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TURNING LEMONS INTO LEMONADE: UTILIZING THE NAAQS PROVISIONS OF THE CLEAN AIR ACT TO COMPREHENSIVELY ADDRESS CLIMATE CHANGE

By Ari R. Lieberman*

INTRODUCTION

It is undeniable that anthropogenic global climate change is occurring and needs to be addressed by the United States government. Emissions from the United States contribute approximately 20% of worldwide greenhouse gases (GHGs). Indeed, the buildup of GHGs has already caused global warming with detrimental effects, and it is predicted that emissions will continue to grow under a business as usual scenario with warming increasing to dangerous levels that will impact virtually every facet of life on this planet.

Congressional action to address climate change is seemingly the preferable approach due to the multiple policy considerations that must be taken into account to set GHG emission goals. Furthermore, climate change should be addressed in a comprehensive manner specifically tailored to the unique problems posed by GHGs. However, as of this writing, it does not appear that Congress will pass comprehensive legislation, thus leaving the sole hope for government action with the executive branch through the Environmental Protection Agency (EPA). The good news is that the EPA has the tools to address GHGs in a commonsense and comprehensive manner through the Clean Air Act (CAA).¹

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¹ As President Barack Obama said in his 2013 State of the Union address, “[I]f Congress won’t act soon to protect future generations [from climate change], I will. I will direct my Cabinet to come up with executive actions we can take now” Address Before a Joint Session of Congress on the State of the Union, 2013 DAILY COMP. PRES. DOC. 2 (Feb. 12, 2013), *available at* <http://www.whitehouse.gov/the-press-office/2013/02/12/remarks-president-state-union-address> (last visited Nov. 26, 2013).

The EPA was initially hesitant to address climate change.² It was not until the Supreme Court decision *Massachusetts v. EPA*,³ which ruled that GHGs are air pollutants for purposes of the CAA, that the EPA finally began to act. Thus far, the focus of the EPA and the Obama Administration has been to regulate GHGs at the source of emissions. For example, the EPA issued a finding that GHGs emitted from motor vehicles endanger health and welfare,⁴ and, accordingly, the EPA issued regulations limiting tailpipe emissions.⁵ Additionally, the EPA proposed regulations regarding stationary sources pursuant to two sections of the CAA: the prevention of significant deterioration (PSD) provisions⁶ and the new source performance standards (NSPS) provisions.⁷

While regulating vehicles, power plants, and other sources of emissions is a useful way to limit greenhouse gas emissions, such regulations fail to guarantee overall reductions in a cost-effective and flexible manner. Instead of conventional technology-based standards, many have argued that the ideal way to target GHGs is with market-based mechanisms, such as cap and trade programs or

² See *Massachusetts v. EPA*, 549 U.S. 497 (2007). On October 20, 1999, a group of private organizations filed a rulemaking petition asking the EPA to regulate greenhouse gases emitted from motor vehicles. Nearly four years later, the EPA entered an order denying the rulemaking petition, arguing that the Clean Air Act does not authorize the EPA to issue regulations in regards to climate change, and even if the EPA had such authority, it would be unwise to do so.

³ *Id.*

⁴ Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009) (to be codified at 40 C.F.R. pt. 1) [hereinafter Endangerment Finding Under 202(a)].

⁵ 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624 (Oct. 15, 2012) (to be codified at 40 C.F.R. pts. 85, 86 & 600, and 49 C.F.R. pts. 523, 531, 533, 536 & 537).

⁶ Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514 (June 3, 2010) (to be codified at 40 C.F.R. pts 51, 52, 70 & 71) [hereinafter Tailoring Rule].

⁷ Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 26,476 (proposed May 4, 2012) (to be codified at 40 C.F.R. pt. 60) [hereinafter Proposed NSPS Rule for EGUs].

a “carbon tax.” While the popular argument among scholars is that the NSPS provisions may allow some degree of emission trading, an NSPS program would likely be limited in scope. Moreover, programs that regulate only at the source, such as emission standards for power plants or vehicles, would likely not take advantage of state initiatives that have already been implemented, such as energy efficiency programs, renewable portfolio standards, and state or regional cap and trade programs. Furthermore, an NSPS program would not provide incentives for various emitters that are not “stationary sources,” such as emissions from land use, agriculture and large residential and commercial buildings. If there were a cap on aggregate emissions, rather than only source-specific regulations, industries and regulators would be allowed a greater degree of flexibility while ensuring actual overall reductions.

This paper will argue that the National Ambient Air Quality Standards (NAAQS) provisions of the Clean Air Act provide the needed tools to cap aggregate emissions. Under the NAAQS provisions, the EPA is required to set a concentration in the ambient air for “criteria pollutants” in order to protect human health and welfare.⁸ Thereafter, the states submit state implementation plans (SIPs) in which they demonstrate how they will meet and maintain the NAAQS.⁹ By the express terms of the NAAQS provisions, SIPs are allowed to incorporate economic incentives, including marketable permits.¹⁰

The NAAQS provisions have received little attention as a method to address climate change as the EPA and others have consistently argued that NAAQS are not a suitable method for addressing GHGs. However, many of the arguments against using the NAAQS are overstated or no longer applicable. The typical argument is that the NAAQS are “conceptually inconsistent” with GHGs, since NAAQS have typically applied to local or regional short-lived pollutants; whereas GHGs are global and remain in the atmosphere for centuries. However, as explained in greater detail below, the CAA provides the EPA with the means to properly address

⁸ See 42 U.S.C. § 7408 (2011).

⁹ See 42 U.S.C. § 7410 (2011).

¹⁰ See 42 U.S.C. § 7410(a)(2)(A) (2011).

GHGs through the NAAQS provisions in a manner that takes into consideration the global long-lived nature of GHGs.

Another common argument against issuing a NAAQS for GHGs is that it would trigger burdensome New Source Review (NSR) permitting requirements. However, this argument is no longer relevant since the EPA has determined that the NSR provisions apply regardless of whether NAAQS are established for GHGs. To curb concerns that NSR will apply expansively to sectors not previously subject to the permitting requirements, the EPA implemented the “tailoring rule,” which provides that only very large GHG emitters are subject to NSR.

Despite the reluctance to rely on the NAAQS provisions to address climate change, the EPA may not have the discretion to refuse to issue a NAAQS for GHGs. The EPA may be legally required to issue a NAAQS for GHGs due to the EPA’s earlier finding with respect to tailpipe emissions. Since the EPA determined that emissions of GHGs from mobile sources is detrimental to health and welfare, it is only logical that a similar endangerment finding should be made with respect to the NAAQS provisions, thus resulting with the EPA being mandated to issue a NAAQS.

This Article will argue that the NAAQS provisions allow the EPA to regulate GHGs in a common sense manner that supports market-based mechanisms and broad flexibility among the states. This Article will consider that after setting NAAQS for GHGs, the EPA can establish emission budgets for the states, and to satisfy a portion of their necessary emission reductions to be in compliance, states can opt into an EPA-created multi-sector cap and trade program. While states may need to reduce emissions beyond the cap and trade program to come within their budgets, they could be creative in the ways they achieve reductions. States could successfully regulate areas normally under state control, such as land use, building standards, and agriculture. Such a design would implement flexible, market-based mechanisms, address many sectors of the economy, and take advantage of existing state laws that address GHGs.

The NAAQS provisions may allow the United States to take significant steps in addressing climate change. Part I will discuss the arguments against using the NAAQS to address GHGs posited

by the EPA and others. Part II will argue that a focus on aggregate emissions is a preferable approach in addressing GHGs, rather than only reductions from specific sources. Part III will provide an overview of how the NAAQS can be utilized to address aggregate GHG emissions. This section will conclude with a discussion on how the EPA can regulate GHGs, which are global long-lasting pollutants, in a rational manner utilizing flexible market-based policy mechanisms by establishing state budgets and a multi-sector cap and trade program.

I. THE ARGUMENTS AGAINST REGULATING THROUGH THE NAAQS

The EPA, along with many commentators, industries and even environmental groups, have advocated against using the NAAQS provisions of the Clean Air Act to address greenhouse gases.¹¹ However, as will be discussed in greater detail below, many of the concerns are either overstated or no longer applicable. Indeed, since Congressional action to comprehensively address climate change does not appear to be forthcoming, the NAAQS may provide the EPA the necessary tools to reduce domestic emissions of GHG. Contrary to what is often argued, the NAAQS provisions of the CAA may allow the EPA to address climate change in a flexible manner, taking advantage of market-based mechanisms and previously-implemented state actions.

¹¹ *Strengths and Weaknesses of Regulating Greenhouse Gas Emissions Using Existing Clean Air Act Authorities: Hearing Before the Subcomm. on Energy and Air Quality of the H. Comm. on Energy and Commerce, 110th Cong. (2008)*. For example, John Dingell, representative from Michigan, stated that EPA regulation of GHGs would be a “glorious mess.” *Id.* at 13. See *Control of Emissions from New Highway Vehicles and Engines*, 68 Fed. Reg. 52,922, & 52,924 (EPA Sept. 8, 2003) (notice of denial of petition for rulemaking). Robert R. Nordhaus, *New Wine into Old Bottles: The Feasibility of Greenhouse Gas Regulation Under the Clean Air Act*, 15 N.Y.U. ENVTL. L.J. 53, 61 (2007). See Nathan Richardson, *PLAYING WITHOUT ACES: OFFSETS AND THE LIMITS OF FLEXIBILITY UNDER CLEAN AIR ACT CLIMATE POLICY*, 30 (2011) [hereinafter Richardson (2011)] (“[T]he mainstream view held by the agency, industry, and most environmental groups appears to be that a NAAQS for GHGs is the wrong approach, both politically and practically.”).

In the wake of *Massachusetts v. EPA*, it became apparent that the EPA might be forced to regulate GHGs through various sources since many provisions of the CAA “trigger” responsibilities under other provisions. For example, as will be discussed in greater below, since the EPA began regulating GHG emissions from motor vehicles, the Prevention of Significant Deterioration (PSD) provisions that apply to stationary sources are triggered. Moreover, arguably the “endangerment findings” with respect to GHG emissions from motor vehicles trigger a similar finding with respect to the NAAQS provisions. In 2008, the EPA issued an Advance Notice of Proposed Rulemaking (ANPR) to discuss and elicit comments on the ways in which the EPA could regulate GHGs through the CAA, if at all.¹² As the introduction to the ANPR demonstrates, the EPA was hesitant to regulate GHGs through the CAA, and would prefer Congressional action:

[T]he ANPR demonstrates the Clean Air Act, an outdated law originally enacted to control regional pollutants that cause direct health effects, is ill-suited for the task of regulating global greenhouse gases. Based on the analysis to date, pursuing this course of action would inevitably result in a very complicated, time-consuming and, likely, convoluted set of regulations.¹³

¹² The ANPR took an atypical approach of not only requesting information and stating the EPA viewpoint, but it also included statements from the Office of Management and Budget, four Cabinet Departments (Agriculture, Commerce, Transportation and Energy), the Chairman of the Council on Environmental Quality, the Director of the President’s Office of Science and Technology Policy, the Chairman of the Council of Economic Advisers, and the Chief Counsel for Advocacy at the Small Business Administration, each of which advocated against regulating GHGs under the Clean Air Act. *See* *Regulating Greenhouse Gas Emissions Under the Clean Air Act*, 73 Fed. Reg. 44,354 & 44,356–96 (Advanced Notice of Proposed Rulemaking July 30, 2008) [hereinafter ANPR]; *see also* LARRY PARKER AND JAMES E. MCCARTHY, CONG. RESEARCH SERV., R40585, CLIMATE CHANGE: POTENTIAL REGULATION OF STATIONARY GREENHOUSE GAS SOURCES UNDER THE CLEAN AIR ACT, 3–4 (2009).

¹³ ANPR, *supra* note 12, at 44,355.

The NAAQS provisions, in particular, are often viewed as conceptually inconsistent with regulating GHGs. In general, the basis of this viewpoint is that the NAAQS were designed for local or regional short-lived pollutants and not global long-lasting pollutants, such as carbon dioxide. This argument was summed up in the EPA's initial determination in 2003, prior to the Supreme Court decision in *Massachusetts v. EPA*, that the EPA lacked the authority to regulate GHGs. This 2003 determination was based in large part on the conclusion that the NAAQS were ill-suited since GHGs are a global pollutant and:

[A]ny CO₂ standard that might be established would in effect be a worldwide ambient air quality standard, not a national standard - the entire world would be either in compliance or out of compliance The globally pervasive nature of CO₂ emissions and atmospheric concentrations presents a unique problem that fundamentally differs from the kind of environmental problem that the NAAQS system was intended to address and is capable of solving.¹⁴

The EPA argued in the ANPR that NAAQS are inappropriate due to the fact that traditional criteria pollutants are typically short-lived and regional in nature, and GHGs stay in the atmosphere for a long period of time and are global pollutants.¹⁵ Moreover, the concentration of GHGs is generally uniform throughout the nation and the world. Accordingly, depending on the concentration that the NAAQS are set, the entire country would either be in attainment or nonattainment of the NAAQS.¹⁶ Furthermore, due to the well-mixed, uniform and long-lasting nature of GHGs emissions, reductions in a single state or region would likely have no appreciable impact on the

¹⁴Memorandum from Robert E. Frabricant, EPA General Counsel, to Marianne L. Horinco, EPA Acting Administrator, EPA's Authority to Impose Mandatory Controls to Address Global Climate Change Under the Clean Air Act, at 7–8 (Aug. 28, 2003).

¹⁵ANPR, *supra* note 12, at 44,408.

¹⁶*Id.* at 44,480.

atmospheric concentration level in the particular state or region.¹⁷ The rationale against issuing a NAAQS for GHGs, according to the EPA's argument, is that no single state would be able to meet the NAAQS, since reductions within a single state will never be sufficient to reduce concentrations of GHGs enough to come within the NAAQS.¹⁸ Additionally, approximately 75 % of GHG emissions are beyond the control of the United States, and accordingly SIPs would not be able to address these emissions.¹⁹

However, while GHGs may be conceptually *different* than traditional criteria pollutants for purposes of regulation under NAAQS, GHGs are not necessarily conceptually *incompatible* with a NAAQS program. In this regard, while it is unusual for the entire nation to be in either in attainment or nonattainment of the NAAQS, such a scenario does not render the NAAQS provisions inoperable. As will be discussed in greater detail below, the CAA includes provisions, namely sections 179B and the "good neighbor provision," that arguably allow the EPA to regulate GHGs in a common-sense manner, taking into account the global nature of GHGs. In brief, section 179B allows state plans implementing the NAAQS to be approved if the reason the state is in nonattainment is international emissions,²⁰ and the "good neighbor" provision prohibits states to interfere with other state's achieving the NAAQS and has been interpreted to allow the EPA to issue state budgets and cap and trade programs.²¹ Moreover, the EPA could take into consideration the long-lasting nature of GHGs by only issuing a secondary NAAQS for GHGs, which protects welfare including changes in the weather and climate and allows states to come in compliance "as expeditiously as practicable,"²² rather than a primary health-based NAAQS, which would require compliance within ten years.²³

¹⁷ See *id.* at 44,401.

¹⁸ *Id.* at 44,483.

¹⁹ Nordhaus, *supra* note 11, at 62; DAVID SCHOENBROD, RICHARD B. STEWART & KATRINA M. WYMAN, BREAKING THE LOGJAM 61(2012).

²⁰ 42 U.S.C. § 7509a (2006).; *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir. 2008).

²¹ See 42 U.S.C. § 7410(a)(2)(D)(i)(I) (2006).

²² 42 U.S.C. § 7502(a)(2)(B) (2006).

²³ 42 U.S.C. § 7502(a)(2)(A) (2006).

A separate common argument against using the NAAQS provisions proffered in the ANPR and elsewhere is that NAAQS regulation will trigger burdensome New Source Review (NSR) regulations. Depending on where the NAAQS are set for GHGs and whether the entire country is in attainment or nonattainment, permitting requirements would be triggered for new and modified sources, known as new source review (NSR).²⁴ If the country were in attainment, then prevention of significant deterioration (PSD) rules would apply,²⁵ and if the country were in nonattainment, then more stringent NSR rules would apply.²⁶ Importantly, the NSR provisions apply to stationary sources that emit or have the potential to emit more than 100 or 250 tons per year of conventional pollutants, depending on the type of source, of a given pollutant per year.²⁷ Many sources that do not emit 100 or 250 tons per year emit GHGs in excess of the statutory amount. Accordingly, if NSR applied to GHGs, then many sources not previously covered by NSR, such as schools, hospitals and large apartment and office buildings, would need to obtain permits.²⁸

While it may very well be a “regulatory nightmare”²⁹ if all new and modified sources that emit 100 or 250 tons per year of GHGs required permits, such a scenario is a possibility regardless of a NAAQS program for GHGs. Indeed, it has been the EPA’s long-held stance that PSD permitting rules apply once a pollutant is regulated under the CAA, regardless of whether the pollutant is a “criteria pollutant.”³⁰ In this regard, section 165(a)(4) states that PSD rules apply and major facilities must install control technology

²⁴ See 42 U.S.C. §§ 7475, 7503 (2006).

²⁵ 42 U.S.C. § 7475 (2006).

²⁶ 42 U.S.C. § 7503 (2006).

²⁷ 42 U.S.C. § 7479(1).

²⁸ Schoenbrod, *supra* note 19, at 60.

²⁹ See Peter Glaser, *Avoiding a Regulatory Nightmare*, 26:2 *Envtl. F.* 52 (March 2009).

³⁰ Tailoring Rule, *supra* note 6; see also Reconsideration of Interpretation of Regulations that Determine Pollutants Covered by Clean Air Act Permitting Programs, 75 Fed. Reg. 17,004 (Final Action on Reconsideration of Interpretation Apr. 2, 2010).

“for each pollutant subject to regulation.”³¹ Since the EPA has already issued regulations for motor vehicles under Title II, GHGs are “subject to regulation” and PSD rules were triggered.³²

To address the regulatory burden of requiring permits for vastly more sources of emissions, the EPA issued a “tailoring rule,” which provided that only very large sources, those emitting 75,000 or 100,000 tons per year of GHGs, would initially be subject to PSD permitting requirements.³³ In the “tailoring rule,” the EPA relied on the “absurd results” doctrine and the “administrative necessity” doctrine to argue that if the 100/250 tons per year threshold applied to GHGs, regulators would be dramatically overburdened.³⁴ The “tailoring rule” was challenged in the D.C. Circuit by a group of states and industry associations.³⁵ However, the court dismissed the challenge on standing grounds since the rule actually favored the petitioners by making the regulation less burdensome.³⁶

The “tailoring rule,” or a similar future NSR rule, should the country be in nonattainment, may be prone to a legal challenge. Indeed, the rule is in clear contradiction to the statutory language that defines a “major emitting facility” as one that emits either 100 or 250 tons per year of a covered pollutant.³⁷ In order for a court to reach the merits, however, the rule must be challenged by petitioners with standing such as a state that is concerned about climate change³⁸ or an environmental group – neither of which are likely forthcoming. A state would likely refrain from opposing the “tailoring rule” since it would create more burdensome regulations should the “tailoring rule” be overturned. Moreover, environmental groups might not challenge the “tailoring rule” since they may be worried that congressional action in response to a decision rejecting the “tailoring rule” would include stripping the EPA of the power to

³¹ 42 U.S.C. § 7475(a)(4).

³² Tailoring Rule, *supra* note 6 at 31518.

³³ *Id.* at 31516, 31533.

³⁴ *Id.* at 31516.

³⁵ Coal. for Responsible Regulation v. EPA, 684 F.3d 102 (D.C. Cir. 2012).

³⁶ *Id.*

³⁷ 42 U.S.C. § 7479(1).

³⁸ See *Massachusetts v. EPA*, 549 U.S. at 518 (holding that state petitioners have standing).

regulate GHGs altogether. Importantly, if a court struck down the “tailoring rule,” then the same outcome would occur whether or not NAAQS were established; all facilities that emit 100 or 250 tons per year of GHGs would be subject to NSR requirements.

Even if a court overturned the “tailoring rule,” or a similar rule for nonattainment NSR, Congress may choose to take the less severe action of stripping authority from the EPA to regulate GHGs. As suggested by some commentators, all Congress would need to do is make a slight modification to the language in the CAA and simply change the threshold for GHGs in the NSR rules.³⁹ Even without congressional action, the EPA may be able to address the issue by allowing universal or general permits for small sources.⁴⁰

The two chief arguments against relying on the NAAQS provisions to address GHGs are overstated or inapplicable. Indeed, as will be shown in greater detail in Part III, the CAA allows the EPA to take into account the global nature of GHGs, and, accordingly, the CAA can regulate GHGs in a rational manner. Furthermore, the concerns that the NAAQS will trigger NSR are overstated since NSR is triggered already, since the EPA is regulating GHGs under the motor vehicle provision of the Clean Air Act.⁴¹ To address the concerns of unduly burdensome regulations, the EPA drafted the “tailoring rule.” The ANPR and many of the commentators that argue against regulating GHGs through the NAAQS were written prior to the “tailoring rule,” and accordingly do not consider that the EPA has already addressed the concerns of out-of-control NSR regulations.

³⁹ See Nathan Richardson, Art Fraas, & Dallas Burtraw, *Greenhouse Gas Regulation Under the Clean Air Act: Structure, Effects, and Implications of a Knowable Pathway*, 41 ENVTL. L. REP. NEWS & ANALYSIS 10098, 10100 (2010) (hereinafter Richardson (2010)).

⁴⁰ Christopher T. Giovinazzo, *Defending Overstatement: The Symbolic Clean Air Act and Carbon Dioxide*, 30 HARV. ENVTL. L. REV. 99, 157 (2006); Larry Parker & James E. McCarthy, *Climate Change: Potential Regulation of Stationary Greenhouse Gas Sources Under the Clean Air Act*, CONG. RESEARCH SRVS., R40585, 26 (May 14, 2009) (notes that the Clean Air Act, section 504(d), allows the EPA to issue a “general permit” covering all sources within the same category).

⁴¹ Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514 (June 3, 2010) (to be codified at 40 C.F.R. pts 51, 52, 70 & 71) [hereinafter Tailoring Rule].

II. THE IMPORTANCE OF ADDRESSING AGGREGATE EMISSIONS

Thus far the policy of the United States and the EPA to reduce GHG emissions is by setting emission standards for specific sources. The EPA set tailpipe emissions reduction targets via Title II of the Clean Air Act and proposed standards of performance for new or modified electricity-generating units through the New Source Performance Standards (NSPS) provisions. Seemingly, the EPA will continue to issue further regulations for additional categories of new and modified stationary sources, such as petroleum refineries, as well as begin to address existing stationary sources. Such regulations may reduce GHG emissions, and may even phase out the construction of new coal-fired power plants; however, source-specific technology-based performance standards will not guarantee that overall emission reductions are realized, since, at least theoretically, emissions can continue to increase outside of the regulated entities. Indeed, the only method to ensure that overall reductions will be met is to put a cap on overall aggregate emissions. A cap on overall emissions will allow reductions from various areas that would be outside a source-specific approach. For example, regulations concerning energy efficiency, building design, land use, city planning, and agriculture would assist in reducing overall emissions, yet would all be outside the scope of a source-specific approach.

As will be discussed in greater detail in Part III, the NAAQS provisions of the Clean Air Act may provide the EPA with the tools to set a cap on overall emissions of GHGs. Significantly, even if the United States were to utilize the NAAQS provisions for GHGs, NSPS regulations for new or modified stationary sources and Title II regulations for motor vehicles would nevertheless be required for sources of GHGs. Many have argued that the NSPS provisions will allow at least some degree of flexibility in its implementation. However, as will be argued below, the NSPS provisions alone do not provide the same degree of flexibility, nor do they consider as many sectors of the economy, as a NAAQS approach. Moreover, while the EPA is currently attempting to avoid issuing NAAQS for GHGs, this decision may not be within their discretion.

A. An Overview of NSPS

Pursuant to the new source performance standards (NSPS) provisions in section 111 of the CAA, the Administrator is charged with creating a list of categories of stationary sources that causes or contributes to air pollution that endangers public health or welfare.⁴² Thereafter, a “standard of performance” is issued for each category, which is defined as “a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the *best system of emission reduction* which (taking into account...cost [and other factors])...the Administrator shall determine whether it has been adequately demonstrated.”⁴³ Setting a “standard of performance” typically involves identifying a control technology and developing performance standards based on the selected technology.⁴⁴ While the EPA often bases the standard of performance on a specific technology, the sources are not forced to implement the technology; rather, the standard of performance is usually reflected as a numerical emissions limit that the given category of sources must meet.⁴⁵

Section 111(b) requires new or modified sources to install emission reduction technologies.⁴⁶ Additionally, pursuant to section 111(d), the EPA establishes a procedure for states to submit plans that establish standards of performance for existing sources.⁴⁷ Under section 111(d), the EPA issues guidelines to the states regarding systems of reduction and the states submit plans, subject to EPA approval, for implementation of the guidelines.⁴⁸ However, the EPA

⁴² 42 U.S.C. § 7411(b)(1)(A).

⁴³ 42 U.S.C. § 7411(a)(1).

⁴⁴ 42 U.S.C. § 7411(b); 42 U.S.C. § 7411 (a)(1); Richardson (2010), *supra* note 39, at 10107.

⁴⁵ See Jonas Monast, Tim Profeta, Brooks Rainey Pearson & John Doyle, *Regulating Greenhouse Gas Emissions from Existing Sources: Section 111(d) and State Equivalency*, 42 ENVTL. L. REP. 10206, 10207 (2012).

⁴⁶ 42 U.S.C. § 7411(b)

⁴⁷ 42 U.S.C. § 7411(d).

⁴⁸ 42 U.S.C. § 7411(d).

is only authorized to issue guidelines for existing sources as long as the pollutant is not regulated under the NAAQS provisions nor listed as a hazardous air pollutant.⁴⁹

As a result of a settlement agreement between states and environmental groups, on January 8, 2014, the EPA proposed GHG NSPS for Electric Generating Units (EGUs).⁵⁰ The NSPS regulations require new large fossil fuel-fired EGUs to meet an output-based standard of 1,000 or 1,100 pounds of CO₂ per megawatt-hour depending on the size and type of unit. This standard is based on the emissions rate of natural gas powered EGUs. Indeed, coal-fired power plants typically have an emissions rate well above the 1,100 pounds of CO₂ per megawatt-hour standard.⁵¹ Thus, unless carbon storage and sequestration technology can be built to scale, the rules virtually prohibit the construction of new coal-fired power plants.⁵² While the proposed regulations are solely for new sources,⁵³ pursuant to 111(d) the EPA may be required in the future to establish a procedure for states to regulate existing sources as well.⁵⁴

⁴⁹ 42 U.S.C. § 7411(d)(1)(A)(i).

⁵⁰ Richardson (2011), *supra* at 4; *Settlement Agreements to Address Greenhouse Gas Emissions from Electric Generating Units and Refineries: Fact Sheet*, available at <http://epa.gov/carbonpollutionstandard/pdfs/settlementfactsheet.pdf> (last visited Aug. 26, 2013); Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 1429 (proposed Jan. 8, 2014) (to be codified at 40 C.F.R. 60). The 2013 proposed standards withdrew standards that were proposed on April 13, 2012. The 2012 standards relied on a single standard for all new fossil-fuel electricity generating units, whereas the 2013 rule has different standards depending on size and type of unit. Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 07820 (proposed Apr. 13, 2012) (to be codified at 40 C.F.R. pt. 60).

⁵¹ *Regulatory Impact Analysis for the Proposed Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units*, EPA-452/R-12-001, at 5–21 (March 2012). The emissions rate for coal-fired power plants is approximately 1,800 pounds of CO₂ per megawatt-hour.

⁵² See generally *Comments from Edison Electric Institute to EPA on Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Generating Units* (June 25, 2012).

⁵³ *Id.*

⁵⁴ 42 U.S.C. § 7411(d)(A).

The proposed NSPS regulations do not allow trading between sources. Since trading is not allowed, stationary sources see no benefit of reducing emissions below the standard of performance. On the other hand, if emission trading were allowed, sources would be incentivized to reduce emissions below the standard that would generate credits that the source could sell to other sources that emit above the standard. Currently, the only incentive in the regulations is for new coal-fired power plants to install carbon capture and sequestration technology or to switch entirely to natural gas. There is no benefit for sources to switch to renewables that have no emissions, rather than switching to natural gas, since either method will allow the source to be in compliance with the proposed rules.

According to the EPA, the proposed regulations will have negligible costs, since it assumes that even without the regulations no new coal plants would be built.⁵⁵ This assumption is troubling for a number of reasons. As an initial matter, the regulations, by the EPA's own admission, do nothing to halt emissions other than what would be occurring under a business-as-usual scenario. Moreover, the regulations assume that natural gas will remain a cheap resource. However, while natural gas has seen a boon in recent years, that may change if controversial natural gas extraction techniques, known as hydraulic fracturing, become more heavily regulated.⁵⁶ As of now, the regulation of hydraulic fracturing is largely left to the states, with little federal oversight.⁵⁷ This may change in the future, especially

⁵⁵ *Regulatory Impact Analysis for the Proposed Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units*, EPA-452/R-12-001, at 5-1 (March 2012); see also *Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units*, 79 Fed. Reg. 1429 (proposed Jan. 8, 2014) (to be codified at 40 C.F.R. 60).

⁵⁶ See Comments from Edison Electric Institute to EPA on Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Generating Units (June 25, 2012) (“Many factors will affect the future price and supply of shale gas, including state and federal regulations that have not yet been finalized.”).

⁵⁷ See, e.g., Jacquelyn Pless, *States Take the Lead on Regulating Hydraulic Fracturing: Overview of 2012 State Legislation*, Nat'l Conference of State Legislatures (March 2013).

since the EPA is undergoing a multi-year study of the effects of hydraulic fracturing,⁵⁸ and depending on the results of this study, the federal government may determine that more oversight is necessary. If additional regulations are put in place, the price of natural gas will likely rise.

B. Can NSPS Utilize Flexible Market-Based Mechanisms?

As stated above, currently the administration has only proposed NSPS regulations for new or modified sources. However, President Obama has indicated in a speech on June 25, 2013, that his administration is planning to regulate existing sources as well.⁵⁹ Since existing coal-fired power plants continue to emit large amounts of carbon dioxide, it is important that such sources reduce emissions. Since, as mentioned above, it is likely that no new coal-fired power plants would be built even without EPA action, it is important that regulations are implemented that address existing stationary sources.

Many commentators believe that the EPA is allowed to pursue flexible market-based mechanisms through the NSPS provisions, especially in regards to existing sources through section 111(d). As discussed above, pursuant to the NSPS provisions, the EPA sets “standards of performance” for categories of sources which is defined as the “emission limitation achievable through the *best system of emission reduction...*”⁶⁰ While the term “best system of emission reduction” has traditionally been interpreted as technological systems of reduction at the actual source, if the term can be interpreted broadly to mean that the EPA-created program is the “system of emissions reduction,” the EPA could arguably create a program with compliance flexibilities, including trading between

⁵⁸ *EPA's Study of Hydraulic Fracturing and its Potential Impact on Drinking Water Resources*, available at <http://www2.epa.gov/hfstudy> (last visited Aug. 26, 2013).

⁵⁹ *Remarks by the President on Climate Change* (June 25, 2013) available at <http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change> (last visited Aug. 26, 2013).

⁶⁰ 42 U.S.C. § 7411(a)(1).

sources of the same category.⁶¹ There is little precedent, however, for an emission-trading program under the NSPS provisions. The EPA attempted to create such a program with the Clean Air Mercury Rule (CAMR),⁶² but the D.C. Circuit invalidated the rule on the grounds that the EPA improperly delisted mercury as a hazardous pollutant. Accordingly, the court did not rule on the legality of the trading program, and the ability for the EPA to create a trading program through NSPS remains largely untested.⁶³

Some commentators find evidence that an NSPS program for existing sources can incorporate flexible market-based compliance mechanisms in the reference to the SIP procedure contained in section 111(d).⁶⁴ Under section 111(d), the EPA Administrator “shall establish *a procedure similar to...section 7410 [110]*...which each state shall submit to the Administrator a plan...” to meet the emission reductions targets set by the EPA for existing sources.⁶⁵ Section 110, in turn, expressly allows state plans that implement the NAAQS, to include “economic incentives such as ...marketable permits, and auctions of emissions rights.”⁶⁶ Accordingly, some argue that state plans for existing sources under NSPS allow market mechanisms in a “similar” manner to section 110 state implementation plans.⁶⁷

Others argue, however, that an NSPS program requires emission reductions from each facility, and, thus, no trading would be available. As an initial matter, the reference to section 110 merely states that the “*procedure*” in which the EPA issues guidelines and the states submit plans for existing sources under 111(d) is “*similar*”

⁶¹ See generally Gregory E. Wannier, Jason A. Schwartz, Nathan Richardson, Michael A. Livermore, Michael B. Gerrard, and Dallas Burtraw, “Prevailing Academic View on Compliance Flexibility under 111 of the Clean Air Act” RFF DP 11-29 (July 2011) (majority of scholars believe such a definition is possible); see Richardson (2010), *supra*; some argue that such an interpretation by the EPA will be granted deference by a court. See, e.g., Richardson (2011) *supra* at 20 citing *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837 (1984).

⁶² See Wannier et al., *supra* at 5; Richardson (2011), *supra*.

⁶³ *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008).

⁶⁴ Wannier et al., *supra* at 5.

⁶⁵ 42 U.S.C. § 7411 (d).

⁶⁶ Wannier et al., *supra* at 5.

⁶⁷ See Richardson (2011), *supra* at 15; Wannier et al., *supra* at 5

to the SIP procedure in section 110.⁶⁸ Thus, section 111(d) is silent with regards to whether the substance of a section 110 SIP, including “economic incentives” and market approaches, can be included in NSPS state plans. The reference to section 110 may simply mean that the procedure in which the EPA sets guidelines and the states devise plans, subject to EPA approval, is similar for section 111(d). Moreover, the phrase “best system of emission reduction” has traditionally applied to technological systems in facilities, rather than an overarching program such as a trading regime.⁶⁹ To consider a trading regime to be a “system of emission reduction” for purposes of 111(d) may be stretching its meaning to the breaking point. Accordingly, a court may very well invalidate a trading scheme implemented under 111(d).⁷⁰

Even if a trading program were allowed under the NSPS provisions, the extent and flexibility would likely be limited. In this regard, even if “system of emission reduction” is defined broadly to include a trading program, trading across different categories of sources will likely be prohibited.⁷¹ Indeed, the language of the

⁶⁸ See Richardson (2011), *supra* at 16.

⁶⁹ See, e.g., Lisa Heinzerling, Testimony before the Subcommittee on Energy and Air Quality of the Committee on Energy and Commerce, 110th Cong. 11-14 (2008) (statement of Lisa Heinzerling, Professor of Law, Georgetown University Law Center); see also *Asarco v. EPA*, 578 F.2d 319 (D.C. Cir. 1978) (held that EPA was prevented from “bubbling” multiple facilities to be considered since source). However, *Asarco* may not be applicable because it focused on the term “source,” rather than “system of reduction” and the case was decided before *Chevron v. NRDC*, thus the EPA did not have same degree of deference as they would currently enjoy.

⁷⁰ See Patricia Ross McCubbin, *Cap and Trade Programs Under the Clean Air Act: Lessons from the Clean Air Interstate Rule and the NOx SIP Call*, 18 PENN ST. ENV'T'L L. REV. 2, 22–23 (Fall 2009) (“ . . . EPA is exploring the possibility of implementing a cap and trade program for certain facilities that emit greenhouse gases [under the NSPS section]. That provision does not expressly authorize emissions trading, and many states and environmental organizations believe such a program fundamentally conflicts with the section 111 scheme, which generally imposes the same emissions standards on all members of an industrial group As a result . . . the court would likely restrict the Agency’s ability to establish a cap and trade program under section 111 . . . ”).

⁷¹ See generally Richardson (2011), *supra*; see generally Monast et al., *supra*.

CAA requires the EPA to define categories of sources and create “standards of performance...within such category.”⁷² Thus, it is conceivable that the EPA could create an emissions trading program for electricity-generating units (EGUs), for example. However, EGUs would not be able to trade emissions credits with sources from another category, such as petroleum refineries. The EPA arguably has the ability to redefine categories broadly enough to encompass multiple sources that would ordinarily be in separate categories. For example, a category may be defined as all stationary sources that emit a certain amount of GHGs, such that EGUs and petroleum refineries would be in the same category and thus able to trade with each other.⁷³ However, there is no precedent for such redefinition of categories.⁷⁴ Moreover, fossil-fuel powered EGUs may be limited in trading with renewable sources that do not emit greenhouse gases since renewable sources would, arguably, not be covered under the NSPS provisions, and thus outside the scope of the trading regime. In this regard, renewable energy sources, for instance wind farms, would not be “stationary sources” pursuant to section 111, since they do not emit air pollutants.⁷⁵ Accordingly, a wind farm would not receive any credits under an NSPS trading program for emitting less than the emission standard, and there would be no incentive for the creation of new wind farms in the NSPS program.

Additionally, it is highly unlikely that an NSPS program could allow offsets from uncovered sources. Even if “system of emission reduction” was defined broadly to include trading and EPA redefined categories of sources to include multiple sectors, it still remains unlikely that sources will be able to receive credits from reductions other than directly from those directly from the stationary sources.⁷⁶ Generally, offsets reduce the overall costs of a trading program by allowing covered sources to receive credits if they secure emissions reductions from uncovered sources. Thus, a covered source under a trading program could either reduce its

⁷² 42 U.S.C. § 7411(b)(1)(A)–(B).

⁷³ Richardson (2011), *supra* at 17–18.

⁷⁴ *Id.*

⁷⁵ See 42 U.S.C. § 7411(a)(3).

⁷⁶ Richardson (2011), *supra* at 21–22; Wannier et al., *supra* at 9.

own emissions, buy allowances from other covered sources, or pay an uncovered source to lower their emissions and receive offset credits for such reductions. Such a system, however, would likely be unavailable under an NSPS program. For example, it would be impermissible for an EGU to meet the required performance standard by emission reductions taking place at a farm. Accordingly, even if NSPS regulations allowed trading, the scope would likely be limited to inter-category trading, and offsets would almost certainly not be allowable.

Lastly, even an NSPS regime that incorporated flexible market-based mechanisms, such as trading between sources, would nevertheless leave many sources of GHG emissions uncovered. Even if the EPA incorporated most large stationary sources into an NSPS program, a significant portion of GHGs—almost 50%—would remain outside of the program.⁷⁷ As discussed above, an NSPS trading regime would likely not allow trading between fossil-fueled powered EGUs and renewable energy EGUs. Furthermore, any other emissions that do not come from stationary sources that emit pollutants are uncovered. For example, evidence demonstrates that large amounts of methane are released during hydraulic fracturing practices to extract natural gas. However, the fugitive methane emissions from natural gas extraction would be outside the scope of the NSPS regime since the hydraulic fracturing operations are not conducted at the “stationary source.” Accordingly, while coal-fired power plants emit more GHGs than natural gas-fired plants, since the methane emissions would likely remain completely outside the scope of the NSPS regime, it is unclear if NSPS regulations that limit coal and support natural gas will be as successful in reducing emissions as currently claimed. Furthermore, emissions that occur due to urban sprawl, deforestation and other land use would be outside the scope of the NSPS regime, and low priced-methods to sequester carbon through reforestation and agricultural soil sequestration would not be incentivized under an NSPS program.⁷⁸ Additionally, building standards and most agricultural operations will likewise

⁷⁷Nordhaus, *supra* note 11, at 69.

⁷⁸Richardson (2011), *supra* at 27.

not be covered under an NSPS program.⁷⁹ However, if the focus of the EPA action were on overall aggregate emissions, rather than emissions at specific sources, then any source of emissions, whether it is at a farm, due to urban sprawl, or from a large power plant, can be under a single regime. Thus, there will be incentives to reduce GHG emissions no matter the source of said emissions.

C. Regulation of Existing Sources through NSPS May Be Barred

The CAA only allows the EPA to address existing sources under an NSPS program when the air pollutant at issue is not a criteria pollutant under 108(a) or a hazardous pollutant under 112.⁸⁰ When a pollutant is listed as a criteria pollutant under 108(a), the EPA must issue NAAQS for the subject pollutant.⁸¹ Accordingly, the EPA will be prohibited from regulating GHGs from existing sources under an NSPS program if GHGs are regulated under the NAAQS.⁸² Significantly, the EPA may be legally bound to issue NAAQS for GHGs, and, thus would be unable to regulate existing sources under an NSPS program.

Section 108(a) of the CAA dictates when the EPA must issue NAAQS. The section states:

- (1) For the purpose of establishing national primary and secondary ambient air quality standards, the Administrator shall...publish...a list which includes each air pollutant
 - (A) emissions of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare;

⁷⁹ *Id.* at 17; 42 U.S.C. § 7411(b)(1)(A); *see also* 42 U.S.C. § 7411(a)(3) (NSP only covers large stationary sources of emissions).

⁸⁰ 42 U.S.C. § 7411(d)(1)(a)(i).

⁸¹ 42 U.S.C. § 7409(a)(1)(A).

⁸² However, the EPA could continue to regulate new and modified sources under NSPS even if the EPA regulates GHGs through the NAAQS. *Compare* 42 U.S.C. § 7411(b), *with* 42 U.S.C. § 7411(d).

- (B) the presence of which in the ambient air results from numerous or diverse mobile or stationary sources; and
- (C) for which the air quality criteria had not been issued before December 31, 1970 but for which he plans to issue air quality criteria under this section.

It is clear that GHGs meet subsection (B) since they are emitted from “numerous or diverse mobile or stationary sources.” Moreover, subsection (A) is likely met too. In this regard, the EPA has already issued an “endangerment finding” for GHGs with respect to mobile sources.⁸³ The “endangerment” language contained in section 202(a) is virtually identical to the language contained in subsection (A) of 108.⁸⁴ Since GHGs “endanger public health or welfare” when emitted from motor vehicles for purposes of section 202(a), then it is logical that the pollutants also “endanger public health and welfare” when emitted from “numerous or diverse mobile or stationary sources” for purposes of section 108.⁸⁵

The EPA maintains that, notwithstanding GHGs meet subsections (A) and (B), the agency retains discretion whether or not to issue NAAQS for GHGs.⁸⁶ It is argued that subsection (C), which states that NAAQS are to be issued for pollutants “which [the Administrator] plans to issue air quality criteria,” provides the EPA with discretion.⁸⁷ Thus if the Administrator does not “plan to issue

⁸³ “Endangerment Finding Under 202(a),” *supra* note 4.

⁸⁴ Compare 42 U.S.C. § 7521(a), with 42 U.S.C. § 7408(a). 42 U.S.C. § 7521(a) states that “The Administrator shall . . . prescribe . . . standards applicable to the emission of any air pollutant from . . . new motor vehicles . . . which in his judgment, cause or contribute to, air pollution, which may reasonably be anticipated to endanger public health or welfare.” 42 U.S.C. § 7521(a).

⁸⁵ Even if the previous endangerment finding does not compel a similar endangerment finding for section 108(a)(1)(A), it certainly “offers compelling evidence that cannot be ignored.” See McCubbin, *supra* at 112.

⁸⁶ See, e.g., Nathan Richardson, “Greenhouse Gas Regulation under the Clean Air Act: Does *Chevron v. NRDC* Set the EPA Free?” RFF DP 09-50, 10 (Dec. 2009) (hereinafter “Richardson (2009)”); ANPR, *supra* note 12, at 44,477.

⁸⁷ As the EPA stated, “. . . this third criterion could provide EPA discretion to decide whether to list those pollutants under section 108 for purposes of regulating them

air quality criteria” for GHGs, then it is irrelevant that subsections (A) and (B) have been met, and no NAAQS will need to be issued.

The Second Circuit in *NRDC v. Train*⁸⁸ was the only court to render an opinion on whether the EPA has discretion to issue NAAQS following an endangerment finding. The EPA sought to avoid setting a NAAQS regime for lead, despite previously issuing an endangerment finding under section 211, which covers fuels and fuel additives, and claimed that it had discretion under subsection (C).⁸⁹ The Second Circuit, however, rejected the EPA’s argument, and opined that the legislative history and the text of the statute, including the refrain that EPA “*shall*... publish... a list,” dictate that the EPA lacks discretion when subsections (A) and (B) are met, and the EPA must list the pollutant and issue NAAQS.⁹⁰

Although this reading of the statute has not been subsequently challenged, the EPA continues to believe that it has discretion to decline to issue NAAQS for GHGs.⁹¹ The EPA argues that *Chevron U.S.A., Inc. v. NRDC*,⁹² which was decided after *NRDC v. Train*, gives the EPA greater latitude in interpreting ambiguous statutes, and a court would find an interpretation of subsection (C) that allowed the EPA to exercise reasonable discretion.⁹³ In this regard, the landmark Supreme Court decision in *Chevron* incorporated a two-part test, which first asks whether Congress spoke directly to a given issue, and if so then the agency must give effect to the unambiguous direction from Congress. However, if the statute was silent or ambiguous with respect to a given issue, then the agency’s interpretation will be upheld if it was a permissible construction of the statute.⁹⁴ Additionally, amendments to the CAA guarantee that a challenge now would be heard in the D.C. Circuit,⁹⁵ rather than the

via the NAAQS.” ANPR, *supra* note 12, at 44,477.

⁸⁸ 545 F.2d 320 (2d Cir. 1976).

⁸⁹ *Id.*

⁹⁰ *See id.*; *see also* Richardson (2009), *supra* at 16–18.

⁹¹ ANPR, *supra* note 12, at 44,477.

⁹² 467 U.S. 837 (1984).

⁹³ ANPR, *supra* note 12, at 44,477.

⁹⁴ *Chevron U.S.A. v. NRDC*, 467 U.S. 837, 843–843 (1984).

⁹⁵ 42 U.S.C. § 7607(b)(1).

Second Circuit, and accordingly *NRDC v. Train* would only have persuasive authority, rather than precedential.⁹⁶

Despite *Chevron*, however, a court may follow *NRDC v. Train* and hold that the EPA does not have discretion to refuse to issue NAAQS following an endangerment finding. In this regard, the court in *NRDC v. Train* based its holding on canons of construction, including legislative history, the canon against surplusage, and the canon to find meaning based on the structure of the statute, which has been used by courts since *Chevron* to determine that a statute was unambiguous.⁹⁷ Accordingly, a court could use the same canons of construction used in *NRDC v. Train* to determine that the statute is not ambiguous and if sections (A) and (B) are met, then the EPA must list GHGs as a criteria pollutant.⁹⁸ Importantly, if the EPA is legally

⁹⁶ See Richardson (2009), *supra* at 19.

⁹⁷ Richardson (2009), *supra* at 22–23; see also *Immigration and Naturalization Serv. v. Cardoza Fonseca*, 480 U.S. 421, 446 (1987) (stating that “traditional tools of statutory construction” allow a reviewing court to determine whether a statute is ambiguous); *Babbitt v. Sweet Home Chapter for Comtys for a Great Or.*, 515 U.S. 687, 704 (1995) (holding indicates that legislative history supports agency’s interpretation); While the court in *NRDC v. Train* stated that the statute was “ambiguous,” this statement had a different meaning prior to *Chevron* than it does today, and likely would not have any precedential effect requiring a Step 2 analysis. ⁹⁸ “[T]he EPA very likely be forced by its 202 Endangerment Finding to issue a similar finding under 108, which will then trigger regulation of GHGs under the NAAQS framework detailed under 109-110.” Richardson (2009), *supra* at 10. Additionally, one commentator argued that the language in section 108 suggesting that the EPA retains discretion is due to a Scrivener’s error. See generally Patricia Ross McCubbin, *EPA’s Endangerment Finding for Greenhouse Gases and the Potential Duty to Adopt National Ambient Air Quality Standards to Address Global Climate Change*, 33 S. ILL. U. L.J. 437 (2009) (symposium contribution). McCubbin argued that section 108 appears to have contradicting requirements since it contains the mandatory command that the EPA “shall...publish...a list,” as well as discretionary language if the EPA doesn’t “plan to issue air quality criteria.” McCubbin argued that the legislative history, however, demonstrates that such discretion was unintended by citing to a Senate Report which provided that EPA would list and regulate “all those pollution agents or combinations of agents which have, or can be expected to have, an adverse effect on health and welfare and which are emitted from widely distributed mobile and stationary sources, and all those for which air quality criteria are planned.” S. Rep. No. 91-1197, Report of the Committee on Public Works United States Senate Together with Individual

required to list GHGs as a criteria pollutant and issue a NAAQS, then any work establishing a program for existing sources pursuant to section 111(d) would be for naught since the EPA is prohibited from regulating sources under 111(d) for criteria pollutants.

III. REGULATION OF GHGS THROUGH THE NAAQS

As discussed above, one method to regulate GHGs in a comprehensive and flexible manner that takes advantage of market-based mechanisms is to put a cap on overall aggregate emissions. Moreover, as demonstrated above, the EPA may be legally required to issue a NAAQS for GHGs due to its prior endangerment finding. Luckily, the EPA can arguably regulate GHGs via the NAAQS in a common-sense manner that puts a cap on aggregate emissions. This section will discuss how the EPA can establish state emission budgets to meet or maintain the NAAQS, where the EPA should set the NAAQS, and how states can achieve the NAAQS, including opting into an EPA-created cap and trade program.

A. Addressing the Global Nature of GHGs and Assigning State Budgets

Typically, the NAAQS provisions require the EPA to set a concentration level of a given pollutant, and if a region is above the concentration then that area is in nonattainment of the NAAQS. Conversely, if the area is below the NAAQS, then that area is in attainment. However, since GHGs are global pollutants, emissions in one location will affect the concentration everywhere. It is for this reason that many argue against using the NAAQS to address GHGs; a region or state will be unable to directly control the concentration of GHGs in the ambient air even if it drastically reduced its emissions.

Views to Accompany S. 4358, 91st Cong. 2d Sess. at 9 (Sept. 17, 1970), at 9 (emphasis added). It is arguable, therefore, that subsection (C) was meant to be a separate category for which EPA could list pollutants as criteria, and if a given pollutant met subsections (A) and (B) then the EPA must issue criteria, or if the Administrator planned to issue air quality criteria under subsection (C) then the EPA could also list the pollutants. *See* McCubbin, *supra* at 457–460.

However, the Clean Air Act includes the necessary tools to take into consideration the global nature of GHGs. In this regard, states are granted relief from the CAA if the reason they are in nonattainment is due to international emissions. Section 179B allows states to submit to the EPA that they would be in attainment of the NAAQS “but for emissions emanating from outside of the United States.”⁹⁹ While in the past, states would need to apply to the EPA for relief pursuant to 179B if the state was not in compliance with the NAAQS due to international emissions,¹⁰⁰ it is arguable that the EPA could determine that 179B should be applicable on a national basis and determine that the nation would be in compliance with the NAAQS but for international emissions.¹⁰¹ Accordingly, the EPA may be given leeway to regulate in such a manner that the entire country may be in attainment of the NAAQS “but for” international emissions.¹⁰² Indeed, the CAA recognizes, by the terms of 179B, that international emissions will contribute to concentration levels within the United States, and such a scenario does not render the states in noncompliance or the NAAQS provisions inapplicable.

By utilizing section 179B, the EPA would be allowed, in effect, to ignore international emissions and focus exclusively on domestic emissions when deeming a SIP to be in compliance. Thus, while the terms of the NAAQS provisions nevertheless require the EPA to set a concentration of GHGs in the ambient air that protects health and welfare, since the EPA would be allowed to ignore international emissions, it would accordingly be improper to test the physical concentration of GHGs in the atmosphere since the concentration of GHGs in any state would include emissions emanating from outside that state.

⁹⁹ 42 U.S.C. § 7509(a)(2013).

¹⁰⁰ Only California’s Imperial Valley, which borders Mexico, has previously invoked 179B. California redesignated Imperial Valley and the resignation request was approved and published by the EPA. 66 Fed. Reg. 42125, 42127.

¹⁰¹ The EPA noted in the ANPR that they are considering the role 179B may play in providing relief to states. See ANPR, *supra* at 44,481; see also William L. Kovacs, Chamber of Commerce of U.S. (2006).

¹⁰² ANPR, *supra* note 12, at 44,481.

After the EPA sets the appropriate concentration of the NAAQS to protect health and welfare, which will be discussed in greater detail in the following subsection, the EPA could determine the amount the entire world must reduce its emissions to meet or maintain the target concentration, determine the United States contribution to worldwide GHG emissions, and set a national budget of emissions which reduce business as usual emissions by the same percentage that must be reduced worldwide. Accordingly, the United States could establish a national budget of emissions in order to meet the required NAAQS concentration “but for” international emissions.

After determining the national budget of emissions, the EPA could then assign each individual state a budget. Indeed, there is precedent for the EPA assigning budgets through the “good neighbor” provision, section 110(a)(2)(D), which prohibits interference with attainment of the NAAQS by other states.¹⁰³ To address pollution caused by nitrous oxide emissions, the EPA issued the “NO_x SIP Call,” which created a model cap and trade program and assigned states corresponding budgets for the power sector and a few other industrial categories.¹⁰⁴ The EPA created another cap and trade program pursuant to the “good neighbor” provision, which likewise assigned budgets to states, with the Clean Air Interstate Rule (CAIR), which addressed both NO_x and sulfur dioxide emissions from 28 states.¹⁰⁵ Both of these rules were challenged in court and the outcomes shed light on how the EPA should assign budgets for GHGs. In this regard, the EPA should require each state to reduce

¹⁰³ Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Transport of Ozone, 63 Fed. Reg. 57,356 (Oct. 27, 1998) (to be codified at 40 C.F.R. pts. 51, 72, 75, and 96); Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to the Acid Rain Program; Revisions to the NO_x SIP Call, 70 Fed. Reg. 25, 162 (May 12, 2005) (to be codified at 40 C.F.R. pts. 51, 72, 73, 74, 77, 78, and 96).

¹⁰⁴ NO_x SIP Call, *supra*. Significantly, all of the states that were affected by the EPA regulations adopted EPA’s model rule. Richardson (2010), *supra* at 12.

¹⁰⁵ Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (CAIR); Revisions to the Acid Rain Program; Revisions to the NO_x SIP Call, 70 Fed. Reg. 25,162 (2005).

emissions by a certain percentage while taking into consideration each state's current contribution to GHG concentrations. The EPA could arguably give credit to states that have already implemented regulations and practices that reduce emissions so that states that have taken the initiative to reduce GHGs before being mandated to would not be penalized.

B. Where to Set the NAAQS

Determining the level to set the NAAQS is a major concern of regulating GHGs through the NAAQS provisions. The NAAQS is set at a concentration which protects health and welfare with an "adequate margin of safety," and may be expressed as parts per million (ppm) by volume. If the EPA decides to list GHGs as a criteria pollutant, or is forced to through litigation due to its prior "endangerment finding" with respect to motor vehicles, the EPA must simultaneously "publish...proposed national primary and secondary ambient air quality standards" for GHGs.¹⁰⁶ The primary standards must be set at a level which protects "public health" with an "adequate margin of safety,"¹⁰⁷ and the secondary standards are set at a level "requisite to protect the public welfare from any known or anticipated adverse effects..."¹⁰⁸ Currently, the CO₂ concentration in the atmosphere is approximately 393 ppm, and is increasing by 1 to 2 ppm per year.¹⁰⁹ Many disagree over the appropriate or "safe" concentration of GHGs, and it is predicted that should the EPA issue NAAQS for GHGs, this subject will be litigated. However, as will be discussed in greater detail below, the EPA may rely on scientific studies to decide an appropriate NAAQS that will likely be given deference and upheld by the courts.

An important issue will be whether the EPA sets NAAQS for all GHGs, or separate NAAQS for each GHG individually. There

¹⁰⁶ 42 U.S.C. § 7409(b)(2).

¹⁰⁷ 42 U.S.C. § 7409(b)(1).

¹⁰⁸ 42 U.S.C. § 7409(b)(2).

¹⁰⁹ See NOAA's Annual Greenhouse Gas Index, available at <http://www.esrl.noaa.gov/gmd/aggi/> (last visited Aug. 26, 2013); see also LARRY PARKER & JAMES E. MCCARTHY, CONG. RESEARCH SERV., R40585, 8, CLIMATE CHANGE: POTENTIAL REGULATION OF STATIONARY GREENHOUSE GAS SOURCES UNDER THE CLEAN AIR ACT (2009).

are six gases that are considered GHGs; carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.¹¹⁰ The EPA has begun regulating GHGs as a single class of pollutants.¹¹¹ Additionally, the EPA already established reporting inventories for emissions and sinks based on a CO₂-equivalent basis.¹¹² Accordingly, it would follow that the NAAQS should be set for all GHGs as a single class, determining the concentration on a CO₂ equivalency basis. If GHGs were in a single class, it would have the added benefit of allowing broad trading between various sectors. As stated above, the current CO₂ concentration is approximately 393 ppm, but the current CO₂-equivalency (CO₂-e) of all GHGs is approximately 476 ppm.¹¹³ For the sake of ease of argument, henceforth this paper will assume that non-CO₂ GHGs add approximately 80 ppm to the total concentration of GHGs.

In the ANPR, the EPA argued that determining the level of NAAQS for GHGs is not only difficult due to many uncertainties, including complex feedback loops, but also it is not purely a scientific question; rather it “involves important value judgments regarding what level of climate change may or may not be acceptable.”¹¹⁴ Indeed, many argue that Congress should determine the level that NAAQS should be set at due to the political nature of the question.¹¹⁵ In this regard, by setting the NAAQS at a certain level, the EPA would be, in effect, determining the United States’ position as to the goal for GHG concentrations worldwide. Such a determination in the hands of a single executive agency may have political implications both domestically and internationally.

¹¹⁰ See Tailoring Rule, *supra* note 6 at 31518.

¹¹¹ See *id.*

¹¹² See generally EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2011*, EPA 430-R-13-001 (Apr. 12, 2013).

¹¹³ See NOAA’s Annual Greenhouse Gas Index, available at <http://www.esrl.noaa.gov/gmd/aggi/> (last visited Aug. 26, 2013).

¹¹⁴ ANPR, *supra* note 12, at 44367, 44401; see also McCubbin, *supra* note 70 at 111.

¹¹⁵ See Holly Doremus & W. Michael Hanemann, *Of Babies and Bathwater: Why the Clean Air Act’s Cooperative Federalism Framework is Useful for Addressing Global Warming*, 50 ARIZ. L. REV. 799, 822 (2008).

While it will be difficult for the EPA to set NAAQS for GHGs, it is surely not impossible.¹¹⁶ Indeed, the CAA requires many difficult tasks from the EPA, and the courts expect the EPA to arrive at standards through tough scientific inquiries.¹¹⁷ A major concern is that the EPA cannot consider costs in setting the NAAQS. Pursuant to the Supreme Court decision in *Whitman v. American Trucking Assoc., Inc.*,¹¹⁸ the EPA is forbidden to consider costs when determining the level to set the NAAQS to. Since there is arguably no “safe” level to set the NAAQS for GHGs while allowing continued emissions, as any GHG concentration above pre-industrial levels could result in adverse consequences, a strict reading of *American Trucking* would require the complete shutdown of entire industries.¹¹⁹

Although the Supreme Court stated that the EPA may not consider costs in arriving at the NAAQS standards for any given pollutant,¹²⁰ it is a not-so-hidden secret that the EPA can, and does, consider costs and other factors when arriving at the standards. In this regard, a requirement on the EPA to demand risk-free air quality, without regard to costs, assumes that there is a “safe” concentration or threshold for any given pollutant.¹²¹ Not only is this not accurate for GHGs, but it is also not true for most, if not all, conventional pollutants.¹²² Indeed, virtually all conventional pollutants are non-threshold pollutants, meaning that any emissions above zero are potentially harmful.¹²³ Accordingly, if the EPA were actually required to set NAAQS at a level that guaranteed absolutely no harm, then NAAQS for currently-listed criteria pollutants would

¹¹⁶ See McCubbin, *supra* note 98 at 460 (“[W]hether greenhouse gases and their long-term impacts are so completely different from conventional pollutants that the task is not merely difficult but unworkable remains unclear.”).

¹¹⁷ See, e.g., *Lead Indus. Assoc., Inc. v. EPA*, 647 F.2d 1130, 1160–1161 (D.C. Cir. 1980) (upholding EPA’s national standards for lead even though “the issues involved are at the ‘very frontiers of scientific knowledge.’”); see generally Giovinazzo, *supra* note 40.

¹¹⁸ 531 U.S. 457 (2001).

¹¹⁹ See McCubbin, *supra* note 70 at 114.

¹²⁰ See *Whitman*, 531 U.S. at 468.

¹²¹ See Giovinazzo, *supra* note 40 at 104.

¹²² *Id.* at 105.

¹²³ See *id.*

need to be set at a level that would cause nearly all production, transportation, and electric generation to come to a halt. Indeed, even in the *American Trucking* case, which was in regards to the NAAQS revisions for particulate matter (PM) and ozone, the EPA did not set the NAAQS at the absolute safest level. Rather, the EPA’s own studies demonstrated that had the NAAQS been stricter, it would produce significant health benefits.¹²⁴ Yet, on remand to the D.C. Circuit, the court approved the EPA’s standards for PM and ozone,¹²⁵ despite the Supreme Court’s instructions that cost could not be a factor, and the EPA’s own studies demonstrated that there were safer levels at which the NAAQS could have been set.

Justice Breyer’s concurrence in *American Trucking* sheds light on how the EPA can move forward in setting NAAQS for non-threshold pollutants, including GHGs. Justice Breyer stated:

“Nor are the words ‘requisite’ and ‘public health’ to be understood independent of context. We consider football equipment ‘safe’ even if it entails a level of risk that would make drinking water ‘unsafe’ for consumption. And what counts as ‘requisite’ to protecting the public health will similarly vary with background circumstances, such as the public’s ordinary tolerance of the particular risk in the particular context at issue.”¹²⁶

Justice Breyer’s opinion clarifies that the EPA need not set the NAAQS at a level that is absolutely risk free, and given the “context” of climate change, the EPA can likely set the NAAQS at a level that protects against dangerous climate change while ensuring economic development does not come to a halt.¹²⁷

¹²⁴ *Id.* at 111.

¹²⁵ *Am. Trucking Assoc., Inc. v. EPA*, 283 F.3d 355 (D.C. Cir. 2002); *see also* Giovinazzo, *supra* note 40 at 107.

¹²⁶ *See Whitman*, 531 U.S. at 494.

¹²⁷ *See Giovinazzo, supra* note 40, at 110 (“Justice Breyer’s invocation of context is really just a euphemism for cost.”).

In setting the NAAQS, the EPA would likely need to determine whether it must consider the health and welfare impacts of international populations or just domestic populations. Arguably, pursuant to section 115 of the CAA, a NAAQS would need to take into consideration international harms. That section requires the Administrator to issue a SIP call when a state's emissions endanger the health and welfare of international populations.¹²⁸ Since it is likely that climate change will have greater impacts on certain international populations than domestic populations, if the EPA is forced to take into consideration the health and welfare of these populations as well, the NAAQS may be significantly more stringent than it would be if only national populations were considered.¹²⁹ Accordingly, it will be of great importance for the EPA to determine whether or not international populations should be considered.

When the EPA undertakes to set the NAAQS levels, it must establish a Clean Air Scientific Advisory Committee (CASAC) for GHGs.¹³⁰ The CASAC and the EPA would then develop a recommended range for NAAQS options, of which the EPA Administrator will ultimately choose the NAAQS standard.¹³¹ As discussed above, the primary NAAQS are set at a level that protects the public health "with an adequate margin of safety," and the secondary NAAQS protects welfare from adverse effects. Where to set the NAAQS will likely be a complex and contentious issue,¹³² though the EPA will have discretion on where to set the NAAQS as long as it is based on adequate science. The EPA could rely on existing synthesis reports, such as that by the Intergovernmental Panel on Climate Change (IPCC), to expedite the process.¹³³

¹²⁸ 42 U.S.C. § 7415.

¹²⁹ Section 115 only directs the EPA to issue SIP calls to prevent international pollution if the harmed nation gives "essentially the same rights with respect to the prevention or control of air pollution occurring in that country" as the United States gives. *See* 42 U.S.C. § 7415(c).

¹³⁰ 42 U.S.C. § 7408(b)(1).

¹³¹ *See, e.g.*, National Ambient Air Quality Standards for Ozone, 73 Fed. Reg. 16,436, 16,477-78 (Mar. 27, 2008).

¹³² Some argue Congress should address the question. *See* Doremus & Hanemann, *supra* note 115, at 822.

¹³³ ANPR, *supra* note 12, at 44483.

The EPA may set the NAAQS above the current concentration of GHGs, which is approximately 393 ppm of CO₂ and 476 ppm CO₂-e. Indeed, the IPCC found that in order to avoid “dangerous anthropogenic interference with the climate system” concentrations of GHGs should not exceed 450 ppm, or 530 ppm CO₂-e.¹³⁴ The EPA may choose to adopt the 530 ppm CO₂-e as a reference point in setting the NAAQS. If the NAAQS are set at a level above current concentrations, PSD rules would be triggered, which are less burdensome than if the country was in nonattainment.¹³⁵ Moreover, as discussed above, the EPA has already begun initiating PSD rules, even though NAAQS have not been issued for GHGs.

However, the EPA may decide that 530 ppm CO₂-e is too high of a concentration to protect public health and welfare. Indeed, a 530 ppm CO₂-e, or 450 ppm of CO₂, concentration may result in a 50% chance of exceeding a two degree Celsius rise and a 30% chance of exceeding a three degree rise.¹³⁶ Such a threat of temperature increases may be too severe to protect health and welfare “with an adequate margin of safety.” In this regard, some, including NASA climatologist Dr. James Hansen, argue that the concentration of GHGs in the atmosphere is already too high, and a proper level for the NAAQS should be 350 ppm of CO₂, or 420 ppm of CO₂-e.¹³⁷

If the NAAQS are set below current levels then nonattainment NSR rules would be triggered. New and modified sources would need to install the most sophisticated technologies that achieve the “lowest achievable emissions rate.”¹³⁸ Additionally, new or modified sources would be required to offset their emissions by reductions in emissions from other sources in the same nonattainment area or contributing upwind nonattainment area.¹³⁹ If these offset rules were to apply, however, the nature of GHGs may allow for

¹³⁴ IPCC FOURTH ASSESSMENT REPORT: CLIMATE CHANGE, at § 5 (2007).

¹³⁵ Compare 42 U.S.C. § 7475, with 42 U.S.C. § 7503.

¹³⁶ AMY L. LUERS ET AL., HOW TO AVOID DANGEROUS CLIMATE CHANGE: A TARGET FOR U.S. EMISSIONS, UNION OF CONCERNED SCIENTISTS (2007), available at http://www.ucsusa.org/assets/documents/global_warming/emissions-target-report.pdf.

¹³⁷ Hansen et al., *Target Atmospheric CO₂: Where Should Humanity Aim?*, 2 THE OPEN ATMOSPHERIC SCI. J. 217, 229 (2008).

¹³⁸ 42 U.S.C. § 7503 (a)(2).

¹³⁹ 42 U.S.C. § 7503(c).

increased flexibility for compliance when compared with traditional pollutants. While the offset provisions in regards to nonattainment NSR has not applied in a nationwide manner in the past, GHGs are substantially different than traditional pollutants due to their global nature. In this regard, every state in the nation could be considered an “upwind” state to any other state, since emissions anywhere in the nation increases the concentrations of GHGs everywhere else. Accordingly, the new or modified source could offset its emissions through reductions anywhere in the country.

C. Primary vs. Secondary NAAQS

When areas are designated in nonattainment, the SIPs must provide for reaching attainment for the primary NAAQS no later than five years from the date of the nonattainment designation,¹⁴⁰ or no later than ten years if the EPA decides that the state needs additional time.¹⁴¹ Such a time frame may be unreasonable for GHGs, which have long atmospheric residence times. The EPA may, however, have the flexibility to only issue secondary NAAQS for GHGs.¹⁴² Rather than a strict ten-year time frame, the CAA provides that areas in nonattainment must meet the secondary NAAQS “as expeditiously as practicable...”¹⁴³ The EPA likely has the discretion to define “as expeditiously as practicable” in a manner that provides states the time needed to meet the NAAQS. Accordingly, there will be greater flexibility if only the secondary NAAQS applied, rather than the primary and the secondary.

While the EPA typically issues both primary and secondary NAAQS, it may have discretion to only issue secondary NAAQS for GHGs. As mentioned previously, primary NAAQS protect public health and secondary NAAQS protect welfare. In the past, the EPA has never set only a secondary NAAQS for a given criteria pollutant. However, traditional pollutants have direct impacts on health, whereas GHGs only have indirect health impacts. Moreover,

¹⁴⁰ 42 U.S.C. § 7410(n)(2) and 42 U.S.C. § 7502(a)(2)(A).

¹⁴¹ 42 U.S.C. § 7502 (a)(2)(A).

¹⁴² 42 U.S.C. § 7409(b)(2).

¹⁴³ 42 U.S.C. § 7502 (a)(2)(B).

there is precedent for issuing NAAQS for only one of the two categories. In this regard, there is only a primary NAAQS for carbon monoxide, since there are no known or anticipated adverse welfare effects associated with the pollutant.¹⁴⁴

The definition of “welfare” in the CAA includes “effects on...weather...and climate...”¹⁴⁵ Significantly, the EPA has found that all of the health effects of GHGs are caused by changes in the weather and the climate. The EPA stated:

“Current and projected levels of ambient concentrations of the six GHGs are not expected to cause any direct adverse health effects, such as respiratory or toxic effects, which would occur as a result of the elevated GHG concentrations themselves rather than through climate change. However, there are indirect human health risks (e.g., heat related mortality, exacerbated air quality, extreme events)... [T]he health impacts associated with ambient GHG concentrations are a result of the changes in climate at the global, regional, and local levels, which trigger myriad ecological and metrological changes that can adversely affect public health...The effects on human health are thus indirect impacts resulting from these ecological and meteorological changes, which are effects on welfare.”¹⁴⁶

The EPA may argue that any health-based effects caused by changes in the weather and/or climate, such as increases in rates of heat stroke, are encompassed within the CAA’s definition of welfare. Otherwise, “health” and “welfare” would be overlapping, and would cause language in the CAA to become surplusage.

¹⁴⁴ *National Ambient Air Quality Standards*, EPA, available at <http://www.epa.gov/air/criteria.html>; see also 76 Fed. Reg. 54,294 (Aug. 31, 2011) (to be codified at 40 C.F.R. pts. 50, 53, 58). In 1985, the EPA revoked the secondary NAAQS for carbon monoxide. 50 Fed. Reg. 37484, 37494 (Sept. 13, 1985) (to be codified at 40 C.F.R. pt. 50).

¹⁴⁵ 42 U.S.C. § 7602 (h).

¹⁴⁶ ANPR, *supra* note 12, at 44427, 44478.

Moreover, the CAA commands the EPA to issue NAAQS for those pollutants that cause or contribute to air pollution that endangers “public health *or* welfare.”¹⁴⁷ Thus, the drafters understood that there might be occasions where pollutants cause health effects, but are not detrimental to welfare, and vice versa. The EPA may therefore argue that primary NAAQS only apply to direct health effects from pollutants and indirect health effects from changes in the weather and climate are considered in setting the secondary NAAQS. Accordingly, health-based effects caused by changes in the weather or climate could arguably be addressed by secondary NAAQS rather than primary NAAQS. Therefore, the EPA may argue that it can issue only secondary NAAQS for GHGs, rather than primary and secondary, thus allowing greater flexibility for states to come into compliance should the nation be deemed to be in nonattainment, rather than a stringent 10-year deadline to come into compliance.

D. State Implementation Plans (SIPs) and a Model Cap and Trade

Pursuant to section 110 of the CAA, after the EPA assigns a NAAQS for a given pollutant, the states must then submit state implementation plans (SIPs) which detail the steps the state will take to meet and maintain the NAAQS. As discussed above, given the global nature of GHGs, the EPA could arguably assign each state a budget of GHGs and, accordingly, if the state remains under its budget then it will be in compliance. Moreover, as discussed above, if the EPA is allowed to only assign a secondary NAAQS for GHGs, then the states and the EPA will not need to meet the NAAQS-required concentration in the strict 10-year time frame that must be met for the primary NAAQS; rather states must meet the standards as “expeditiously as possible.” Accordingly, the EPA could arguably assign state budgets which will allow the country to meet the NAAQS concentration “as expeditiously as possible” “but for” international emissions.

A NAAQS program could likely incorporate flexible market-based mechanisms including a cap and trade. Unlike NSPS

¹⁴⁷ 42 U.S.C. § 7408(a)(1)(A) (emphasis added).

provisions, discussed above, which generally govern technology-based facility emission reductions, NAAQS is focused on atmospheric concentrations, and thus the flexibility of compliance mechanisms is much broader. Indeed, section 110 allows SIPs to include “economic incentives such as fees, marketable permits and auctions emissions rights” to meet and maintain the NAAQS.¹⁴⁸ Accordingly, states could create trading programs or opt into an EPA-created program. A state may choose to opt into the EPA plan or devise its own SIP, subject to EPA approval, that demonstrates a sufficient reduction in emissions and is consistent with the standards set by the EPA.¹⁴⁹ If the state does not establish a satisfactory SIP, the EPA can order a federal implementation plan (FIP) for that state.¹⁵⁰

After assigning budgets, the EPA may create a cap and trade system for certain sectors of the economy. The EPA has in the past established cap and trade programs pursuant to the “good neighbor provision” in the NAAQS section.¹⁵¹ While these programs, the NOx SIP Call¹⁵² and the Clean Air Interstate Rule,¹⁵³ were more limited in scope as they were not nationwide and only applied to certain sectors, these programs demonstrate that the EPA has the authority to establish cap and trade programs via the NAAQS provisions. Such a NAAQS trading program for GHGs could be much broader and allow trading across sectors, rather than be limited to single categories of sources as would be the case for a program through the NSPS provisions. While the EPA arguably has the authority to create an economy-wide cap and trade program, it would likely choose to apply the program to the sectors it already regulates, such as electrical generation and other large industries. Pursuant to an EPA-modeled cap and trade program, a portion of the state’s emissions

¹⁴⁸ 42 U.S.C. § 7410(a)(2)(A).

¹⁴⁹ See Richardson (2010), *supra* note 39, at 9–10.

¹⁵⁰ 42 U.S.C. § 7410(c).

¹⁵¹ 42 U.S.C. § 7410(a)(2)(D).

¹⁵² EPA, Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Transport of Ozone (the “NOx SIP Call”).

¹⁵³ Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (CAIR), 70 Fed. Reg. 25,162 (May 12, 2005) (to be codified at 40 C.F.R. pts. 51, 72-74, 77, 78, 96).

budget would be allocated towards the program, and, depending on a state's individual budget and how many of its emissions come from the sectors that are covered in the cap and trade program, some states may be required to reduce emissions from other sectors as well. The states would be granted broad leeway in its decisions on how to reduce emissions further. Indeed, the CAA gives states great flexibility in meeting the NAAQS.¹⁵⁴ This would create a multi-faceted approach, which many scholars believe is the best way to address GHGs.¹⁵⁵

A national multi-sector, rather than an economy-wide, cap and trade system may be preferable for GHGs, especially in the context of regulation by the EPA. Indeed, the EPA expressed concerns regarding an economy-wide cap and trade market created by the EPA due to the high administrative costs for measuring, reporting and verifying, and due to the infeasibility of accurate monitoring and compliance for various sectors of the economy that the EPA has traditionally not governed.¹⁵⁶ The EPA has already implemented multi-sector cap and trade approaches under CAA programs, whereas “[a]n economy-wide, market-oriented environmental regulation has

¹⁵⁴ Thomas D. Peterson, Robert B. McKinstry, Jr., & John C. Dernbach, *Developing a Comprehensive Approach to Climate Change Policy in the United States that Fully Integrates Levels of Government and Economic Sectors*, 26 VA. ENVTL. L.J. 227, 256 (2008).

¹⁵⁵ Alice Kaswan, *A Cooperative Federalism Proposal for Climate Legislation: The Value of State Autonomy in a Federal System*, 85:4 DENV. U. L. REV. 791, 834 (2008) (“Although some policymakers appear to presume that a cap-and-trade program will be a sufficient solution, a more multi-faceted approach is necessary.”); Peterson et al., *supra* note 154, at 250 (“To be effective, a tax or cap-and-trade mechanism, or both, should be a part of the mix, but other measures will be also required and must be integrated with the cap-and-trade program and with each other.”); Doremus et al, *supra* note 115, at 800 (“We have no quarrel with the idea that cap-and-trade strategies should play a role in addressing greenhouse gas (GHG) emissions - trading is a politically palatable and cost-effective way to address some of the ‘low-hanging fruit’ of GHG emissions. But enthusiasm for trading has become so pervasive that it threatens to drive out interest for other policy instruments. We do have a quarrel with this.”); Nordhaus, *supra* note 11, at 58 (Such a hybrid approach would “build upon existing sector-based approaches.”).

¹⁵⁶ ANPR, *supra* note 12, at 44,411.

never been implemented before in the U.S.”¹⁵⁷ As the EPA stated, “...it may be simpler and thus faster to move forward with cap-and-trade programs for sectors already involved in, and thus familiar with, cap-and-trade programs.”¹⁵⁸

If the country is deemed to be in nonattainment of the NAAQS, the EPA can rely on the “good neighbor” provision to create the model cap and trade program. The EPA already created two cap and trade programs under the “good neighbor” provision, section 110(a)(2)(D), which prohibits interference with attainment of the NAAQS by other states.¹⁵⁹ To address pollution caused by nitrous oxide emissions, the EPA issued a NO_x SIP Call, which created a model cap and trade program for the power sector and a few other industrial categories.¹⁶⁰ Significantly, all of the states that were affected by the EPA regulations adopted EPA’s model rule.¹⁶¹ The NO_x SIP rule was challenged in *Michigan v. EPA*,¹⁶² but the rules were upheld by the Court of Appeals of the D.C. Circuit.¹⁶³

The EPA created another cap and trade program pursuant to the “good neighbor” provision with the Clean Air Interstate Rule (CAIR), which addressed both NO_x and sulfur dioxide emissions from 28 states.¹⁶⁴ The D.C. Circuit, however, invalidated CAIR and held that the trading program failed to guarantee that emissions from upwind states would not “contribute significantly” to the nonattainment of the NAAQS in downwind states, as required by

¹⁵⁷ *Id.* at 44,374.

¹⁵⁸ *Id.* at 44,412.

¹⁵⁹ Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Transport of Ozone, 63 Fed. Reg. 57,356 (Oct. 27, 1998) (hereinafter “NO_x SIP Call”) (to be codified at 40 C.F.R. pts. 51, 72, 75 & 96); Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (CAIR); Revisions to the Acid Rain Program; Revisions to the NO_x SIP Call, 70 Fed. Reg. 25,162 (May 12, 2005) (to be codified at 40 C.F.R. pts. 51,72,73,74,77,78 & 96).

¹⁶⁰ NO_x SIP Call, *supra* note 159.

¹⁶¹ Richardson (2010), *supra* note 39, at 12; *see* NO_x SIP Call, *supra* note 159.

¹⁶² 213 F.3d 633 (D.C. Cir. 2000).

¹⁶³ However, the cap-and-trade program itself was not challenged by the petitioners. *See id.*

¹⁶⁴ 70 Fed. Reg. at 25,162.

110(a)(2)(D).¹⁶⁵ The decision by the D.C. Circuit in *North Carolina v. EPA* will likely be inapplicable to a GHG trading program. Since GHGs are well-mixed global pollutants, emission reductions anywhere will affect local concentrations as much as they affect concentrations in any other part of the country. Accordingly each state is an “upwind” state and a “downwind” state to every other state. In *North Carolina v. EPA*, the Court was concerned that upwind states could purchase allowances rather than reducing emissions, and, thus the trading program would not address a downwind state’s nonattainment of the NAAQS.¹⁶⁶ For a GHG trading program, on the other hand, states will not run into the same problem that the D.C. Circuit was concerned with. With respect to GHGs, even if sources in a state do not reduce emissions, but rather purchases allowances, the emission reductions will still occur from a different state, thereby reducing the overall concentration of GHGs in each state.¹⁶⁷ Thus, the problem with CAIR would not be applicable to GHGs, and a GHG cap and trade program would not run afoul of section 110(a)(2)(D).

Even if the NAAQS are set at a level above the current concentration, the EPA nevertheless can arguably establish a cap and trade program. In this regard, as suggested in the ANPR, the EPA could argue that in order to maintain the NAAQS, the states need to reduce current emissions by a certain amount, since business as usual would lead to nonattainment of the NAAQS.¹⁶⁸ Accordingly, the model SIPs that contain the cap and trade program is necessary to maintain the NAAQS.

Depending on where the EPA sets the NAAQS and the amount of reductions from the sectors involved in the cap and trade program, states may need to reduce emissions beyond the program. Since motor vehicles subject to Title II and stationary sources subject to NSPS would be compelled to reduce emissions even with a NAAQS program, states can consider these reductions in their SIPs.

¹⁶⁵ *North Carolina v. EPA*, 531 F.3d 896 (D.C. Cir.), modified on reh’g in part, 550 F.3d 1176 (D.C. Cir. 2008).

¹⁶⁶ 531 F.3d at 907; see generally McCubbin, *supra* note 70.

¹⁶⁷ See Richardson (2010), *supra* note 33, at 12, fn 33.

¹⁶⁸ See ANPR, *supra* note 12, at 44,482.

Additionally, states could create their own initiatives, or even use existing policies and programs, to satisfy their emissions reductions quota. Indeed, the states are in a good position to address their own interests to decide how to reduce emissions.¹⁶⁹ The structure of the SIP process itself is meant to give states autonomy to implement their own mechanisms to address environmental concerns.¹⁷⁰

This cooperative federalism approach is exactly how the SIP structure is supposed to be implemented, wherein the federal government sets the environmental goal (the NAAQS), and allows the states broad authority for implementation.¹⁷¹ As one commentator noted:

“...in many ways the state planning and implementation framework used to achieve the NAAQS is an excellent fit for addressing global warming. It can engage the states as full partners in addressing the problem, leverage the work they are already doing, provide information needed to tackle aspects of the problem that are not well suited to markets, recognize local variation in challenges and opportunities, take advantage of the special political and practical abilities of the states to deal with behavioral emissions, and help states learn from one

¹⁶⁹ See Doremus et al., *supra* note 115, at 800 (“The states are in a better position than either the federal government or the market to address the individual behaviors responsible for a large proportion of the nation’s GHG emissions; indeed, many states are already taking steps to do so.”).

¹⁷⁰ See Kaswan, *supra* note 155, at 821. Alice Kaswan supported new federal legislation which implemented a SIP-like process, and stated, “Since federal emission reduction goals are unlikely to be achievable solely through direct source regulation and/or a cap-and-trade program, and are likely to require state and local action, then some mechanism, like state implementation plans, will be necessary to stimulate the necessary state and local action and to determine how regulatory actions to multiple levels will ultimately achieve federal goals.” *Id.* at 829–830.

¹⁷¹ See Doremus et al., *supra* note 115, at 817 (“The Clean Air Act was the first modern federal environmental statute to employ a ‘cooperative federalism framework,’ assigning responsibilities for air pollution control to both federal and state authorities.”).

another's successes and failures."¹⁷²

State programs that address GHGs beyond the cap and trade program can be in those sectors traditionally under state control, for example land use, building codes and agriculture. Indeed, it would be difficult to include these sectors into a cap and trade program, due to difficulty in monitoring and verifying emissions reductions.¹⁷³ For example, a state may include in its SIP land use changes that would reduce the amount of miles driven in a given city or a program to incentivize reforestation. While such reductions would likely be incompatible with a cap and trade program, the state could demonstrate to the EPA that such programs would lead to emission reductions within the state.¹⁷⁴

As long as the emissions reductions can be demonstrated to the EPA, the states will be granted a broad range of discretion in choosing the policy options to be implemented. Such a system to address climate change would allow the states to be creative and act as "laboratories" of innovation. Indeed, the state may use various regulatory approaches such as direct regulation or market-based programs to address its own needs. As noted by one commentator, "Allowing state experimentation is particularly appropriate where the problem to be addressed is new and where policymakers are uncertain about the best mechanisms for addressing it."¹⁷⁵ Giving states a great deal of flexibility to innovate will result in states learning from each other and create opportunities for collaboration.¹⁷⁶

¹⁷² *Id.* at 823.

¹⁷³ See, e.g., Kaswan, *supra* note 155, at 835–36; Doremus et al., *supra* note 115, at 816; Kassie Siegel, Bill Snape, & Matt Vespa, *No Reason to Wait: Reducing Greenhouse Gas Emissions Through the Clean Air Act*, Center for Biological Diversity, 6 (2009).

¹⁷⁴ See Kaswan, *supra* note 155, at 836 ("Reducing vehicle miles traveled through smart growth requirements and improved public transit is likely to be an essential component of an effective climate change policy, and one that cannot be accomplished through a cap-and-trade program.").

¹⁷⁵ *Id.* at 800.

¹⁷⁶ Siegel et al., *supra* note 72, at 18.

Many states are already seriously addressing climate change with laws differing greatly state-to-state.¹⁷⁷ One study has found that states have undertaken over 250 different types of policy actions to mitigate climate change.¹⁷⁸ The federal government should capitalize on this momentum.¹⁷⁹ For example, a nine-state coalition in the northeast participates in the Regional Greenhouse Gas Initiative (RGGI) and California has initiated its own cap and trade program, both of which include offsets.¹⁸⁰ Twenty-nine states and Washington D.C. have laws regarding renewable portfolio standards (RPS) or end-use-efficiency.¹⁸¹ Such programs vary, but in general, RPS programs mandate or incentivize electricity generation from renewable sources and end-use-efficiency programs reduce the overall demand on electricity generation. These programs allow states to achieve reductions at a lower cost than traditional measures.¹⁸² A NAAQS program would likely be able to take advantage of existing state programs since the focus of NAAQS can be on overall emissions rather than source-specific reductions. For example, the EPA already allows states to use RPS and end-use efficiency programs to meet NAAQS with regards to other criteria pollutants, and the EPA issued a guidance document that provides

¹⁷⁷ See Kaswan, *supra* note 155, at 794; Peterson et al., *supra* note 154, at 236; J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change*, 155 U. PA. L. REV. 1499 (2007).

¹⁷⁸ Robert B. McKinstry, Jr. & Thomas D. Peterson, *The Implications of the New 'Old' Federalism in Climate-Change Legislation: How to Function in a Global Marketplace When States Take the Lead*, 20 PAC. McGEORGE GLOBAL BUS. & DEV. L.J. 61, 72 (2007).

¹⁷⁹ Of note, none of the federal bills considered in Congress contained provisions that would allow states to incorporate existing programs into the programs. See Kaswan, *supra* note 155, at 815–816.

¹⁸⁰ See *Regional Greenhouse Gas Initiative: CO₂ Offsets*, available at <http://www.rggi.org/market/offsets>; *California Air Resources Board's Process for the Review and Approval of Compliance Offset Protocols in Support of the Cap-and-Trade Regulation*, CARB (May 2013), available at <http://www.arb.ca.gov/cc/capandtrade/compliance-offset-protocol-process.pdf>.

¹⁸¹ Monast et al., *supra* note 44, at 10,209.

¹⁸² EPA, *Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans*, (July 2012), available at <http://www.epa.gov/eere/pdfs/EEREmanual.pdf>.

a roadmap to assist states in accounting for and incorporating RPS and energy efficiency policies into SIPs.¹⁸³

A NAAQS program, unlike an NSPS-only program, would incentivize states to address emissions other than those from large stationary sources. Even if the EPA incorporated most large stationary sources into an NSPS program, a significant portion of GHGs—almost 50%—would remain outside of the program.¹⁸⁴ Indeed, land use changes, building standards, and most agricultural operations are completely outside the scope of NSPS.¹⁸⁵ Furthermore, low priced-methods to sequester carbon through reforestation and agricultural soil sequestration would not be incentivized under an NSPS program.¹⁸⁶ As the EPA stated, “A NAQQS would call for assessment of potential control strategies for a broad array of sources, rather than focusing only on emissions reduction from a specified (but potentially limited) list of sources.”¹⁸⁷

Nearly half of all domestic GHG emissions occur from the commercial and residential buildings, transportation and agriculture sectors. While mobile sources are regulated under Title II of the CAA, states may be able to further reduce emissions from the transportation sector to comply with a NAAQS by incorporating land-use changes or other programs that decrease the amount of miles driven into a state implementation plan. For example, Washing D.C.’s city-wide bike-sharing program reduced carbon dioxide emissions by an estimated 3.7 million pounds per year.¹⁸⁸ Moreover, there are numerous agricultural techniques that could be used domestically that reduce emissions and remove carbon dioxide from the atmosphere, including manure management techniques, precision fertilization, no-tillage

¹⁸³ *See id.*

¹⁸⁴ Nordhaus, *supra* note 11, at 69.

¹⁸⁵ Richardson (2011), *supra* note 11, at 17; 42 U.S.C. § 7411 (b)(1)(A); *see also* 42 U.S.C. § 7411(a)(3) (stating that NSP only covers large stationary sources of emissions).

¹⁸⁶ Richardson (2011), *supra* note 11, at 27.

¹⁸⁷ ANPR, *supra* note 12, at 4485.

¹⁸⁸ Tanya Snyder, *Capital Bikeshare Members Reduced their Driving 4.4 Million Miles Per Year*, DC STREETS BLOG (May 22, 2013), <http://dc.streetsblog.org/2013/05/22/capital-bikeshare-members-reduced-their-driving-4-4-million-miles-per-year/>.

or low-tillage farming, and agroforestry. Furthermore, policies that incentivize efficient building designs could be incorporated into a NAAQS implementation plan. While all of these programs may assist in reducing overall concentrations, since the reductions do not occur at a stationary source, they would be outside the scope of NSPS. Lastly, sequestration projects, including reforestation and agricultural sequestration, could theoretically be incorporated into a SIP since they assist in lowering overall concentrations.¹⁸⁹ Accordingly, states would be given broad leeway in creating an array of programs that reduce emissions in order to comply with the EPA-mandated budgets.

IV. CONCLUSION

The issue of climate change deserves a comprehensive federal response. However, there has yet to be the necessary congressional action. The EPA has broad authority through the Clean Air Act to regulate greenhouse gases, and should move forward by issuing a NAAQS for GHGs. Through the NAAQS, the EPA would have the ability to regulate GHGs in a manner that incorporates flexible market-based approaches, including a broad multi-sector cap and trade program, takes advantage of existing state programs and covers various sectors of the economy. While in an ideal world, Congress would create a new statute that specifically addresses GHGs; such a circumstance does not appear to be forthcoming. However, while many believe that the CAA is not ideally suited for addressing GHGs, the EPA certainly has the ability to use the CAA in a way that makes sense for GHGs. As the old adage says: when life hands you lemons, make lemonade.

While NAAQS regulations of GHGs may be politically problematic, it should be noted that the EPA enjoys more public support than Congress. Accordingly, it may be more likely for the EPA, rather than Congress, to put in place the kind of comprehensive regulatory approach that is needed to address GHG emissions. In

¹⁸⁹ Such programs have a much greater potential for reductions internationally, specifically in developing countries. Whether a SIP could incorporate international reductions, for example through offsets, is outside the scope of this paper.

this regard, according to a poll conducted in 2011, 75% of the public trusts the EPA over Congress to determine air pollution limits.¹⁹⁰ It is likely true that NAAQS provisions will be subject to litigation. Indeed, any regulation by the CAA concerning GHGs would likely be challenged in Court, since it is a new area of rulemaking. Such a concern, however, should not be the rationale that halts necessary action to comprehensively address climate change. Indeed, NSPS regulations, especially when attempting a broad trading regime, is also subject to litigation, and as demonstrated above, may very well fail. Indeed, litigation may result in the EPA being mandated to issue a NAAQS for GHGs.

A NAAQS program can be sensible and rely on market-based mechanisms. As discussed above, the EPA has the tools, namely sections 179B and the “good neighbor” provision to issue state budgets for GHGs. Moreover, if the EPA sets only a secondary NAAQS, the EPA can design a program that allows states to come into compliance “as expeditiously as possible” rather than within a strict 10-year timeframe. To comply with the budgets, states can then opt into a multi-sector cap and trade program to satisfy a portion of the reductions necessary to meet their budgets and reduce emissions even further through other sectors not covered by the cap and trade program, such as building efficiency standards, land use, reforestation, and agriculture. Accordingly, by issuing NAAQS for GHGs, the EPA can ensure actual overall emission reductions in a cost-effective, flexible and comprehensive manner.

¹⁹⁰ Peyton Fleming, *Voters Overwhelmingly Support EPA Air Pollution Rules*, CERES (Oct. 12, 2011), available at <http://www.ceres.org/press/press-releases/cleanairpoll>.