

An hourglass-shaped graphic with a globe inside. The top bulb is dark blue, and the bottom bulb is light blue. The globe is centered in the narrow neck of the hourglass. The text is overlaid on the graphic.

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Clean Interstate Rule: Review and Analysis

Larry Parker, Resources, Science, and Industry Division

May 20, 2005

Abstract. On March 10, 2005, the Environmental Protection Agency (EPA) issued its final rule to address the effects of interstate transport of air pollutants on nonattainment of the National Ambient Air Quality Standards (NAAQS) for fine particulates (PM_{2.5}) and ozone (specifically, the 8-hour standard). The Clean Air Interstate Rule (CAIR) was first proposed as the Interstate Air Quality (IAQ) rule and appeared in the Federal Register January 30, 2004. For PM_{2.5}, CAIR finds that the interstate transport of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) from 23 states and the District of Columbia contributes significantly to downwind nonattainment; for ozone, CAIR finds that interstate transport of NO_x from 25 states and the District of Columbia contributes significantly to downwind nonattainment of the 8-hour standard. This result differs some from the proposed rule because of improved modeling.

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Clean Air Interstate Rule: Review and Analysis

May 20, 2005

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Clean Air Interstate Rule: Review and Analysis

Summary

On March 10, 2005, the Environmental Protection Agency (EPA) issued its final rule to address the effects of interstate transport of air pollutants on nonattainment of the National Ambient Air Quality Standards (NAAQS) for fine particulates (PM_{2.5}) and ozone (specifically, the eight-hour standard). The Clean Air Interstate Rule (CAIR) was first proposed as the Interstate Air Quality (IAQ) rule and appeared in the *Federal Register* January 30, 2004. For PM_{2.5}, CAIR finds that the interstate transport of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) from 23 states and the District of Columbia contributes significantly to downwind nonattainment; for ozone, CAIR finds that interstate transport of NO_x from 25 states and the District of Columbia contributes significantly to downwind nonattainment of the eight-hour standard. This result differs some from the proposed rule because of improved modeling.

EPA decided in CAIR to create three emissions caps: Two are annual emissions caps that address the interstate contribution of SO₂ and NO_x to PM_{2.5} nonattainment; the third cap is a seasonal cap to address interstate contribution of NO_x to ozone nonattainment. The three caps are implemented in two phases: Phase 1 begins in 2009 for the NO_x caps and 2010 for the SO₂ cap. Improved modeling and other considerations resulted in some changes in the final rule from the proposed IAQ. For example, in CAIR, EPA added a fuel-type adjustment factor to the NO_x allocation formula that provides significantly more NO_x allowances to states that have coal-fired electric generation compared with those with natural gas-fired generation.

Although changes to the proposed rule may be important in specific cases, they do not represent a major shift in the thrust and scope of CAIR. That CAIR has not had the visibility of the contemporaneous mercury (Hg) rule should not be interpreted to mean that the underlying issue of PM_{2.5} and eight-hour ozone compliance has been solved. EPA is currently reviewing the stringency of the PM_{2.5} NAAQS, a process that may result in a more stringent standard. Given CAIR's lengthy schedule, it seems likely that if the PM_{2.5} NAAQS is strengthened, efforts to revise CAIR would occur.

Likewise, CAIR does not address the most potent environmental issue surrounding fossil-fuel-fired electric generating facilities — global warming and the possibility of carbon dioxide reductions. Movement on that issue over the next decade could result in a modification of CAIR, or a new multi-pollutant control regime. Bills have been introduced in Congress to create such a system.

Finally, CAIR raises questions about the future of the Bush Administration's legislative initiative — Clear Skies. Clear Skies represents a complete rewrite of Title IV of the Clean Air Act and would impose a comprehensive cap-and-trade system on utility SO₂, NO_x, and Hg emissions. In addition, Clear Skies would alter, delete, or hold in abeyance for some time existing sections of the CAA with respect to affected electric facilities and industrial sources that chose to opt into the program. With the promulgation of CAIR that achieves NO_x and SO₂ emissions reductions from most of the country's electricity generating facilities, and of the final Hg rule, it is unclear what impetus remains for Clear Skies. This report will not be updated.

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Clean Air Interstate Rule: Review and Analysis

Overview

On March 10, 2005, the Environmental Protection Agency (EPA) issued its final rule to address the effects of interstate transport of air pollutants on nonattainment of the National Ambient Air Quality Standards (NAAQS) for fine particulates (PM_{2.5}) and ozone (specifically, the eight-hour standard).¹ The Clean Air Interstate Rule (CAIR) was first proposed as the Interstate Air Quality (IAQ) rule and appeared in the *Federal Register* January 30, 2004.² For PM_{2.5}, CAIR finds that the interstate transport of sulfur dioxide (SO₂) and nitrogen oxides (NOx) from 23 states and the District of Columbia contributes significantly to downwind nonattainment; for ozone, CAIR finds that interstate transport of NOx from 25 states and the District of Columbia contributes significantly to downwind nonattainment of the eight-hour standard.

To remedy the situation, the rule generally follows (with some important exceptions) the methodology EPA employed in an earlier regulation that addressed interstate transport of ozone pollution, the NOx SIP Call.³ In the NOx SIP Call, EPA found 21 states and the District of Columbia significantly contributed to nonattainment of the 1-hour ozone NAAQS.⁴ To remedy the situation, EPA set statewide emissions budgets for NOx emissions, and recommended that states achieve those budgets through “highly cost-effective” controls on electric generators and large industrial facilities under a regional cap-and-trade program. States began implementing controls on May 31, 2004.

¹ 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 NOx SIP Call; Final Rule* (70 *Federal Register* 25162-25405, May 12, 2005). (Hereafter cited as *Clean Air Interstate Rule*.)

² 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). For an analysis of the proposed IAQ rule, see CRS Report RL32273, *Air Quality: EPA's Proposed Interstate Air Quality Rule*, by Larry Parker and John Blodgett. (Hereafter cited as *Proposed Interstate Air Quality Rule*.)

³ For background and discussion of the NOx SIP Call, see CRS Report 98-236, *Air Quality: EPA's Ozone Transport Rule, OTAG, and Section 126 Petitions — A Hazy Situation?*, by Larry Parker and John Blodgett.

⁴ Originally, the rule included 22 states; however, Wisconsin was removed from the rule's reduction requirements by the court during litigation in 2000. See *Michigan v. EPA*, 213 F.3d 663 (D.C. Cir. 2000) *cert. denied* 532 U.S. 904 (2001)

With CAIR, EPA creates regional emissions caps for NO_x and SO₂ to be implemented in two phases — 2010 (2009 for NO_x) and 2015. Two caps (annual SO₂ emissions and annual NO_x emissions) apply to the region of 23 states (and District of Columbia) found to contribute to PM_{2.5} nonattainment, and one cap (seasonal NO_x emissions) applies to the region of 25 states (and District of Columbia) found to contribute to eight-hour ozone nonattainment. The regional caps for the affected states are as follows:

- SO₂ annual caps: 3.6 million tons in 2010 and 2.5 million in 2015
- NO_x annual caps: 1.5 million tons in 2009 and 1.3 million in 2015
- NO_x ozone season caps: 580,000 tons in 2009 and 480,000 tons in 2015

Based on methodology centered on reductions from electric generating facilities and adjusted for type of fossil fuel burned, each affected state is assigned a portion of the regional cap in the form of a statewide “emissions budget” or cap. Each covered state is required to submit a revised State Implementation Plan (SIP) identifying measures it intends to implement to achieve its emissions budget. States are free to choose whatever means they deem appropriate, subject to EPA approval. However, EPA strongly believes that the regional emissions caps can be most cost-effectively achieved through regional cap-and-trade programs focused on electric generators and strongly encourages that states choose that option. A model cap-and-trade scheme for states to adopt is included in the final rule. That model scheme achieves a state’s emissions budget through emission limitations solely on electric generating units.

Background

Why Did EPA Do It?

In 1997, EPA finalized new NAAQS for both PM_{2.5} and ozone.⁵ The new NAAQS for ozone revised the previous ozone NAAQS by tightening the standard from 0.12 parts per million (ppm) to 0.08 ppm, increasing the averaging time from one hour to eight hours, and measuring compliance by averaging concentrations rather than by counting individual peak concentrations exceeding the standard. The new PM_{2.5} NAAQS was set at an annual maximum concentration of 15 micrograms per cubic meter (µg/m³) based on the three-year average of annual arithmetic mean PM_{2.5} concentrations from one or more community-oriented monitors; and a 24-hour concentration of 65 µg/m³, based on the three-year average of the 98th percentile of 24-hour PM_{2.5} concentrations at each population-oriented monitor within an area.

EPA has taken a cautious approach to implementing the two NAAQS. Attempts to coordinate the new eight-hour ozone standard with the previous 1-hour standard proved difficult and subject to considerable litigation. In the case of the PM_{2.5} standard, comprehensive monitoring data were unavailable in 1997 to determine

⁵ Published in the *Federal Register* on July 18 (62 FR 38652-38896), the standards became effective September 16, 1997.

compliance and make designations. In 1998, the Congress set a statutory schedule for the two NAAQS, based on EPA's previously announced Interim Implementation Policy.⁶ Judicial review and other factors combined to delay the designations.

In 2004-2005, EPA issued designations on attainment and nonattainment for the eight-hour ozone NAAQS and the PM_{2.5} NAAQS. For PM_{2.5}, EPA analysis indicates violations of the NAAQS over the eastern part of the United States and parts of California and Montana. Specifically, data show 39 nonattainment areas covering all or part of 224 counties in 20 states either fail to meet the standard or cause a downwind county to fail. All or part of 208 counties violate the annual standard; a few violate both the annual and the 24-hour standard; none violate only the 24-hour standard. The population of the affected counties is 90 million.⁷ For the eight-hour ozone NAAQS, EPA analysis indicates widespread violations of the NAAQS over the eastern and midwestern United States, California, and Texas, along with scattered areas in Louisiana, Arizona, and Colorado. Specifically, data show 126 nonattainment areas covering all or part of 474 counties in 31 states violate the eight-hour ozone standard. The population of the affected counties is 159 million.⁸

The 1997 eight-hour ozone and PM_{2.5} NAAQS set in motion the Clean Air Act's (CAA) SIP process under Section 110. The promulgation of the revised ozone NAAQS and the new PM_{2.5} NAAQS meant that the SIPs of many states were no longer adequate to bring those states into compliance by the statutory deadline. Under Section 110(k)(5), 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 the eight-hour ozone and the PM_{2.5} NAAQS, the process of developing effective compliance strategies is complicated by the problem of transported air pollutants. Under Section 110(a)(2)(D), SIPs must include adequate provisions to prevent sources within that state from contributing significantly to nonattainment in one or more downwind states. Finding that interstate transport of SO₂ and NO_x contributes significantly to ozone and PM_{2.5} nonattainment, the EPA issued the proposed Interstate Air Quality rule (IAQ) in December 2003 to mitigate the problem. This rule was finalized as the Clean Air Interstate Rule (CAIR) in March 2005.

Combining the requirements of the CAA with EPA intentions as stated in the rule, the major milestones for implementing the eight-hour ozone and PM_{2.5} NAAQS are set out in **Table 1**.

⁶ *Transportation Equity Act for the 21st Century*, P.L. 105-178, Title VI.

⁷ For more on PM designations, see EPA's website at [<http://epa.gov/pmdesignations/>].

⁸ For more on eight-hour ozone designations, see EPA's website at [<http://www.epa.gov/ozone/designations/>].

Table 1. Estimated Schedule for Eight-Hour Ozone and PM_{2.5} NAAQS

Milestones	Eight-hour Ozone NAAQS	PM_{2.5} NAAQS
Governors submit designations of nonattainment areas	July 2003	February 2004
EPA Proposes Clean Air Interstate rule (CAIR)	January 2004	
EPA promulgates final implementation rule	April 2004 (phase 1)	<i>Expected early 2006</i>
EPA promulgates final designations	April 2004	January 2005
EPA issues final CAIR	March 2005 (published May 2005)	
States submit CAIR SIPs	<i>Required 18 months after CAIR is issued (September 2006)</i>	
States submit revised SIPs to achieve PM _{2.5} and Ozone NAAQS	Three years after effective date of designations (<i>June 2007</i>)	Three years after effective date of designations (<i>April 2008</i>)
NAAQS compliance deadline	Varies according to severity of the problem (<i>2007-2021</i>)	5 to 10 years after designations (<i>2010-2015</i>)
CAIR compliance deadlines	Two phases: 2010 (2009 for NO_x) and 2015	

As indicated by **Table 1**, EPA would require states to submit their CAIR SIPs before the NAAQS nonattainment SIPs are required. EPA justifies the submission of transported air pollutant SIPs by upwind states before the submission of nonattainment SIPs by downwind states on the basis of Section 110(a)(1-2) and Section 172(b) of the Clean Air Act and on policy considerations.⁹ EPA argues that the upwind reductions will facilitate planning by downwind states and that downwind states will benefit from the relatively early reductions because they themselves contribute to nonattainment elsewhere.

⁹ Section 110 requires submission of SIPs to attain NAAQS, including transport provisions, within three years after promulgation of a NAAQS. Section 172(b) requires submission of SIPs in response to a nonattainment designation within three years of the designation. EPA argues this sequence indicates the priority given to the transport SIPs over the nonattainment SIPs. *Proposed Interstate Air Quality Rule*, p. 4624.

How Did EPA Come Up With All Its Determinations?

CAIR is based on a series of determinations by EPA with respect to pollution transport, cost-effective pollution control, and compliance feasibility. These determinations are made within the SIP process of Sections 110(k)(5) and 110(a)(2)(D).¹⁰

Significant Contribution. The pivotal finding by EPA in the rule is that affected states significantly contribute to nonattainment in downwind states. This determination defines the geographic scope of the rule. For states in the eastern United States, 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) actual amount of transported pollution from upwind states that contribute 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.¹¹ For the eight-hour 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 noncompliance in 2010. States whose maximum contribution was estimated at less than 2 parts per billion (ppb) and/or that contribute less than 1% to total nonattainment were screened out. After evaluating the remaining eastern states on the three criteria above on 40 eastern downwind counties, 25 states and the District of Columbia were found to make a significant contribution to nonattainment.¹² These states constitute the region covered under CAIR seasonal NO_x cap and are shown in **Table 2**.

For the PM_{2.5} NAAQS, EPA modeled the emissions impacts of 37 eastern states on 62 eastern downwind counties projected by EPA to be in noncompliance in 2010.¹³ Because the controlling PM_{2.5} NAAQS is the annual standard, EPA considered only two of the three factors listed for ozone in determining significant contribution: actual amount and comparative amount.¹⁴ In the proposed rule, EPA suggested that the threshold for determining significant contribution be 0.15 µg/m³ — 1% of the annual standard of 15 µg/m³. In the final rule, EPA settled on 0.2 µg/m³

¹⁰ Section 110(k)(5) provides for EPA to issue a SIP Call if existing SIPs are determined to be substantially inadequate to attain or maintain a NAAQS or mitigate interstate pollutant transport as described in sections 176A (involving Interstate Transport Commissions) or 184 (involving control of interstate ozone air pollution). Section 110(a)(2)(D) requires states to submit SIPs to the EPA that contain adequate provisions prohibiting emissions of any air pollutant that contributes significantly to NAAQS or Prevention of Significant Deterioration (PSD) nonattainment in any other state.

¹¹ *Clean Air Interstate Rule*, p. 25246.

¹² For modeling purposes, the District of Columbia’s emissions were combined with those of Maryland. *Clean Air Interstate Rule*, p. 25249.

¹³ *Clean Air Interstate Rule*, p. 25247.

¹⁴ *Proposed Interstate Air Quality Rule*, p. 4608.

as the threshold.¹⁵ Based on that threshold, EPA found 23 states and the District of Columbia were projected to contribute significantly to 2010 PM_{2.5} nonattainment. These states constitute the region covered under CAIR's annual NO_x and SO₂ caps and are shown in **Table 2**.

Table 2. States Determined to Contribute Significantly to Downwind Nonattainment of the PM_{2.5} and Eight-Hour Ozone NAAQS

States contributing to Downwind Nonattainment of the PM _{2.5} NAAQS	States contributing to Downwind Nonattainment of the eight-hour ozone NAAQS
Alabama	Alabama
	Arkansas
	Connecticut
Delaware (<i>proposed</i>)	Delaware
District of Columbia	District of Columbia
Florida	Florida
Georgia	
Illinois	Illinois
Indiana	Indiana
Iowa	Iowa
Kentucky	Kentucky
Louisiana	Louisiana
Maryland	Maryland
	Massachusetts
Michigan	Michigan
Minnesota	
Mississippi	Mississippi
Missouri	Missouri
New Jersey (<i>proposed</i>)	New Jersey
New York	New York
North Carolina	North Carolina
Ohio	Ohio
Pennsylvania	Pennsylvania
South Carolina	South Carolina

¹⁵ *Clean Air Interstate Rule*, p. 25246.

States contributing to Downwind Nonattainment of the PM _{2.5} NAAQS	States contributing to Downwind Nonattainment of the eight-hour ozone NAAQS
Tennessee	Tennessee
Texas	
Virginia	Virginia
West Virginia	West Virginia
Wisconsin	Wisconsin

Source: *Clean Air Interstate Rule*, p. 25167.

EPA does not specify the process by which it determined that interstate transport of pollution is not a significant contributor to nonattainment in states such as California, Arizona, or Montana. The proposed rule simply stated:

In analyzing significant contribution to nonattainment, we determined it was reasonable to exclude the Western U.S., including the States of Washington, Idaho, Oregon, California, Nevada, Utah and Arizona from further analysis due to geography, meteorology, and topography. Based on these factors, we concluded that the PM_{2.5} and eight-hour ozone nonattainment problems are not likely to be affected significantly by pollution transported across these States' boundaries. Therefore, for the purpose of assessing States' contributions to nonattainment in other States, we have only analyzed the nonattainment counties located in the rest of the U.S.¹⁶

The rule provides no other specific basis for EPA's determination that western nonattainment areas should not be subject to the rigorous modeling eastern nonattainment areas were. None of the extensive modeling conducted for nonattainment areas in the eastern United States was conducted on nonattainment areas in the western United States.

Regional Cap/State Budget. With a determination of significant contribution, CAIR moves toward developing a cost-effective remedy. Maintaining the 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_{2.5} 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

¹⁶ *Proposed Interstate Air Quality Rule*, p. 4581.

downwind areas with this strategy was due to reductions in transported sulfate attributable to upwind SO₂ emissions.¹⁷

EPA conclusions with respect to eight-hour ozone nonattainment areas were less dramatic, but still significant enough for EPA to conclude that further regional reductions were warranted.¹⁸

Calling for a combination of local and interstate transport control, EPA developed criteria for determining “highly cost-effective” transport control levels. SO₂ and NO_x are emitted by a variety of sources. Sulfur dioxide is primarily emitted by stationary sources, particularly coal-fired electric generators (69% of the total in 2003) and industrial combustion (14% of the total in 2003).¹⁹ In the case of nitrogen oxides, mobile sources are the primary source, although stationary sources, particularly electric generators (22% of the total in 2003) and industrial combustion (14% of the total in 2003), make 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 the NO_x SIP Call, large industrial combustion sources were included in EPA’s cost-effectiveness calculations.

Focusing on electric generators 25 megawatts (MW) or greater, EPA developed a threshold for controlling transported pollutants by comparing the average and marginal costs of other SO₂ and NO_x regulatory actions, along with other factors. Specifically, EPA compared the average and marginal costs of installing flue-gas desulfurization (FGD) and selective catalytic reduction (SCR) technologies on electric generators with the average and marginal costs of other regulatory actions, including Best Available Control Technology (BACT) determinations, individual state actions, New Source Performance Standards (NSPS), and various mobile source decisions. 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. The projected cost per ton removed is shown in **Table 3**.

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

¹⁷ *Proposed Interstate Air Quality Rule*, p. 4582.

¹⁸ Specifically, EPA modeling indicated that from 22% to 96% of projected 2010 nonattainment of the eight-hour ozone NAAQS is due to transport, depending on the specific area. *Proposed Interstate Air Quality Rule*, p. 4584.

¹⁹ Based on EPA data for 2003. See [<http://www.epa.gov/airtrends/econ-emissions.html>].

Table 3. Projected Control Costs for Electric Generators under CAIR

(1999 \$/ton removed)

	2010 (2009 for NO _x) Average cost	2010 (2009 for NO _x) Marginal cost	2015 Average cost	2015 Marginal cost
SO ₂ Control Costs	\$500	\$700	\$700	\$1,000
SO ₂ Control Cost (high cost case*)		\$800		\$1,200
NO _x Control Costs	\$500	\$1,300	\$700	\$1,600
NO _x Control Costs with Compliance Supplement Pool (CSP)		\$1,300		\$1,600
NO _x Control Costs (high cost case*)		\$1,400		\$1,700

Source: *Clean Air Interstate Rule*, pp. 25201-4613-4615.

* Assumes high electricity demand and high natural gas prices.

The Rule

As noted above, EPA decided in its final rule to create three emissions caps: Two are annual emissions caps that address the interstate contribution of SO₂ and NO_x to PM_{2.5} nonattainment; the third is a seasonal cap to address interstate NO_x contribution to ozone nonattainment. Each of these caps and their accompanying model trading schemes has to be integrated into the existing multilayered fabric of the Clean Air Act (CAA). As discussed below, each cap faced unique problems in meshing with the CAA.

Reducing PM_{2.5}: The SO₂ and NO_x Annual Caps

Reducing PM_{2.5} is a year-round problem, unlike ozone, which is a seasonal problem. Overwhelmingly, nonattainment areas are in noncompliance with the annual PM_{2.5} NAAQS, not the 24-hour standard. Thus, the two caps are averaged on an annual basis, an averaging time that provides maximum flexibility and potential cost-savings to polluters.

SO₂ Annual Cap. Unlike annual NO_x emissions, annual SO₂ emissions are already controlled to some degree by an existing statutory cap-and-trade program — Title IV of the CAA. Indeed, it is the success of the Title IV program that has encouraged the development of other market-oriented programs, including the NO_x SIP Call and CAIR. Title IV of the 1990 CAA Amendments required the reduction of SO₂ emissions from electric generators from about 15 million tons in 1988 to 8.95 million tons by January 1, 2000. In addition, it mandates that the 8.95 million ton cap be maintained into the future, requiring new SO₂ emitting utility plants to offset

their emissions with further reductions from existing facilities. To implement the program, Title IV created a comprehensive permit and emissions allowance system. An allowance is a limited authorization to emit a ton of SO₂ during or after a specific year. Issued by EPA, the allowances are allocated to existing power plants according to formulas provided in Title IV. The utility receives the allowances for a given plant regardless of the actual operation of the plant. For example, a utility may choose to shut down an existing power plant and use those allowances to offset emissions from two or more newer, cleaner facilities. Generally, a power plant that commenced operation after enactment receives no allowances, requiring it to obtain allowances from the existing pool of allowances in order to operate. A utility may trade allowances nationally as well as bank allowances for future use or sale.

Developing a new regional cap-and-trade SO₂ program raised several issues with respect to the statutory nationwide SO₂ cap-and-trade program created under Title IV. Among the issues EPA had to resolve were (1) allocation of state budgets, (2) treatment of excess Title IV allowances by the more stringent CAIR program, and (3) treatment of existing banked Title IV allowances.

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 under CAIR.²⁰ 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, the effect of this allocation scheme is to continue the grandfathering of pre-1990 existing plants under CAIR. EPA recognizes this, but argues that maintaining the integrity of the Title IV program prevents it from pursuing alternative allocation schemes that might provide relief to newly constructed sources.

Perhaps the most obvious problem with a CAIR-Title IV interface is the creation of surplus Title IV allowances as sources in the regional control area reduce emissions to the more stringent CAIR limits while the rest of the country is under the Title IV caps. To prevent the build-up of Title IV allowances, EPA mandates CAIR-affected states require a two-for-one redemption of CAA Title IV allowances during phase 1, and a 2.86-for-one redemption of Title IV allowances during phase 2. Such redemption ratios would represent a 50% reduction during phase 1 and 65% during phase 2. These Title IV allowance redemptions are required regardless of whether or not the state chooses to participate in the EPA-sponsored CAIR SO₂ trading scheme.

Modifying Title IV allowances could be questioned by some; however, allowances are not cast in concrete by the 1990 CAAA. As noted, an allowance is a limited authorization to emit SO₂. Title IV states explicitly that an allowance is not a property right, and that “[n]othing in this title or in any other provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.” (Section 403(f)). The Senate report on Title IV (from which this language originated) elaborates on this provision with the following:

²⁰ *Clean Air Interstate Rule*, p. 25229.

The purpose in characterizing the legal or property status of allowances in new section [403](f) of the Act is to make clear that regulatory actions taken subsequent to the issuance of allowances are not subject to the “takings clause” of the U.S. Constitution. Allowances are, in large part, simply iterations of each unit’s permit under this title. Since the permits will be, in effect, legally binding statements of each unit’s emissions limitation obligations under the pollution control program established herein, the subsection makes clear that should the Congress or the Administrator limit, revoke or otherwise modify the allowances or the underlying regulatory program established by new title IV of the Act or the regulations promulgated pursuant thereto, the U.S. government will not be obliged to compensate allowance-holders for loss of the allowances or any loss in their value. Allowances are but the means of implementing an emissions limitation program, which can be altered in response to changes in the environment or for other reasons of public policy.²¹

Thus, EPA may have significant flexibility in modifying Title IV allowances “in response to changes in the environment or for other reasons of public policy.” EPA provides a detailed defense of its decision to use Title IV allowances in its CAIR trading program in the rule.²²

At the beginning of 2004, the Title IV allowance bank had about 7.6 million allowances.²³ EPA decided that pre-2010 banked Title IV allowances may be used on a one-for-one basis for meeting the more stringent reductions under CAIR in order to encourage early reductions.²⁴ Essentially, this means that pre-2010 allowances could double in value beginning in 2010 and nearly triple in value beginning in 2015.

One revision EPA does make in the Title IV program *per se* as part of the CAIR SO₂ trading program is to change the unit-by-unit allowance-holding requirement to a source-by-source system, effective July 1, 2006.²⁵ EPA argues that it is important to provide this additional compliance flexibility, and that it does not affect the emissions monitoring and reporting requirements, which remain applied on a unit-by-unit basis.

NOx Annual Cap. Unlike SO₂, there is no statutory cap-and-trade program for NOx emissions from electric utilities. However, there is a regional, seasonal NOx cap-and-trade program (the NOx SIP Call) that includes electric utility and other major stationary sources. Like the model trading programs suggested under CAIR, the NOx SIP Call trading program is the product of an EPA-sponsored model rule and regional trading scheme that was voluntarily adopted by the affected states to achieve their emissions budgets. As discussed in the next section, CAIR eliminates the NOx SIP Call’s seasonal cap-and-trade scheme starting in 2009 in favor of the seasonal CAIR NOx program.

²¹ S.Rept. 101-228, December 20, 1989, p. 321.

²² See *Clean Air Interstate Rule*, pp. 25291-25296.

²³ For more information on the Title IV emissions bank, see EPA’s most recent annual report at [<http://www.epa.gov/airmarkets/cmprpt/arp03/2003report.pdf>].

²⁴ *Clean Air Interstate Rule*, pp. 25284-25285.

²⁵ *Ibid.*, pp. 25296-25299.

Unlike its approach with the SO₂ program, EPA did not attempt to meld the CAIR annual program with the existing NOx SIP Call by using a cap-and-trade scheme based on the NOx SIP Call. EPA calculated emission budgets for states by multiplying a NOx emission rate specified in the rule by the state's electric generating units' historical annual heat input. The rule sets the NOx emission rate at 0.15 lb./mmBtu during phase 1, increasing the stringency to 0.125 lb./mmBtu during phase 2. The baseline for the annual heat input is the highest annual input for any year 1999 through 2002 on a unit-by-unit basis.²⁶ For powerplants beginning operations after 2002 or for rewarding early reductions, or for assisting utilities having difficulties meeting their emissions limitations, EPA provides for a Compliance Supplement Pool (CSP) of 200,000 allowances to be allocated to states in proportion to their reduction requirement.

The final annual CAIR NOx program includes three major changes from the proposed rule. First, the phase 1 compliance deadline was accelerated from 2010 to 2009. EPA believes that accelerating the phase 1 deadline for both NOx and SO₂ is not practical, but a one-year acceleration of the NOx deadline was feasible.²⁷ Second, EPA chose to weight the heat input baseline by fuel type. Specifically, the adjustment factors are 1.0 for coal, 0.4 for natural gas, and 0.6 for oil.²⁸ This departure from the NOx SIP Call methodology (and the proposed rule) is justified by EPA on equity grounds.²⁹ The adjustment represents a 2½ weighing of coal combustion compared with natural gas combustion providing states with substantial coal-fired generation a significantly larger emissions budget than they would have received if all fossil fuel combustion were weighed the same. Third, EPA decided to offer states a voluntary opt-in provision for non-electric utility units that meet specific criteria.³⁰

The NOx annual cap and its model trading program presented several issues with respect to its relationship to CAIR's seasonal NOx program and the existing NOx SIP Call, including (1) melding CAIR methodology with the existing NOx SIP Call; (2) non-electric utilities included in the NOx SIP Call, but not CAIR cap determinations and model trading programs; and (3) annual versus seasonal controls. Some of these problems were resolved by EPA's decision in the final rule to include a seasonal NOx cap in addition to the annual CAIR NOx cap discussed here.

Despite its emphasis on using NOx SIP methodology in developing CAIR, the annual CAIR NOx cap-and-trade scheme differs significantly from the NOx 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

²⁶ Ibid., p. 25230.

²⁷ Ibid., p. 25222.

²⁸ Ibid., p. 25231.

²⁹ Ibid., p. 25231.

³⁰ Ibid., pp. 25286-25288.

NOx SIP Call.³¹ OTAG's recommendations to EPA with respect to the NOx SIP Call called for NOx controls on large and medium non-utility stationary sources in addition to controlling utility sources. In the final NOx 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.³² 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 NOx SIP Call that included these sources, but argues it doesn't have sufficient data in 2005 to include these sources in CAIR because of the increased geographic scope of CAIR and its inclusion of SO₂.³³

The methodological differences resulting from the exclusion of stationary industrial sources from CAIR but not the NOx SIP Call presents difficulties for the CAIR cap-and-trade program. By permitting only electric utilities to participate in the CAIR model trading programs, along with the decision to eliminate the NOx SIP Call trading program, industrial sources currently covered under the SIP Call would have been left hanging with respect to the CAIR model trading program. In the final rule, EPA decided to permit states to include NOx SIP Call industrial sources under its model seasonal NOx trading program, but not its model annual NOx trading program.

A final issue is the seasonal nature of the NOx SIP Call versus the annual nature of the CAIR NOx program. In the proposed IAQ, EPA argued this was not a problem. In the CAIR, EPA partly changed its approach and included a third cap to respond to the seasonal nature of the ozone program. However, it included no flow control mechanisms to prevent the excessive use of emission banks in meeting emission limitations such as are contained in the current NOx SIP Call trading program.

³¹ 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.

³² Specifically, for utility sources, EPA used a NOx emission rate of 0.15 lb. NOx/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.

³³ *Clean Air Interstate Rule*, p. 25214.

Reducing Ozone Formation: The Seasonal NOx Cap

In the final rule, EPA decided to include a seasonal NOx program directly focused on ozone nonattainment. This decision represents a reversal on EPA's part from its proposed rule that argued that ozone-affected states should be included in the proposed annual NOx program and no seasonal program was necessary.

The seasonal NOx trading program is completely separate from the annual NOx trading program in its operations, and would replace the existing NOx SIP Call seasonal trading program. Allowances banked under the seasonal program cannot be used for complying with the annual program and vice-versa. Likewise, existing banked allowances under the NOx SIP Call trading program can be used only with the seasonal NOx program. As in the NOx SIP Call, the ozone season is defined as May-September. In the final rule, EPA found that five states — Connecticut, Massachusetts, New Jersey, Delaware, and Arkansas — would be covered under the seasonal NOx program, but not the annual NOx program.³⁴ All of these states are currently covered by the NOx SIP Call.

However, EPA's CAIR seasonal NOx program's emissions budget allocation methodology is based on its CAIR annual NOx program's methodology, not the existing NOx SIP Call. This includes the sole focus on electric generating units, employing the same emission rates and historic baselines that the annual program uses, and the inclusion of fuel-type adjustment factors for determining baseline heat rates.

The decision to include a seasonal NOx cap and model trading program under CAIR reflects a desire by EPA to eliminate the existing NOx SIP Call trading program. EPA believes its updated modeling justified an enlarged emissions cap, and that its CAIR cost-effectiveness strategy is the most appropriate means of distributing state budgets. As discussed previously, the differing scope and methodologies created significant interfacing challenges.

Perhaps the greatest challenge was the exclusion of industrial sources covered under the NOx SIP Call from the allocation methodology used for the CAIR seasonal state budgets and trading program. EPA essentially provides NOx SIP Call states two options.³⁵ First, the state can choose to adopt the seasonal NOx program's electric-generating-units-only system and assign reduction requirements accordingly. As those states would be achieving their CAIR budgets solely through controlling electric generating facilities, previously controlled industrial sources would no longer have reduction requirements under the eliminated NOx SIP Call. The other option for states would be to include industrial sources currently covered under the NOx SIP Call in the seasonal trading program. Emission limitations for those sources would remain the same as under the current NOx SIP Call.

³⁴ When EPA issued the final rule, it also proposed to include New Jersey and Delaware under the annual NOx and SO₂ caps for contributing to PM_{2.5} nonattainment.

³⁵ *Clean Air Interstate Rule*, p. 25290.

Another melding problem resulted from the geographic difference between the 21-state NO_x SIP Call program and the 25-state CAIR program. Because of different methodologies, Rhode Island is included under the NO_x SIP Call, but not the CAIR NO_x program. EPA decided to give Rhode Island two options: (1) join the CAIR seasonal NO_x trading program, or (2) develop an alternative method to achieve its NO_x SIP Call requirements.³⁶

Issues

Timing of Reductions: Banking

Providing flexibility to participants is at the heart of the CAIR cap-and-trade implementation strategy. EPA hopes the adoption of the model trading program by states will achieve emission reductions earlier and less expensively than a command-and-control system. Incentives to achieve reductions earlier than necessary include (1) one-for-one redemption of SO₂ allowances banked before 2010 for more stringent CAIR requirements; (2) one-for-one use of NO_x SIP Call allowances banked before 2009 for the seasonal NO_x program; and (3) creation of a Compliance Supplemental Pool (CSP) with 200,000 annual NO_x allowances that states can use to reward early reductions by electric utilities.³⁷

However, analysis of projected banking activity before and during CAIR does not indicate that early reductions will be significant. As indicated in **Table 4**, none of the three trading program under CAIR is projected to have any net increase in banked allowances before the 2009/2010 phase 1 dates. For the SO₂ program, the current bank of 7.6 million allowances is projected to fall to 6.9 million allowances in 2010. From that point, the bank declines, producing the “glide slope” of reductions that EPA wants in order to reduce costs.³⁸ However, that “glide slope” does not appear to include any additional early reductions resulting from CAIR.

Table 4. Projected Net Banking Before and During CAIR

	2003	2007	2010	2015	2020	2026
SO ₂ Annual (million tons)	7.6	6.9	6.9	4.3	1.0	0
NO _x Annual	0	0	0	0	0	0
NO _x Seasonal (million tons)	n/a	0	0.06	0.15	0.22	0.29

Source: Environmental Protection Agency, *IPM CAIR 2004 Final Run*, located at [<http://www.epa.gov/airmarkets/epa-ipm/iaqr.html>].

³⁶ Ibid., p. 25290.

³⁷ Ibid., pp. 25284-25286.

³⁸ Ibid., p. 25284.

For the annual NO_x trading program, the projected banking activities indicates no “glide slope” whatsoever. There is no net banking activity projected under the annual NO_x program. For the seasonal program, the model projects no banking before the 2009 compliance dates, but a slowly accumulating bank of seasonal NO_x allowance after 2009. This accumulation continues through the projected period.

The effect this activity has on emission reductions is indicated in **Table 5**. As suggested above, the SO₂ banking activity results in a smoothing out of the phase 1 and phase 2 reduction requirement, but at the cost of emissions remaining over actual cap levels through the projected period. In contrast, the annual NO_x emission levels follow the reduction requirement in lockstep with no smoothing of the emission levels over time. Finally, the emissions levels under the seasonal program remain below the cap limits throughout the period.

Table 5. Projected Emissions Under CAIR
(million tons)

Regional emissions	2003	2010 (2009 for NO _x)	2015	2020	Cair caps (phase 1/ phase 1)
SO ₂ Baseline Emissions	9.4	8.7	7.9	7.7	
SO₂ Emissions after CAIR	n/a	5.1	4.0	3.3	3.6/2.5
NO _x Baseline Emissions	3.2	2.7	2.8	2.8	
NO_x Emissions after CAIR	n/a	1.5	1.3	1.3	1.5/1.3
Seasonal NO _x Baseline Emissions	1.05	0.68	0.68	0.70	
Seasonal NO_x Emissions after CAIR	n/a	0.56	0.47	0.47	0.58/0.48

Source: Environmental Protection Agency, 2005.

The last trend is interesting. When EPA proposed the IAQ, it did not include a seasonal NO_x cap for ozone mitigation. Its decision in CAIR to include a seasonal NO_x program with separate seasonal caps appears, at first, to be a major change from the proposed rule. However, the result above suggests that the annual NO_x control requirement is dictating control strategies, not the seasonal cap.³⁹ Indeed, the result indicates that compliance with the annual cap results in a slight overcontrol situation with respect to the seasonal cap — hence the slowly increasing bank of seasonal allowances. If this projection proves correct, seasonal allowances may have little value — something states may want to consider in deciding whether to include their industrial NO_x SIP Call sources in the seasonal CAIR program.

³⁹ According to EPA’s modeling runs, the actual emissions under the seasonal NO_x program continue under the control requirements with no banking activities. The seasonal NO_x credits banked over the projected time period just continue to accumulate. Discussions with EPA indicate the model sees the annual NO_x requirement as the controlling metric under CAIR, not the seasonal cap. Telephone communications with EPA (May 5, 2005).

Adequacy of Reductions

The purpose of CAIR is to address interstate transport of pollutants that are hindering downwind states from attaining the eight-hour ozone and PM_{2.5} NAAQS. As indicated by **Table 6**, most eastern U.S. counties currently in nonattainment will come into compliance with the PM_{2.5} and eight-hour ozone NAAQS by implementing existing CAA programs over the next 5-10 years. In terms of the remaining counties, CAIR is predicted by EPA to have a greater impact on PM_{2.5} attainment in the eastern United States than on eastern U.S. eight-hour ozone attainment. According to EPA, CAIR will bring only three additional counties (out of the remaining 40) into compliance with the eight-hour ozone NAAQS in 2010, and only a total of six additional counties (out of remaining 22) by 2015. In contrast, EPA projects CAIR will bring 52 additional counties (out of the remaining 79) into compliance with the PM_{2.5} NAAQS by 2010, and a total of 57 additional counties (out of the remaining 74) by 2015.

Table 6. Projected Impact of CAIR on Eastern U.S. Compliance with PM_{2.5} and Eight-Hour Ozone NAAQS

	Eastern U.S. ozone NAAQS nonattainment counties		Eastern U.S. PM _{2.5} NAAQS nonattainment counties	
	Without CAIR	With CAIR	Without CAIR	With CAIR
2005	408	n/a	195	n/a
2010	40	37	79	27
2015	22	16	74	17

Source: *Clean Air Interstate Rule*, p. 25165; 2005 data from EPA website at [http://www.epa.gov/cair/charts_files/nonattain_maps.pdf].

As noted above, the purpose of CAIR is to address interstate transport of SO₂ and NO_x, not to achieve the PM_{2.5} and eight-hour ozone NAAQS on its own. That task will require a combination of interstate and local controls. However, the relative lack of impact of the seasonal cap on ozone attainment raises questions. If data are a problem, some may ask why not include industrial sources for seasonal NO_x control only (as is currently the case with the NO_x SIP Call)? EPA has already decided to separate the phase 1 deadlines between NO_x (2009) and SO₂ (2010); why not include industrial sources for seasonal NO_x only? There are only five states that are under the CAIR seasonal program but not the NO_x SIP Call, so EPA's data concerns would be lessened.

In addition, do EPA's projections of seasonal NO_x banking suggest that the seasonal cap could be strengthened slightly? The seasonal NO_x program is separate from the annual NO_x program (as are the environmental problems they address), so the budget allocation schemes do not have to be identical.

With respect to the SO₂ results, the lessening of progress between 2010 and 2015 may raise questions. How much is this the result of the banking activities during that time period? Would a tighter reduction schedule or inclusion of industrial

sources improve the results? What should EPA response be if it chooses to increase the stringency of the PM_{2.5} standard in the future?

EPA believes it has struck the correct balance between addressing the interstate transport component of nonattainment and the need for local controls. Ultimately, it may be the Congress or the courts that determine whether that assessment is correct.

Meshing with the Clean Air Act

EPA does not provide any direct regulatory relief to facilities covered under CAIR, specifically New Source Review.⁴⁰ No exemptions or safe harbors are provided to facilities that meet the requirements of CAIR. However, two provisions of CAIR may offer some future relief from CAA requirements, depending on future EPA determinations. These are discussed below.

Section 126 Petitions. Under Section 126(b) of the CAA, any state or political subdivision may petition EPA for a finding that any major source or group of stationary sources located in another state is emitting pollutants that “significantly contribute” to the nonattainment of a NAAQS by their state. EPA is to respond to the petition within 60 days. If the petition is granted, the offending sources must cease operations within three months unless the sources comply with emission controls and the compliance schedules as determined by EPA to bring them into compliance with the section.

Section 126 petitions have been on file with EPA with respect to the eight-hour ozone standard since August 1997.⁴¹ On January 18, 2000, EPA indefinitely stayed findings on the eight-hour ozone standard, because of litigation on that standard.⁴² More petitions have been received since. On March 19, 2004, EPA received a Section 126 petition from North Carolina seeking reductions in upwind emissions to help it achieve the PM_{2.5} and eight-hour ozone NAAQS.⁴³ In CAIR, EPA did not state how it would rule on the North Carolina petition, stating: “When we propose action on the North Carolina petition, we will set forth our view of the interaction between section 110(a)(2)(D) and section 126.”⁴⁴

Regional Haze: BART. The reductions required under CAIR would have the effect of reducing regional haze in the eastern United States. In the proposed rule, EPA requested comment on the extent to which the requirements of the proposed rule

⁴⁰ *Clean Air Interstate Rule*, p. 25305.

⁴¹ In August 1997, three states — Massachusetts, Pennsylvania, and Vermont — submitted ozone transport petitions to EPA with respect to the eight-hour ozone NAAQS. These were joined later by petitions from Maine and New Hampshire.

⁴² Environmental Protection Agency, *Findings of Significant Contribution and Rulemaking on Section 126 Petitions for Purposes of Reducing Interstate Ozone Transport: Final Rule*, 65 *Federal Register* 2675-2767 (January 18, 2000).

⁴³ *Clean Air Interstate Rule*, p. 25304.

⁴⁴ *Ibid.*, p. 25304.

could satisfy the requirements of its regional haze program. Of particular focus was the requirement of Section 167A of the CAA that certain existing sources install best available retrofit technology (BART) to protect visibility in national parks and wilderness areas.⁴⁵

In the proposed IAQ and in CAIR, EPA sets out a lengthy argument with respect to CAIR and BART.⁴⁶ Specifically, EPA argues that participation in CAIR should act as a substitute for complying with BART. However, EPA also decided to defer the decision on substituting CAIR for BART for affected units until the BART guidelines are finalized. As stated by EPA:

The results clearly indicate that the CAIR will achieve greater reasonable progress than BART as proposed, measured by the proposed better-than-BART test. At this time, we can foresee no circumstances under which BART for EGUs could produce greater visibility improvement than the CAIR. However, for the reasons noted in section IX.C.1 above, we are deferring a final determination of whether the CAIR makes greater reasonable progress than BART until the BART guidelines for EGUs and the criteria for BART-alternative programs are finalized.⁴⁷

Conclusion

The final CAIR rule reflects several changes from the proposed IAQ resulting from improved modeling and other considerations. Changes include:

- Inclusion of a seasonal NO_x emissions cap separate from the proposed annual NO_x emission cap.
- Accelerating compliance with phase 1 of the two NO_x caps from 2010 to 2009.
- Five states — Arkansas, Kansas, Delaware, New Jersey, and Massachusetts — were removed from the list of states contributing to PM_{2.5} nonattainment. EPA has proposed that Delaware and New Jersey be re-included under a separate rulemaking.
- Four states — Arkansas, Delaware, Massachusetts, and New Jersey — joined Connecticut as states determined only to contribute to eight-hour ozone nonattainment.
- One state — Kansas — was removed from the rule.
- One state — Georgia — was removed from the list of states contributing to eight-hour ozone nonattainment, but remained on the list of states contribution to PM_{2.5} nonattainment.
- One state — Florida — was added to the list of states contributing to eight-hour ozone nonattainment in addition to remaining on the list of states contributing to PM_{2.5} nonattainment.

⁴⁵ For more on the regional haze program, see CRS Report RL32483, *Visibility, Regional Haze and the Clean Air Act: Status of Implementation*, by Larry Parker.

⁴⁶ *Clean Air Interstate Rule*, pp. 25300-25304.

⁴⁷ *Ibid.*, p. 25304.

- Creation of a 200,000 annual NOx compliance supplement pool (CSP) to allow states to reward early reductions or assist needy participants.
- Inclusion of a fuel-type adjustment factor to the NOx allocation formula that provides more NOx allowances to states that burn coal for electricity generation.
- Decision not to finalize any determinations with respect to Section 126 petitions or BART.

Although these changes may be important in specific cases, they do not represent a major shift in the thrust and scope of CAIR. Unlike the recently promulgated mercury (Hg) rule,⁴⁸ CAIR has not been particularly controversial, so major changes were not anticipated.

That the rule has not had the visibility of the Hg rule should not be interpreted to mean that the underlying issue of PM_{2.5} and eight-hour ozone compliance has been solved. In particular, EPA is currently reviewing the stringency of the PM_{2.5} NAAQS, a process that could result in a more stringent standard and more counties out of compliance. Given the lengthy time frame of CAIR, it seems likely that efforts will be made to strengthen its provisions well before 2015, if the PM_{2.5} standard is strengthened.

Likewise, CAIR does not address the most potent environmental issue surrounding fossil-fuel-fired electric generating facilities — global warming and the possibility of carbon dioxide reductions. Movement on that issue over the next decade could result in a modification of CAIR, or a new multipollutant control regime. Bills have been introduced in Congress to impose such a system.⁴⁹

Finally, the promulgation of CAIR may raise questions about the future of the Bush Administration's legislative initiative — Clear Skies. Clear Skies represents a complete rewrite of Title IV of the Clean Air Act and would impose a comprehensive cap-and-trade system on utility SO₂, NOx, and Hg emissions. In addition, it would have altered, deleted, or held in abeyance for some time existing sections of the Clean Air Act with respect to affected electric generating units and industrial sources that chose to opt into the program.⁵⁰ With the promulgation of CAIR that achieves NOx and SO₂ emissions reductions from most of the country's electricity generating facilities, and of the final Hg rule, it is unclear what impetus remains for Clear Skies.

⁴⁸ Environmental Protection Agency, *Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units; Final Rule*, 70 *Federal Register* 28606-28700 (May 18, 2005). For an analysis of the Hg rule, see CRS Report RL32868, *Mercury Emissions from Electric Power Plants: An Analysis of EPA's Cap-and-Trade Regulation*, by James E. McCarthy.

⁴⁹ See CRS Report RL32755, *Air Quality: Multi-Pollutant Legislation in the 109th Congress*, by Larry Parker and John Blodgett.

⁵⁰ See CRS Report RL32782, *Clear Skies and the Clean Air Act: What's the Difference*, by Larry Parker and James E. McCarthy.