

**WHAT NOW? THE FUTURE OF EPA TRANSPORT PROGRAMS
FOLLOWING VACATUR OF THE CROSS-STATE AIR POLLUTION
RULE**

*Carla M. Gray**

Transport programs provide a means for the Environmental Protection Agency to regulate states' emissions that endanger human health in neighboring areas. The Clean Air Interstate Rule and the Cross-State Air Pollution Rule are transport programs implemented under the authority of the good neighbor provision. However, the Court of Appeals for the District of Columbia Circuit remanded the Clean Air Interstate Rule without vacatur in December 2008, citing statutory infirmities. The court also vacated the Cross-State Air Pollution Rule in August 2012, citing improper reliance on the good neighbor provision. Now it is unclear whether the Environmental Protection Agency can create a new transport program in accordance with the court's interpretation of the good neighbor provision. It is also unclear how grandfathering of sources and fuel switching might play a future role in emissions reductions.

I. INTRODUCTION

Air quality has the capacity to dramatically affect quality of life and health. The presence of harmful air pollutants from industrial sources was first recognized through several national and international pollution-induced events that caused injury and death.¹ One prominent event occurred in Los Angeles in the

* J.D. Candidate, University of North Carolina School of Law, 2014

¹ See *Origins of Modern Air Pollution Regulations*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/apti/course422/apc1.html> (last updated Jan. 29, 2010). From 1930 to 1952, four major pollution-induced events caused deaths in the following cities: (1) Meuse River, Belgium in 1930; (2) Donora,

1940s, when smog, known today as ground-level ozone,² caused city residents to endure health problems such as eye, respiratory, and gastrointestinal symptoms.³ Recognizing that clean air was an important public health issue, President Nixon created the Environmental Protection Agency (“EPA”), and Congress passed the Clean Air Act that the EPA enforced in 1970.⁴ Within that Act, the EPA created National Ambient Air Quality Standards (“NAAQS”) to set levels for harmful air pollutants based on the public health and welfare.⁵ However, setting pollutant standards and enforcing compliance became problematic because air pollution can travel long distances once emitted into the air.⁶ This is because pollutants can adversely affect regions downwind of those polluted areas, and both polluted areas and their downwind neighbors can suffer air pollution problems and public health issues.⁷

The transient nature of air pollution, primarily its interference with and encroachment in downwind states and regions, has presented a modern regulatory challenge for the EPA. Air transport can cause the regulation of a particular source, region, or state to be complex because pollution from particular sources may be difficult to quantify.⁸ The EPA’s regulation of air pollution and

Pennsylvania in 1948; (3) Poza Rica, Mexico in 1950; and (4) London, England in 1952. *Id.*

² Patricia Ross McCubbin, *Michigan v. EPA: Interstate Ozone Pollution and EPA’s “NO_x SIP Call,”* 20 ST. LOUIS U. PUB. L. REV. 47, 48 (2001).

³ *Origins of Modern Air Pollution Regulations, supra* note 1.

⁴ *Id.*

⁵ See 42 U.S.C. § 7409(b)(1) (2006).

⁶ See *Control Emissions Technologies—Transport & Dispersion of Air Pollutants*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/apti/course422/ce1.html> (last updated Jan. 29, 2010) (“Because of the factors responsible for the transport and dispersion of pollutants, air pollution produced in the United States Midwest can have adverse effects on lakes and forests in the East coast of the country.”).

⁷ *Id.*

⁸ See U.S. ENVTL. PROT. AGENCY, *THE BENEFITS AND COSTS OF THE CLEAN AIR ACT FROM 1990 TO 2020 1-11* (2011), available at <http://www.epa.gov/oar/sect812/feb11/fullreport.pdf>.

transport provides one way that pollutants can be reduced and controlled, not just within a state, but also on a regional, multi-state level.⁹ Recognizing that clean air is a public good shared by all,¹⁰ Congress explicitly charged the EPA with the duty to regulate pollutants that cross state lines in the Clean Air Act Amendments of 1990.¹¹ These important amendments first granted the EPA authority to regulate air pollution through two new statutes: the Acid Rain Program,¹² the first transport program based upon a cap and trade approach, and 42 U.S.C. § 7410(a)(2)(D)(i)(I) of the Clean Air Act, otherwise known as the “good neighbor provision.”¹³ The good neighbor provision is used as the source of authority for more recently litigated transport programs.¹⁴

The concept of a cap and trade program provides the foundation for how the Title IV Acid Rain Program¹⁵ and more recent transport programs operate.¹⁶ A cap and trade program is

⁹ See generally Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, 63 Fed. Reg. 57,356 (Oct. 27, 1998) (codified at 40 C.F.R. pts. 51, 72, 75, and 96) (implementing the NO_x SIP Call).

¹⁰ Jonathan Baert Wiener, *On the Political Economy of Global Environmental Regulation*, 87 GEO. L.J. 749, 752 (1999).

¹¹ See Kati Kiefer, *A Missing Market: The Future of Interstate Emissions Trading Programs After North Carolina v. EPA*, 54 ST. LOUIS U. L.J. 635, 636 (2010); see also Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (1990).

¹² See Clean Air Act Amendments of 1990 § 401.

¹³ See *infra* pp. 13–14 and note 81.

¹⁴ See *North Carolina v. Env'tl. Prot. Agency*, 531 F.3d 896, 913 (D.C. Cir. 2008) (remanding the Clean Air Interstate Rule because the EPA exceeded its good neighbor statutory authority); see also *EME Homer City Generation, L.P. v. Env'tl. Prot. Agency*, 696 F.3d 7, 11–12 (D.C. Cir. 2012) (vacating the Cross-State Air Pollution Rule because the EPA improperly applied the good neighbor statute).

¹⁵ Kiefer, *supra* note 11, at 636.

¹⁶ See Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. 48,208, 48,211 (Aug. 8, 2011) (to be codified at 40 C.F.R. pts. 51, 52, 72, 78, and 97) (finalizing the Cross-State Air Pollution Rule in 2011). See generally Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions to the NO_x SIP

created when an emissions cap is set for each polluting source included in the program.¹⁷ Sources are given a certain amount of emissions allowances, which provide for the maximum amount that a source can emit under the program.¹⁸ Even if a particular source emits more emissions than its allowances permit, it is still required to comply.¹⁹ This strategy pushes sources to determine how they will meet their emissions requirements, which can be achieved through acquiring allowances from other sources to cover their additional emissions.²⁰ Allowances can also be met when sources use technologies to curb emissions.²¹ Thus, cap and trade is hailed as both an economically and environmentally viable solution because compliance strategies “require no prior approval, allowing sources to respond quickly to market conditions and government regulators.”²²

The Acid Rain Program garnered early success primarily because of its cap and trade approach.²³ Specifically, the Acid Rain Program was successful because it implemented a cap and trade structure by giving sulfur dioxide (“SO₂”) allowances to those plants that used least-cost energy conservation plans to reduce SO₂ emissions.²⁴ Thus, the explicit Title IV authority Congress granted the EPA to regulate air pollutants paved the way to modern air pollution regulation because this first program established that the EPA was able to create an effective cap and trade program to reduce air emissions.²⁵

Call, 70 Fed. Reg. 25,162 (May 12, 2005) (codified at 40 C.F.R. pts. 51, 72, 73, 74, 77, 78, and 96) (finalizing the Clean Air Interstate Rule in 2005).

¹⁷ *Cap and Trade: Essentials*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/captrade/basic-info.html>.

¹⁸ *Id.*

¹⁹ *See id.*

²⁰ *See id.*

²¹ *See id.*

²² *Id.*

²³ *See Kiefer, supra* note 11, at 636.

²⁴ *See* 42 U.S.C. § 7651c(f)(2)(B)(iii)(I) (2006).

²⁵ *See Kiefer, supra* note 11, at 673.

What Now? The Future of EPA Transport Programs

More importantly, the Clean Air Act Amendments created a second source of authority that the EPA now uses to regulate emissions of power plants outside of Title IV. The amendments created the good neighbor provision, which expanded the EPA's authority to regulate emissions that cross state lines and contribute to the nonattainment of another state's air quality standards.²⁶ However, private individuals and states have often litigated transport programs founded upon this good neighbor provision, ultimately challenging the EPA's statutory authority.²⁷

The United States Court of Appeals for the District of Columbia Circuit has had multiple opportunities to define the scope of the provision. The first of these was in *Michigan v. United States Environmental Protection Agency*,²⁸ where the court upheld the EPA's reliance on the good neighbor provision to regulate nitrogen oxides ("NO_x") in the NO_x SIP Call Program.²⁹ Under the NO_x SIP Call Program, the EPA required many states in the eastern part of the United States to revise their State Implementation Plans ("SIPs") in order to regulate NO_x emissions and meet good neighbor provision requirements.³⁰ The NO_x SIP Call Program also provided for a NO_x Budget Trading Program, a cap and trade program for NO_x emissions.³¹

²⁶ See *infra* pp. 13–14 and note 81.

²⁷ See *EME Homer City Generation, L.P. v. Env'tl. Prot. Agency*, 696 F.3d 7, 11 (D.C. Cir. 2012); *North Carolina v. Env'tl. Prot. Agency*, 531 F.3d 896, 906 (D.C. Cir. 2008); *Michigan v. U.S. Env'tl. Prot. Agency*, 213 F.3d 663, 669 (D.C. Cir. 2000).

²⁸ 213 F.3d 663 (D.C. Cir. 2000).

²⁹ See *id.* at 695 (denying petitions against the NO_x SIP Call rule itself); Kiefer, *supra* note 11, at 636 (discussing the creation of the NO_x SIP Call); McCubbin, *supra* note 2, at 48.

³⁰ See Harry Moren, Note, *The Difficulty of Fencing in Interstate Emissions: EPA's Clean Air Interstate Rule Fails to Make Good Neighbors*, 36 *ECOLOGY L.Q.* 525, 533 (2009).

³¹ See Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, Final Rule, 63 Fed. Reg. 57,356, 57,456 (Oct. 27, 1998) (codified at 40 C.F.R. pts. 51, 72, 75, and 96); see also *NO_x Budget Trading Program—Basic Information*, U.S. ENVTL. PROTECTION AGENCY,

Following the NO_x SIP Call ruling in *Michigan*, the Court of Appeals for the District of Columbia Circuit decided in *North Carolina v. Environmental Protection Agency*³² that the EPA's Clean Air Interstate Rule ("CAIR") was "fundamentally flawed."³³ The same court also held in *EME Homer City Generation v. Environmental Protection Agency*³⁴ that the EPA "exceed[ed] [its] statutory authority" when it promulgated the Cross-State Air Pollution Rule ("CSAPR").³⁵ A careful review and analysis of these prior decisions offers clues as to whether and how the EPA can create a new program that will fit within the scope of these previous decisions.

It is uncertain what a program to effectively control interstate pollution will look like following the previous remand without vacatur of the CAIR in *North Carolina*³⁶ and the vacatur of the CSAPR on August 21, 2012 in *EME Homer City Generation*.³⁷ Analysis of the Court of Appeals for the District of Columbia Circuit's interpretation of previous transport program rulings in *Michigan*, *North Carolina*, and *EME Homer City Generation* will provide insights into how the next transport program might be created by the EPA. In the end, the CSAPR's vacatur is likely to cost both the EPA significant amounts of time and resources in the coming years as new and more stringent regulations are developed

<http://www.epa.gov/airmarkt/progsregs/nox/sipbasic.html> (last updated May 28, 2009) (discussing that the NO_x budget trading program, which was a cap and trade program, was voluntary, but all states included in the NO_x SIP Call opted into the trading program).

³² 531 F.3d 896 (D.C. Cir. 2008).

³³ *Id.* at 929.

³⁴ *EME Homer City Generation, L.P. v. Env'tl. Prot. Agency*, 696 F.3d 7, 11 (D.C. Cir. 2012).

³⁵ *Id.* at 7.

³⁶ *North Carolina*, 550 F.3d at 1178. The EPA filed a petition for remand without vacatur, and the court granted this petition, remanding the CAIR without vacatur in December 2008. *Id.* at 1177-78.

³⁷ *EME Homer City Generation*, 696 F.3d at 12.

and implemented.³⁸ The rule's vacatur will have implications for future cap-and-trade programs, as well as implications for emissions technologies that plants will use to comply with the present and future programs, including what the EPA's next transport program will look like following the CSAPR ruling. There is also a question as to how current and future emissions technologies will play a role in helping to further reduce emissions.

This Recent Development addresses how previous cap and trade programs have influenced the EPA's most recent rulemaking, the CSAPR, and how a future transport program might operate. Part II will focus on the history of transport programs leading up to the CSAPR, as well as the CSAPR itself. An understanding of this history is needed for Part III, which analyzes factors from the CSAPR and previous programs that could help create an appropriate transport program in the future. These factors are derived from the *Michigan*, *North Carolina*, and *EME Homer City Generation* rulings. Part III also addresses the cooperative federalism relationship between the EPA and the states, and the good neighbor provision's role in this relationship. Finally, Part IV discusses the implications for future transport programs, following the CSAPR ruling. Part IV makes this argument by identifying a potential transport program that works and discussing the future of emissions technologies that might contribute to further emissions reductions within a cap and trade structure.

II. THE CROSS-STATE AIR POLLUTION RULE

Before the EPA created the CSAPR, it promulgated other transport programs pursuant to the Clean Air Act Amendments of 1990. Over the two decades since Congress amended the Clean Air Act, the following programs have been created to regulate SO₂

³⁸ See Lindsay Morris, *Update 3: Appeals Court Throws Out CSAPR*, POWER ENGINEERING (Aug. 21, 2012), <http://www.power-eng.com/articles/2012/08/appeals-court-throws-out-csapr.html>.

and NO_x emissions: the Title IV Acid Rain Program,³⁹ the NO_x SIP Call program,⁴⁰ and the Clean Air Interstate Rule.⁴¹

A. *The EPA's Air Quality Rules*

The CAIR regulates NO_x and SO₂ pollutants through emission control technologies and a cap and trade program for states regulated by the rule.⁴² In 2005, the EPA promulgated the CAIR in order to enforce good neighbor provision violations created by NO_x and SO₂ pollution in upwind states.⁴³ Good neighbor

³⁹ See Clean Air Act Amendments of 1990, Pub. L. No. 101-549, tit. IV, 104 Stat. 2399, 2584–2634 (1990) (codified at 42 U.S.C. §§ 7651–7651o (2006)); see also *Basic Information: Acid Rain Program*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/airmarkt/progsregs/arp/basic.html> (last updated Jul. 25, 2012) (implementing this program in 1995 to reduce nationwide SO₂ levels).

⁴⁰ See Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Reducing Regional Transport of Ozone, 63 Fed. Reg. 57,356, 57,356 (Oct. 27, 1998) (codified at 40 C.F.R. pts. 51, 72, 75, and 96); see also *Finding of Significant Contribution and Rulemakings for Certain States in the Ozone Transport Assessment Group Region*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/ttn/naaqs/ozone/rto/sip/index.html> (last updated Dec. 10, 2012) (implementing this program in 1998 to regulate NO_x in the eastern United States).

⁴¹ See Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions to the NO_x SIP Call, 70 Fed. Reg. 25,162, 25,162 (May 12, 2005) (codified at 40 C.F.R. pts. 51, 72, 73, 74, 77, 78, and 96); see also *Clean Air Interstate Rule (CAIR)*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/cair/> (last updated Aug. 21, 2012) (implementing this program in 2005, following the successful implementation of the Acid Rain Program and the NO_x SIP Call program).

⁴² See Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions to the NO_x SIP Call, 70 Fed. Reg. at 25,162. See generally *Cap and Trade: Essentials*, *supra* note 17. The idea behind using a cap and trade program is to encourage least cost emissions strategies by allowing sources to use a combination of controls, cap and trade allowances, and innovative ideas to comply in the most effective way. See *id.*

⁴³ See Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions

provision violations generally occur where upwind states' pollution interferes with downwind states' attainment of a particular air quality standard.⁴⁴ An air quality standard, or NAAQS, is determined by the EPA administrator for particular offending pollutants.⁴⁵ When a region does not meet a NAAQS standard, that region is considered to be in nonattainment,⁴⁶ and a correction must be made by the state to reach attainment.⁴⁷ Thus, the CAIR provides authority for states to regulate impacts on other states' compliance with NAAQS for ozone, a precursor to NO_x pollution, and particulate matter, a precursor to SO₂ pollution.⁴⁸

The CAIR also used modeling techniques to determine which areas would be in nonattainment or contribute to nonattainment.⁴⁹ The CAIR employed a "Community Multiscale Air Quality Model" and meteorological data to determine particulate matter concentrations in the states.⁵⁰ The CAIR also used a "Comprehensive Air Quality Model with Extensions" and meteorological data to determine ozone concentrations in states.⁵¹ The model was subsequently used to "project future baseline concentrations, interstate transport, and the impacts of the CAIR on projected nonattainment" of these pollutants.⁵²

After the EPA used the models to determine particulate matter and ozone concentrations, the agency created SO₂ and NO_x

to the NO_x SIP Call, 70 Fed. Reg. at 25,170 (regulating eastern states included in the CAIR that violate 42 U.S.C. § 7410(a)(2)(D)(i)(I) (2006)).

⁴⁴ See 42 U.S.C. § 7410(a)(2)(D)(i)(I).

⁴⁵ See *id.* § 7409(a).

⁴⁶ See *id.* § 7407(d)(1)(A)(i) ("[T]he Governor of each State shall . . . submit to the Administrator a list of all areas (or portions thereof) in the State[] designat[ed] as . . . nonattainment . . .").

⁴⁷ See *id.* § 7410(a)(2)(I).

⁴⁸ See Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions to the NO_x SIP Call, 70 Fed. Reg. at 25,162.

⁴⁹ See *id.* at 25,233.

⁵⁰ See *id.*

⁵¹ See *id.*

⁵² *Id.*

emissions budgets for states.⁵³ For SO₂ emissions, the EPA used the Title IV Acid Rain Program allowances as a basis for calculation of the region-wide and the annual state SO₂ budgets.⁵⁴ For NO_x emissions, the EPA created each state budget by adding together fuel emissions in a state, and then “adjusting” emissions by varied amounts based on fuel type,⁵⁵ in order to provide budgets that the EPA believed most closely resembled each state’s historical emissions.⁵⁶

Enforcement of the CAIR is primarily accomplished through the states.⁵⁷ This is because the explicit language of the CAIR requires states to create SIPs for those sources of offending emissions that “contribute significantly to downwind nonattainment” of NAAQS in another state.⁵⁸ Under the CAIR, the EPA would also create Federal Implementation Plans (“FIPs”) to regulate sources in states that implement deficient or disapproved SIPs under the CAIR.⁵⁹

⁵³ *Id.* at 25,229.

⁵⁴ *Id.*

⁵⁵ *See id.* at 25,231. (“State budgets would be determined by multiplying historic heat input data (summed by fuel) by different adjustment factors for the different fuels. These factors reflect for each fuel (coal, gas and oil), the 1999–2002 average emissions by State summed for the CAIR region divided by average heat input by fuel by State, summed for the CAIR region.”).

⁵⁶ *Id.* The EPA’s justification for this practice is that “[s]uch an approach provides States with allowances more in proportion with their historical emissions.” *Id.*

⁵⁷ *See id.* at 25,264 (“A State’s SIP must of course provide for ‘implementation maintenance and enforcement’ of the NAAQS ‘within’ the State because States lack authority to impose requirements on sources in other States . . .”).

⁵⁸ Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. 48,208, 48,217 (Aug. 8, 2011) (to be codified at 40 C.F.R. pts. 51, 52, 72, 78, and 97). At the time, July 1997 ozone and particulate matter NAAQS were those most recently promulgated in time for the CAIR rulemaking. *See id.*

⁵⁹ *See* Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions to the NO_x SIP Call, 70 Fed. Reg. at 25,269 (“EPA intends to promulgate the FIP shortly after the CAIR SIP submission deadline for States that fail to submit

Following the Court of Appeals for the District of Columbia Circuit's decision in *North Carolina*, where the CAIR was remanded without vacatur,⁶⁰ the EPA created the CSAPR and finalized the rule in August 2011.⁶¹ The rule would have replaced the CAIR⁶² by regulating NO_x and SO₂ pollutants in a similar set of states as those regulated under the CAIR.⁶³ The rule would have also enforced the particulate matter and ozone NAAQS.⁶⁴ Like the CAIR, the EPA determined the CSAPR's influence on states by using the Comprehensive Air Quality Model with Extensions to determine the nature of particulate matter and ozone concentrations in states.⁶⁵ However, the CSAPR attempted to fine-tune its analysis by using "source apportionment" tools that are designed to quantify the contribution of emissions from various sources and areas to ozone and [particulate matter] in other downwind locations."⁶⁶

The CSAPR also would have provided NO_x and SO₂ budgets for states and NO_x and SO₂ trading programs in the eastern United States.⁶⁷ To determine these budgets, the EPA used a different analysis than the Comprehensive Air Quality Model with

approvable SIPs in order to help assure that the downwind States realize the air quality benefits of regional NO_x and SO₂ reductions as soon as practicable.").

⁶⁰ *North Carolina v. Env'tl. Prot. Agency*, 550 F.3d 1176, 1178 (D.C. Cir. 2008).

⁶¹ Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. at 48,208. Note that the CSAPR is also known as the Transport Rule. *Id.* at 48,210.

⁶² *Id.* at 48,211.

⁶³ *See id.*

⁶⁴ *EME Homer City Generation, L.P. v. Env'tl. Prot. Agency*, 696 F.3d 7, 15 (D.C. Cir. 2012) ("The Transport Rule addresses States' good neighbor obligations with respect to the three NAAQS: the 1997 annual PM_{2.5} NAAQS, the 1997 ozone NAAQS, and the 2006 24-hour PM_{2.5} NAAQS."); *see* Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. at 48,209.

⁶⁵ Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. at 48,229.

⁶⁶ *Id.*

⁶⁷ *See id.* at 48,208. The CSAPR regulated the eastern and central parts of the country. *Id.* at 48,229.

Extensions. This analysis “look[ed] at different ‘cost thresholds’—places where there was a noticeable change on the cost curve because emissions reductions occur—and examin[ed] the corresponding impact on air quality” to determine the excess of emissions that violate the good neighbor provision within each state.⁶⁸ The EPA designed the NO_x and SO₂ budgets to “define[] each State’s emissions reduction obligations under the good neighbor provision.”⁶⁹ Unlike the CAIR, the CSAPR first “prescribe[d] Federal Implementation Plans to implement those obligations at the State level,”⁷⁰ rather than allowing states to implement a SIP to handle emissions reductions first.

B. *Vacatur of the Rule in EME Homer City Generation*

CSAPR was vacated on August 21, 2012 in *EME Homer City Generation*.⁷¹ Though the CSAPR was created to replace the CAIR, the Court of Appeals for the District of Columbia Circuit ordered that the EPA continue to administer the CAIR.⁷² In this decision, CSAPR was vacated on both procedural and substantive grounds.⁷³ Analyzing CSAPR’s reliance on the good neighbor provision will provide the EPA with a roadmap that will show how the Agency can promulgate a new transport rule that will comply with the previous Court of Appeals for the District of Columbia Circuit’s decisions.

The court’s substantive reasons to vacate the CSAPR relied on the EPA overstepping its good neighbor provision authority.⁷⁴ Specifically, the court laid out two problems with the EPA’s promulgation of the CSAPR. First, the court held that the EPA improperly used the good neighbor provision because the EPA

⁶⁸ *Id.* at 48,255.

⁶⁹ *EME Homer City Generation*, 696 F.3d at 15.

⁷⁰ *Id.*

⁷¹ *Id.* at 12.

⁷² *Id.* at 38.

⁷³ *Id.* at 11–12.

⁷⁴ *Id.* at 11 (exclaiming that “[a]bsent a claim of constitutional authority (and there is none here), executive agencies may exercise only the authority conferred by statute, and agencies may not transgress statutory limits on that authority”).

required emissions reductions from upwind states that would exceed the limits of what the good neighbor provision allows.⁷⁵ This is because the good neighbor provision only calls for the regulation of upwind states, rather than both upwind and downwind states, as the EPA proposed in the CSAPR.⁷⁶ This means that the CSAPR would overstep its good neighbor authority by over regulating states. Second, the EPA departed from the usual way of enforcing the good neighbor provision, which is where states first implement SIPs before being required by the EPA to follow a FIP.⁷⁷ In contrast, according to the Court of Appeals for the District of Columbia Circuit, the CSAPR requires a FIP in the beginning, bypassing state discretion.⁷⁸

III. ANALYSIS OF THE CSAPR RULING AND COMPARISON TO PREVIOUS TRANSPORT PROGRAMS

Understanding why CSAPR was vacated, and how the EPA can create a new program that will comply with the Court of Appeals for the District of Columbia Circuit's previous rulings, turns on the court's interpretation of the good neighbor provision. This is because the good neighbor provision provides the authority for both the CAIR's and the CSAPR's promulgation.⁷⁹ The EPA's failure to adhere to the Court of Appeals for the District of Columbia Circuit's good neighbor provision interpretation is at the heart of why the court remanded the CAIR without vacatur in *North Carolina* and vacated the CSAPR in *EME Homer City Generation*.⁸⁰

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *See id.* at 11–12.

⁷⁸ *Id.* The EPA argues that the states initially had the opportunity to create SIPs under Section 110(c)(1), and now the EPA must create FIPs because states have not met their emissions reductions obligations. *See id.* at 42–43 (Rogers, J., dissenting).

⁷⁹ *See* Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. 48,208, 48,211 (Aug. 8, 2011) (to be codified at 40 C.F.R. pts. 51, 52, 72, 78, and 97).

⁸⁰ *See EME Homer City Generation*, 696 F.3d at 11–12, 19.

A. *The Good Neighbor Provision*

The language of the good neighbor provision has specific requirements for SIPs. SIPs must “contain adequate provisions” that prohibit “emissions activity within the State from emitting any air pollutant in amounts” that will “contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard.”⁸¹ But what does this mean? An analysis of the good neighbor provision is needed in order to determine what the provision means in the context of a transport program. Specifically, a discussion that defines factors the court found appropriate under previous programs, and that also defines the scope of the EPA’s authority using *Michigan*, *North Carolina*, and *EME Homer City Generation*, is helpful to determine what a future transport program might look like. The four factors that must be met to satisfy the good neighbor provision are: (1) there must be a sufficient connection between upwind and downwind pollution to determine significant contributions; (2) sharing emissions reductions burdens between states is not allowed; (3) cost can be used as a consideration when determining states’ emission obligations; and (4) states cannot be over-controlled within the transport program.

1. *Connection Between Upwind and Downwind Pollution to Determine Significant Contributions*

In *North Carolina*, the court found that the CAIR violated the good neighbor provision⁸² because it failed to sufficiently “connect” individual states’ SO₂ emissions reductions to their “significant contributions” of pollution, but instead “relate[d] SO₂ reductions simply to their Title IV allowances, tampering unlawfully with the Title IV trading program.”⁸³ The *North Carolina* court used the word “connect” to show its disapproval of merely using Title IV allowances to determine states’ reduction

⁸¹ 42 U.S.C. § 7410(a)(2)(D)(i)(I) (2006).

⁸² *North Carolina v. Env’tl. Prot. Agency*, 531 F.3d 896, 930 (D.C. Cir. 2008).

⁸³ *Id.*

requirements. However, the court does not give guidance as to what an appropriate connection looks like. A better connection might mean that the EPA should base SO₂ reductions more closely from the Community Multiscale Air Quality Model.

Following this determination, the court directed the EPA to promulgate a rule in compliance with the good neighbor provision's attainment requirement,⁸⁴ rather than creating pollutant reductions based on factors unrelated to the provision.⁸⁵ Following the Court of Appeals for the District of Columbia Circuit's orders, the EPA created the CSAPR,⁸⁶ which employed a "two-stage approach."⁸⁷ The first part of the two-stage approach in the CSAPR was based upon a "state-by-state analysis of each upwind state's significant contribution to nonattainment and interference with maintenance."⁸⁸ This analysis used the Comprehensive Air Quality Model with Extensions at a horizontal resolution of 12 x 12 km⁸⁹ in order to determine upwind contributions to downwind states.⁹⁰

In *EME Homer City Generation*, the court stated that the CSAPR *did not* correctly follow the good neighbor provision because the rule did not tie "how much pollution each upwind state

⁸⁴ *Id.* at 929; see 42 U.S.C. § 7410(a)(2)(D)(i)(I).

⁸⁵ *North Carolina*, 531 F.3d at 930 (referring to SO₂ reductions determined by Title IV allowances and NO_x reductions determined by fairness).

⁸⁶ See Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. 48,208, 48,211 (Aug. 8, 2011) (to be codified at 40 C.F.R. pts. 51, 52, 72, 78, and 97).

⁸⁷ *EME Homer City Generation, L.P. v. Env'tl. Prot. Agency*, 696 F.3d 7, 23 (D.C. Cir. 2012).

⁸⁸ Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. at 48,212.

⁸⁹ *Id.* at 48,229. The EPA also noted the following:

The 12 km domain was nested within a coarse grid 36 x 36 km modeling domain which covers the lower 48 states and adjacent portions of Canada and Mexico. Predictions from this Continental U.S. (CONUS) domain were used to provide initial and boundary concentrations for simulations in the 12 km domain.

Id. at 48,229 n.19.

⁹⁰ *Id.* at 48,229.

was required to eliminate . . . to how much the upwind State contributed to downwind States' air pollution problems."⁹¹ The CSAPR did set a standard, or "air quality threshold," in step one of the two-stage approach, which was deemed appropriate by the court.⁹² Even so, the court took issue with the fact that—in step two—there was no longer a connection between these thresholds.⁹³ This is because the "EPA required each State's power plants to cut off all of the emissions they could eliminate at a given cost per ton of pollution reduced—regardless of the 'amounts' of the State's emissions the EPA deemed to 'contribute significantly.'"⁹⁴

Ultimately, the EPA did not overcome the similar "connection" problem that first created an unfavorable ruling in the CAIR. Like the CAIR, the Court of Appeals for the District of Columbia Circuit struck down the CSAPR because the court found this connection between the determination of significant contributions and the implementation of emissions reductions to be lacking.⁹⁵ The EPA did not adhere to the good neighbor provision because it did not take the actual emissions affecting downwind states as derived from the model, and then make an appropriate connection between analysis and implementation by requiring states to eliminate only that amount.⁹⁶ In practical terms, the EPA's problem lies in that it focused too much on cost thresholds to determine the amount of emissions that could be reduced, rather than its Comprehensive Air Quality Model with Extensions.

⁹¹ *EME Homer City Generation*, 696 F.3d at 17.

⁹² *Id.* at 23. Step one was appropriate because states out of attainment were being regulated according to the good neighbor provision, which requires individual states' attainment of the NAAQS standard. *See id.* Step one was also appropriate because states that did not contribute to nonattainment were not subject to attainment measures, meaning there was no overreach by the EPA to regulate outside of the good neighbor provision. *See id.*

⁹³ *See id.*

⁹⁴ *Id.*

⁹⁵ *See id.* at 16–17.

⁹⁶ *See id.* at 23 ("At that second stage, EPA abandoned the previous measure of significance—the numerical air quality thresholds, which were based on the quantity of pollution an upwind State sent to a downwind area. Instead, EPA switched over to relying on cost of reduction alone.").

2. *Sharing the Burden Is Not Allowed*

The *North Carolina* court held that the CAIR overstepped the language of the good neighbor provision because the manner in which states' NO_x caps are created within the CAIR's trading program effectively requires that states "share the burden" of emissions regulation.⁹⁷ The court considered the NO_x caps as causing states that do not contribute to nonattainment to share the contributing states' burden of emissions reduction because the EPA designed NO_x caps to operate on an "equitable" regional basis, rather than on an individualistic state basis.⁹⁸ Regulation of source through equitable burden is contrary to the good neighbor provision because the objective of the provision is to require regulation of upwind states' pollution in order to prevent interference with other states' attainment of NAAQs.⁹⁹ As a result, equity-based approaches were deemed arbitrary and capricious¹⁰⁰ by the *North Carolina* court.¹⁰¹ The CAIR's major flaw was that sharing the burden of pollution caps was contrary to what the good neighbor provision allows.

The EPA effectively made the same mistake in the CSAPR as in the CAIR when the CSAPR "took into account contributions of other upwind States to the downwind States' nonattainment problems" and subsequently "failed to take into account the

⁹⁷ *North Carolina v. Env'tl. Prot. Agency*, 531 F.3d 896, 918–19 (D.C. Cir. 2008).

⁹⁸ *See id.* at 920.

⁹⁹ *See id.* at 918, 930 ("As with the need to 'preserve the viability' of the Title IV program, EPA's notions of what is an 'equitable governmental approach to attainment is not among the objectives of section 110(a)(2)(D)(i)(I)."). The EPA was also forthright that caps were created in an equitable manner. *See id.* at 918.

¹⁰⁰ *Id.* at 906 ("An action is 'arbitrary and capricious' if it 'has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.'") (quoting *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983)).

¹⁰¹ *See id.* at 921.

downwind States' own fair share of the amount by which it exceeds the NAAQS."¹⁰² The court explained that, in order to conform to the good neighbor provision requirements set out in *North Carolina*, "the collective burden must be allocated among the upwind States in proportion to the size of their contributions to the downwind State's nonattainment."¹⁰³ While the court uses the language of "collective burden," which *sounds similar* to "sharing the burden," it only uses this language to quantify the total amount of air pollution causing downwind states to remain in nonattainment. After the EPA calculates this amount, the total amount must be divided between each offending upwind state in proportion to each of those state's pollution contribution.¹⁰⁴

3. *Cost Can Be Considered when Determining a State's Obligation to Meet Attainment*

In *Michigan*, cost was one factor that could be considered by the EPA to lower upwind states' attainment requirements under the good neighbor provision.¹⁰⁵ The *North Carolina* court also upheld this ruling, based on the *Michigan* holding.¹⁰⁶ However, the court mentions in *EME Homer City Generation* that the court previously ruled and currently holds that cost cannot be the *only* factor, or even the primary factor, considered when determining the amount of emissions that must be eliminated by sources.¹⁰⁷ The court considers this factor important because it will allow the EPA to

¹⁰² *EME Homer City Generation, L.P. v. Env'tl. Prot. Agency*, 696 F.3d 7, 27 (D.C. Cir. 2012).

¹⁰³ *See id.* at 21.

¹⁰⁴ *See id.*

¹⁰⁵ *See id.* at 21–22.

¹⁰⁶ *See North Carolina*, 531 F.3d at 918.

¹⁰⁷ *See EME Homer City Generation*, 696 F.3d at 25 ("Our decision in *Michigan* held that EPA may use cost considerations to require 'termination of *only* a subset of each state's contribution.'" (emphasis added) (quoting *Michigan v. U.S. Env'tl. Prot. Agency*, 213 F.3d 663, 675 (D.C. Cir. 2000))); *North Carolina*, 531 F.3d at 918. ("EPA can't just pick a cost for a region and deem 'significant' any emissions that sources can eliminate more cheaply. Such an approach would not necessarily achieve something measurable toward the goal of prohibiting sources 'within the State' from contributing significantly to downwind nonattainment.").

loosen their attainment standards if an emissions reduction action suggested is too cost-prohibitive. However, attainment standards must always come from the NAAQS standards, as set out by the good neighbor provision above.¹⁰⁸

4. *Over-Control of Upwind States Is Not Allowed*

Whether by cost,¹⁰⁹ or by other factors, the EPA is not allowed to impose obligations “beyond what is necessary for the downwind states to achieve the NAAQS.”¹¹⁰ According to *EME Homer City Generation*, over control through the good neighbor provision would result in abuse of the good neighbor provision by the EPA because air quality levels should be set to achieve the NAAQS standard, not “levels in downwind States that are *well below* the NAAQS.”¹¹¹ Such an overreach was also prohibited in *North Carolina*.¹¹² Confusingly, the Court of Appeals for the District of Columbia Circuit provides that a program should not overreach *and* it should also ensure that the program never provides for over-control in states.¹¹³ Over-control, whether it is apparent in the program or at all possible in the future, is always an incorrect use of the good neighbor provision to regulate states. Such limitations will undoubtedly make the EPA’s creation of a new program complicated and cumbersome as it navigates both the sharing the burden and over-control standards simultaneously.

¹⁰⁸ *EME Homer City Generation*, 696 F.3d at 23. (“[T]he Transport Rule is flawed because the requirement that EPA imposed on upwind States was not based on the ‘amounts’ from upwind States that ‘contribute significantly to nonattainment’ in downwind States . . .”).

¹⁰⁹ *See id.* at 25.

¹¹⁰ *Id.* at 22.

¹¹¹ *Id.* (“[I]f modeling shows that . . . upwind reductions would yield more downwind air quality benefits than necessary for downwind areas to attain the NAAQS, EPA must attempt to ratchet back the upwind States’ obligations to the level of reductions necessary . . . to produce attainment in the downwind States.”).

¹¹² *See North Carolina*, 531 F.3d at 921 (explaining that the EPA cannot require that states “exceed the mark” when eliminating their downwind pollution).

¹¹³ *EME Homer City Generation*, 696 F.3d at 27 (holding that the EPA did not ensure that state’s obligations were not over-controlled).

A review of previous case law provides four primary factors that a future transport program must heed in order to meet good neighbor provision requirements. First, the *North Carolina* and *EME Homer City Generation* rulings provide that the EPA did not adhere to the good neighbor provision because it did not make a connection between the actual emissions affecting downwind states and the pollution amounts the states must eliminate.¹¹⁴ It is important to note that although this interpretation by the *EME Homer City Generation* court is questionable,¹¹⁵ this approach is what the court will use when evaluating transport programs. Second, the cases also provide that the end result of the emissions reduction burden for each state must be based on that individual state's contribution to overall pollution, not approaches that share the burden between states.¹¹⁶ Third, although cost can be used as a factor to determine an upwind state's obligations, it may only be used to lower the particular state's obligations, not increase obligations.¹¹⁷ Fourth, over-control is not allowed, which is defined as the enforcement of air quality standards in downwind states that would create lower levels of pollution than the current NAAQS level.¹¹⁸

B. *FIPs and SIPs: Federal Versus State Implementation of Transport Programs*

Though this consideration does not fall solely under the authority of the good neighbor provision, it is nonetheless important to discuss the cooperative federalism relationship between the EPA and the states. FIP and SIP implementation

¹¹⁴ *See id.* at 17.

¹¹⁵ *See id.* at 41 (Rogers, J., dissenting). The dissent argues that the majority lacks merit to challenge the good neighbor provision's connectedness, or what the court calls a proportionality requirement, because "petitioners presented no such statutory authority argument in their briefs, instead challenging EPA's grouping of States for purposes of SO₂ reduction as arbitrary and capricious." *Id.*

¹¹⁶ *See North Carolina*, 531 F.3d at 918–19.

¹¹⁷ *EME Homer City Generation*, 696 F.3d at 21.

¹¹⁸ *Id.* at 22.

within the transport program is important to consider because Section 110(a)(1),¹¹⁹ from which the good neighbor provision is derived, governs how states submit SIPs.¹²⁰ The good neighbor provision falls within the section of the Clean Air Act that provides the requirements of a SIP, which states are required to submit to comply with NAAQS standards.¹²¹ State submission of a SIP is an important part and first step of the process in which a state complies with NAAQS standards and cooperates to implement an EPA transport program.

The *EME Homer City Generation* court argued that in this process of cooperative federalism, FIPs are only to be implemented by the EPA when a “SIP fails to contain a ‘required submission’ or EPA’s disapproving a SIP because of a ‘deficiency.’”¹²² As a result, the court found in the CSAPR program that the EPA erroneously “did not . . . leave it to the States to implement the required reductions through . . . SIPs,”¹²³ as the statute structure provides. The EPA promulgated FIPs before allowing states the opportunity to avoid FIPs, thus relegating SIPs to a secondary role.¹²⁴ The requirement exists in that a new transport program must first allow states to implement emissions reductions before taking action through a FIP.

IV. FUTURE IMPLICATIONS OF CSAPR AND EARLIER RULINGS

Based on the holdings in *EME Homer City Generation* and other cases, the EPA likely has a clearer idea as to what a program should *not* look like. After assessing what the court considers an appropriate interpretation of the good neighbor provision, there are questions as to what a future transport program promulgated by the EPA could look like. There is also the underlying question as to whether a new program can be implemented, under the authority of

¹¹⁹ 42 U.S.C. § 7410(a)(1) (2006).

¹²⁰ *See id.*

¹²¹ *EME Homer City Generation*, 696 F.3d at 30.

¹²² *Id.* at 31.

¹²³ *Id.* at 18.

¹²⁴ *Id.* at 18–19.

the good neighbor provision, or whether congressional action is needed that clarifies the EPA's duties for the next transport program.

A. *Identifying a Future Program that Works*

Some of the factors presented in past decisions can be more easily implemented in a new transport program than others. For example, the EPA can use *Michigan* as a model for how to properly implement costs as a regulatory loosening tool and properly use a SIP as the primary means of enforcement. These approaches, as used in the NO_x SIP Call program,¹²⁵ were upheld by the *Michigan* court.¹²⁶

However, demonstrating a connection between the quantities of pollution each upwind state is responsible for eliminating with “how much the upwind state contributed to downwind States’ air pollution problems”¹²⁷ will be problematic. It is problematic because the ways to meet the requirement for making the proper connection are not clearly defined in the cases. It is clear, however, that an appropriate connection is not made when emissions budgets are simply borrowed from another program.¹²⁸ Instead, budgets should come from air pollution analysis undertaken for that program. The EPA still failed to make this connection when it went from using numerical air quality thresholds gathered in the model to relying solely on costs to create emissions reductions requirements for states.¹²⁹ Using the model to make the connection would have been a better choice than cost, since using cost as a primary factor to determine states’ significant contributions to downwind air pollution will not work in the next transport program.¹³⁰ The EPA would do well to restrict its cost analyses to those found in *Michigan*.

¹²⁵ *Id.* at 34–35.

¹²⁶ *See id.* at 34 (finding that the NO_x SIP Call adequately quantified states’ good neighbor requirements).

¹²⁷ *Id.* at 17.

¹²⁸ *North Carolina v. Env’tl. Prot. Agency*, 531 F.3d 896, 930 (D.C. Cir. 2008).

¹²⁹ *EME Homer City Generation*, 696 F.3d at 23.

¹³⁰ *See id.*

North Carolina provides that sharing the burden between states is not allowed for the purposes of an emissions cap.¹³¹ Theoretically, the EPA could avoid a sharing-the-burden structure *and* show a connection by calculating emissions individually for each state by doing the following: (1) running the appropriate model to determine pollutant concentrations in the specific region at hand and from what sources those pollutants originate; (2) applying NAAQS standards within the analysis to determine which states are in attainment and nonattainment; and (3) determining a cap for each pollutant from that analysis that is individual to that state. However, the Court of Appeals for the District of Columbia Circuit described a necessity to divide emissions by state, in order to avoid sharing the burden of emissions caps levels between states. Even though the *EME Homer City Generation* decision provides some guidance as to how the EPA can divide emissions by state,¹³² it is unclear how accurate such an endeavor can be. It is also unclear what level of accuracy the court will accept for the next transport program.

The accuracy problem lies in how the EPA will be able to ensure that it will require each upwind state causing downwind

¹³¹ *North Carolina*, 531 F.3d at 918.

¹³² *EME Homer City Generation*, 696 F.3d at 21. The court stated:

A specific example helps illustrate [how to divide emissions by state]. Suppose the NAAQS is 100 units, but the downwind State's nonattainment area contains 150 units. Suppose further that the downwind State contributes 90 units, and three upwind States contribute 20 units each. Because the upwind States are responsible for the downwind State's exceeding the NAAQS by 50 units, the downwind State is entitled to at most 50 units of relief from the upwind States so that the downwind State can achieve attainment of the NAAQS. Distributing those obligations in a manner proportional to their contributions, each of the three upwind States' significant contribution would be, at most, $16\frac{2}{3}$ units. Or and 30 units respectively. Distributing those obligations in a manner proportional to their contributions, those three States' significant contributions would be at most $8\frac{1}{3}$, $16\frac{2}{3}$ and 25 units, respectively, leading to the combined reduction of 50 units needed for the downwind State to reach attainment.

Id.

pollution to mitigate *only* its portion of pollution in the air. Uncertainty is likely to result, due to the nature of pollutants, as once pollutants are emitted into the air, they have the ability to travel long distances.¹³³ Polluting gases disperse in the atmosphere once emitted, making local analysis difficult and time consuming. Gaseous pollutants are not well suited to a structure that separates pollution by state.¹³⁴

There is a limiting nature to the monitoring and modeling technology used in the CAIR and the CSAPR to determine states' emissions. Since a model is used as the basis for determining pollutant concentrations in both the CAIR and the CSAPR, it is likely that a model will be used for the next transport program. However, models involve a level of uncertainty, depending upon the factors used and the model's level of accuracy. Uncertainty lies in how accurately a model can determine exactly which state pollutants are originating from, particularly in the case where each pixel covers a large area¹³⁵ and lies near or overlaps a state boundary. Theoretically, the accuracy of the model used could play a role in whether the EPA's future pollutant budgets over-control or share the burden between states. The uncertainties that lie in the nature of modeling, paired with the transient nature of air pollution, will put future EPA transport programs at risk of not meeting the good neighbor provision factors set out by previous cases.

The reality is that the EPA's authority is quite restricted by the court's interpretation of the good neighbor provision from *Michigan*, *North Carolina*, and *EME Homer City Generation*. In the interest of creating a program that will withstand court challenges, it is time for Congress to provide explicit authority for

¹³³ See *Control Emissions Technologies—Transport & Dispersion of Air Pollutants*, *supra* note 6.

¹³⁴ See Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. 48,208, 48,231 (Aug. 8, 2011) (to be codified at 40 C.F.R. pts. 51, 52, 72, 78, and 97) (stating that “[n]ational rulemakings are not attainment demonstrations” and that the EPA is “not able to perform fine scale analyses for each area”).

¹³⁵ *Id.* at 48,229. The pixel resolution in the CSAPR model was 12 x 12 km. *Id.*

a transport program outside of Title IV.¹³⁶ This is what a workable transport program would require because the EPA's reliance upon the good neighbor provision for authority has proven unsuccessful for the CAIR and the CSAPR programs. One advantage is that explicit authority would allow the EPA to better navigate the restrictions laid down by the court rulings and thus avoid the regulatory struggle that lies in using the good neighbor provision to deal with a multi-state problem.¹³⁷ However, Congress has not taken such action, so currently the court's analysis of the good neighbor provision must provide guidance for the next program.

B. *The Future of Emissions Reductions Technology*

Since the Acid Rain Program began, the purpose of transport programs has been to use cap and trade, along with new emissions technologies, to reduce emissions standards from sources in an economic manner, in order to protect public health.¹³⁸ It is possible that the CSAPR could have served as a greater impetus for technology-based emissions reductions than those regulations under the CAIR. The CSAPR could have forced sources to come on board and quickly tighten their emissions standards through the implementation of newer technologies for older, existing sources,¹³⁹ or through fuel-switching from coal to cleaner-burning natural gas.¹⁴⁰

¹³⁶ Kiefer, *supra* note 11, at 671–73.

¹³⁷ *Id.* at 671–72.

¹³⁸ 42 U.S.C. § 7651(a)(4)–(7) (2006) (“The Congress finds that . . . (4) strategies and technologies for the control of precursors to acid deposition exist now that are economically feasible, and improved methods are expected to become increasingly available over the next decade; (5) current and future generations of Americans will be adversely affected by delaying measures to remedy the problem; (6) reduction of total atmospheric loading of sulfur dioxide and nitrogen oxides will enhance protection of the public health and welfare and the environment; and (7) control measures to reduce precursor emissions from steam electric generating units should be initiated without delay.”).

¹³⁹ See Brian H. Potts, *Trading Grandfathered Air—A New, Simpler Approach*, 31 HARV. ENVTL. L. REV. 115, 116 (2007).

¹⁴⁰ See Morris, *supra* note 38.

1. *Using Current Technologies in New Ways: Tackling the Grandfathered Sources Problem*

Current emission control technologies have the capacity to be highly effective at removing NO_x and SO₂ during combustion and post-combustion.¹⁴¹ Even though current technologies are effective at removing the offending pollutants, new directions in technology are needed to further reduce emissions. The future of technology and opportunity for greater emissions reduction is not likely to lie in the technology itself, but instead in identifying new ways in which current control technologies can be used to further reduce emissions.

One opportunity for greater emissions control exists in changing how “grandfathered” sources are regulated under the Clean Air Act.¹⁴² Grandfathered sources are defined as “vintage-differentiated sources,” where emissions limitations are set according to the date the source was built.¹⁴³ This means that older and less efficient sources are effectively grandfathered in to much less stringent regulations, allowing those sources to emit more pollutants.¹⁴⁴ Grandfathered sources are a problematic area within the Clean Air Act because they are less efficient than newer sources.¹⁴⁵ Regulation through another transport program, or through phasing out of such sources, would contribute to decreased pollution and cleaner air overall.

¹⁴¹ See, e.g., U.S. DEP’T OF ENERGY, CLEAN COAL TECHNOLOGY: TECHNOLOGIES FOR THE COMBINED CONTROL OF SULFUR DIOXIDE AND NITROGEN OXIDE EMISSION FROM COAL-FIRED BOILERS 8 (1999), available at <http://www.netl.doe.gov/technologies/coalpower/cctc/topicalreports/pdfs/topical13.pdf>. For example, the SNOX Flue Gas Cleaning Demonstration Project, a proprietary technology which uses a combination of selective catalytic reduction to remove SO₂ and NO_x, is able to oxidize ninety-five percent of SO₂ and ninety percent of NO_x from the coal combustion process. *Id.* at 11, 12.

¹⁴² See Potts, *supra* note 139, at 116.

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ See VICTOR B. FLATT & KIM DIANA CONNOLLY, CTR. FOR PROGRESSIVE REGULATION, ‘GRANDFATHERED’ AIR POLLUTION SOURCES AND POLLUTION CONTROL: NEW SOURCE REVIEW UNDER THE CLEAN AIR ACT 7 (2005), available at http://progressivereform.org/articles/NSR_504.pdf.

Using the concept of grandfathering under the Clean Air Act has advantages. From a technological standpoint, this is both fair and cost-effective because new technologies might develop shortly after a facility is built, bringing “the cost to retrofit sources [above] the cost to build a new facility.”¹⁴⁶ It is also cost-effective and therefore advantageous for older sources not to modify because modifications can trigger the New Source Review process that a plant was not previously required to comply with.¹⁴⁷ In the same way, it is fair that newer sources are regulated to meet tougher standards because owners of new sources can take advantage of the current technologies that will offer greater reductions in emissions.

The primary disadvantage to grandfathering in older sources is that allowing increased pollution from certain sources is not an environmentally or economically sound solution. Additionally, grandfathering does not further the public health interests.¹⁴⁸ The fact that modifications trigger New Source Review creates a disincentive for owners to retrofit older sources, which does not further air pollution reduction goals.¹⁴⁹ From an economic perspective, grandfathering provides relief that “discourages actors from anticipating legal change” and conforming to new standards.¹⁵⁰ Requiring new emissions regulations on old units or shutting down old units would also disadvantage the power industry. This is because installing control technologies is more expensive and more of a regulatory burden than simply running older plants with few controls and few regulations.¹⁵¹

In order to alleviate the grandfathering problem, several approaches exist. It is suggested that phasing out exemptions for existing, older sources would “provide . . . an economic incentive to upgrade pollution control equipment in plants where upgrades

¹⁴⁶ Potts, *supra* note 139, at 117.

¹⁴⁷ *Id.* at 123; see FLATT & CONNELLY, *supra* note 145.

¹⁴⁸ FLATT & CONNELLY, *supra* note 145.

¹⁴⁹ Potts, *supra* note 139, at 118.

¹⁵⁰ Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation: The Law and Economics of New Source Review*, 101 Nw. U. L. REV. 1677, 1726 (2007).

¹⁵¹ FLATT & CONNELLY, *supra* note 145.

are economically justifiable and an equally powerful incentive to shut down inefficient and highly polluting plants.”¹⁵² Such an absence of relief would encourage emitters to investigate and implement newer technologies.¹⁵³ With implementation of newer technologies, older sources can be more stringently regulated in the future.

Another idea is to incorporate older, grandfathered sources into a cap and trade program. Since the Acid Rain Program provided for the first cap and trade structure in the 1990’s, pre-1990 existing plants have been grandfathered out of the program.¹⁵⁴ This grandfathering scheme was also continued under the CAIR,¹⁵⁵ the rule in place today. This means that older sources have not had to purchase allowances¹⁵⁶ and have effectively been shielded from the market forces and regulation newer sources must participate in.

The opportunity to further regulate SO₂ and NO_x emissions first lies in the idea of installing control technologies on grandfathered sources in order to retrofit older plants. If plants cannot be retrofitted, then two options exist: (1) the plant will have to shut down; or (2) the plant must continue to be grandfathered in to continue operating. If plants are shut down or retrofitted, implementing older plants into a cap and trade program can become a reality. The EPA must ultimately decide if higher levels of pollution emitted from older plants are acceptable to human health. After such a decision is made, only then would the prospect of implementation of older sources into cap and trade be possible.

2. *Fuel Switching as an Emissions Reduction Strategy*

Fuel switching is one technique that can be employed by power companies in order to reduce emissions and meet more stringent

¹⁵² *Id.* at 2.

¹⁵³ Nash & Revesz, *supra* note 150, at 1726.

¹⁵⁴ JAMES E. MCCARTHY, LARRY PARKER & ROBERT MELTZ, CONG. RESEARCH SERV., RL 34589, CLEAN AIR AFTER THE CAIR DECISION: MULTI-POLLUTANT APPROACHES TO CONTROLLING POWERPLANT EMISSIONS 5 (2010).

¹⁵⁵ *See id.*

¹⁵⁶ *See id.*

standards. Since the Acid Rain Program, the EPA has endorsed “switching to lower sulfur fuel” as a way to reduce emissions and use less allowance in a cap and trade program.¹⁵⁷ For example, switching from burning coal to burning natural gas has the capacity, on average, to reduce carbon dioxide emissions by approximately fifty percent,¹⁵⁸ NO_x emissions by approximately twenty-eight percent, and SO₂ emissions by approximately ninety-nine percent.¹⁵⁹

Fuel switching could be an even more attractive solution today because natural gas prices have dropped dramatically in recent years.¹⁶⁰ This is partially in response to increased hydraulic fracturing in the United States.¹⁶¹ Although fuel switching is not necessarily a new technology strategy,¹⁶² the idea was most popular with plants as a way to quickly and cheaply comply with the CSAPR because installing other technologies would prove to be very expensive.¹⁶³ Fuel switching from coal to natural gas is not

¹⁵⁷ *SO₂ Reductions and Allowance Trading Under the Acid Rain Program*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/airmarkt/progsregs/arp/s02.html> (last updated July 25, 2012) [hereinafter *SO₂ Reductions*].

¹⁵⁸ Richard J. Pierce, Jr., *The Past, Present, and Future of Energy Regulation*, 31 UTAH ENVTL. L. REV. 291, 304 (2011); see *Air Emissions*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html> (last updated Oct. 17, 2012).

¹⁵⁹ See *Air Emissions*, *supra* note 158.

¹⁶⁰ Marin Katusa, *Shale Gas Takes on Coal to Power America's Electrical Power Plants*, FORBES (May 30, 2012, 1:43 PM), <http://www.forbes.com/sites/energysource/2012/05/30/shale-gas-takes-on-coal-to-power-americas-electrical-plants>.

¹⁶¹ Pierce, *supra* note 158, at 293.

¹⁶² See *SO₂ Reductions*, *supra* note 157. Fuel switching has been a strategy since at least as far back as the Clean Air Act Amendments of 1990, a little over two decades. *Id.*

¹⁶³ See Dorothy Davis, *EPA's Cross State Air Pollution Rule Overturned*, PENNENERGY (Aug. 22, 2012), <http://www.pennenergy.com/articles/pennenergy/2012/08/epa-s-cross-state.html> (arguing that implementation of the CSAPR regulations would be an economic hardship); see also Morris, *supra* note 38 (explaining that Luminant, a power generator, would have shut down some units at their Montecello coal plant, but will now continue operations following the CSAPR's vacatur).

only a way to reduce emissions overall, but it is also a way to decrease costs for sources participating in a cap and trade program. Switching fuels would not only allow for the source to cut costs through buying cheaper natural gas, but the cleaner-burning properties of natural gas would enable the source to purchase fewer allowances. As it is cost-effective to purchase natural gas at this time, fuel-switching is viewed as an effective strategy to decrease emissions for the purposes of complying with a cap and trade program.

Following the vacatur of the CSAPR, it is unlikely that emissions will be tightened or that new ways of using technologies will push forward.¹⁶⁴ Unfortunately, the EPA will take years to create a new program.¹⁶⁵ In turn, allowing the CAIR to remain in place for several more years will undoubtedly discourage innovative technology ideas and discourage implementation of regulations on grandfathered units. In the same vein, vacatur of the CSAPR will promote status-quo conditions and regulations for all emitting sources until a new rule is promulgated. It is important to note, however, that the power sector has gained more time before NO_x and SO₂ emissions will become more stringently regulated through a different EPA rule. It is also important to consider that investing in new technologies ahead of rulemaking is a possible way in which companies can ready themselves for the next era of regulations.

V. CONCLUSION

Significant delays of stringent emissions reduction measures are likely to result from developing another new rule to replace the CAIR. A new rule may be created, but, unfortunately, creation of a new program, if feasible under the good neighbor provision, will likely take years and significant expense to create. Interpretation of the language of the good neighbor provision, set out in *Michigan*, *North Carolina*, and *EME Homer City Generation*, brings to the forefront considerations about how the EPA must act

¹⁶⁴ See Morris, *supra* note 38.

¹⁶⁵ See *id.*

when creating their next transport program. The court has identified that (1) there must be a sufficient connection between upwind and downwind pollution to determine significant contributions; (2) sharing emissions reductions burdens between states is not allowed; (3) cost can be used as a consideration when determining states' emission obligations; and (4) states cannot be over-controlled within the transport program. However, many questions remain as to how the EPA can navigate these restrictions when using the good neighbor provision as the primary authority for the next program.

14 N.C. J.L. & TECH. ON. 103, 134
What Now? The Future of EPA Transport Programs