



# Clean Air After the CAIR Decision: Back to Square One?

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## Summary

On July 11, 2008, in *North Carolina v. EPA*, the U.S. Court of Appeals for the D.C. Circuit vacated what had been widely regarded as the Bush Administration's most significant environmental measure: the Clean Air Interstate Rule (CAIR). CAIR, promulgated in May 2005, establishes a regional cap-and-trade program for sulfur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO<sub>x</sub>) emissions from electric generating units (EGUs) in 28 eastern states and the District of Columbia. The court subsequently modified its decision: on December 23, 2008, it reversed itself by allowing CAIR to remain in effect until a new rule is promulgated by EPA.

From a policy standpoint, the court's July decision seriously undermined EPA's approach to clean air over the past eight years. CAIR was the lynchpin that held together the Bush Administration's strategy for attainment of the ozone and fine particulate National Ambient Air Quality Standards (NAAQS), for achieving reductions in mercury emissions from coal-fired powerplants, for addressing regional haze impacts from powerplants, and for responding to state petitions to control upwind sources of ozone and fine particulates under Section 126 of the Clean Air Act. As discussed in this report, the potential impact on communities attempting to achieve NAAQS and the impact on mercury emissions could be substantial, and has prompted some to call for congressional action to address the issue.

EPA's only short-term option, other than letting the decision stand, was to seek further judicial review, a step the agency took on September 24, 2008. This led to the aforementioned D.C. Circuit ruling allowing CAIR to remain in effect until replaced. But the court's July decision strongly suggests that there is no simple "fix" that will make CAIR acceptable to the court. This leaves EPA with three clear long-term options: (1) starting anew with a new strategy with respect to mitigating transported air pollution based on the decision; (2) allowing the states to sort out the issue through Section 126 petitions; and (3) seeking new legislation providing EPA with the statutory authority to implement either CAIR in some form, or an alternative.

For Congress, the decision raises several issues:

- Should Congress consider providing EPA with the authority to implement CAIR or other cost-based, market-oriented approaches to address NAAQS?
- Should Congress consider multi-pollutant legislation as a supplement or substitute for the current regulatory regime, at least for electric generating units?
- Should Congress consider a more comprehensive revision to the Clean Air Act to address the full scope of ozone and PM<sub>2.5</sub> NAAQS non-attainment and related issues, as well as mercury emissions from coal-fired powerplants, and emerging environmental issues such as climate change?

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## Introduction

On July 11, 2008, in *North Carolina v. EPA*,<sup>1</sup> the U.S. Court of Appeals for the D.C. Circuit vacated what was widely regarded as the Bush Administration's most significant environmental measure: the Clean Air Interstate Rule (CAIR).<sup>2</sup> CAIR, promulgated by EPA under the Clean Air Act (CAA)<sup>3</sup> in May 2005, established a regional cap-and-trade program for sulfur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO<sub>x</sub>) emissions from electric generating units (EGUs) in 28 eastern states and the District of Columbia.<sup>4</sup> The basic purpose of the rule was to protect downwind states from pollution generated in other states located upwind. Subsequently, on December 23, 2008, the court modified its decision to allow CAIR to remain in effect while EPA fashions a replacement rule.<sup>5</sup>

For SO<sub>2</sub>, the program reduces emission allowances in the affected upwind states 50% beginning in 2010 and 65% beginning in 2015.<sup>6</sup> SO<sub>2</sub> emissions cause acid precipitation, and SO<sub>2</sub> is also among the pollutants that form fine particles (PM<sub>2.5</sub>) in the atmosphere. Reducing PM<sub>2.5</sub> concentrations, as CAIR would do, was estimated by EPA to have significant health benefits, eliminating 13,000-22,000 premature deaths annually.

CAIR's NO<sub>x</sub> cap reduces emissions in the affected states by similar percentages: a first phase in 2009 lowers the emissions by 53% and a second phase, in 2015, is to achieve a 61% reduction compared to 2003 levels. NO<sub>x</sub> contributes to both PM<sub>2.5</sub> and to the formation of ground-level ozone. Ozone aggravates a variety of respiratory and cardiovascular conditions and causes as many as 2,300 premature deaths annually. Concentrations of the pollutant need to be reduced in most of the states east of the Mississippi, according to EPA.<sup>7</sup>

## Importance of the CAIR Decision

From a policy standpoint, the court's decision seriously undermined EPA's approach to clean air over the past eight years. CAIR was the lynchpin that held together the Bush Administration's strategy for attainment of the ozone and fine particulate National Ambient Air Quality Standards (NAAQS), for achieving reductions in mercury emissions from coal-fired powerplants, for addressing regional haze impacts from powerplants, and for responding to state petitions to control upwind sources of ozone and fine particulate pollution under Section 126 of the Clean Air Act. As discussed in this report, the potential impact of vacating CAIR on communities

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<sup>1</sup> 531 F.3d 896 (D.C. Cir. 2008).

<sup>2</sup> 70 *Federal Register* 25162 (May 12, 2005).

<sup>3</sup> 42 U.S.C. § 7401 et seq.

<sup>4</sup> While virtually all eastern states were affected by the rule, three were subject only to the SO<sub>2</sub>-NO<sub>x</sub> annual caps, and five only to the seasonal NO<sub>x</sub> cap; the other 20 states and DC were subject to all three caps. See EPA Fact Sheet, p. 3, at [http://www.epa.gov/CAIR/pdfs/cair\\_final\\_fact.pdf](http://www.epa.gov/CAIR/pdfs/cair_final_fact.pdf).

<sup>5</sup> 550 F.3d 1176 (D.C. Cir. 2008).

<sup>6</sup> Because EGUs have been using up banked allowances since 2000 and emitting more tons than the current SO<sub>2</sub> cap allows, the actual reduction in SO<sub>2</sub> emissions would ultimately have been 73% below 2003 levels after 2015, according to the agency.

<sup>7</sup> For a map of the affected areas, see CRS Report RL34057, *Ozone Air Quality Standards: EPA's March 2008 Revision*, by James E. McCarthy.

attempting to achieve NAAQS and the impact on mercury emissions would be substantial, and prompted some (including EPA, state environmental agencies, electric utilities, and environmental organizations) to appeal the decision.

Even though it provides less-than-adequate reductions to achieve full compliance with the NAAQS, CAIR would have substantial benefits for the communities affected. In 2005, EPA, in response to congressional requests, conducted a multi-pollutant regulatory analysis, including the estimated costs and benefits of CAIR, the Clean Air Mercury Rule (CAMR), and the Clean Air Visibility Rule (CAVR).<sup>8</sup> Although its analysis combined all three rules, the vast majority of the costs and benefits quantified were for CAIR. **Table 1** summarizes the results of that analysis. As indicated, the benefit-to-cost ratio ranged from 20 to 1, to 27 to 1. The primary benefit identified was the avoidance of premature mortality, but 10 other categories of health impacts were also identified by the agency, including (annually in 2020) the avoidance of 29,000 non-fatal heart attacks, 510,000 cases of respiratory symptoms, 360,000 cases of asthma exacerbation, 2 million work loss days, 430,000 school absence days, and 12 million minor restricted activity days.

**Table 1. Costs and Benefits of Reducing Emissions Under CAIR/CAMR/CAVR**

	2010 Estimate	2015 Estimate	2020 Estimate
Annual Costs (billions, 1999\$)	\$2.7	\$4.4	\$6.1
Annual Benefits <sup>a</sup> (billions, 1999\$)	\$62-\$73	\$91-\$106	\$120-\$140
Annual premature mortality avoided (people)	13,000	18,000	22,000

**Source:** U.S. Environmental Protection Agency, Office of Air and Radiation, *Multi-Pollutant Regulatory Analysis: CAIR/CAMR/CAVR (The Clean Air Interstate Rule, the Clean Air Mercury Rule, and the Clean Air Visibility Rule)*, October 2005, p. 26.

a. Quantified benefits from SO<sub>2</sub> and NO<sub>x</sub> reductions only; benefits from Hg or CO<sub>2</sub> reductions not estimated by EPA.

## Background

The Clean Air Act envisions a mix of state and federal authorities to reduce air pollution. For those pollutants subject to NAAQS,<sup>9</sup> it established a partnership in which the federal government sets uniform national air quality standards and the states develop State Implementation Plans (SIPs) identifying the measures they will take to attain the standards.

In 1997, when EPA finalized new NAAQS for both PM<sub>2.5</sub> and ozone,<sup>10</sup> it set in motion the SIP process under Section 110 of the act. Most states already had SIPs demonstrating how they would attain less stringent ozone and PM standards, but the promulgation of the revised ozone NAAQS

<sup>8</sup> U.S. Environmental Protection Agency, Office of Air and Radiation, *Multi-Pollutant Regulatory Analysis: CAIR/CAMR/CAVR (The Clean Air Interstate Rule, the Clean Air Mercury Rule, and the Clean Air Visibility Rule)*, October 2005.

<sup>9</sup> NAAQS pollutants (also called “criteria pollutants”) are pollutants that “may reasonably be anticipated to endanger public health or welfare” in the EPA Administrator’s judgment, and whose “presence ... in the ambient air results from numerous or diverse mobile or stationary sources....” CAA Section 108(a)(1); 42 U.S.C. § 7408(a)(1). EPA has identified six such pollutants: ozone, particulate matter, carbon monoxide, sulfur dioxide, nitrogen dioxide, and lead.

<sup>10</sup> 62 *Federal Register* 38652-38896 (July 18, 1997). The standards became effective September 16, 1997.

and the new PM<sub>2.5</sub> NAAQS meant that the SIPs of most states were no longer adequate to bring those states into attainment by the statutory deadlines. Under Section 110(k)(5) of the act, if EPA finds a SIP inadequate, it must require the affected state to submit a revised SIP that includes sufficient measures to bring that state into compliance. This is known as a “SIP Call.”

In the case of both the ozone and the PM<sub>2.5</sub> NAAQS, the process of developing effective compliance strategies is complicated by the problem of transported air pollutants. Many states cannot attain the standards unless upwind states reduce their pollution. The act recognizes this and requires that those upwind states control major sources of pollution that affect other states: under Section 110(a)(2)(D), SIPs must include adequate provisions to prevent sources within a state from contributing significantly to nonattainment in downwind states.

Finding that interstate transport of SO<sub>2</sub> and NO<sub>x</sub> contributes significantly to ozone and PM<sub>2.5</sub> nonattainment in the majority of eastern states, EPA issued the Clean Air Interstate Rule (CAIR) in March 2005 to mitigate the problem. CAIR was based on a series of determinations by EPA with respect to pollution transport, cost-effective pollution control, and compliance feasibility. These determinations were made within the State Implementation Plan process of Sections 110(k)(5) and 110(a)(2)(D) of the Clean Air Act.

## Significant Contribution

The pivotal finding by EPA in the rule is that SO<sub>2</sub> and NO<sub>x</sub> emissions from 23 states and the District of Columbia contribute to unhealthy levels of fine particles in downwind states, and NO<sub>x</sub> emissions in 25 eastern states and the District of Columbia contribute to unhealthy levels of ozone in downwind states. This determination defined the geographic scope of the rule.

EPA conducted a series of modeling runs to determine the contribution various upwind states are projected to make to areas in the eastern United States projected by EPA to be in nonattainment in 2010 and 2015. For ozone nonattainment, a “significant contribution” was defined by EPA as the product of three factors: (1) the actual amount of transported pollution from upwind states that contributes to nonattainment in downwind states; (2) how often contributions over specific thresholds occur; and (3) the comparative amount of the upwind transported contribution to the total nonattainment situation in the downwind area.<sup>11</sup> For the ozone NAAQS, EPA modeled the emissions impact of the 31 states east of or bordering the Mississippi River on 40 eastern downwind counties projected by EPA to be in nonattainment in 2010. States whose maximum contribution was estimated at less than 2 parts per billion (ppb)<sup>12</sup> and/or that contribute less than 1% to total nonattainment were screened out. After evaluating the remaining eastern states on the three criteria, 25 states and the District of Columbia were found to make a significant contribution to nonattainment.<sup>13</sup> These states constitute the region covered under the CAIR seasonal NO<sub>x</sub> cap.<sup>14</sup>

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<sup>11</sup> Environmental Protection Agency, *Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions to the NO<sub>x</sub> SIP Call; Final Rule*, 70 *Federal Register* 25162-25405 (May 12, 2005), p. 25246 (hereinafter cited as *Clean Air Interstate Rule*).

<sup>12</sup> The ozone NAAQS, at the time, was 0.08 parts per million, which, allowing for rounding, was 85 ppb. It has since been reduced to 75 ppb.

<sup>13</sup> For modeling purposes, the District of Columbia’s emissions were combined with those of Maryland. *Clean Air Interstate Rule*, p. 25249.

<sup>14</sup> In addressing the effect of interstate transport on ozone pollution, CAIR established a summer season (“seasonal”) (continued...)

For the PM<sub>2.5</sub> NAAQS, EPA modeled the emissions impacts of 37 eastern states on 62 eastern downwind counties projected by EPA to be in nonattainment in 2010.<sup>15</sup> Because the controlling 1997 PM<sub>2.5</sub> NAAQS is an annual standard, EPA considered only two of the three factors in determining significant contribution: actual amount of transported pollution and comparative amount.<sup>16</sup> In the proposed rule, EPA suggested that the threshold for determining significant contribution be 0.15 micrograms per cubic meter (µg/m<sup>3</sup>)—1% of the annual standard of 15 µg/m<sup>3</sup>. In the final rule, EPA settled on 0.2 µg/m<sup>3</sup> as the threshold.<sup>17</sup> Based on that threshold, EPA found 23 states and the District of Columbia were projected to contribute significantly to 2010 PM<sub>2.5</sub> nonattainment. These states constitute the region covered under CAIR’s annual NOx and SO<sub>2</sub> caps.

## Regional Cap/State Budget

With a determination of significant contribution, CAIR moves toward developing a cost-effective remedy. Arguing a need to base its remedy on “highly cost-effective reductions,” EPA examined the potential balance of local control to interstate controls along with the availability and timing of cost-effective pollution control measures in upwind states. Projecting nonattainment areas in 2010, EPA concluded in the proposed rule that for many PM<sub>2.5</sub> nonattainment areas:

it would be difficult, if not impossible, to reach attainment unless transport is reduced to a much greater degree and over a much broader regional area than by the simultaneous adoption of local controls within specific nonattainment areas. In addition, we found that much of the air quality improvement that did occur in downwind areas with this strategy was due to reductions in transported sulfate attributable to upwind SO<sub>2</sub> emissions.<sup>18</sup>

EPA conclusions with respect to ozone nonattainment areas were less dramatic, but still significant enough for EPA to conclude that further regional reductions were warranted.<sup>19</sup>

Calling for a combination of local and interstate transport control, EPA’s CAIR rulemaking developed criteria for determining “highly cost-effective” transport control levels. SO<sub>2</sub> and NOx are emitted by a variety of sources. Sulfur dioxide is primarily emitted by stationary sources, particularly coal-fired electric generators (69% of the total SO<sub>2</sub> emissions in 2003) and industrial combustion (14% of the total in 2003).<sup>20</sup> In the case of nitrogen oxides, mobile sources are the primary source (55% of the total in 2003), although stationary sources, particularly electric generators (22% of the total in 2003) and industrial combustion (14% of the total in 2003), make

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(...continued)

cap on emissions, because ozone forms primarily through atmospheric reactions among NOx and other pollutants in the presence of sunlight and warm temperatures.

<sup>15</sup> *Clean Air Interstate Rule*, p. 25247.

<sup>16</sup> Environmental Protection Agency, *Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Interstate Air Quality Rule); Proposed Rule* (69 *Federal Register* 4566-4650), p. 4608. (Hereafter cited as *Proposed Interstate Air Quality Rule*.) Note: EPA changed the name of the rule from the Interstate Air Quality Rule (IAQR) to the Clean Air Interstate Rule (CAIR) between the time of proposal and the rule’s promulgation.

<sup>17</sup> *Clean Air Interstate Rule*, p. 25246.

<sup>18</sup> *Proposed Interstate Air Quality Rule*, p. 4582.

<sup>19</sup> Specifically, EPA modeling indicated that from 22% to 96% of projected 2010 nonattainment of the eight-hour ozone NAAQS is due to transported pollution, depending on the specific area. *Proposed Interstate Air Quality Rule*, p. 4584.

<sup>20</sup> Based on EPA data for 2003. See <http://www.epa.gov/airtrends/econ-emissions.html>.

substantial contributions to the overall totals. Generally arguing that electric generators provided the most cost-effective emission reduction source and that data were lacking on other stationary sources, EPA focused on reductions from electric generators to determine emission caps. In contrast, for an earlier regional cap-and-trade program (the NO<sub>x</sub> SIP Call, promulgated in the late 1990s), large industrial combustion sources were included in EPA's cost-effectiveness calculations.

Focusing on electric generators greater than 25 megawatts (MW), EPA developed a threshold for controlling transported pollutants by comparing the average and marginal costs of other SO<sub>2</sub> and NO<sub>x</sub> regulatory actions, along with other factors. Finding the electric generating control technologies to be "highly cost-effective," EPA determined the final regionwide caps for affected states by assuming these control technologies were installed on electric generators.

Based on the assumption that states would solely target electric generators for control, EPA proceeded to determine the appropriate individual statewide emission budgets. Under the SIP process, states are not required to adopt an electric-generator-only strategy in complying with their emissions budgets; however, they must do so if they choose to participate in the EPA-sponsored regional trading program set up under the model rule.

## **Interaction with the Title IV Program**

Since 1990, EPA has been implementing a regional cap-and-trade program to control SO<sub>2</sub> emissions that cause acid rain under Title IV of the Clean Air Act. Because the Title IV program is both statutory and successful, EPA felt it needed to protect the program, thus limiting its ability to suggest alternative allocation schemes for emission allowances under CAIR.<sup>21</sup> Based on the assumption that states would solely target electric generators for control, EPA proceeded to determine CAIR's appropriate statewide emission budgets by melding CAIR's allocation scheme into the existing Title IV acid rain program. With both programs based on electric generators, one effect of this allocation scheme is to continue the grandfathering of pre-1990 existing plants under CAIR.<sup>22</sup> EPA recognized this, but argued that maintaining the integrity of the Title IV program prevented it from pursuing alternative allocation schemes that might have provided relief to newly constructed sources.

## **Interaction with the NO<sub>x</sub> SIP Call**

EPA's other regional cap-and-trade program, designed to control NO<sub>x</sub> emissions, is the Ozone Transport Rule, which EPA finalized on October 27, 1998,<sup>23</sup> and which the D.C. Circuit Court of Appeals upheld (with some modifications) on March 3, 2000. The rule required 21 eastern

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<sup>21</sup> *Clean Air Interstate Rule*, p. 25229.

<sup>22</sup> Under Title IV, pre-1990 existing plants are allocated allowances to pollute based on a specified emission rate times their historic average fuel consumption. New (post-1990) facilities are not allocated any allowances: they must purchase allowances in EPA auctions or from pre-1990 plants that are using fewer allowances than they were allocated.

<sup>23</sup> Environmental Protection Agency. *Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone*. Rule. 63 Federal Register 57356-57538 (October 27, 1998).

For the rule as proposed, see Environmental Protection Agency. *Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone*. Notice of proposed rulemaking. 62 *Federal Register* 60317-60421 (November 7, 1997).



states<sup>24</sup> and the District of Columbia to submit state implementation plans (SIPs) to address regional transport of ozone under the 1997 1-hour ozone standard, which is why the rule is known as the NO<sub>x</sub> SIP Call. As issued, the rule called for increased controls on NO<sub>x</sub>, focusing particularly on emissions from electric utilities and large combustion sources. To achieve the necessary reductions, EPA stipulated emission budgets for each of the affected states, with each state free to decide on what controls to use to maintain emissions within those budgets. EPA also encouraged the formation of a regional cap and trade program to implement the NO<sub>x</sub> reductions through a model program, which all participating states agreed to join.

Unlike EPA's approach with the SO<sub>2</sub> program and despite its emphasis on using NO<sub>x</sub> SIP methodology in developing CAIR, the annual CAIR NO<sub>x</sub> cap-and-trade scheme differs significantly from the NO<sub>x</sub> SIP Call in terms of the state budget determined and the scope of participants. EPA's choice of focusing only on electric generators runs counter to the cost-benefit analysis, the recommendations of the Ozone Transport Assessment Group (OTAG), and EPA's NO<sub>x</sub> SIP Call.<sup>25</sup> OTAG's recommendations to EPA with respect to the NO<sub>x</sub> SIP Call called for NO<sub>x</sub> controls on large and medium non-utility stationary sources in addition to controlling utility sources. In the final NO<sub>x</sub> SIP Call, EPA calculated state emission budgets based on five sectors: electric utility, nonutility sources, area sources, nonroad engines, and highway vehicles. Budgets were based on cost-effective reductions, with substantial reductions required from electric generators and from nonutility sources. Indeed, EPA used a 70% reduction requirement for large industrial facilities and Reasonably Available Control Technology (RACT) control (generally 25%-50%) for smaller sources.<sup>26</sup> In CAIR, arguing a lack of data, EPA generally released the other stationary source components from the rule. EPA notes it had sufficient data in 1997 to propose a NO<sub>x</sub> SIP Call that included these sources, but argues it didn't have sufficient data in 2005 to include these sources in CAIR because of the increased geographic scope of CAIR and its inclusion of SO<sub>2</sub>.<sup>27</sup>

## The Court's Decision

No fewer than 32 petitions for review of CAIR were consolidated in *North Carolina v. EPA*. On July 11, 2008, the D.C. Circuit found several of the key challenges valid. Noting that EPA regards CAIR as one integrated action, the court decided against voiding only the successfully challenged

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<sup>24</sup> There were 22 states included in the original rule: Alabama, Connecticut, Delaware, Georgia, Illinois, Indiana, Kentucky, Massachusetts, Maryland, Michigan, Missouri, North Carolina, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, Wisconsin, and West Virginia. In ruling on the applicability of the Ozone Transport Rule under the 1-hour ozone standard, the court removed one state (Wisconsin) and parts of two others (Missouri and Georgia) from the scope of the rule, but left its requirements in place for the other 19 states.

<sup>25</sup> OTAG was created by EPA and the 37 easternmost states under the 1990 Clean Air Act Amendments to recommend ways of reducing ozone transport in the northeastern part of the country. Final recommendations were made in 1997.

<sup>26</sup> Specifically, for utility sources, EPA used a NO<sub>x</sub> emission rate of 0.15 lb. NO<sub>x</sub>/mmBtu to determine budget allocations. For area sources, EPA assumed no new controls. For nonutility sources, EPA used a 70% reduction requirement for large sources, and RACT controls (generally 25%-50%) for smaller sources. EPA calculated the highway vehicle budget by assuming implementation of existing SIPs, along with the following federal measures: national low emission vehicle standards, 2004 heavy-duty engine standards, and revisions to emissions test procedures. Finally, EPA calculated the budget for nonroad engines assuming implementation of existing SIPs, along with the following federal measures: federal small engine standards (Phase II), and 1997 proposed nonroad diesel engine standards. See proposed Ozone Transport Rule and Appendix B (OTAG Recommendations), 62 *Federal Register* 60318-60420 (November 7, 1997).

<sup>27</sup> *Clean Air Interstate Rule*, p. 25214.

portions. Rather, it vacated the entire rule (and its associated Federal Implementation Plan) and remanded it to EPA.

With regard to North Carolina's challenges, the court ruled that CAIR's emissions trading program for SO<sub>2</sub> and NO<sub>x</sub> violates CAA Section 110(a)(2)(D)(i)(I). This provision addresses downwind states, such as North Carolina, whose achievement of NAAQS is interfered with by emission sources in upwind states. It requires SIPs to—

prohibit[, consistent with the provisions of [CAA Title I, governing stationary sources of emissions], any source or other type of emissions activity within the State from emitting any air pollutants in amounts which will ... contribute significantly to nonattainment in, or interference with maintenance by, any other State with respect to any [NAAQS]...

The court found the CAIR trading program unlawful in assuring only that no *entire region* will “contribute significantly,” while Section 110(a)(2)(D)(i)(I) requires that *each state's* sources not “contribute significantly.” (For similar reasons, the court noted that the NO<sub>x</sub> SIP Call's emissions trading program might have been judicially invalidated, had this argument been raised in the case challenging the program.<sup>28</sup>) The court also found unacceptable that CAIR attributed no significance to the “interference with maintenance” prong of Section 110(a)(2)(D)(i)(I) independent of the “contribute significantly to nonattainment” prong. As CAIR would have it, only states that satisfy the nonattainment prong can also satisfy the maintenance prong, rendering the latter a nullity. North Carolina's final successful argument was that CAIR's 2015 deadline for upwind states to eliminate their “significant contribution” to downwind nonattainment again ignores Section 110(a)(2)(D)(i)(I). That provision requires compliance “consistent with ... [Title I],” which imposes compliance deadlines for downwind states in 2010. Finally, the court elected not to pass judgment on the lawfulness of the NO<sub>x</sub> Compliance Supplement Pool (200,000 extra allowances as a reward for early reductions), though suggesting that EPA would need to revise it on remand.

As to the challenges by electric utility companies, the court agreed first that EPA had improperly set states' budgets for SO<sub>2</sub> and NO<sub>x</sub> in the CAIR emissions trading program. For example, in basing the budgets on the number of allowances that a state's EGUs receive under the CAA's acid rain program (Title IV), the budgets fail to track the requirements of Section 110(a)(2)(D)(i)(I) above. Second, the court found EPA's use of adjustment factors that gave smaller budgets to states with mostly natural-gas- or oil-fired EGUs to be inconsistent with Section 110(a)(2)(D)(i)(I) as well, and thus arbitrary and capricious. Third, the court agreed with the utilities that EPA's effort to reconcile CAIR's regulation of SO<sub>2</sub> with the existing program for trading SO<sub>2</sub> allowances under Title IV was unlawful. The court found nothing in Section 110(a)(2)(D)(i)(I) or other law giving EPA authority to, as CAIR proposed, remove some Title IV allowances created by CAIR from the Title IV market. Fourth, the court approved Minnesota Power's argument that EPA had overstated the state's downwind contribution to PM<sub>2.5</sub> (thereby pushing the state over the threshold for inclusion in CAIR). The argument, said the court, requires a response from EPA on remand.

*North Carolina v. EPA* is an immersion in regulatory program detail involving little in the way of broad legal principles. The court simply juxtaposed what the CAA (chiefly, Section

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<sup>28</sup> *Michigan v. EPA*, 213 F.3d 663 (D.C. Cir. 2000). It is too late now to challenge the 1998 NO<sub>x</sub> SIP Call rule. CAA Section 307(b), 42 U.S.C. Section 7607(b), requires that petitions for review of the rule be filed within 60 days after the rule is promulgated in the *Federal Register*.

110(a)(2)(D)(i)(I) requires and what CAIR said, and in several key respects found the latter deficient. Nor did the court feel obliged to defer to EPA's views, possibly because it saw the CAA (chiefly, Section 110(a)(2)(D)(i)(I)) as speaking unambiguously to many of the issues raised by petitioners.

In response to the court's decision, EPA requested reconsideration on September 24, 2008, with suggestion for rehearing by the entire court. Alternatively, EPA requested that the CAIR rule be allowed to continue in effect while the agency developed a replacement program that satisfied the court's July 2008 decision. On December 23, 2008, the court adopted the latter, leave-the-rule-in-effect course, noting that vacating the old rule would defeat protection of the environmental values that the rule was designed to preserve.<sup>29</sup> The court did not impose a specific deadline on EPA's development of the replacement rule. But it did say that it was not granting an indefinite stay of its July 2008 decision—that in the event EPA does not modify CAIR consistently with that decision, petitioners may sue again.

## Issues

### EPA's Options

Legally, EPA has three options at this time: develop a CAIR-type program that meets the D.C. Circuit's July, 2008 requirements, seek congressional approval of the old CAIR (or a CAIR-type program) that would moot the D.C. Circuit decision, or seek review of the D.C. Circuit decision in the Supreme Court (the deadline for filing a petition for certiorari with the Supreme Court not yet having passed). Each of these options poses its own set of difficulties.

The first option above, rewriting the regulations to address the court's objections, poses special difficulties. The court found "more than several fatal flaws"<sup>30</sup> in the rule, and concluded: "CAIR's flaws are deep. No amount of tinkering will transform CAIR, as written, into an acceptable rule."<sup>31</sup> A rewrite would appear to require a stronger link between the significant contribution to nonattainment posed by individual states and the controls placed on their emissions. Given that requirement, it is unclear whether the agency can salvage the regional cap-and-trade approach, which lies at the heart of CAIR, or whether cap-and-trade on a smaller scale, whether intrastate or intra-company, would face better odds.<sup>32</sup>

The second option, seeking congressional approval of the old CAIR, would moot the D.C. Circuit's objections, but raises a host of additional issues. As described below, CAIR was not sufficiently stringent to bring numerous downwind areas into attainment with the 1997 NAAQS for ozone and fine particulates. With both of these NAAQS having subsequently been strengthened, Congress would undoubtedly be pressured to do more than simply ratify the old

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<sup>29</sup> 550 F.3d 1176 (D.C. Cir. 2008).

<sup>30</sup> 531 F.3d at 901.

<sup>31</sup> *Id.* at 930.

<sup>32</sup> Allowing even modest emissions trading can significantly reduce costs. Estimates made during the development of the acid rain trading program indicated that intra-utility trading reduced costs by half over a plant-by-plant control program, while including intrastate trading reduced costs by an additional 10%. Further expansion to interstate trading reduced costs an additional 10%. See Larry B. Parker, Robert D. Poling, and John L. Moore, "Clean Air Act Allowance Trading," 21 *Environmental Law* 2021, 2022-2068 (1991).

CAIR. The degree to which CAIR's caps might be strengthened, whether to include other pollutants (mercury and CO<sub>2</sub>) in the package, and if so, what form their regulation might take, would all be open for debate.

Seeking review of the decision in the Supreme Court (assuming the Court agrees to hear the case) carries the possibility of defeat, since the agency's position in the D.C. Circuit was rejected unanimously and by a largely conservative panel. Moreover, a decision by the Supreme Court would be unlikely before the spring of 2010, leaving EPA in a quandary for over a year as to whether to commit significant resources to developing a replacement program that ultimately may not be needed, and leaving the regulated community in doubt as to whether to commit significant resources to complying with CAIR.

## **Problems Facing Nonattainment Areas**

Whatever path EPA chooses to follow, the areas designated nonattainment for ozone and PM<sub>2.5</sub>—a significant portion of the eastern United States—face choices of their own. As of June 2008, 132 million people in 293 counties lived in areas designated nonattainment for the ozone standard. Seventy percent of the total (about 93 million people) lived in the eastern half of the country, where EPA had identified CAIR as a key step toward improving ozone air quality.

Under the fine particle (PM<sub>2.5</sub>) standard, 208 counties with a combined population of more than 90 million are designated nonattainment. Except for Los Angeles and the San Joaquin Valley in California, virtually all of these people and counties were in areas where air quality will be improved by implementation of CAIR. As with ozone, EPA identified CAIR as a key component of State Implementation Plans to attain the PM<sub>2.5</sub> standard. EPA estimated that about half of the SIPs had been submitted by July 2008, with the remainder expected in the months to follow.<sup>33</sup> The court decision added uncertainty to this process, causing states to reconsider plans already submitted and those pending submission.

Further complicating issues associated with achieving attainment of PM<sub>2.5</sub> NAAQS promulgated in 1997, the EPA promulgated revisions to the NAAQS for particulate matter on October 17, 2006,<sup>34</sup> primarily a tightening of the 1997 standard for PM<sub>2.5</sub>. The tightening of the PM<sub>2.5</sub> standards<sup>35</sup> increased the number of areas in nonattainment, and will likely mean that areas already designated nonattainment under the 1997 standard will need to adopt more stringent control measures to reach attainment. SIPs for the new 2006 PM NAAQS will be due in April of 2012; under the CAA, states are required to meet the new standard “as expeditiously as practicable,” but no later than five years from the date of final nonattainment designations—April 2014. Given the historical delays in implementing the 1997 standards, some stakeholders have advocated leapfrogging to implementation of the 2006 standards instead.

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<sup>33</sup> States were required to submit SIPs for the 1997 PM<sub>2.5</sub> NAAQS by April 2008 (three years after the effective date for the final geographic nonattainment designations).

<sup>34</sup> 71 *Federal Register* 61143-61233 (October 17, 2006). See CRS Report RL33254, *Air Quality: EPA's 2006 Changes to the Particulate Matter (PM) Standard*, by Robert Esworthy and James E. McCarthy.

<sup>35</sup> The new daily standard averaged over 24-hour periods is reduced from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup>. 71 *Federal Register* 61143-61233 (October 17, 2006).

Similarly, for ozone, EPA strengthened the NAAQS in March 2008. This sets in motion a new round of nonattainment area designations and SIP revisions, even though 293 counties have not attained the old standard, with most SIPs to attain that old standard still under review by EPA.

States are required to submit SIPs to EPA outlining their strategy for complying with the PM<sub>2.5</sub> and ozone NAAQS, including provisions to prevent sources within their states from contributing significantly to nonattainment in downwind states. Under the Administration's approach to the SIPs, implementation of CAIR would have met the interstate transport (downwind state) provision of Section 110(a)(2)(D). The remand of CAIR could mean that SIPs from downwind states would be inadequate if they assumed the CAIR reductions in interstate transport of pollutants. SIPs from upwind states, on the other hand, could be inadequate if they don't prevent downwind nonattainment: the Clean Air Act makes clear that states are to impose controls on stationary sources of pollution that contribute significantly to downwind nonattainment or interfere with the maintenance of air quality standards in other states. This provision of the statute has been widely disregarded in the past, with little EPA effort (other than regional cap-and-trade programs) to address it. This reluctance to act can be challenged through Section 126 petitions.

## **Section 126 Petitions**

Under Section 126 of the Clean Air Act,<sup>36</sup> which addresses interstate pollution abatement, any state or political subdivision may petition the EPA Administrator for a finding that a major source or group of sources is violating the act's prohibition of emissions contributing significantly to nonattainment or interfering with the maintenance of attainment in another state.<sup>37</sup> EPA has 60 days to make a finding in response to such a petition. If the Administrator found that out-of-state sources were significantly contributing to an area's nonattainment, the out-of-state sources would have to shut down within three months unless EPA imposed emission limits and a compliance schedule of not more than three years.

EPA has never granted a Section 126 petition in the manner outlined by the statute. Most recently, it denied a 2004 petition from the State of North Carolina, arguing in part that CAIR was a better mechanism for addressing the interstate transport of pollution to which North Carolina was subject than was the state's petition under Section 126. North Carolina challenged this denial in court.<sup>38</sup> Its challenge was initially stayed pending the outcome of the CAIR suit, but with the decision in that suit has been reactivated. Oral argument on the merits is scheduled for March 12, 2009. The CAIR decision arguably makes a decision in North Carolina's Section 126 case more likely to favor the states: the CAIR decision, after determining that CAIR must be vacated in toto, notes that "downwind states retain their statutory right to petition for immediate relief from unlawful interstate pollution under section 126."<sup>39</sup> A decision in favor of North Carolina's Section 126 petition might, therefore, bring on an avalanche of Section 126 petitions from other states.

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<sup>36</sup> 42 U.S.C. § 7426, or visit <http://www.epa.gov/air/caa/caa126.txt>.

<sup>37</sup> The prohibition is found in CAA Section 110(a)(2)(D)(i).

<sup>38</sup> *Sierra Club v. EPA*, No. 06-1221 (D.C. Cir. filed June 23, 2006).

<sup>39</sup> *North Carolina v. EPA*, 531 F.3d 896, 930 (D.C. Cir. 2008).

## Impetus for Multi-pollutant Legislation

The remand of CAIR and the vacating and remand of a companion rule targeting mercury (the Clean Air Mercury Rule, CAMR)<sup>40</sup> raised again the argument for a multi-pollutant strategy with respect to the electric utility industry—a framework based on a consistent set of emissions caps, implemented through emission trading. Such an approach would not resolve all the issues surrounding CAIR, particularly if limited to the electric utility industry, and would raise issues of its own: How stringent should the emission caps be? What is an appropriate schedule for their introduction? How should they relate to existing CAA provisions? Should carbon dioxide be included with SO<sub>2</sub>, NO<sub>x</sub>, and mercury control programs?

In the 110<sup>th</sup> Congress, there were several bills introduced in Congress to impose emission caps on electric utility emissions of these four pollutants.<sup>41</sup> The vacating of CAIR increased the focus on this legislation, but the court's December 23, 2008 ruling eliminating the vacatur may have lessened interest in such an approach.

## Conformity and Sanctions

The Clean Air Act does not impose formal penalties on nonattainment areas for failing to attain air quality standards. Rather, it penalizes areas that fail to submit and implement adequate plans—plans that identify emission control measures that, when modeled, show that the area will have reduced emissions sufficiently to reach the standards. Many of the most recent SIPs have, with EPA's approval, counted on the reductions projected from implementation of CAIR. As noted earlier, in the CAIR proposal, EPA stated: "(I)t would be difficult, if not impossible, to reach attainment unless transport is reduced to a much greater degree and over a much broader regional area than by the simultaneous adoption of local controls within specific nonattainment areas."<sup>42</sup> Without CAIR, these SIPs would no longer have demonstrated attainment.

## Mercury Emissions

Although CAIR applied only to SO<sub>2</sub> and NO<sub>x</sub>, EPA has made clear since it proposed the rule in 2003 that it expected the scrubbers and NO<sub>x</sub> controls installed for CAIR compliance to be the means by which most electric utilities would reduce mercury emissions. The agency did promulgate a Clean Air Mercury Rule (CAMR) at the same time as CAIR, through which it would have established a cap-and-trade program for EGU mercury emissions. But CAMR was vacated by the D.C. Circuit in February 2008.<sup>43</sup> Without CAIR, the agency would be left with no controls on mercury emissions from powerplants.

Coal-fired powerplants are responsible for 42% of total U.S. emissions of mercury, according to EPA, and are, by far, the largest uncontrolled mercury emission source. Mercury pollution is widespread; it deposits in water bodies where it is converted to methylmercury and is taken up in

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<sup>40</sup> *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008).

<sup>41</sup> For a comparison of legislation, see CRS Report RL34018, *Air Quality: Multi-Pollutant Legislation in the 110<sup>th</sup> Congress*, by Larry Parker and John Blodgett.

<sup>42</sup> *Proposed Interstate Air Quality Rule*, p. 4582.

<sup>43</sup> *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008).

the food chain.<sup>44</sup> The Clean Air Act requires that major sources of mercury meet standards based on EPA's determination of the Maximum Achievable Control Technology (MACT) available to such sources. EPA sought to avoid imposing MACT on coal-fired powerplants by substituting the CAIR and CAMR control programs, which it argued would produce more cost-effective controls.<sup>45</sup>

## Impact on Regional Haze Rule

Section 169A(a)(1) of the CAA sets “as a national goal the prevention of any future, and the remedying of any existing, impairment to visibility” in designated “class I areas” (e.g., national parks and wilderness areas).<sup>46</sup> It requires 26 categories of major stationary sources of pollution—including electric generating units (EGUs)—in existence on the date of the section's enactment (1977), but not more than 15 years old as of that date, to install “best available retrofit technology” (BART) if the state determines the source may reasonably be anticipated to cause or contribute to any impairment of visibility in any class I area. In 2005, EPA made a final determination to exempt EGUs subject to the CAIR trading program from the Section 169A visibility BART program.<sup>47</sup> With the CAIR rule in limbo, BART determinations for EGUs may be subject to further rulemaking.

## Conclusion

Unless Supreme Court review is sought and the Court reverses, the *North Carolina v. EPA* decision leaves EPA's strategy for achieving attainment of the ozone and PM<sub>2.5</sub> NAAQS in serious disarray. CAIR was the lynchpin that held together EPA's strategy for attainment of the ozone and fine particulate NAAQS, for achieving reductions in mercury emissions from coal-fired powerplants, for addressing regional haze impacts from powerplants, and for responding to state petitions under Section 126 of the Clean Air Act with respect to the ozone and fine particulate NAAQS.

As described, the D.C. Circuit, on EPA's motion, recently reversed its decision to vacate CAIR while EPA is developing a replacement rule. The Circuit, however, left the substantive requirements of its July, 2008 decision fully intact. That decision strongly suggests that there is no simple “fix” that would make CAIR acceptable to the court. Barring Supreme Court involvement, this leaves EPA with three clear options: (1) starting over with a new strategy to mitigate transported air pollutants based on the decision; (2) allowing the states to sort out the issue through Section 126 petitions; and (3) seeking new legislation providing EPA with the statutory authority to either implement CAIR in some form, or an alternative.

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<sup>44</sup> Forty-eight states have fish-consumption advisories for mercury in their freshwater lakes and/or rivers (23 of these advisories cover every water body in the state); and 13 states have statewide mercury advisories in their coastal waters. About 60% of the U.S. coastline (excluding Alaska) is under fish consumption advisories for mercury. See U.S. EPA, Office of Water, “Fact Sheet: 2005/2006 National Listing of Fish Advisories,” July 2007, pp. 4-5, at <http://www.epa.gov/waterscience/fish/advisories/2006/tech.pdf>.

<sup>45</sup> For additional information on CAMR, see CRS Report RS22817, *The D.C. Circuit Rejects EPA's Mercury Rules: New Jersey v. EPA*, by Robert Meltz and James E. McCarthy.

<sup>46</sup> 42 U.S.C. § 7491(a)(1).

<sup>47</sup> 70 *Federal Register* 39137 (July 6, 2005).

For Congress, the decision raises several issues:

- Should Congress consider providing EPA with the authority to implement CAIR or other cost-based, market-oriented approaches to address NAAQS?
- Should Congress consider multi-pollutant legislation as a supplement or substitute for the current regulatory regime, at least for electric generating units?
- Should Congress consider a more comprehensive revision to the Clean Air Act to address not only ozone and PM<sub>2.5</sub> NAAQS non-attainment, but also mercury emissions from coal-fired powerplants, and emerging environmental issues such as climate change?

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