditions essential for human survival, health, and well being; and the need to fashion a mechanism sufficiently broad and flexible to prevent or abate any serious stratospheric threat. *New information suggests that certain chemical reactions in the stratosphere may result in potentially serious climatic change without depleting ozone. The committee wishes to emphasize that any such threat to elements of the stratosphere other than ozone could be dealt with under the research and regulatory authorities of section 107.* HR95-294 at 103 (emphasis added).

The Amendments accordingly enacted CAA §157, which provided in material part:

If . . . in the Administrator’s judgment, *any substance, practice, process, or activity* may reasonably be anticipated to affect the stratosphere, especially ozone in the stratosphere, and such effect may reasonably be anticipated to endanger public health or welfare, the Administrator shall promptly promulgate regulations respecting the control of such substance, practice, process, or activity (emphasis added)

This provision remains in effect as CAA §615.

Prevention of Significant Deterioration

The 1970 Amendments established that one purpose of the Clean Air Act is “to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.” In August, 1971, however, EPA published guidelines that would allow states to permit additional source emissions in attainment areas as long as the area remained in attainment. The guidelines were struck down in *Sierra Club v. Ruckelshaus*, 344 F. Supp. 253 (D.D.C. 1972), *aff’d* per curiam, 4 ERC 1815 (D.C. Cir. 1972), *aff’d* by an equally divided Court, *sub nom. Fri v. Sierra Club*, 412 U.S. 541 (1973). Subsequently adopted regulations were also challenged, and litigation was still pending while the 1977 Amendments were under consideration in Congress.

As explained at length in the House Report,² the ambient air quality standards set by EPA pursuant to the 1970 Amendments did not adequately address risks to health and welfare from chronic or long term periodic exposure even to criteria pollutants. Congress thus envisioned the PSD program as a precautionary strategy for minimizing these risks and risks that were yet to be identified, by minimizing pollution from new sources in attainment areas. Among the risks identified in the House Report were “major modifications in weather and climate”:

Fine particulates and aerosols emitted from polluting sources threaten to bring about major modifications in weather and climate. A National Oceanic and Atmospheric Administration study (Weickmann and Peuschel, “Atmospheric

² These provisions originated in the House and were adopted in conference with minor modifications. HR95-564, at 148.

Aerosols: Residence Times, Retainment Factor and Climatic Effects,” January, 1973 p. 113) warns: “If we consider that the energy demand has increased with time drastically in the past with no limit in sight, then there can be little doubt that inadvertent weather modification on a scale large enough to affect man's well-being might soon become a reality.” Similarly, a National Academy of Sciences Report, (NAS, “Understanding Climate Change: A Program for Action,” September, 1974) states: “It is not primarily the advance of a major ice sheet over our farms and cities that we must fear. Rather, it is persistent changes of the temperature and rainfall in areas committed to agriculture use which are of more immediate concern. We know from experience that the world's food production is highly dependent on the occurrence of favorable weather conditions in the breadbasket areas during growing seasons.” (pp. 1-2) This report also expressed concern about increased CO [sic, probably CO₂] levels and aerosol levels as possible contributing factors to potential inadvertent weather changes. (pp. 59-63)

A policy of preventing significant deterioration of clear air resources which minimizes the impact of emissions of new industrial sources will help reduce possible major weather modifications such as increased acidity of rainfall, changes in amounts of rainfall and temperature changes. HR95-294, at 138 (emphasis added).

The Report concludes:

The committee recognized the strong need for a policy of preventing significant deterioration of air quality. The bases of such a policy include: health and welfare protection, economic and employment considerations, protection of States' rights and avoidance of interstate conflicts relating to air pollution, protection of air quality within unique national lands such as national parks, *and avoidance of unnecessary stratospheric and atmospheric modifications due to air pollution.* *Id.* at 105 (emphasis added).

Unregulated Pollutants

The legislative history of the 1977 Amendments also shows that Congress intended EPA to have plenary regulatory authority over *any* emissions, substances, or activities that might endanger public health or welfare by means of air pollution, in other words, authority broad enough to encompass climate change resulting from emissions into the ambient air or stratosphere.

Just as argued today by opponents of EPA authority to regulate GHGs under the Clean Air Act, likewise EPA argued in the hearings on the 1977 Amendments that it was without authority to address some environmental threats, including some types of radioactive materials and some products using halocarbons. Congress clarified the Act to erase any doubt on the matter.

For radioactive materials, Congress amended the definition of “air pollutant” to make it clear that all radiological materials are subject to EPA’s authority to the extent they are emitted into or enter the atmosphere, and directed EPA to determine within two years whether such materials should be listed as criteria pollutants under §108. Pub. L. No. 95-95, §120, *enacting* CAA §122. HR95-294, at 41; HR 95-564, at 41. The House Committee reasoned that EPA should take jurisdiction because “[f]irst, the Clean Air Act is the comprehensive vehicle for protection of the Nation's health from air pollution. In the committee's view, it is not appropriate to exempt

certain pollutants or certain sources from the comprehensive protections afforded by the Clean Air Act.” HR95-294, at 42.

Similarly, the 1970 Amendments, which enacted the new definition of “air pollutant” as “an air pollution agent or combination of such agents,” broadened the scope of the Act by adding “weather, visibility, and *climate*” to the definition of “welfare” (emphasis added). *See* Pub. L. 91-604, §15(a)(1), 84 Stat. 1710 (Dec. 31, 1970), reprinted in 1970 U.S.C.C.A.N. 1954, 1997.

For halocarbons, Congress expressly found that “there is some authority under existing law, to regulate certain substances, practices, processes, and activities which may affect the ozone in the stratosphere.” CAA §151(a)(5), as enacted by Pub. L. No. 95-95, §126. CAA §158 thus provided that enactment of the stratosphere and ozone protection provisions should not be construed to limit EPA’s authority under other provisions, in particular EPA’s emergency powers under CAA §303 and its authority under CAA §231 with respect to aircraft emission standards. By adopting the new provisions, Congress “intend[ed] to confer adequate authority to deal with *any* substance, practice, process, or activity which may reasonably be of concern” with regard to effects on the stratosphere. HR95-294, at 100 (emphasis added). Of course, this was the Supreme Court’s conclusion in *Massachusetts v. EPA*, based on the language of the Act. But since some opponents of EPA regulation still argue that the CAA was not designed to address climate change, it is worth taking the time to show that this authority was already in the CAA’s DNA in 1977.

Fine Particulates

During oversight hearings, Congress received information to the effect that the NAAQS for particulates, set by EPA in 1971, did not adequately deal with fine particulates. EPA testified in 1973 and 1975 that fine particulates were at least an order of magnitude more hazardous than larger particulates, because they remain suspended longer in the ambient air and penetrate more deeply into the lungs. Nevertheless, by 1977, EPA still had not adopted regulations to control fine particulates, and even reported to Congress that available studies did not provide an adequate basis for setting a new standard. HR95-294, at 337-38.

In response, the House proposed and Congress adopted a provision in the 1977 Amendments requiring EPA to complete its studies and report to Congress within 18 months. Congress proposed 18 months to coincide with the deadline for review of ambient air quality standards under a provision of the 1977 Amendments requiring EPA to review ambient air quality standards by December 31, 1980,³ expecting that EPA might conclude based on its studies that the NAAQS for particulates would have to be revised or supplemented to further control fine particulates.

In this context, the House Report also took note of studies suggesting that fine particulates might affect climate, and directed EPA to investigate and address that possibility as well:

Finally, the committee is aware of several articles and studies which have raised the possibility that fine particulate emissions could significantly modify the Earth's climate. It has been suggested that precipitation rates and distribution and temperature may be affected.³⁰ *The committee expects that special emphasis in this study will be placed on possible weather and climate modifications which may result from fine particulate emissions. The committee also anticipates that this aspect of the study will be coordinated with other agencies, such as CEQ, NOAA, and NASA, and considered in the standards revision process. As indicated in the discussion of section 107 of this bill [the stratosphere and ozone protection provisions], there can be no higher mission for Government than*

³ Pub. L. No. 95-95, §106, amending CAA §109.

assuring that man's activities will not threaten the life-sustaining conditions on which we all rely. HR95-294, at 339 (emphasis added).

n30 NAS, NRC, United States Committee for the Global Atmospheric Research Program. *Understanding Climatic Change: A Program for Action*, (September 1974 draft), p. 61; Weickmann and Pueschel, "Atmospheric Aerosols: Residence Times, Retainment Factor, and Climatic Effects." National Oceanic and Atmospheric Administration (Jan. 4, 1973). p. 117; ". . . in about 23 years, the aerosol production reaches the amount of the natural production and the atmospheric aerosol content may then have doubled. While this need not be alarming, it may nevertheless signal the beginning of global inadvertent weather modification."

In expressing its expectation that EPA would consider the risk of climate change in the "standards revision process," the Committee was indicating its belief that EPA could and should take the risk of climate change into account in setting or revising the NAAQS for particulates.

Congress thus believed that EPA had authority to control pollutants that endanger public welfare through climate change under three different CAA programs: ozone protection, prevention of significant deterioration, and the NAAQS. It remains to be said that the regulatory mechanism under two of those programs, ozone protection and NAAQS, share the same criteria for initiating regulatory action: EPA must act when in the Administrator's judgment, the emissions, processes or activities under scrutiny "may reasonably be anticipated to endanger public health or welfare." This is the "precautionary" standard formulated in the 1977 Amendments and applied by §401 of the Amendments to CAA §§108 (criteria pollutants), §111 (new source performance standards), §112 (hazardous air pollutants), §202 (mobile source emissions), §211 (fuels), and §231 (aircraft emissions), and by §126 of the Amendments to the newly adopted ozone protection provisions, CAA §157 in particular. Because the same criteria for action apply in all of these provisions,⁴ it follows that Congress's understanding regarding EPA's authority under the three programs is equally applicable to all.

II. How the Clean Air Act Can Work with Greenhouse Gases

In this section, we discuss how the Clean Air Act can be readily applied to the problem of climate change. With specific regard to the NAAQS-SIP process, it is in some respects much more simply applied to GHGs than for existing criteria pollutants. That is not to say that a better solution could not be legislated. However, the claim that the Clean Air Act is unworkable and that this "bad fit" is a reason not to regulate GHGs under the Act is simply unfounded. In particular, we address four arguments raised against the use of the Clean Air Act (specifically the NAAQS-SIP process) to address GHGs.⁵

The Difference Is with CFCs, Not GHGs

First, opponents argue that Congress did not intend the NAAQS-SIP process to deal with "global environmental risks." As support, they note that, for stratospheric ozone depletion, Congress devised a separate program, even though chlorofluorocarbons (CFCs) might appear to qualify for regulation as a criteria pollutant. They assert that because the ozone depletion problem is not specific to particular locations and because CFCs contribute to the problem wherever they are emitted, the NAAQS-SIP process is not appropriate. Similarly, if Congress had intended to authorize EPA to regulate GHGs, it would have established a separate program.

⁴ Congress adopted this provision specifically "to provide the same standard of proof for regulation of any air pollutant," among other reasons. HR95-294, at 50.

⁵ See, e.g., Lewis, M. Jr. *The Anti-Energy Litigation of the State Attorneys General: From Junk Science to Junk Law* (March 2003), <http://www.cei.org/gencon/025,03383.cfm> (accessed July 16, 2010).

This argument fails because there are distinct differences with GHGs. Congress adopted a separate program to deal with CFCs because it wanted to ban their manufacture, rather than regulate their emissions. That is something Congress cannot do in the case of the main GHG, carbon dioxide. While CFCs are a purposefully manufactured chemical not produced in significant quantity as a byproduct of other human activities, carbon dioxide is the other way around. Far more carbon dioxide is produced as the byproduct of fossil fuel combustion (e.g., transportation and power generation) than is purposefully manufactured. At present, there is no complete alternative to the burning of fossil fuels contributing to rising global carbon dioxide levels. Congress cannot apply the Stratospheric Ozone program model to carbon dioxide because it cannot ban the production of carbon dioxide; carbon dioxide emissions can only be reduced by regulating the numerous and diverse processes (sources) that produce it.

This characteristic of carbon dioxide as a GHG decisively distinguishes it from CFCs, and also demonstrates its essential similarity to criteria air pollutants such as ozone and particulate matter. In its own words, Congress devised the NAAQS-SIP process to deal with pollutants emitted into the ambient air by “numerous or diverse mobile or stationary sources.” Thus the characteristic that carbon dioxide has in common with ozone and particulate matter, for example – number or diversity of sources – is at the heart of the NAAQS-SIP scheme.

Criteria Air Pollutants Are Not Necessarily “Place-Specific”

Second, opponents argue the NAAQS-SIP process is designed to deal with local or regional pollution, and all the criteria pollutants are of that character in that they “vary locally and regionally in their ambient concentrations.” Thus, they claim, Congress envisioned criteria air pollutants as only those that cause or contribute to a localized or “place-specific” problem amenable to a “place-specific” solution.

It is incorrect, however, to assume that criteria air pollutants are all place-specific, and that the purpose of the NAAQS-SIP process is to deal with the problem of localized pollution. Congress did not specify such a “place-specific” requirement. By contrast, built into the Clean Air Act are provisions addressing the problem of transport between states and across international borders (*see, e.g.*, CAA §§110(a)(2)(D), 115, 126, 179B). The problem of transport is precisely that pollution is *not* localized: nonattainment can (and does) result from emissions across large upwind regions. And those statutory provisions provide great flexibility, as demonstrated by EPA’s ability to apply the NAAQS process to the problem of ground-level ozone.

Ground-level ozone (a criteria air pollutant) is a well documented example of transported air pollution under the Clean Air Act (and it also has a global component).⁶ As a result of work done by EPA and the Ozone Transport Assessment Group, EPA recognized in the mid-1990s that while ozone nonattainment appears to be a local problem, in reality a major cause of local nonattainment is due to contributions from broad regional transport: the eastern United States as a whole is subject to conditions conducive for the formation and movement of ozone and its precursors across large multi-state regions.

Thus, it would be more accurate to say that the criteria pollutants fall on a continuum from localized pollution (elemental lead, for example) to regional pollution (ozone and fine particulate matter), depending on the importance of transport. Lead nonattainment areas mainly span only parts of counties around one or a few large industrial emitters of lead pollution. On a larger scale, nonattainment for ozone and fine particulate matter is now being addressed through

⁶ See Fiore, A.M. *et al.*, *Background ozone over the United States in summer: Origin, trend, and contribution to pollution episodes*, J. Geophys. Res. 107 (D15), 4275, doi:10.1029/2001JD000982 (2002).

multistate regulatory programs, such as the NO_x SIP Call for ozone covering 20 eastern states⁷ and EPA's proposed air pollution Transport Rule for ozone and fine particulate matter that would include up to 31 eastern states.⁸ From this point of view, long-lived GHGs fit on the same continuum as the existing criteria pollutants.

Nonattainment or Attainment Everywhere Is Not a Barrier to Using the CAA

Because of their long residency times, GHGs are well mixed and relatively uniform throughout the atmosphere, and emissions anywhere in the world contribute to the problem everywhere. Because of this, many people have observed that – depending on the precise NAAQS levels that might be set – the entire country would presumably be in or out of attainment. But there is nothing odd or inappropriate about that result. Each state's attainment status would still be determined by whether the pollutants in the state's air exceeded dangerous levels.

A peculiarity of the GHG problem is that EPA could set the NAAQS at a level higher than current carbon dioxide concentrations, in which case the country as a whole would be in attainment even though it is emitting carbon dioxide at levels that will eventually push atmospheric concentrations over the NAAQS. States, however, must develop implementation plans that provide for “maintenance” of attainment and that do not interfere with maintenance of attainment elsewhere. *See North Carolina v. EPA*, 531 F.2d 896 (D.C. Cir. 2008). Although the NAAQS may be set at a level above current concentrations, the obligation to develop a plan that maintains attainment means that states must ensure atmospheric concentrations will stabilize at or below the NAAQS.

By providing for national standards on the one hand and local implementation and enforcement on the other, Congress leveraged scarce EPA enforcement resources and preserved and fostered state and local control over implementation and enforcement. Even though the local GHG problem is inseparable from the global problem, the need to regulate the innumerable individual sources (specifically in the context of carbon dioxide) that collectively cause the problem argues in favor of using the tools of the Clean Air Act, including the NAAQS-SIP process, as an appropriate regulatory response.

Furthermore, the very characteristics that make long-lived GHGs different from other criteria pollutants make the NAAQS-SIP process simpler to implement with respect to GHGs than with respect to other criteria pollutants. For example, for the most common GHG, carbon dioxide, the relative uniformity of its concentrations throughout the country means that it will be unnecessary to measure concentrations in every area. Therefore, there is no need for the expense of comprehensive state and local monitoring networks that are otherwise necessary for shorter-lived air pollutants whose concentrations can vary significantly over relatively small areas at times of their peak concentrations.

In addition, state and local authorities do not need to expend resources on performing area-specific modeling of the impact of emissions or emissions limitations on local pollution levels, as is the case in attainment demonstrations for current criteria pollutants like ground-level ozone and particulate matter. Essentially all of the technical work and modeling could be performed by EPA at the national level, leaving to state and local authorities the task of inventorying sources and implementing state and regional emissions limits at the source level, through permitting and enforcement.

Finally, precisely because carbon dioxide and other GHGs endanger public health and welfare in direct relation to their concentrations in the atmosphere (as distinguished from the level

⁷ Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, 63 Fed. Reg. 57,356 (October 27, 1998).

⁸ Federal Implementation Plans To Reduce Interstate Transport of Fine Particulate Matter and Ozone (Proposed Rule), 75 Fed. Reg. 45,210 (August 2, 2010).

of human exposure for example), and because many of them (e.g., carbon dioxide, methane, nitrous oxide) cannot simply be banned, like CFCs, almost any regulatory response must begin with a question that the NAAQS-SIP process was designed from the outset to answer: what is a safe level of GHGs in the atmosphere? Certainly in this respect the NAAQS-SIP process is a very good fit for the problem of global warming.

The NOx SIP Call provides a model for regulating carbon dioxide and other long-lived GHGs. Once EPA concluded that the regional transport of ozone and its precursors was contributing significantly to nonattainment in specific downwind locations, it developed an initiative to require region-wide reductions of NOx emissions so as to reduce regional ozone levels. Relying on sophisticated modeling, EPA was able to sort through the difficult causation issues and to assign each state a requisite share of the problem in order for the states individually and collectively to meet their compliance goals. EPA identified a set of relatively inexpensive controls that could yield sufficient reductions in NOx emissions and thereby substantially reduce regional ozone. EPA calculated these reductions and then translated them into state-by-state caps on NOx emissions. Once each state had its “budget,” it then could determine for itself how it would stay within the budget by implementing some package of controls on sources within its borders. EPA also established an optional region-wide emissions trading market for large electric generating units.

This same model could be put to use to regulate long-lived GHGs. As it developed a NAAQS for carbon dioxide and other long-lived GHGs, EPA would also determine (through modeling or other means) the level of emissions that would stabilize atmospheric concentrations at or below the NAAQS.⁹ Based on this information and source inventories in each state, EPA would establish state-by-state emission budgets.¹⁰ Then each state would select a package of source controls that would stay within its budget, would identify those controls in a SIP, and would implement the SIP through permitting and other measures. For large sources, and perhaps also for other source categories, EPA could establish a trading program that would enable emissions reductions to be achieved on a least-cost basis, as it did in the NOx SIP Call.¹¹

⁹ In the process of developing state budgets, EPA would have to determine a national GHG budget. This would no doubt be a contentious problem, but the Clean Air Act offers at least two models for making that determination: the determination under §110(a)(2)(D) of the extent to which upwind emissions contribute “significantly” to downwind nonattainment as EPA has previously done in various transport rules (e.g., NOx SIP Call), and the §179B determination of the “but for” contribution of international emissions to nonattainment in an area in the United States.

¹⁰ The allocation of emissions among the states could also be a contentious process, but here again the NOx SIP Call is a guide. In the SIP Call, EPA did not establish budgets based on current emissions inventories but instead built in 10 years of economic growth and established budgets based on projected emissions inventories, thereby to some extent allowing economic breathing room for each state. A GHG program would presumably provide for periodic rebalancing of budgets between states to take account of actual population and economic trends.

¹¹ Applying a regional cap-and-trade approach for GHGs is not inconsistent with the D.C. Circuit’s later ruling in *North Carolina v. EPA*, 531 F.2d 896 (D.C. Cir. 2008), that struck down EPA’s regional trading approach for nitrogen oxides and sulfur dioxide to address interstate transport contributions to nonattainment of revised ozone and fine particle national ambient air quality standards. In that case, the Court reasoned that there was a mismatch between existing transport provisions under §110 of the Act that target specific cuts from upwind states to address “significant contribution” to downwind states, and an emissions trading program designed to secure overall cuts in the aggregate. *See* 531 F.3d at 906-08. Whatever the import of that perceived mismatch with regard to ozone and fine particle pollutant transport, the problem vanishes with respect to long-lived GHGs. That is because transport of long-lived GHGs lacks a directional component: all states are both upwind/downwind of each other, and each contributes to the problem in all. Therefore, a state’s “significant contribution” is determined by the amount of that state’s

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Finally, critics of using the Clean Air Act to address the climate change problem also argue that if other nations do not do their part in reducing GHG emissions, then either the exercise will be futile (because GHG concentrations will continue to rise), or the states by themselves would have to reduce emissions enough to bring atmospheric concentrations worldwide below the NAAQS. This is wrong on both counts.

First, many other nations are actively working at reducing their GHG emissions. Indeed, the United States is a signatory of the United Nations Framework Convention on Climate Change (UNFCCC) under which, along with other nations, we have committed ourselves to the goal of reducing our domestic emissions. Certainly in calculating the national GHG budget, EPA may take into account emission reductions that can reasonably be expected to result from implementation of treaties and other control programs in effect in foreign countries, just as states now take into account federal and regional control measures that are planned but not yet implemented when they determine whether their SIP will attain and maintain a NAAQS.

The United States submits national communications under the UNFCCC documenting the actions the nation is taking to achieve the UNFCCC climate objectives. In its 2010 report, the United States Department of State provides a long list of climate measures being implemented at the state and local levels.¹² With specific regard to the Clean Air Act, the State Department cites the adoption of motor vehicle GHG emission standards in California, with subsequent adoption under CAA §177 by a number of other states, as an example of a domestic action taken to reduce GHGs consistent with its international obligations under the UNFCCC. Furthermore, the United States has in the past used its position in the world to convince other nations to meet international norms in other areas, particularly in the area of trade, and it could do so on climate change issues.

Second, it is not the case that the Clean Air Act would require states to reduce GHGs further to offset the failure of other nations to do so. The Act offers a model in §179B, which provides that states in nonattainment because of international transport are not required to offset that transport. Similarly, states in attainment of a GHG NAAQS would presumably have to demonstrate only measures designed to achieve their fair share of emissions reductions, not additional reductions to offset inaction by foreign countries.

III. Conclusion

In sum, the Clean Air Act, including the NAAQS-SIP process, is well suited to regulating GHGs. Although climate change is a global problem, there is ample opportunity and authority under the CAA to address it in the United States through control of the numerous and diverse GHG sources in every part of the country. The fact that atmospheric concentrations of GHGs are uniform and that GHG emissions anywhere will affect concentrations everywhere makes development of a regulatory program through CAA §§108-110 simpler, not more difficult. Moreover, such a program would mesh well with international programs already underway, and could help create incentives for additional programs.

emissions, without attention to other factors such as geographical location, direction of prevailing winds, and so forth. It follows that a state's participation in an emissions trading program that will in the aggregate achieve the requisite reductions for the participating states will by definition address the "significant contribution" of that state (regardless of precisely where the reductions occur).

¹² United States Department of State. *U.S. Climate Action Report 2010. Fifth National Communication of the United States of America under the United Nations Framework Convention on Climate Change*, Washington: Global Publishing Services, June 2010 (see Chapter 4, Table 4.2).