

ARTICLES

Legal Pathways to Reducing Greenhouse Gas Emissions Under Section 115 of the Clean Air Act

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ABSTRACT

Under President Barack Obama, the U.S. Environmental Protection Agency (“EPA”) has promulgated a series of greenhouse gas (“GHG”) emissions regulations, initiating the necessary national response to climate change. However, the United States will need to find other ways to reduce GHG emissions if it is to live up to its international emissions reduction pledges, and to ultimately lead the way to a zero-carbon energy future. This article argues that the success of the recent climate negotiations in Paris provides a strong basis for invoking a powerful tool available to help achieve the country’s climate change goals: section 115 of the Clean Air Act, titled “International Air Pollution.” This provision authorizes EPA to require states to address emissions that contribute to air pollution endangering public health or welfare in other countries, if the other countries provide the United States with reciprocal protections. The language of section 115 does not limit the Agency to regulating a particular source-type, or a given industrial or economic sector. Rather, it grants EPA and the states broad latitude to address international air pollution comprehensively through the Clean Air Act’s state implementation plan process, increasing administrative efficiency

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and reducing burdens on regulated companies. EPA and the states could use the provision to establish an economy-wide, market-based approach for reducing GHG emissions. Such a program would provide one of the most effective and efficient means for addressing climate change pollution in the United States.

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INTRODUCTION

In the absence of federal climate change legislation, the Environmental Protection Agency (“EPA”) has taken extensive action to reduce domestic

greenhouse gas (“GHG”) emissions under the Clean Air Act (“CAA”). The Agency has promulgated regulations addressing GHG emissions from motor vehicles, transportation fuels, new and existing power plants, the oil and gas sector, and municipal landfills. These measures, along with various reporting rules and an anticipated rule addressing GHG emissions from aircraft, form an essential part of the nation’s overall response to climate change. More, however, is required. In order to achieve President Barack Obama’s international pledge to cut emissions by up to twenty-eight percent by 2030, and in order to live up to the United States’ commitment to seek to reduce GHG emissions to the point where global warming may yet be limited to two degrees Celsius, the nation will need to find other ways to mitigate climate change. Without further action, we cannot get to where we need to be from where we are today.¹

Section 115 of the Clean Air Act, titled “International Air Pollution,” provides a powerful, and as yet unused, tool to help achieve the country’s climate change goals. The provision authorizes EPA to require states to address emissions that contribute to air pollution endangering public health or welfare in other countries, if the other countries provide the United States with reciprocal protections. The language of the provision does not limit the Agency to regulating a particular source-type or a given industrial or economic sector. Rather, it grants EPA and the states broad latitude to address international air pollution through the Clean Air Act’s state implementation plan (“SIP”) process. Notably, EPA and the states could use the provision to establish an economy-wide, cross-sectoral GHG emissions trading program that incorporates both stationary and mobile sources. In so doing, section 115 could provide one of the most effective and efficient means for addressing climate change pollution in the United States.²

The time is ripe for EPA to consider use of its authority for international air pollution control. Unique among the provisions of the Clean Air Act, section 115 requires actions by other nations as a prerequisite for domestic emissions reductions. The growing international efforts to address climate change, which recently coalesced in Paris in December 2015, provide a firm predicate for invoking section 115 in the United States. Whatever the legal merits of using section 115 to regulate GHGs might have been in prior years, both of the legal prerequisites for action—endangerment and reciprocity—are now present. As a legal matter, EPA has ample authority to move forward with regulation under section 115.

1. See Karl Hausker et al., *Delivering on the U.S. Climate Commitment: A 10-Point Plan Toward a Low Carbon Future 2* (World Res. Inst., Working Paper, 2015).

2. See, e.g., Nathaniel O. Keohane, *Cap and Trade, Rehabilitated: Using Tradable Permits to Control U.S. Greenhouse Gases*, 8 REV. ENVTL. & ECON. POL’Y 42, 49 (2009) (“From an economic perspective, a cap . . . should cover as much of the economy as possible The broader the program, the greater are the gains from trade, and the lower are the total costs of meeting a given target.”).

As a policy matter, regulation under section 115 is a powerful tool that would well serve the interests of regulators, regulated sources, and the public at large. The flexibility of its provisions—allowing states clear authority to use market based regulatory mechanisms across all regulated sectors—is especially well-suited to GHG regulation. The alternative to using section 115 to address GHG emissions from stationary sources is a series of source-specific regulations under section 111 of the Clean Air Act.³ Potentially dozens of source categories would need to be regulated, including steel mills, cement plants, wastewater treatment facilities, and petrochemical plants and refineries.⁴ EPA would need to establish source-specific regulations for both new and existing facilities in each of these categories, which would be time-consuming and expensive for EPA and burdensome for state air pollution agencies to implement. For the regulated sources, standards under section 111 would provide at best limited flexibility to use market-based mechanisms to reduce compliance costs. Significantly, under the current approach, sources would not be able to purchase emissions reductions from facilities in other source categories, like power plants, that might have much lower abatement costs.

In comparison, section 115 would allow EPA to avoid serial rulemakings and consolidate the process. Because it operates through SIPs, section 115 would give states wide-ranging flexibility in developing their implementation plans, including the authority to use market-based approaches like emissions trading programs or emissions fees to minimize compliance costs. As a result, section 115 would lead to lower compliance costs and greater operational latitude for the regulated sources. In addition, a section 115 regime would allow EPA and the states to reach sources that are not subject to section 111 at all, such as transportation fuels and commercial and residential natural gas, and could create a role for carefully vetted offsets, both of which would generate options for further cost savings. Indeed, section 115 is capacious enough for EPA and the states to build an emissions trading program that is interstate, national or even international in scale, and that is economy-wide in scope, incorporating power plants and other section 111 sources, non-section 111 industrial sources, transportation fuels, commercial and residential natural gas, energy efficiency initiatives, planning efforts, and so on.⁵

3. 42 U.S.C. § 7411(b)(1) (2012); 40 C.F.R. §§ 60.30b–60.676 (2015) (establishing standards of performance for multiple source categories).

4. See U.S. ENVTL. PROT. AGENCY, INVENTORY OF GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2012, at ES-5 to ES-7 tbl.ES-2 (2014) (listing multiple sources of GHG emissions).

5. See generally WORLD RES. INST., CAN THE U.S. GET THERE FROM HERE?: USING EXISTING FEDERAL LAWS AND STATE ACTION TO REDUCE GREENHOUSE GAS EMISSIONS (2012).

A section 115 regime would also provide an important backstop for EPA, the states, and industry. The Clean Power Plan, the rule developed by EPA to reduce GHGs from existing power plants, along with EPA's other regulatory initiatives, have been the subject of relentless litigation, casting a shadow of doubt over their implementation. Though the authors of this article are of the view that the Clean Power Plan and EPA's other regulations represent reasonable interpretations of ambiguous provisions of the Clean Air Act and therefore should withstand legal challenge, section 115 provides a potential backstop should any or all of these measures fail in court. Moreover, several politicians have voiced concern over the legality of the agreement resulting from the 21st Conference of the Parties ("COP 21") to the United Nations Framework Convention on Climate Change ("UNFCCC") in Paris. Action under section 115 could buttress the legality of the agreement as a valid exercise of executive power.

In the pages that follow we elaborate on these essential points. Part I provides an introduction, discusses how section 115 works, what Congress intended, and how courts have treated the provision to date. In Part II, we analyze the legal basis for regulating GHG emissions under section 115, focusing on how EPA could substantiate the required endangerment finding and reciprocity determination, and addressing potential challenges to EPA initiating action. Part III addresses legal issues that the Agency may confront in implementing a section 115 GHG emissions regime. Here we examine the appropriate bases for establishing a national GHG emissions reduction target and for allocating reductions among the states; the scope of authority EPA possesses to develop and implement federal implementation plans ("FIPs") for states that decide not to take independent action; integration of a section 115 regime with existing GHG regulations; the use of section 115 to regulate transportation fuels and consumer use of natural gas; and the potential role of offsets in a section 115 emissions trading program. Part IV offers some concluding thoughts.

I. A SECTION 115 PRIMER

A. HOW SECTION 115 WORKS

Section 115 of the Clean Air Act, entitled "International Air Pollution," provides the executive branch with the authority to require states to address air pollution that threatens a foreign country, where that country also provides reciprocal protections for the United States. The provision has been invoked by EPA only once, in the 1980s, in an early attempt to control acid rain pollution generated in the United States and Canada. But the progress that has recently been made in encouraging international action to address climate change makes section 115 relevant once again. As we will show, it provides a powerful means to employ administrative action to address transboundary air pollution, including climate change.

The full text is as follows:

Sec. 115. International air pollution

(a) Endangerment of public health or welfare in foreign countries from pollution emitted in United States

Whenever the Administrator, upon receipt of reports, surveys or studies from any duly constituted international agency has reason to believe that any air pollutant or pollutants emitted in the United States cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country or whenever the Secretary of State requests him to do so with respect to such pollution which the Secretary of State alleges is of such a nature, the Administrator shall give formal notification thereof to the Governor of the State in which such emissions originate.

(b) Prevention or elimination of endangerment

The notice of the Administrator shall be deemed to be a finding under section 7410(a)(2)(H)(ii) of this title which requires a plan revision with respect to so much of the applicable implementation plan as is inadequate to prevent or eliminate the endangerment referred to in subsection (a) of this section. Any foreign country so affected by such emission of pollutant or pollutants shall be invited to appear at any public hearing associated with any revision of the appropriate portion of the applicable implementation plan.

(c) Reciprocity

This section shall apply only to a foreign country which the Administrator determines has given the United States essentially the same rights with respect to the prevention or control of air pollution occurring in that country as is given that country by this section.

(d) Recommendations

Recommendations issued following any abatement conference conducted prior to August 7, 1977, shall remain in effect with respect to any pollutant for which no national ambient air quality standard has been established under section 7409 of this title unless the Administrator, after consultation with all agencies which were party to the conference, rescinds any such recommendation on grounds of obsolescence.⁶

Under the express terms of the provision, two conditions must be satisfied to trigger states' obligations to reduce emissions. First, the EPA Administrator must issue an endangerment finding. An endangerment finding may be issued under section 115 where the Administrator "has reason to believe," based on "reports, surveys or studies from any duly constituted international agency," that air pollutants emitted in the United States "cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign

6. 42 U.S.C. § 7415 (2012).

country.”⁷ This language is nearly identical to that of Clean Air Act section 202(a), under which EPA issued an endangerment finding for GHGs in 2009,⁸ except that section 115 specifically addresses international pollution. Alternatively, the Secretary of State may initiate the endangerment finding by requesting the Administrator to act in response to pollution the Secretary “alleges is of such a nature.”⁹

Second, to invoke authority under section 115, the EPA Administrator must make a reciprocity finding. Such a finding may be made where the Administrator determines that the endangered foreign country gives “essentially the same rights with respect to the prevention or control” of its own air pollution as is provided by section 115.¹⁰ This language has no clear analog to any other provision of the Clean Air Act. It is nearly identical to language in section 310 of the Clean Water Act—a parallel authority for cross-boundary pollution of water resources—but section 310 has not been used or interpreted by the courts.¹¹

When both conditions are met, the Administrator must notify the governor of each state where the pollution originates that its SIP is “inadequate to prevent or eliminate the endangerment.”¹² The state must then revise its SIP, under the procedures in section 110 of the Clean Air Act, to meet the requirements of section 115.¹³ In doing so, states will have considerable discretion in how to address the pollution. Among the tools available to the state under section 110 are “economic incentives such as fees, marketable permits, and auctions of emissions rights.”¹⁴ If a state fails to submit a revised SIP, or if the state’s SIP is inadequate or incomplete, EPA must promulgate a federal implementation plan for the state.¹⁵

7. *Id.* § 7415(a).

8. 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) [hereinafter Endangerment Finding]. Section 202(a) calls for the Administrator to issue standards for vehicle emissions “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)(1).

9. 42 U.S.C. § 7415(a).

10. *Id.* § 7415(c).

11. *See, e.g.*, 33 U.S.C. § 1320(a) (2012) (conditioning application on foreign country providing “essentially the same rights with respect to the prevention and control of pollution occurring in that country as is given that country by this subsection.”).

12. 42 U.S.C. § 7415(a)–(b).

13. SIPs are traditionally thought of as state plans for attaining health-based air quality standards EPA establishes for criteria pollutants. *See, e.g., id.* § 7410(a)(1). This is indeed a primary function of SIPs. *Id.* But section 110(a)(2)(D)(2) provides that SIPs must also comply with any requirements EPA establishes under section 115. *Id.* § 7410(a)(2)(D)(2).

14. *Id.* § 7410(a)(2)(A).

15. *Id.* § 7410(c)(1).

B. LEGISLATIVE HISTORY OF SECTION 115

The international air pollution provision was first enacted in 1965 as section 105 of the original Clean Air Act.¹⁶ Like the current section 115, section 105 had two prerequisites for action: (1) an endangerment finding and (2) a reciprocity determination. In fact, the reciprocity language in section 105 was identical to the language now in section 115, with the exception that the reciprocity determination was to be made by the Secretary of Health, Education, and Welfare, not the EPA Administrator (a position that had not yet been created). Section 105 differed from the current section 115 primarily in what was triggered once these prerequisites were met. Under section 105, a finding that U.S. air pollution was endangering another nation and a determination that the foreign nation provided reciprocal rights to the United States triggered a multi-step abatement process. First, the Secretary was empowered to convene a conference of relevant local, state, and interstate agencies, as well as the foreign nation involved, to discuss the air pollution and the adequacy of measures to reduce it. If the Secretary determined that the conference did not achieve effective abatement, section 105 then authorized the Secretary to convene a hearing in front of a board of five or more members appointed by the Secretary, the affected states, other federal agencies with substantial interests, and any affected interstate air pollution agency. If the hearing board agreed with the Secretary and the states continued to refuse to abate the pollution, section 105 authorized the Secretary to ask the Attorney General to initiate legal action.

The legislative history of the 1965 amendments makes clear that there were two purposes behind the international air pollution provision: to empower the executive branch to prevent U.S. pollution from harming other countries and to give the executive branch the authority to “cooperate with foreign countries” in the abatement of air pollution and “to seek agreements” with them that would provide “reciprocal benefits” for the United States. According to the Senate report, the international air pollution provision was added to the Clean Air Act because:

there is no provision which would authorize cooperative action with foreign countries when air pollution is endangering the health or welfare or their people. It is important that we, in the interest of international amity and in fairness to the people of other countries, afford them the benefit of protective measures.¹⁷

In a similar passage, the Senate report states:

16. Clean Air Act Amendments and Solid Waste Disposal Act, Pub. L. No. 89-272, 77 Stat. 392, 396 (1965).

17. S. REP. NO. 89-192, at 6 (1965).

The committee believes that it is important that the Clean Air Act be amended . . . to adopt a procedure whereby we can cooperate with foreign countries in cases involving endangerment of health or welfare The language of the bill provides for enforcement proceedings to correct international pollution problems originating in the United States.¹⁸

The Senate report expressly anticipated that use of the new authorities would lead to international air pollution agreements. In one passage, the Senate report states, “International negotiations will be necessary to provide reciprocal benefits for US citizens.”¹⁹ In another, the report says, “[t]he committee urges the administration to seek agreements with Canada and Mexico to help protect US citizens from air pollution originating in those countries.”²⁰ The legislative history in the House evinces a similar intent.²¹

In 1970, Congress moved the international air pollution provision to section 115 of the Clean Air Act.²² Then, in 1977, Congress made substantive changes to the enforcement mechanism in section 115. The provision has not been amended since.

The 1977 amendments converted section 115 from a primarily procedural provision to a substantive one with a proven enforcement mechanism by giving the EPA Administrator the authority to require states to revise their SIPs to abate international air pollution. Congress took this step because the abatement conference was regarded as an ineffective way to achieve emissions reductions. As the Senate report stated, “[b]efore 1970 the principal legal means for control or abatement of air pollution was the enforcement conference procedure . . . a lengthy and uncertain process in which all parties—State, local, and Federal agencies and the polluter—were convened to negotiate a schedule for control of the emissions alleged to cause the problem.”²³ In comparison, the SIP process was thought to be an effective approach:

The 1970 amendments . . . retained in section 115 the conference procedure for abatement of . . . international situations. The authority of section 115 has not

18. *Id.* at 4.

19. *Id.* at 6.

20. *Id.* at 4.

21. H.R. REP. NO. 89-889, at 6 (1965) (“[T]he United States cannot in good conscience decline to protect its neighbors from pollution which is beyond their legal control. Therefore the bill provides remedies for foreign countries adversely affected by air pollution emanating from the United States, if reciprocal rights are granted to the United States.”). During floor consideration, Rep. Richard McCarthy from New York asked Rep. Oren Harris, the Chairman of the Committee on Interstate and Foreign Commerce, how the new provision would work “in this instance of pollution emanating from the United States in the Buffalo area and going over to Fort Erie in Ontario.” 111 CONG. REC. H25052 (daily ed. Sept. 24, 1965) (colloquy between Reps. McCarthy and Harris). Chairman Harris replied, “before they could proceed to bring about any program to deal with the subject they would have to be in agreement for reciprocal treatment. On the agreement of reciprocity there would be inaugurated a program by the Secretary to deal with that particular problem.” *Id.*

22. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676, 1677 (1970).

23. S. REP. NO. 95-127, at 17 (1977).

been used, and the implementation plan approach for interstate air quality control regions has proven to be more successful in dealing with air pollution problems involving more than one State.

In fact, the committee believes that the implementation plan approach is . . . more appropriate than the enforcement conference for international air pollution. Section 115 as revised, therefore, provides that the determination that emissions of air pollutants in the United States are endangering the health or welfare of citizens of a foreign country will require the State in which the source of those emissions is located to revise its implementation plan to control those emissions.²⁴

The House-Senate conference report confirms this understanding of the purpose of the amendments. The conference report shows that both bodies understood that the new language in section 115 would give EPA the authority to require SIP revisions to abate international air pollution. According to the conference report, the House concurred in the Senate language with amendments that “require a plan revision only to the extent necessary to prevent or eliminate the endangerment in the foreign country.”²⁵

The 1977 amendments to section 115 made the provision a vastly more effective tool for reducing emissions affecting other nations, but they also substantially curtailed the procedural engagement provided to foreign countries. The 1965 right to participate in an abatement conference as an equal partner with state air pollution control agencies was replaced in 1977 by new language in section 115(b). The new language provides only that the foreign country “shall be invited to appear at any public hearing associated with any revision of the appropriate portion of the applicable implementation plan.”²⁶ In effect, the 1977 amendments downgraded the procedural involvement provided to foreign countries by delaying their involvement until after the federal regulations implementing section 115 have been issued, moving the point of engagement to the state level and giving the comments of the foreign countries no more status than those of any member of the public.

C. JUDICIAL PRECEDENT ON SECTION 115

To date, EPA has sought to invoke section 115 only once, in the 1980s, in order to cooperate with Canada to address the issue of acid rain.

In 1980, the United States and Canada signed a memorandum of intent committing both countries to addressing the problem of acid rain pollution

24. *Id.* at 57.

25. H.R. REP. NO. 95-564, at 136 (1977) (Conf. Rep.). In addition, the House’s perfecting language modified the endangerment finding to reflect the “‘reasonably may be anticipated’ to endanger public health” standard used in other parts of the legislation. *Id.*

26. 42 U.S.C. § 7415(b) (2012).

passing between the two countries.²⁷ Following this memorandum, Canada added provisions modeled on section 115 to its Clean Air Act.²⁸ Under the law, Canadian federal authorities were to identify cross-boundary pollution originating in Canada, and could recommend local efforts to reduce the pollution or impose federal emission standards. The law allowed the endangered foreign country to participate in the comment process, though with the difference that under the Canadian law the foreign country participation occurred at the federal, not state or provincial, level.²⁹ Subsequently, in separate letters addressed to the Secretary of State and a U.S. Senator, then-EPA Administrator Douglas Costle concluded that, although “the detailed procedural and substantive requirements” of the Canadian law differed from those of section 115 and other provisions of the Clean Air Act, the Canadian law nonetheless provided “essentially the same rights” as section 115.³⁰ Administrator Costle also issued an endangerment finding in these same letters, determining that pollution originating in the United States contributed to acid rain pollution in Canada.³¹ However, EPA administrators in the incoming Reagan Administration declined to take further action under section 115.

Subsequent legal challenges based on EPA’s inaction did not lead to significant judicial interpretation of section 115’s requirements. In one lawsuit, New York and other states argued that Administrator Costle’s letter determinations were sufficient to invoke section 115 and that the Reagan Administration was therefore required to call for SIP revisions. In *Thomas v. New York*, however, the D.C.

27. The memorandum of intent established working groups to address transboundary pollution (including acid rain) between the countries, and committed the countries to interim actions to develop domestic air pollution control measures through new or existing laws and regulations. Transboundary Air Pollution, Can.-U.S., Aug. 5, 1980, 32 U.S.T. 2521.

28. Clean Air Act, S.C. 1980, c 45, § 21.1 (Can.); see also *Canada: Amendment of the Clean Air Act to Provide U.S. with Legislative Protection Similar to that Offered to Canada under U.S. Clean Air Act*, 20 INTERNATIONAL LEGAL MATERIALS 762 (1981) (“[T]he purpose of the amendments to the Clean Air Act now before the House is to provide the United States with essentially the same legislative protection as that offered Canada under section 115 of the United States Clean Air Act.”).

29. Clean Air Act, S.C. 1980, c 45, § 21.1 (Can.). Under the Canadian law, when the Canadian Minister of Environment had “reason to believe” that pollution originating in Canada “create[d] or contribute[d]” to air pollution “that may reasonably be expected to constitute a significant danger to the health, safety or welfare of persons in a country other than Canada,” the Minister would recommend to the Governor in Council (a representative of the federal cabinet), an emission standard that he considered “appropriate for the elimination or significant reduction of that danger.” *Id.* For non-federal sources of pollution, the Minister could recommend emission standards only if the Minister had already made reasonable, unsuccessful attempts to get the provincial government to reduce the pollution. *Id.* The Minister’s recommendations would be published prior to implementation, and the foreign country affected by Canadian pollution would be given “a reasonable opportunity” to comment on the recommendations, “in a manner prescribed by the Governor in Council.” *Id.* The Governor in Council could require pollution sources to adopt the Minister’s emission standard, if satisfied that the country endangered by the Canadian pollution provided “essentially the same kind of benefits in favour of Canada with respect to abatement or control of air pollution” as those provided by the Canadian law. *Id.*

30. *New York v. Thomas*, 613 F. Supp. 1472, 1486–93 (D.D.C. 1985) (reproducing Administrator Costle’s letters), *rev’d*, 802 F.2d 1443 (D.C. Cir. 1986).

31. *Id.*

Circuit Court of Appeals held, without addressing the merits of the underlying findings, that the letters did not require EPA to take further action because they had been issued without providing an opportunity for notice and comment and without publication in the Federal Register as required by the Administrative Procedure Act (“APA”) for agency rulemaking.³²

In a second lawsuit, Ontario, a number of U.S. states, and environmental groups sought to compel EPA to respond to a petition for rulemaking filed under section 553(e) of the APA.³³ The petition requested that the Agency issue a rule under section 115 that would address sources of pollution in the United States that were contributing to acid rain in Canada.³⁴ EPA argued that it had not yet made a final decision on the petition, that it was still trying to obtain sufficient information to attribute emissions to specific states, and that section 115 allowed the Agency to address endangerment, reciprocity, and SIP revisions in a unitary proceeding, rather than in a segmented one. The D.C. Circuit found EPA’s interpretation reasonable, holding that the Agency was not required to issue formal endangerment or reciprocity findings until it had the information necessary to trace pollution to particular states, and that its decision that it did not yet have that information was not arbitrary and capricious.³⁵

This sparse history illustrates two important points: First, the endangerment and reciprocity findings required by section 115, along with the call for SIP revisions to abate the international pollution, require notice-and-comment rulemaking consistent with the requirements of section 553 of the APA. Second, both EPA and the D.C. Circuit view EPA as having ample discretion to interpret and apply the provisions of section 115 to address international air pollution.³⁶

II. THE LEGAL BASIS FOR REGULATING GREENHOUSE GASES UNDER SECTION 115

To invoke section 115 to regulate GHG emissions, EPA would need to (1) find that U.S. emissions of GHGs are endangering other nations and (2) determine that other nations have provided reciprocal protections to the United States. After discussing the relevant standard of review, this Part examines whether EPA could make these showings for GHGs. The Part concludes by addressing potential arguments that section 115 cannot be used to regulate GHGs, including the argument that section 110 can be applied only to criteria air pollutants.

32. See *Thomas v. New York*, 802 F.2d 1443, 1446–48 (D.C. Cir. 1986).

33. *Her Majesty the Queen in Right of Ont. v. EPA*, 912 F.2d 1525, 1526 (D.C. Cir. 1990).

34. *Id.*

35. *Id.* at 1533–34.

36. Notably, unlike in the case of *Her Majesty the Queen*, here EPA does possess state-specific greenhouse gas emissions data. See U.S. ENVTL. PROT. AGENCY, NO. 430-R-15-004, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2013, at ES-1 (2015) [hereinafter INVENTORY].

A. THE STANDARD OF REVIEW FOR POTENTIAL EPA ACTION UNDER SECTION 115

Under existing canons of statutory interpretation and well-established administrative law doctrines, EPA has significant discretion to interpret ambiguous terms in section 115 and to make factual findings about its application to international air pollution that contributes to climate change. Two primary legal frameworks would govern EPA's application of section 115: judicial review of agency statutory interpretations under *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*,³⁷ and judicial review of agency fact-finding and policy decisions under the arbitrary and capricious standard set forth in the APA.³⁸

Under the *Chevron* standard, agency interpretations of ambiguous statutory provisions are accorded significant deference as long as they are "reasonable."³⁹ The U.S. Supreme Court has reaffirmed *Chevron's* principle of deference in three recent Clean Air Act cases. The first case, *EPA v. EME Homer City Generation*, involved the "good neighbor" provision of the Clean Air Act, which regulates cross-border pollution within the United States.⁴⁰ The Court found that EPA's definition of the "amounts" of pollution from upwind states that "contribute significantly" to nonattainment in downwind states was reasonable and entitled to significant deference.⁴¹ The second case, *Utility Air Regulatory Group v. EPA*, involved EPA's interpretations of the Prevention of Significant Deterioration ("PSD") provisions of the Act and their applicability to different sources of GHG emissions.⁴² There, the Court found that some of EPA's interpretations represented an unwarranted expansion of EPA's authority to regulate emissions sources that previously were not regulated under the Act; were impermissible under its plain meaning; and that other interpretations, which pertained to sources already covered under the Act, were permissible. On both points, the Court applied the *Chevron* analysis.⁴³ Finally, in *Michigan v. EPA*, the Court reviewed EPA's interpretation of section 112, requiring the Agency to establish standards for hazardous air pollutants where the Agency finds such regulation "appropriate and necessary."⁴⁴ The Court again applied *Chevron*, and a five-justice majority found EPA's interpretation, which excluded costs from the consideration of whether regulation is "appropriate," to be unreasonable.⁴⁵

37. *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837 (1984).

38. 5 U.S.C. § 706(2)(a) (2012).

39. *Chevron*, 467 U.S. 837.

40. 42 U.S.C. § 7410(a)(2)(D)(i) (2012).

41. *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584 (2014).

42. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427 (2014).

43. *Id.* at 2439.

44. *Michigan v. EPA*, 135 S. Ct. 2699 (2015).

45. *Id.* at 2706–08. Some commentators have argued that the trajectory of Supreme Court Clean Air Act decisions, combined with the Supreme Court's decision in *King v. Burwell*, 135 S. Ct. 475 (2015), indicates a shift in the degree of deference the Supreme Court is willing to afford agency decisions, especially EPA decisions. See, e.g., Jonathan R. Nash, *Michigan v. EPA and the Future of Chevron Deference*, THE HILL (July

Final rules issued under the Clean Air Act are also reviewed according to the arbitrary and capricious standard of the APA.⁴⁶ Under this standard, a court will set aside agency action only if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”⁴⁷ The arbitrary and capricious standard presumes the Agency action is valid if it meets a minimum rationality standard,⁴⁸ that is, if the Agency has considered relevant factors and articulated a rational connection between the facts found and the choices made.⁴⁹ This standard of review gives EPA significant deference, particularly where the decision involves EPA’s unique expertise.⁵⁰

Courts often apply both the *Chevron* and the arbitrary and capricious frameworks where agency action requires the Agency to interpret statutory authority.⁵¹ Because of the discretion accorded under these frameworks, EPA should have substantial legal room to issue an endangerment finding, make a reciprocity determination, and issue a call for states to revise their SIPs in order to reduce GHG emissions within their jurisdictions.

B. THE ENDANGERMENT FINDING

The first prerequisite to EPA action under section 115 is the endangerment finding. Under section 115(a), this finding requires that the Administrator “ha[ve] reason to believe,” based on “reports, surveys or studies from any duly constituted

16, 2015), <http://thehill.com/blogs/pundits-blog/the-judiciary/248040-michigan-v-epa-and-the-future-of-chevron-deference>. However, empirical studies of the Court’s application of *Chevron* and other deference regimes reveal that the Court has never applied the test uniformly, Connor N. Raso & William N. Eskridge, Jr., *Chevron as a Canon, Not a Precedent: An Empirical Study of What Motivates Justices in Agency Deference Cases*, 110 COLUM. L. REV. 1727 (2010), and that while there are positive correlations between agency win rates and both the application of *Chevron* and comparative agency expertise there have always been instances in which agencies lose. See William N. Eskridge Jr. & Lauren E. Baer, *The Continuum of Deference: Supreme Court Treatment of Agency Statutory Interpretations from Chevron to Hamdan*, 96 GEO. L.J. 1083, 1098–1100 (2008). Regardless, the *Chevron* doctrine remains the go-to framework for analysis, directing courts to uphold reasonable agency interpretations in instances where the statute is silent or ambiguous.

46. *Nat. Res. Def. Council, Inc. v. EPA*, 194 F.3d 130, 136 (D.C. Cir. 1999) (citing 42 U.S.C. § 7607(d)(9)(A) (2012)).

47. 5 U.S.C. § 706(2)(a) (2012).

48. *Nat. Res. Def. Council, Inc.*, 194 F.3d at 136 (citing *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 520–21 (D.C. Cir. 1983)).

49. See *Motor Vehicle Mfrs. Ass’n of the United States v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

50. See *Nat. Res. Def. Council, Inc.*, 194 F.3d at 136 (“While we carefully review the factual record, we will give due deference to the agency especially when the agency action involves evaluating complex scientific or statistical data within the agency’s expertise.”); see also *Balt. Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 103 (1983).

51. See, e.g., *Michigan v. EPA*, 135 S. Ct. 2699, 2706–07 (2015) (finding agency interpretation impermissible and that the agency failed to take into account all the relevant factors); *Her Majesty the Queen in Right of Ont. v. EPA*, 912 F.2d 1525, 1535 (D.C. Cir. 1990) (finding EPA decision declining to issue section 115 findings due to its interpretation of the statute’s procedures to be both reasonable under *Chevron* and not arbitrary and capricious).

international agency,” that air pollutants emitted in the United States “cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country.”⁵² This section of the article analyzes whether EPA has a legal basis for making an endangerment finding under section 115.

Perhaps the strongest overall argument in favor of EPA’s issuing an international endangerment finding for domestic GHG emissions under section 115 is that the Agency has already made an endangerment finding for GHGs under Clean Air Act section 202(a). As noted above, the language in section 115 is nearly identical to that of section 202(a), under which EPA issued an endangerment finding for greenhouse gases in 2009.⁵³ In that rulemaking, EPA defined six GHGs as a single air pollutant to be measured in carbon dioxide-equivalent units, considered the scientific evidence on the linkages between carbon dioxide levels and global warming, and concluded that motor vehicle emissions of GHGs “contribute to the total greenhouse gas air pollution, and thus to the climate change problem, which is reasonably anticipated to endanger public health and welfare.”⁵⁴ The 202(a) endangerment finding was challenged in court and upheld in its entirety by the D.C. Circuit.⁵⁵

Even without the precedent under section 202(a), the individual elements of a section 115 endangerment determination are all easily satisfied. First, the EPA Administrator is in receipt of “reports, surveys and studies from [a] duly constituted international agency” that support an endangerment finding. The Intergovernmental Panel on Climate Change (“IPCC”)—whose comprehensive 2007 Fourth Assessment Report was used to support EPA’s section 202(a) endangerment finding⁵⁶ and whose subsequent Fifth Assessment Report demonstrates increasing certainty regarding the extraordinary adverse impacts on public health and welfare that climate change has begun to and is likely to continue to inflict⁵⁷—undoubtedly constitutes a “duly constituted international agency.”⁵⁸ The IPCC was established by the World Meteorological Organization (“WMO”) and the United Nations Environment Programme (“UNEP”) in 1988, and was

52. 42 U.S.C. § 7415(a) (2012). In addition, and as noted above, an endangerment finding may be triggered by a request from the Secretary of State. *Id.*

53. Endangerment Finding, 74 Fed. Reg. at 66,496.

54. *Id.* at 66,499.

55. *Coal. for Responsible Regulation, Inc. v. EPA*, 684 F.3d 102 (2012), *aff’d sub nom.* *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427 (2014).

56. *See* Endangerment Finding, 74 Fed. Reg. at 66,497.

57. *See generally* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: SYNTHESIS REPORT (Paulina Aldunce et al. eds., 2014) [hereinafter SYNTHESIS REPORT].

58. *See* *Thomas v. New York*, 802 F.2d 1443, 1445 (D.C. Cir. 1986) (International Joint Commission established by United States and Canada “concededly a ‘duly constituted international body’”); *see also* Hannah Chang, *Cap-and-Trade Under the Clean Air Act?: Rethinking Section 115*, 40 ENVTL. L. REP. 10,894, 10,901 (2010); Roger Martella & Matthew Paulson, *Regulation of Greenhouse Gases Under Section 115 of the Clean Air Act*, DAILY ENV’T REP., Mar. 9, 2009, at B-1, B-10 to B-11.

subsequently endorsed by the U.N. General Assembly and charged by it with the mandate “to provide internationally coordinated scientific assessments of the magnitude, timing and potential environmental and socio-economic impact of climate change and realistic response strategies.”⁵⁹ A U.N. body, open to all member countries of the WMO and UNEP and in which the United States actively participates, the IPCC is recognized as the most authoritative voice on the scientific and technical issues involved with climate change, and has, in effect, become the scientific arm of the UNFCCC.⁶⁰

Second, there is no question that “air pollutants” emitted in the United States “cause or contribute to air pollution” in foreign countries. The U.S. Supreme Court found in *Massachusetts v. EPA* that GHGs are “air pollutants” under the Clean Air Act.⁶¹ The GHGs at issue here are, by definition, emitted in the United States.⁶² And these domestic emissions cause or contribute to pollution beyond U.S. borders because CO₂ and the other GHGs become “well-mixed” in the atmosphere and affect the global climate.⁶³ As EPA has explained, “U.S. emissions have climatic effects not only in the United States but in all parts of the world.”⁶⁴

Third, this air pollution endangers public health and welfare in countries around the world.⁶⁵ The public health effects of climate change have become more clearly understood in recent years.⁶⁶ According to the IPCC, climate change threatens public health directly, through changes in temperature and precipitation and the occurrence of heat waves, floods, droughts, and fires.⁶⁷ The IPCC also explains that climate change may have indirect health impacts arising from crop

59. G.A. Res. 43/53, ¶ 5 (Dec. 6, 1988).

60. See *Intergovernmental Panel on Climate Change*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, <http://unfccc.int/bodies/body/6444.php> (last visited Feb. 21, 2016) (“The COP receives the outputs of the IPCC and uses IPCC data and information as a baseline on the state of knowledge on climate change in making science based decisions.”); see also *Massachusetts v. EPA*, 549 U.S. 497, 508–10 (2007) (citing IPCC reports).

61. *Massachusetts*, 549 U.S. at 528–29.

62. See INVENTORY, *supra* note 36, at ES-1.

63. See Endangerment Finding, 74 Fed. Reg. at 66,536–40; see also *id.* at 66,539 (mobile sources comprising 4.3 percent of global greenhouse gas emissions in 2005 cause or contribute to this pollution). See generally ULRICH CUBASCH ET AL., *Introduction to CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS* 119 (T.F. Stocker et al. eds., 2013) [hereinafter CLIMATE CHANGE 2013].

64. U.S. ENVTL. PROT. AGENCY, TECHNICAL SUPPORT DOCUMENT FOR THE ENDANGERMENT AND CAUSE OR CONTRIBUTE FINDINGS FOR GREENHOUSE GASES UNDER SECTION 202(a) OF THE CLEAN AIR ACT 123 (2009).

65. See, e.g., *id.* at 23–44 (documenting global changes already linked to climate change), 55–80 (projecting future changes), 127–28 and tbl.16.1 (compiling public health and welfare effects of climate change on many world regions); see also SYNTHESIS REPORT, *supra* note 57.

66. See Kirk R. Smith et al., *Human Health: Impacts, Adaptation, and Co-benefits*, in CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY 709 (C.B. Field et al. eds., 2014); see also George Luber et al., *Human Health*, in U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT, DOI: 10.7930/JOPN93H5 220 (J. M. Melillo et al. eds., 2014).

67. Smith et al., *supra* note 66, at 713.

failures, shifting patterns of disease vectors, and other ecological disruptions.⁶⁸ Social responses to climate change, such as displacement due to rising sea levels or drought, may also affect public health.⁶⁹

The IPCC's latest report also makes clear that climate change will have numerous adverse impacts on the welfare of people living in other countries. These include increased frequency and severity of extreme weather events and climate-related disasters; pervasive impacts on critical infrastructure, including energy systems and transportation networks; disruptions to food production; degradation of ecosystems; threats to domestic and international security; and displacement.⁷⁰ Indeed, climate change poses an existential threat to small island states and many coastal areas that are at risk of inundation due to rising seas, and is expected to make some areas uninhabitable due to drought, heat, or the inability to produce adequate food.⁷¹

The IPCC concludes that "it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century," and that "[c]ontinued emissions of greenhouse gases will cause further warming and changes in all components of the climate system," exacerbating these and other harms.⁷² Given the statements made by the IPCC and EPA, and the deference given these scientific determinations by the U.S. Supreme Court, there can be no question that GHGs emitted in the United States contribute to global pollution that endangers public health and welfare in other countries.

C. THE RECIPROCITY DETERMINATION

In order to invoke the EPA's authority under section 115, the EPA Administrator must also determine that an endangered foreign country gives the United States "essentially the same rights with respect to the prevention or control" of its own air pollution as are provided to the foreign country by section 115.⁷³ The phrasing in this provision provides significant interpretive latitude to EPA. Nonetheless, one may anticipate that there will be legal challenges to a section 115 reciprocity determination. Accordingly, this section addresses five issues that may arise in the course of judicial review: (1) the number of foreign nations with which reciprocity needs to be established; (2) the form of the reciprocal rights granted by foreign nations; (3) the procedural rights foreign nations must provide to the United States; (4) the substantive commitments the foreign nations must

68. *Id.*

69. *Id.*

70. *Id.* at 274–77, 364, 488, 662, 721–22, 736, 758.

71. *Id.* at 247–48, 364, 1616; see also Jeremy S. Pal & Elfatih A. B. Eltahir, *Future Temperature in Southwest Asia Projected to Exceed a Threshold for Human Adaptability*, 6 NATURE CLIMATE CHANGE 197 (2016).

72. LISA V. ALEXANDER ET AL., *Summary for Policymakers*, in CLIMATE CHANGE 2013, *supra* note 63, at 3, 17, 19.

73. 42 U.S.C. § 7415(c) (2012).

make; and (5) the ways in which the United States can ensure foreign nations' continued compliance.

1. The Number of Nations

The language of section 115 anticipates that EPA may make a reciprocity finding in relation to a single foreign country. Indeed, in the only instance in which EPA has invoked section 115 it did so with just one country, Canada, to address acid rain. For this reason, EPA could credibly argue that an agreement or shared commitment made with a single nation—even a small island nation facing the threat of vanishing under sea level rise—provides a basis for a reciprocity finding.⁷⁴

Climate change, however, is a global problem caused by global emissions of GHGs, for which countries bear different degrees of responsibility. Accordingly, one can anticipate that opponents to a section 115 rulemaking will challenge a reciprocity determination based on the number—and identity—of the countries involved. While EPA may have legal authority to base a reciprocity determination upon action by a single country, its determination will be less susceptible to challenge if it involves multiple nations.

As discussed above, the legislative history of section 115 indicates that the section was enacted to “authorize cooperative action with foreign countries” and to create “a procedure whereby we can cooperate with foreign countries in cases involving endangerment of health or welfare.”⁷⁵ The Senate report explains that an important goal of this cooperative action should be to ensure that the other nations act to protect U.S. air quality, stating that “[i]nternational negotiations would be necessary to provide reciprocal benefits for US citizens.”⁷⁶ These references in the legislative history evince the intent to empower the executive branch to reach mutually beneficial understandings with foreign countries concerning international air pollution. In fact, the State Department has been pursuing just such an outcome through negotiations and activities under the UNFCCC and in bilateral negotiations with China and other countries.

This concept of “reciprocal benefits,” as described in the Senate report, can provide EPA a touchstone to evaluate the number of countries needed to justify a reciprocity determination. Reciprocal arrangements with one or more nations that

74. As the Supreme Court recognized in *Massachusetts v. EPA*, “a reduction in domestic emissions would slow the pace of global emissions increases, no matter what happens elsewhere.” 549 U.S. 497, 500 (2007). That is, every reduction in GHG emissions matters, and every reduction contributes to the effort to “slow or reduce” global warming. *Id.* at 525. An understanding of “mutual benefits” that accounts for historic contributions to the global warming problem and that recognizes the need for future emissions from developing nations is consistent with the both the internationally recognized right to development and the regard for “common but differentiated responsibilities” under the UNFCCC.

75. S. REP. NO. 89-192, at 4, 6 (1965).

76. *Id.* at 6.

emit, individually or collectively, a significant quantity of GHGs would provide the United States with benefits comparable to those that the United States would be providing to the other nations. That would appear to achieve the mutual benefit Congress intended, even if the United States and its partners achieve different levels of emissions reduction.

There are multiple configurations of countries that could meet this test. Most obviously, the 195 parties to the UNFCCC should surpass any minimal requirement. At the time of this writing, nearly 190 countries have made emissions reductions pledges through the UNFCCC's Intended Nationally Determined Contributions ("INDC") process, accounting for over ninety-three percent of current global GHG emissions.⁷⁷ A reciprocity determination premised on the mutual benefits to accrue through that process would appear to be beyond challenge.

Alternatively, fewer countries could deliver reciprocal benefits. As of 2011, the top three global emitters contributed the majority of global GHG emissions: China emitted twenty-nine percent; the United States emitted sixteen percent; and the European Union ("EU") emitted eleven percent.⁷⁸ Reciprocal action among the United States, China, and the EU to curb climate change would certainly provide mutual benefits to all three partners. As another example, the combined GHG emissions of the EU, Canada, and Mexico in 2011 nearly equaled the emissions from the United States, making them also a potentially sufficient grouping for demonstrating mutual benefit.⁷⁹

In general, the larger the percentage of the world's emissions encompassed in reciprocal arrangements, the more difficult it will be for opponents to dispute a reciprocity determination. Yet section 115's reciprocity prerequisite should be met even if some nations free-ride on the actions of the United States and its partners. Nothing in the language of section 115 requires universal action to combat a pollution problem. If EPA can demonstrate that there is mutual benefit deriving from the actions of the United States and its partner nations, section 115 reciprocity should rest on a solid foundation.

2. The Form of Foreign Reciprocal Undertakings

Section 115 does not specify any particular form that foreign commitments would need to take to serve as the basis for a reciprocity determination. The language of the provision does not require legislation or regulation to be adopted

77. CLIMATE ACTION TRACKER, <http://climateactiontracker.org/indcs.html> (last visited Feb. 18, 2016); see also UNFCCC Secretariat, *Synthesis Report on the Aggregate Effect of the Intended Nationally Determined Contributions*, U.N. Doc. FCCC/CP/2015/7 (Oct. 30, 2015) [hereinafter *Aggregate Effect*].

78. JOS G.J. OLIVIER ET AL., PBL NETH. ENVTL. ASSESSMENT AGENCY, TRENDS IN GLOBAL CO₂ EMISSIONS: 2012 REPORT 6 (2012), <http://www.pbl.nl/en/publications/2012/trends-in-global-co2-emissions-2012-report>.

79. CAIT *Climate Data Explorer: Historical Emissions Tool*, WORLD RES. INST., <http://cait.wri.org> (last visited Feb. 18, 2016).

by a foreign country, nor does it require a binding agreement with the United States. As a result, under *Chevron*, EPA would be afforded considerable deference to find reciprocal protections through a variety of foreign reductions and commitments.

One way reciprocal commitments could be embodied would be through a global treaty. Even prior to the decisions adopted in Paris in December 2015, the UNFCCC included procedural provisions that give the United States an opportunity to review and question the climate plans of other nations. As discussed below, these provisions could provide a foundation for finding that the procedural component of the reciprocity requirement is satisfied.

Less-binding commitments, including political commitments, should also suffice. For example, under the UNFCCC process, countries have submitted nonbinding INDCs. INDCs indicate the level of emissions reductions countries intend to achieve in the post-2020 period, and the domestic measures intended to achieve those reductions.⁸⁰ As of this writing, 160 INDCs have been submitted, representing 187 countries and over ninety percent of anthropogenic GHG emissions.⁸¹ As discussed below, these pledges should satisfy the substantive component of the reciprocity requirement.

Moreover, as discussed below, a bilateral commitment, whether legally binding or not, could also be a basis for a reciprocity determination. In the acid rain context, for example, Administrator Costle found reciprocity without any commitment by Canada at all. Instead, he based his reciprocity finding on Canada's legal authority to act and willingness to provide comparable pollution control protections to the United States.⁸² This indicates that domestic legislation or regulation in foreign countries that is designed to achieve GHG emissions reductions—such as those enacted by the European Union and its member states—could also be a sufficient basis for reciprocity determinations.

3. Procedural Reciprocity

The reciprocity requirement in section 115(c) states that a foreign country must provide the United States with “essentially the same rights with respect to the prevention or control of air pollution as is given that country by this section.”⁸³ The only express right given to a foreign nation in section 115 is the procedural right to attend state public hearings in section 115(b), which provides that “[a]ny foreign country so affected by such emission of pollutant or pollutants shall be

80. Warsaw Climate Change Conference, *Report of the Conference of Parties*, U.N. Doc. FCCC/CP/2013/10/Add.1, at 4 (Nov. 11–23, 2013).

81. See CLIMATE ACTION TRACKER, *supra* note 77.

82. Administrator Costle noted in his letters that the legislation provided “the Government of Canada with ample authority to give essentially the same rights to the United States as are provided by Section 115.” *New York v. Thomas*, 613 F. Supp. 1472, 1488, 1492 (D.D.C. 1985), *rev'd*, 802 F.2d 1443 (D.C. Cir. 1986).

83. 42 U.S.C. § 7415(c) (2012).

invited to appear at any public hearing associated with any revision of the appropriate portion of the applicable implementation plan.”⁸⁴

This procedural right is not an extensive one. Foreign nations would likely more highly value a right to influence the degree of emissions reductions undertaken in the United States. As a result of the 1977 amendments, however, section 115 provides no right to foreign nations to participate in decisions about the level of emissions reductions to be achieved by the United States as a whole or by any individual state.⁸⁵ Rather, the right to comment in section 115(b) occurs later in the process: when the states are developing their plans for achieving the emissions reductions assigned to the states by EPA.

EPA’s implementing regulation on state public hearings specifies the minimum notice required (thirty days), how the notice must be given (by prominent advertisement in the area affected), and recordkeeping requirements (such as maintaining a list of witnesses and the text of each presentation).⁸⁶ The regulation also specifies that the EPA Administrator must be notified through the appropriate regional office, which means that EPA would have notice of the hearing and could in turn notify the affected foreign country. Neither the statute nor the regulation, however, specifies what the right “to appear” entails. Presumably, it would include the right to make a comment on the proposed revision to the SIP. There is no obligation, however, for the state to give any comments by the foreign nation any more weight than a comment by a member of the general public.⁸⁷

It is possible that EPA could simplify or centralize foreign engagement in the hearing process. The public hearing regulation gives states the option of avoiding a public hearing if no one requests one.⁸⁸ In a similar way, EPA may be able to give foreign nations the option of submitting comments through EPA or the State Department to be forwarded to the states, if the foreign nations agree.

In the acid rain precedent, EPA determined that procedural reciprocity existed where Canada had adopted a procedure that provided the United States with an equivalent or greater opportunity for engagement than the right to appear at a state public hearing contained in section 115(b). In that case, Canada’s law gave the United States the opportunity to comment on Canada’s proposed national response, not its province-level implementation. EPA found that Canada did not have to follow “the detailed procedural . . . requirements applicable to the State plan revision process under the U.S. Clean Air Act” because “[t]he Canadian

84. *Id.* § 7415(b) (2012).

85. *See supra* Part II.B. (discussing legislative history).

86. 40 C.F.R. § 51.102 (2015).

87. EPA has promulgated “Criteria for Determining the Completeness of Plan Submissions.” These criteria provide that a complete state submission must include a “[c]ompilation of public comments and the State’s response thereto.” *Id.* Part 51, App. V. The criteria, however, are a checklist for determining when a state submission is considered complete and ready for review by EPA. They do not specify which comments the state must respond to nor how the state must respond to them.

88. *Id.* § 51.102.

requirement for federal consultation and efforts to procure provincial action fills the same role as the State plan revision process in the U.S. system.”⁸⁹ As this administrative precedent suggests, the test for procedural reciprocity should be a practical one that requires an opportunity for procedural engagement while respecting differences in regulatory approaches.

Thus, so long as a country accords the United States an avenue for involvement that is at least roughly equal to the participatory rights accorded to foreign countries by section 115, EPA could reasonably determine that the United States has received “essentially the same” procedural rights. This condition could be met through a number of different mechanisms: through the UNFCCC, through bilateral agreements that provide opportunities for nation-to-nation engagement, or through the domestic law of a foreign country that accords participatory rights to interested parties under conditions similar to U.S. administrative law.

To illustrate how this analysis could proceed, this subsection examines the arguments for procedural reciprocity in relation to the UNFCCC, China, the EU, Canada, and Mexico.

a. The United Nations Framework Convention on Climate Change

The UNFCCC provides a mechanism for establishing procedural reciprocity with nearly every country in the world—both under the procedures currently in effect and even more so under the enhanced procedures adopted at the Paris Conference of the Parties (“COP”) in December 2015.

The current UNFCCC rules have reporting and review procedures called International Assessment and Review (“IAR”) for developed countries listed in Annex I of the Convention and International Consultation and Analysis (“ICA”) for non-Annex I countries.⁹⁰ These procedures provide the United States with regular opportunities to review and question the climate mitigation plans of other nations, including at public sessions at UNFCCC meetings.⁹¹ EPA could reasonably determine that these procedures give the United States “essentially the same rights” as the public hearing requirement in section 115.

The case for reciprocity is strongest with other Annex I nations because there is an extensive review and assessment process for these developed countries under the current UNFCCC rules. Under IAR procedures, each Annex I country submits a “biennial report” that quantifies the nation’s emissions and describes its

89. Letter from EPA Administrator Douglas Costle to Secretary of State Edmund Muskie (Jan. 13, 1980), in *New York v. Thomas*, 613 F. Supp. 1472, app. A at 1487–88 (D.D.C. 1985), *rev’d*, 802 F.2d 1443 (D.C. Cir. 1986).

90. *Measuring, Reporting, and Verification (MRV) for Developing Country Parties*, UNFCCC (2015), http://unfccc.int/national_reports/non-annex_i_parties/ica/items/8621.php [hereinafter *MRV*]; *The International Assessment and Review Process*, UNFCCC (2015), http://unfccc.int/focus/mitigation/the_multilateral_assessment_process_under_the_iaar/items/7549.php [hereinafter *International Assessment*].

91. *MRV*, *supra* note 90; *International Assessment*, *supra* note 90.

plans for achieving economy-wide emissions reductions.⁹² These reports are reviewed by a panel of technical experts and subject to a “multilateral assessment” that gives all other nations a chance to review the report, submit written questions, and attend and ask questions at a public presentation by the nation at a UNFCCC meeting.⁹³ The public session at the UNFCCC meeting is a close analogue to the public hearing provided for under section 115. The review by technical experts, the ability to submit written questions, and the biennial nature of the process provide additional opportunities for input beyond the minimal requirements of section 115.

Reciprocity should also exist with non-Annex I countries under the ICA process, which, for these developing countries, is a “lite” version of the IAR process for Annex I nations. The reporting requirements are less demanding; the public presentation by the non-Annex I country occurs in a less formal setting; and the review is supposed to be “facilitative” and avoid discussion of “the appropriateness of . . . domestic policies and measures.”⁹⁴ Nonetheless, the process retains the technical review, the opportunity to submit written questions, and the chance to raise questions at a public session, which could be the basis for a finding of procedural reciprocity.⁹⁵

In December 2015 in Paris, the world adopted a new agreement that calls for “an enhanced transparency framework.”⁹⁶ The details of the new framework are to be developed in “modalities, procedures and guidelines” adopted at a future UNFCCC meeting.⁹⁷ When fully implemented, the enhanced framework will further strengthen the case for procedural reciprocity.

One key change made in the Paris Agreement is the elimination of the bifurcated system of review, whereby developed and developing nations are subject to different procedures. Under the new approach, both developed nations, such as the United States, and major developing nations, such as China, will undergo review in a single set of procedures. The new transparency framework provides flexibility in implementation, but only “to those developing countries that need it in the light of their capacities.”⁹⁸

The new framework also eliminates the limitation on considering the appropriateness of developing countries’ domestic measures. To the contrary, the Paris Agreement expressly provides that the review “shall . . . identify areas of improvement” for every country in “its implementation and achievement of its nationally

92. *International Assessment*, *supra* note 90.

93. *Id.*

94. *MRV*, *supra* note 90.

95. *Id.*

96. Paris Agreement under the U.N. Framework Convention on Climate Change art. 13.1, *opened for signature* Apr. 22, 2016 to Apr. 21, 2017 [hereinafter Paris Agreement].

97. *Id.* art. 13.13.

98. *Id.* art. 13.2.

determined contribution” to reducing GHG emissions.⁹⁹ The Paris Agreement also provides that “each Party shall participate in a facilitative, multilateral consideration of progress with respect to . . . its respective implementation and achievement of its nationally determined contribution.”¹⁰⁰ This facilitative, multilateral process will provide the United States an opportunity to evaluate and comment upon the emissions reduction plans of other nations.

Another significant improvement in the Paris Agreement is the requirement that nations regularly update their emissions reduction pledges. Under the Paris Agreement and the COP Decision adopting it, each Party to the UNFCCC is required to “prepare, communicate and maintain” successive Nationally Determined Contributions (“NDCs”) and to implement domestic mitigation measures with the aim of achieving emissions reduction targets in the NDCs.¹⁰¹ UNFCCC Parties will be expected to submit their first NDCs in 2020, and successive NDCs every five years thereafter and at least nine to twelve months in advance of the relevant COP.¹⁰² Parties are expected to also provide information in their NDCs to facilitate “clarity, transparency and understanding of the contributions.”¹⁰³ The UNFCCC Secretariat will prepare a synthesis report evaluating the cumulative effect of the emissions reduction commitments in the NDCs.¹⁰⁴ Beginning in 2023 the COP will periodically assess collective progress towards achieving the purpose of the Agreement (including emissions reductions). This “global stock-take” is to inform the subsequent NDCs of Parties.¹⁰⁵

In summary, the Paris Agreement establishes an ongoing cycle of “enhanced transparency” where countries will communicate successive emissions reduction commitments, including information about the domestic measures that implement those commitments. Other countries will have multiple opportunities to review and have input on those emissions reduction commitments both before and after they are submitted. This ongoing opportunity for review and input should far exceed the procedural rights provided by the opportunity to appear at a public hearing and comment on a SIP revision, as contemplated by section 115.

b. China

Even absent the multilateral process through the United Nations, EPA should be able to find sufficient procedural reciprocity with other nations. For example, the United States and China, the world’s largest emitters, have long engaged in

99. *Id.* art. 13.12.

100. *Id.* art. 13.11.

101. *Id.* art. 4.2.

102. UNFCCC, *Adoption of the Paris Agreement*, U.N. Doc. FCCC/CP/2015/L.9/Rev.1, ¶¶ 23–25 (Dec. 12, 2015), <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>.

103. *Id.* ¶ 25.

104. *Id.*

105. Paris Agreement, *supra* note 96, art. 14.

formal and informal collaboration on a variety of environmental issues, especially climate change.¹⁰⁶ In recent years, the two nations have reached agreements that provide opportunities for each to understand and comment on the other's climate policies. They also regularly discuss climate policies at the highest levels of government. Taken together, the agreements and the regular discussions provide a firm foundation for finding procedural reciprocity.

In July 2009, the United States and China entered into a "Memorandum of Understanding to Enhance Cooperation on Climate Change, Energy and Environment."¹⁰⁷ The MOU creates a bilateral "Climate Change Policy Dialogue" to "promote discussion and exchange of views on domestic strategies and policies for addressing climate change."¹⁰⁸ The following year, in October 2010, EPA and China's Ministry of Environmental Protection entered into a "Memorandum of Understanding on Scientific and Technical Cooperation in the Field of Environment."¹⁰⁹ This MOU calls specifically for "cooperation to strengthen the development, implementation and enforcement of environmental laws."¹¹⁰ Then, in April 2013, the United States and China agreed to create a Climate Change Working Group "to spur large-scale cooperative efforts to address climate change," which has become "the premier vehicle for U.S.-China cooperation on climate change."¹¹¹ These agreements give the United States better opportunities for influencing China's climate policies than the opportunity to participate in a public hearing required by section 115.

The practice of the two nations shows that there is in fact an active dialogue on climate at the highest levels of government. As part of an "Enhanced Policy Dialogue" under the Climate Change Working Group, senior officials in the United States and China have met multiple times to discuss the two countries' post-2020 plans for reducing GHG emissions, engaging in "detailed conversation

106. Joanna Lewis, *The State of U.S.-China Relations on Climate Change: Examining the Bilateral and Multilateral Relationship*, 11 CHINA ENV'T SERV. 7, 26–34 tbl.1 (2010), <http://www.wilsoncenter.org/sites/default/files/Feature%20Article%20The%20State%20of%20U.S.-China%20Relations%20on%20Climate%20Change.pdf>.

107. Press Release, U.S. Dep't of State, Memorandum of Understanding on Enhancing Cooperation on Climate Change, Energy and the Environment at the U.S.-China Strategic and Economic Dialogue (July 28, 2009), <http://www.state.gov/r/pa/prs/ps/2009/july/126597.htm>.

108. Press Release, U.S. Dep't of State, U.S.-China Memorandum of Understanding to Enhance Cooperation on Climate Change, Energy and the Environment (July 28, 2009), <http://www.state.gov/r/pa/prs/ps/2009/july/126592.htm>.

109. Memorandum of Understanding Between the Environmental Protection Agency of the United States of America and the Ministry of Environmental Protection of the People's Republic of China on Scientific and Technical Cooperation in the Field of Environment (Oct. 10, 2010), <http://www.state.gov/documents/organization/154076.pdf>.

110. *Id.* annex 5, art. 1.

111. Press Release, U.S. Dep't of State, Joint U.S.-China Statement on Climate Change (Apr. 13, 2013), <http://www.state.gov/r/pa/prs/ps/2013/04/207465.htm>.

about the domestic policies of each side.”¹¹² In June 2015, the two nations created a new “Domestic Policy Dialogue” within the Climate Change Working Group “to share information on domestic policy goals, plans, challenges, and successes.”¹¹³ Areas where there is active collaborative effort underway include phasing down hydrofluorocarbons, a potent GHG; reducing vehicle emissions; smart grids; carbon capture, utilization, and storage; collection of GHG emissions data; and energy efficiency.¹¹⁴ Moreover, the leaders of the two nations have met in both the United States and China to announce major climate initiatives. At the meeting in China in November 2014, the leaders made historic climate reduction pledges and said they would “continue strengthening their policy dialogue and practical cooperation.”¹¹⁵

In addition, evaluation of foreign input is already a standard part of the Chinese policymaking process, and the United States is one of the leading sources of foreign involvement. Indeed, many laws, policies, and regulations in China are now posted to the public for comment as a matter of course.¹¹⁶

China has a different system of government than the United States. But there is no language in section 115 that requires fundamental changes in the form of a foreign country’s government. Instead, the procedural reciprocity requirement of section 115 should be interpreted in the context of the nations involved. Under section 115, China would need to provide the United States with an equivalent opportunity to provide input, but it does not need to become a constitutional democracy. The requirements of procedural reciprocity should be satisfied by the multiple avenues for input into China’s climate policies, which its bilateral agreements with the United States provide.

c. The European Union

The EU is the world’s third largest emitter of GHGs and is a global leader in undertaking measures to mitigate climate change. The “general principles and minimum standards” for consultation in the EU allow the United States and other nations to participate in the development of its climate policies by filing comments.¹¹⁷ In fact, the United States has used this process to submit comments

112. Todd D. Stern, Special Envoy for Climate Change, U.S. Dep’t of State, Remarks at the U.S.-China Strategic and Economic Dialogue (July 9, 2014), <http://www.state.gov/e/oes/rls/remarks/2014/228913.htm>.

113. Press Release, U.S. Dep’t of State, U.S.-China Strategic & Economic Dialogue Outcomes of the Strategic Track (June 24, 2015), <http://www.state.gov/r/pa/prs/ps/2015/06/244205.htm>.

114. *Id.*

115. Press Release, The White House, U.S.-China Joint Announcement on Climate Change (Nov 11, 2014), <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change> [hereinafter U.S.-China Joint Announcement].

116. See Jeffrey S. Lubbers, *Notice-and-Comment Rulemaking Comes to China*, ADMIN. & REG. L. NEWS 5–6 (2006).

117. *Guidelines on Stakeholder Consultation*, EUR. COMM’N, http://ec.europa.eu/smart-regulation/guidelines/ug_chap7_en.htm (last updated May 19, 2015).

on proposed EU environmental policies.¹¹⁸ This procedural right to comment resembles the right that section 115 provides foreign countries, except that it occurs at the EU level and has an even broader scope than section 115 because it applies to legislative and regulatory proposals.

In addition, there are multiple forums—both bilateral and multilateral—available to the United States to discuss climate policy directly with the EU officials. The bilateral forums include leader-to-leader summits that discuss climate change, the U.S.-EU Energy Council, and the Transatlantic Economic Council.¹¹⁹ The multilateral forums include the Major Economies Forum on Energy and Climate and the Clean Energy Ministerial.¹²⁰ Taken together, the EU consultation standards and the bilateral and multilateral forums provide a substantial opportunity for input in EU climate policies; certainly at least as much as foreign countries receive through section 115’s public hearing requirement. This provides a sound basis for concluding that procedural reciprocity already exists with the EU.

d. Canada and Mexico

Two countries are specifically mentioned in the 1965 legislative history creating the international air pollution provision: Canada and Mexico. During floor consideration, the Chairman of the House Interstate and Foreign Commerce Committee, Rep. Oren Harris, said that the bill would give the Administration a mechanism to address “air pollution adversely affecting persons in Mexico or Canada.”¹²¹ A passage in the House report referred to protecting “neighboring countries.”¹²² The Senate report urged “the administration to seek agreements with Canada and Mexico to help protect U.S. citizens from air pollution originating in those countries.”¹²³

These references to Canada and Mexico are unlikely to lead to a judicial interpretation that reciprocal relationships can occur only with these two countries as the statutory language is written more broadly to apply to any “foreign

118. U.S. GOV’T, EUROPEAN COMMISSION’S PUBLIC CONSULTATION ON DEFINING CRITERIA FOR IDENTIFYING ENDOCRINE DISRUPTORS (EDS) IN THE CONTEXT OF THE IMPLEMENTATION OF THE PLANT PROTECTION PRODUCT REGULATION AND BIOCIDAL PRODUCTS REGULATION 5–6 (2015), <http://www.usda-eu.org/wp-content/uploads/2015/01/United-States-Comments-on-Endocrine-Disruptors-January-16-2015.pdf>.

119. See Press Release, U.S. DEP’T OF STATE, Joint Statement of the U.S.-EU Energy Council (Dec. 3, 2014), <http://state.gov/t/pa/prs/ps/2014/12/234638.htm>; *Transatlantic Economic Council*, U.S. DEP’T OF STATE, <http://state.gov/p/eur/rt/eu/tec> (last visited Mar. 19, 2016).

120. *Clean Energy Ministerial*, U.S. DEP’T OF ENERGY, <http://www.energy.gov/ia/initiatives/clean-energy-ministerial> (last visited Mar. 19, 2016); *Major Economies Forum on Energy and Climate*, U.S. DEP’T OF STATE, <http://www.state.gov/e/oes/climate/mem> (last visited Mar. 19, 2016).

121. 111 CONG. REC. H25050 (daily ed. Sept. 24, 1965) (Statement of Rep. Oren Harris).

122. H.R. REP. NO. 89-889, at 6 (1965).

123. S. REP. 89-192, at 4 (1965).

country.” In the case of both countries, however, there is a strong case that procedural reciprocity already exists.

As a matter of law, Article 4 of the 1993 North American Agreement on Environmental Cooperation between Canada, Mexico, and the United States provides that “[t]o the extent possible, each Party shall: (a) publish in advance any [environmental] measure it proposes to adopt; and (b) provide . . . Parties a reasonable opportunity to comment on such proposed measures.”¹²⁴ Subsequent regulatory cooperation agreements have repeated and broadened these requirements.¹²⁵ These rights to receive notice of and opportunity to comment on environmental measures in Canada and Mexico should give the United States “essentially the same” ability, if not a greater one, to influence Canadian and Mexican policy as Canada and Mexico would have to influence U.S. policy by appearing at public hearings under section 115.

In practice and as a result of subsequent bilateral and trilateral agreements, Canada, Mexico, and the United States routinely extend extensive opportunities to discuss and comment on their climate policies. These opportunities include (1) face-to-face discussions at the leader level;¹²⁶ (2) strategic planning to address climate change by the heads of each country’s environmental agency through the Commission on Environmental Cooperation;¹²⁷ (3) a Clean Energy Dialogue

124. North American Agreement on Environmental Cooperation, Can.-Mex.-U.S., Sept. 8-14, 1993, 107 Stat. 2057, 2164.

125. *E.g.*, THE WHITE HOUSE, CANADA/UNITED STATES/MEXICO SPP REGULATORY COOPERATION FRAMEWORK 2 (2005) https://www.whitehouse.gov/sites/default/files/omb/oira/irc/spp_regulatory_cooperation_framework.pdf; THE WHITE HOUSE, TERMS OF REFERENCE FOR THE UNITED STATES-CANADA REGULATORY COOPERATION COUNCIL 1–2 (2011), https://www.whitehouse.gov/sites/default/files/omb/oira/irc/us-canada_rcc_terms_of_reference.pdf; THE WHITE HOUSE, TERMS OF REFERENCE FOR THE HIGH-LEVEL REGULATORY COOPERATION COUNCIL (Mar. 3, 2011), https://www.whitehouse.gov/sites/default/files/omb/oira/irc/high-level_regulatory_cooperation_council-terms_of_reference_final.pdf.

126. *E.g.*, Joint Statement by President Obama and President Enrique Peña Nieto of Mexico on United States-Mexico Climate Policy Cooperation, 2015 DAILY COMP. PRES. DOC. 207 (Mar. 27, 2015) [hereinafter Climate Policy Cooperation]; Joint Statement by President Barack Obama, President Enrique Peña Nieto of Mexico, and Prime Minister Stephen J. Harper of Canada: 21st Century North America: Building the Most Competitive and Dynamic Region in the World, 2014 DAILY COMP. PRES. DOC. 102 (Feb. 19, 2014); Joint Statement by President Barack Obama and President Felipe de Jesus Calderon Hinojosa of Mexico, 1 PUB. PAPERS 676 (May 19, 2010); Joint Statement by President Barack Obama, President Felipe de Jesus Calderon Hinojosa of Mexico, and Prime Minister Steven Harper of Canada on Climate Change and Clean Energy, 2 PUB. PAPERS 1246 (Aug. 10, 2009); Press Release, The White House, U.S.-Mexico Announce Bilateral Framework on Clean Energy and Climate Change (Apr. 16, 2009), <https://www.whitehouse.gov/the-press-office/us-mexico-announce-bilateral-framework-clean-energy-and-climate-change>; Press Release, The White House, President Obama and Prime Minister Harper Vow Joint Effort on North American Economic Recovery (Feb. 19, 2009), <https://www.whitehouse.gov/the-press-office/president-obama-and-prime-minister-harper-vow-joint-effort-north-american-economic->; Joint Statement by President George W. Bush, President Felipe de Jesus Calderon Hinojosa of Mexico, and Prime Minister Steven Harper of Canada, 1 PUB. PAPERS 557 (Apr. 22, 2008).

127. *E.g.*, *Ministerial Statement—2014*, COMM’N FOR ENVTL. COOPERATION, <http://www.cec.org/about-us/council-statements/cec-ministerial-statement-2014> (last visited Mar. 19, 2016); COMM’N FOR ENVTL. COOPERATION, STRATEGIC PLAN 2010-2015 (2010), http://www.cec.org/sites/default/files/documents/strategic_plans/1015_strategic_plan_2011_en.pdf.

with Canada,¹²⁸ a Bilateral Clean Energy and Climate Change Task Force with Mexico,¹²⁹ and a newly announced North American Energy Ministers' Working Group on Climate Change and Energy led by the countries' respective energy secretaries;¹³⁰ and (4) efforts to harmonize important climate regulations, including vehicle and appliance standards and power plant rules.¹³¹

As with the case of China and the EU, these many opportunities for the United States to participate in the formulation of climate policy in Canada and Mexico should be sufficient to establish procedural reciprocity with the countries.

4. Substantive Reciprocity

In addition to the procedural requirement that transverses subsections 115(b) and (c), the requirement that a foreign country provide the United States with “essentially the same rights with respect to the prevention or control of air pollution” may also be interpreted to mandate some commitment by partner nations to reduce GHG emissions within their borders. Without substantive action by the foreign country, the United States would not receive the “reciprocal benefit” envisioned by Congress when it enacted the international air pollution provision in 1965.¹³² As with other aspects of section 115, the statutory ambiguity and the high degree of technical expertise required suggest that a court would accord significant deference to EPA's determination of the level of substantive commitment necessary to establish reciprocity.

There are a number of legally defensible bases for an EPA substantive reciprocity determination. At a foundational level, all countries already provide a degree of substantive reciprocity to the United States under the international law principle of *sic utere tuo ut alienum non laedus* (“so use your own as not to injure another's property”), which directs nations to avoid causing significant injuries to the environment of other nations.¹³³ This principle was most recently upheld by

128. U.S.-CAN. CLEAN ENERGY DIALOGUE, THIRD REPORT TO THE PRESIDENT OF THE UNITED STATES OF AMERICA AND THE PRIME MINISTER OF CANADA (Oct. 2014).

129. Climate Policy Cooperation, *supra* note 126.

130. Press Release, U.S. Dep't of Energy, North American Energy Ministers Establish a Working Group on Climate Change and Energy (May 25, 2015), <http://energy.gov/articles/north-american-energy-ministers-establish-working-group-climate-change-and-energy>.

131. *E.g.*, U.S.-CAN. REGULATORY COOPERATION COUNCIL, JOINT ACTION PLAN 16 (2011), https://www.whitehouse.gov/sites/default/files/us-canada_rcc_joint_action_plan3.pdf; *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulation*, C. GAZ., Aug. 30, 2012, pt. 1, <http://www.gazette.gc.ca/rp-pr/p2/2012/2012-09-12/html/sor-dors167-eng.html>; Climate Policy Cooperation, *supra* note 124.

132. *See* S. REP. NO. 89-192, at 4 (1965).

133. *See* RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAWS § 601 (A.L.I. 1987) (do-no-harm principle); *see also* MARTE JERVAN, THE PROHIBITION OF TRANSBOUNDARY ENVIRONMENTAL HARM. AN ANALYSIS OF THE CONTRIBUTION OF THE INTERNATIONAL COURT OF JUSTICE TO THE DEVELOPMENT OF THE NO-HARM RULE, PLURICOURTS RESEARCH PAPER NO. 14-17 (2014); Brian R. Popiel, Comment, *From Customary Law to Environmental Impact Assessment: A New Approach to Avoiding Transboundary Environmental Damage Between Canada and the United States*, 22 B.C. ENVTL. AFF. L. REV. 447, 449-58 (1995) (providing numerous

the International Court of Justice (“ICJ”) in the *Pulp Mills on the River Uruguay* case, where the ICJ clarified that, as a matter of customary international law, it is “every State’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States.”¹³⁴ Specifically, the ICJ noted that there is a “principle of prevention” that requires a state to “use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State.”¹³⁵

The member states of the UNFCCC committed in 1992 to provide an additional degree of substantive reciprocity to each other under the terms of that treaty and member states have committed to the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”¹³⁶ More specifically, the 195 parties to the convention have committed—while “taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances”¹³⁷—to, among other things, “[f]ormulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks”¹³⁸

In the negotiations leading up the December 2015 COP in Paris, nations took further steps to commit to comparable efforts, taking into account national circumstances and respective capabilities. These commitments are embodied in the INDCs that nations submitted and that will be implemented under the terms of the Paris Agreement. China, the world’s largest emitter, pledged to peak its emissions around 2030 and to increase its share of non-fossil fuels in primary energy consumption to around twenty percent by the same year.¹³⁹ The United States, the world’s second largest emitter, pledged to reduce GHG emissions by twenty-six to twenty-eight percent below 2005 levels by 2025, and to make best efforts to reduce emissions by twenty-eight percent.¹⁴⁰ The EU, the world’s third

examples of the incorporation of the *sic utere* principle into binding international law and governing international norms).

134. *Pulp Mills on the River Uruguay* (Arg. v. Uru.), 2010 I.C.J. 14, ¶ 101 (Apr. 20) (citing *Corfu Channel* (U.K. v. Alb.), 1949 I.C.J. 4 (Apr. 9)); see also *Trail Smelter* (U.S. v. Can.), 3 R.I.A.A. 1938, 1963 (Mar. 11, 1941) (“[N]o state has the right to use or permit the use of its territory in such a manner as to cause injury . . . in or to the territory of another or of the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.”).

135. *Pulp Mills on the River Uruguay*, 2010 I.C.J. 14, ¶ 101 (citing *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, I.C.J. Reports 1996 (I), ¶ 29 (1996)).

136. United Nations Framework Convention on Climate Change, art. 2, May 9, 1992, 1771 U.N.T.S. 107.

137. *Id.* art. 4, ¶ 1.

138. *Id.* art. 4, ¶ 1(b).

139. DEP’T OF CLIMATE CHANGE, NAT’L DEV. & REFORM COMM’N OF CHINA (2015).

140. UNITED STATES, INTENDED NATIONALLY DETERMINED CONTRIBUTION (2015), <http://www4.unfccc.int/>

largest emitter, pledged to reduce domestic GHG emissions by forty percent by 2030 compared to a 1990 baseline year, consistent with its own goal to reduce emissions by eighty to ninety-five percent by 2050.¹⁴¹ And India, the world's fourth largest emitter, pledged to increase its share of non-fossil-based power capacity from thirty percent today to about forty percent by 2030 with the help of international support; to reduce its emissions intensity per unit of gross domestic property (“GDP”) by thirty-three to thirty-five percent below 2005 levels by 2030; and to create an additional carbon sink of 2.5 to 3 billion tons of carbon dioxide through additional tree cover.¹⁴² Many other countries have made their own pledges.¹⁴³

Section 115 does not prescribe how EPA should assess these pledges, and there are multiple ways EPA could do so. The IPCC has identified seven “effort-sharing” approaches for fairly allocating emissions reduction obligations among nations. These approaches are (1) “responsibility,” which would apportion emissions reductions based on a country’s historical emissions; (2) “capability,” which would apportion emissions reductions based on a measure of a country’s ability to pay; (3) “equality,” which would apportion emissions reductions based on per-capita emissions; (4) “equal marginal abatement costs,” which would apportion emissions reductions based on a measure of reduction costs; and (5) three additional approaches that are combinations of the responsibility, capability, and equality approaches.¹⁴⁴ Other approaches have looked at metrics that compare emissions to a past baseline, to a future baseline representing “business as usual” emissions, or to a measure of emissions intensity per unit of GDP.¹⁴⁵ Depending on the approach used, different countries’ pledges will look more or less ambitious. It would be eminently reasonable for EPA to look to the relative commitments of each country measured from a variety of perspectives and to take into account differences in national circumstances in determining whether they are making comparable efforts.

submissions/INDC/Published%20Documents/United%20States%20of%20America/1/U.S.%20Cover%20Note%20INDC%20and%20Accompanying%20Information.pdf [hereinafter U.S. INDC].

141. LATVIA & THE EUR. COMM’N, INTENDED NATIONALLY DETERMINED CONTRIBUTION OF THE EU AND ITS MEMBER STATES (2015), <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Latvia/1/LV-03-06-EU%20INDC>.

142. INDIA, INDIA’S INTENDED NATIONALLY DETERMINED CONTRIBUTION: WORKING TOWARDS CLIMATE JUSTICE (2015), <http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf>.

143. See *Aggregate Effect*, *supra* note 77; *Intended Nationally Determined Contributions*, UNFCCC SITE, http://unfccc.int/focus/indc_portal/items/8766.php.

144. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, WORKING GROUP III, MITIGATION OF CLIMATE CHANGE, §§ 4.6.2, 6.3.6.6 (2014).

145. PEW CTR. ON GLOBAL CLIMATE CHANGE, COMMON METRICS: COMPARING COUNTRIES’ CLIMATE PLEDGES (2011).

An evaluation of the INDCs and related commitments of China and the EU illustrates how EPA could determine that substantive reciprocity exists for both of them. Similar approaches could be used for other nations.

a. China

Its high levels of GHG emissions make China a difficult country to ignore in present and future climate change response efforts and a prime target for a section 115 reciprocity finding. China's emissions have grown enormously over the past few years, more than doubling between 2003 and 2011, in part because of rapid domestic economic growth and also because the developed world has outsourced significant manufacturing to China.¹⁴⁶ Without policy changes, China's emissions would continue to rise through 2050, more than doubling again from current levels.¹⁴⁷

In recent years, the country has developed a substantial policy framework addressing GHG emissions. The country's 12th Five Year Plan set 2015 targets not only for energy and carbon intensity, but also for use of non-fossil fuels and increased afforestation.¹⁴⁸ That plan also committed China to developing a carbon market, with pilot cap-and-trade programs in seven provinces and cities. All seven jurisdictions, including Beijing and Shanghai, have now begun their carbon markets.¹⁴⁹ Additionally, since the beginning of 2013, China has promulgated a wide range of policies on air pollution that in many cases produce climate change co-benefits.

In November 2014, Presidents Obama and Xi made a historic announcement. The United States promised to reduce its emissions by twenty-six to twenty-eight percent below 2005 levels by 2025, and China would achieve peak CO₂ emissions and increase its share of zero-emission energy to twenty percent by 2030.¹⁵⁰ These commitments were subsequently embodied in each country's INDC. President Xi made significant additional commitments at a meeting with President Obama in September 2015. Among other steps, President Xi an-

146. OLIVIER ET AL., *supra* note 78, at 28.

147. XILIANG ZHANG ET AL., MIT JOINT PROGRAM ON THE SCIENCE & POLICY OF CLIMATE CHANGE, CARBON EMISSIONS IN CHINA: HOW FAR CAN NEW EFFORTS BEND THE CURVE? app., at A3 tbl.A5 (2014), http://globalchange.mit.edu/CECP/files/document/MITJSPGC_Rpt267.pdf.

148. JOANNA LEWIS, CTR. FOR CLIMATE & ENERGY SOL., ENERGY AND CLIMATE GOALS OF CHINA'S 12TH FIVE-YEAR PLAN (2011), <http://www.c2es.org/docUploads/energy-climate-goals-china-twelfth-five-year-plan.pdf>.

149. See INT'L CARBON ACTION P'SHIP, EMISSIONS TRADING WORLDWIDE, STATUS REPORT (2014), https://icapcarbonaction.com/en/?option=com_attach&task=download&id=349; Kathy Chen & David Stanway, UPDATE 2—China Completes Pilot Carbon Market Rollout, But Take Up Uncertain, REUTERS, June 19, 2014, <http://af.reuters.com/article/energyOilNews/idAFL4N0P00KL20140619>; Gerard Wynn, China's Hubei Province Launches Carbon Market, CLIMATE HOME (Apr. 2, 2014), <http://www.rtcc.org/2014/04/02/chinas-hubei-province-launches-carbon-market/>.

150. U.S.-China Joint Announcement, *supra* note 113.

nounced that China would start a national emissions trading system by 2017.¹⁵¹

Some critics of China's efforts have claimed that China's commitments are not comparable to the U.S. commitments because they allow Chinese emissions to continue to grow until 2030.¹⁵² Others have taken the opposite position and argued that China's commitments are so ambitious they may never be achieved.¹⁵³

In fact, there are multiple metrics by which China's commitments look at least as ambitious, if not more so, than the those of United States. According to the White House, China's zero-emission energy commitment "will require China to deploy an additional 800-1,000 gigawatts of nuclear, wind, solar and other zero emission generation capacity by 2030—more than all the coal-fired power plants that exist in China today and close to the total current electricity generation capacity in the United States."¹⁵⁴ China's recent announcement that it will adopt a nationwide cap-and-trade program for GHG emissions is a more comprehensive regulatory approach than any in the United States. Carbon Action Tracker has developed a methodology for comparing the level of effort reflected in countries' INDCs, taking into account "the full range of estimates from the literature" used in the effort-sharing studies identified by the IPCC, supplemented by additional analyses it performs to complete the dataset.¹⁵⁵ Carbon Action Tracker gives both the U.S. pledge and the Chinese pledge a "medium" rating.¹⁵⁶

These comparisons should give EPA a more than adequate basis to determine that China is making at least reciprocal substantive efforts to curb climate change.

151. Joint Statement by President Obama and President Xi Jinping of China on Climate Change, 2015 DAILY COMP. PRES. DOC. 649 (Sept. 25, 2015).

152. Ed O'Keefe et al., *GOP Congressional Leaders Denounce U.S.-China Deal on Climate Change*, WASH. POST (Nov. 12, 2014, 2:17 AM), https://www.washingtonpost.com/politics/gop-congressional-leaders-denounce-us-china-deal-on-climate-change/2014/11/12/ff2b84e0-6a8d-11e4-a31c-77759f1eacc_story.html?postshare=3281458484169712&tid=ss_tw-bottom (quoting Republican Senate Majority Leader Mitch McConnell as saying, "as I read the agreement, it requires the Chinese to do nothing at all for 16 years.").

153. Laura Barron-Lopez, *Inhofe Blasts U.S.-China Climate Pact as 'Non-Binding Charade'*, THE HILL (Nov. 12, 2014, 9:57 AM), <http://thehill.com/policy/energy-environment/223823-inhofe-us-china-climate-pact-a-non-binding-charade> (quoting Republican Sen. James Inhofe: "[I]t's hollow and not believable for China to claim it will shift 20 percent of its energy to non-fossil fuels by 2030.").

154. Press Release, The White House, Fact Sheet: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation (Nov. 11, 2014), <https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c>.

155. *Methodology: Comparability of Effort*, CLIMATE ACTION TRACKER, <http://climateactiontracker.org/methodology/85/Comparability-of-effort.html> (last visited Mar. 23, 2016).

156. *Tracking INDCs*, CLIMATE ACTION TRACKER, <http://climateactiontracker.org/indcs.html> (last visited Feb. 21, 2016) [hereinafter *Tracking INDCs*]. When China submitted its INDC, it included a commitment to reduce the carbon intensity of its economy by sixty to sixty-five per cent below 2005 levels by 2030, as well as a commitment to peak carbon dioxide emissions by 2030 and increase the share of zero-emission energy to twenty percent by 2030. Carbon Action Tracker assessed that the "carbon intensity targets if taken in isolation . . . would be rated as 'Inadequate.'" *Id.*

b. The European Union

The case for substantive reciprocity with the EU is also strong, if not stronger. EU member states have been considerably more active on climate change than most other nations. The EU is currently on track to achieve its goals for 2020, which will reduce emissions by twenty percent compared to 1990 levels, increase the use of renewable energy, and improve energy efficiency.¹⁵⁷ Among the strategies for achieving the emissions reduction goals is Europe's Emissions Trading System, a broad cap-and-trade program covering more than 11,000 power stations and industrial plants and airline flights within the EU.¹⁵⁸

The EU's INDC addresses the actions it will take after 2020. It includes a pledge to reduce its domestic emissions by at least forty percent below 1990 levels by 2030.¹⁵⁹ EU leaders have also announced a more ambitious greenhouse gas emissions reduction target of eighty to ninety-five percent below 1990 levels by 2050.¹⁶⁰

These commitments are at least comparable with the United States' INDC. The United States pledged to reduce domestic emissions by twenty-six to twenty-eight percent below 2005 levels by 2025. Measured from a 1990 baseline, this is equivalent to a twelve to nineteen percent reduction below 1990 levels.¹⁶¹ By this metric, the EU will have exceeded U.S. reductions years ahead of the United States. Using its more comprehensive methodology, Carbon Action Tracker gives both the United States and the EU the same "medium" rating.¹⁶² As in the case of China, these comparisons would support an EPA finding of substantive reciprocity.

5. Enforceability of Reciprocal Commitments

It is possible that opponents of EPA action under section 115 would challenge a reciprocity determination by arguing that foreign countries may not follow through in implementing their GHG-reduction commitments. There is no requirement in section 115, however, that the emissions reduction pledges of foreign nations be legally enforceable by the United States. In fact, if the foreign pledges

157. EUR. ENV'T AGENCY, EEA REP. NO. 10/2013, TRENDS AND PROJECTIONS IN EUROPE 2013: TRACKING PROGRESS TOWARDS EUROPE'S CLIMATE AND ENERGY TARGETS UNTIL 2020, at 8 (2013), <http://www.eea.europa.eu/publications/trends-and-projections-2013/full-report-ghg-trends-and-1>.

158. *The EU Emissions Trading System (EU ETS)*, EUR. COMM'N, <http://ec.europa.eu/clima/policies/ets> (last updated Mar. 21, 2016).

159. LATVIA & THE EUR. COMM'N, *supra* note 141.

160. EUR. COMM'N, NO. COM (2011) 112 FINAL, A ROADMAP FOR MOVING TO A COMPETITIVE LOW CARBON ECONOMY IN 2050, at 3 (2011), <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0112:FIN:en:PDF>.

161. USA, CLIMATE ACTION TRACKER, <http://climateactiontracker.org/countries/usa.html> (last visited Mar. 23, 2016). In the EU, 2005 emissions were lower than 1990 emissions. If the EU pledge were measured from a 2005 baseline, it would be a reduction of thirty-eight percent. PEW CTR. FOR GLOBAL CLIMATE CHANGE, *supra* note 145.

162. *Tracking INDCs*, *supra* note 156.

were enforceable by the United States, the foreign nations would be providing greater legal rights to the United States than it is likely to provide to them. While it may be unlikely as a practical matter, there is no legal barrier preventing a future president from directing EPA to revoke the final rules President Obama has issued to reduce GHG emissions, such as the final rules promulgated under section 202 of the Clean Air Act for motor vehicles or under section 111 for new and existing power plants, or any rules promulgated in the future pursuant to section 115.¹⁶³ Moreover, it appears questionable that a foreign government could avail itself of litigation to enforce the EPA rules.¹⁶⁴

In any event, EPA could probably address this challenge by reserving the opportunity to withdraw its reciprocity determination at a later date. Such a right to withdraw its determination inheres in EPA's authority under the statute. Indeed, Administrator Costle endorsed just such a procedure in the letters in which he made his acid rain reciprocity and endangerment findings. There, he noted that although Canada's law appeared facially to provide "essentially the same rights," his finding was only the first step of a two-step determination:

It is not possible to make a permanently binding determination that Canada has given the United States essentially the same rights based simply on a review of Canadian authorizing legislation. EPA first determines that Canadian legislation gives ample authority to the Government of Canada to provide essentially the same rights to the United States. Second, EPA must determine that the Government of Canada is *exercising or interpreting that authority* in a manner that provides essentially the same rights to the United States. This second aspect of EPA's determination is necessarily a dynamic one which will continue to be influenced by Canadian action now and in the future.¹⁶⁵

D. THE APPLICABILITY OF SECTIONS 110 AND 115 TO GHGS

Assuming EPA can make both an endangerment finding and a reciprocity determination, there is one final threshold question that may arise: Can section 115 be applied to GHG emissions? In February 2008, the EPA Director of Atmospheric Programs rejected a request submitted by a Canadian environmen-

163. See, e.g., *Motor Vehicle Mfr. Ass'n of the United States v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29 (1983).

164. If a foreign nation tried to bring suit against a federal defendant, it would need to show that the United States waived its sovereign immunity. See Stephen Tosini, *Foreign Sovereign Standing to Sue the United States in Its Own Courts under the Administrative Procedure Act*, 28 J. INT'L L. 91 (2014) (discussing the limited case law on foreign government suits under the Administrative Procedure Act and arguing that sovereign immunity has not been waived). If a foreign nation tried to bring suit against a private or state party for failure to comply with the Clean Air Act, it could find the citizen suit provision of the Act to be a barrier because it allows enforcement only by "persons," a defined term that does not mention foreign governments. 42 U.S.C. §§ 7602(e), 7604 (2012).

165. *New York v. Thomas*, 613 F. Supp. 1472, 1491 (D.D.C. 1985) (emphasis added), *rev'd*, 802 F.2d 1443 (D.C. Cir. 1986).

tal group to regulate or reduce GHG emissions under section 115 on the grounds that the section 110 SIP process triggered by section 115 could be used only to achieve National Ambient Air Quality Standards (“NAAQS”) for “criteria” pollutants listed under section 108.¹⁶⁶ EPA took a similar position in its July 2008 Advance Notice of Proposed Rulemaking on Regulating Greenhouse Gas Emissions under the Clean Air Act, where it wrote that “[s]ection 115 could not be used to require states to incorporate into their SIPs measures unrelated to attainment or maintenance of a NAAQS.”¹⁶⁷ These precedents make it likely that opponents of EPA action under section 115 would raise a similar objection.¹⁶⁸

However, this interpretation of the limited scope of section 110, and by extension section 115, has been superseded by subsequent ones and most likely foreclosed altogether. Indeed, EPA has since used the SIP process to address GHGs, and the Supreme Court has upheld the Agency’s action.

In 2010, EPA called on states to revise their SIPs to incorporate GHG emissions reductions through the Prevention of Significant Deterioration program.¹⁶⁹ The PSD program is designed to protect air quality in areas that meet one or more NAAQS and is implemented through SIPs. In particular, EPA required states to revise their SIPs to require new large sources of GHGs to obtain PSD permits, which would require the sources to employ “best available control technology” for GHGs.¹⁷⁰ In this rulemaking, EPA expressly rejected comments arguing that the Agency could not use SIPs to address GHG emissions.¹⁷¹

166. Letter from Brian McLean, Dir., Office of Atmospheric Programs, U.S. Env’tl. Prot. Agency, to Albert Kochl, Staff Attorney, Ecojustice Canada (Feb. 29, 2008) (on file with Georgetown Environmental Law Review); *see also* Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44,354, 44,482–83 (proposed July 30, 2008) (to be codified at 40 C.F.R. c. 1) [hereinafter Regulating Greenhouse Gas]. To date, EPA has listed only six common air pollutants as criteria pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead. *Criteria Air Pollutants*, U.S. ENVTL. PROT. AGENCY, <http://www3.epa.gov/airquality/urbanair> (last updated Mar. 4, 2016).

167. Regulating Greenhouse Gas, 73 Fed. Reg. at 44,483.

168. Commentators have rejected this argument. *See* Chang, *supra* note 58, at 10,900. Indeed, the lawyer who was the EPA General Counsel at the time the Canadian request was rejected, wrote an article a year later arguing that “Section 115, unlike the other usual suspects in the tireless Clean Air Act greenhouse gas debate, may hold the key to a flexible, effective, legally sound, and economically reasonable approach to greenhouse gas emissions under current law.” Martella & Paulson, *supra* note 58, at B-1.

169. Action to Ensure Authority to Issue Permits Under the Prevention of Significant Deterioration Program to Sources of Greenhouse Gas Emissions: Finding of Substantial Inadequacy and SIP Call, 75 Fed. Reg. 77,698 (Dec. 13, 2010) (to be codified at 40 C.F.R. pt. 52) [hereinafter Action to Ensure Authority]; *see also* 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 Gas Tailoring Rule] (propriety of regulating non-NAAQS pollutants within SIPs).

170. Gas Tailoring Rule, 75 Fed. Reg. at 31,561.

171. *Id.* at 31,560. EPA reiterated its position when it issued the Greenhouse Gas SIP Call, stating that the provisions of the Clean Air Act “mandate that SIPs include PSD programs that are applicable to any air pollutant that is subject to regulation under the CAA, including . . . GHGs.” Action to Ensure Authority, 75 Fed. Reg. at 77,701. EPA also stated that “the CAA contemplates that the PSD program be implemented by the states through their SIPs” and that it rejects the argument that PSD permits are limited to criteria pollutants. *Id.* at 77,700, 77,701 n.5.

In *American Electric Power v. Connecticut* and *Utility Air Regulatory Group v. EPA*, the Supreme Court confirmed EPA's authority to require states to regulate GHGs from some large stationary sources through their SIPs.¹⁷² In the latter case, the Court specifically upheld EPA's requirement that states revise their SIPs to require new large sources to control GHG emissions, though the Court limited the requirement to sources that would already need a permit because of emissions of other pollutants.¹⁷³ States are now implementing the requirements of the PSD program for GHG emissions through the SIP revision process.¹⁷⁴ Regulating GHGs through section 115, then, is in full conformance with Supreme Court precedent.

In addition to this recent Supreme Court precedent, the plain language of section 115 makes clear that the provision extends to GHGs, even though no NAAQS have been issued for them.¹⁷⁵ Section 115(a) states that the section applies to "any air pollutant."¹⁷⁶ The statute defines "air pollutant" as including "any physical, chemical . . . substance or matter" which enters the ambient air.¹⁷⁷ In *Massachusetts v. EPA*, the Supreme Court held that this phrase "embraces all whatever compounds of any stripe," including GHGs "without a doubt."¹⁷⁸ The Court considered the argument that regulating GHG emissions under section 202 of the Clean Air Act would lead to "extreme measures" and rejected the contention, stating that "there is nothing counterintuitive to the notion that EPA can curtail the emission of substances that are putting the global climate out of kilter."¹⁷⁹ The Court qualified its interpretation of "any air pollutant" in its 2014 decision in *Utility Air Regulatory Group*, holding that the words "any air pollutant" must "be read in their context and with a view to their overall statutory scheme."¹⁸⁰ The Court there invalidated EPA's interpretation, which would have extended EPA's PSD permitting authority over tens of thousands of previously uncovered smaller sources. This latter decision thus supports the application of section 115 to GHGs in principle, as both the context and statutory scheme call

172. See *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427 (2014); *Am. Elec. Power Co. v. Connecticut*, 131 S. Ct. 2527 (2011).

173. *Util. Air Regulatory Grp.*, 134 S. Ct. at 2448.

174. See, e.g., Approval and Promulgation of Air Quality Implementation Plans; Texas; Prevention of Significant Deterioration; Greenhouse Gas Tailoring Rule Revisions, 79 Fed. Reg. 66,626 (Nov. 10, 2014) (to be codified at 40 C.F.R. pt. 52).

175. See Martella & Paulson, *supra* note 58, at B-12. Notably, in February 2013, the Institute for Policy Integrity petitioned EPA to regulate GHGs under section 115. Petition from Inst. for Pol'y Integrity, NYU Sch. of Law, to EPA for Rulemakings and Call for Information Under Section 115, Title VI, Section 111, and Title II of the Clean Air Act to Regulate Greenhouse Gas Emissions (Feb. 19, 2013), https://www.epa.gov/sites/production/files/documents/policy_integrity_omnibus_ghg_petition_under_caa.pdf. EPA has not acted on the Institute petition.

176. 42 U.S.C. § 7415(a) (2012).

177. *Id.* § 7602(g).

178. *Massachusetts v. EPA*, 549 U.S. 497, 529 (2007).

179. *Id.* at 531.

180. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2441 (2014).

for applying section 115 to GHGs—in short, there is no more compelling example of emissions that affect other nations than greenhouse gases. The two instances are also factually distinguishable, as interpreting section 115 to cover GHGs would not expand substantially the number of sources subject to regulation under the Clean Air Act. Rather, it can provide a more flexible and market-based approach for regulating sources of GHGs.

The carefully crafted cross-references in sections 115 and 110 offer further support for the interpretation that section 115 can apply to GHGs. Section 115(b) provides that an endangerment finding under subsection (a) “shall be deemed a finding under section 7410(a)(2)(H)(ii) . . . which requires a [SIP] revision with respect to so much of the applicable implementation plan as is inadequate to prevent or eliminate the endangerment.”¹⁸¹ Section 110(a)(2)(H)(ii) in turn requires states to revise their SIPs under two conditions: (1) “whenever the Administrator finds . . . that the plan is substantially inadequate to attain the national ambient air quality standard” or (2) “whenever the Administrator finds . . . that the plan is substantially inadequate . . . to otherwise comply with any additional requirements established under this Act.”¹⁸² The “comply with any additional requirements” language in section 110(a)(2)(H)(ii) can easily encompass requirements involving GHGs. In addition, section 110(a)(2)(D) requires that SIPs contain adequate provisions for both attaining the relevant NAAQS and “insuring compliance with the applicable requirements of section[] . . . 115 of this title (relating to . . . international pollution abatement).”¹⁸³ Thus, the statute authorizes the use of SIPs to control “any pollutant” designated for international pollution control under section 115, including non-NAAQS pollutants.¹⁸⁴

181. 42 U.S.C. § 7415(b).

182. *Id.* § 7410(a)(2)(H)(ii).

183. *Id.* § 7410(a)(2)(D)(ii). Courts would likely consult other provisions in section 110 for context and harmonization. *See, e.g.,* *Hearth, Patio, & Barbeque Ass’n v. U.S. Dep’t of Energy*, 706 F.3d 499, 454 (D.C. Cir. 2013) (“Under *Chevron* step one we consider not only the language of the particular statutory provision under scrutiny, but also the structure and context of the statutory scheme of which it is a part.” (internal citation omitted)). Here, these provisions likewise state that both NAAQS and non-NAAQS obligations are to be addressed in SIPs. *See* 42 U.S.C. § 7410(a)(2)(D)(ii) (stating that SIP revisions are required whenever a plan is substantially inadequate to attain the NAAQS or “to otherwise comply with any additional requirements.”); *see also* *United States v. Bishop Processing Co.*, 287 F. Supp. 624 (D. Md. 1968) (considering a related predecessor provision of section 115 concerning interstate pollution and holding that absence of a NAAQS for the relevant pollutant did not affect that section’s pollution abatement mandate).

184. Opponents of using section 115 might also argue that there is no “applicable implementation plan” to revise because there are no state implementation plans devoted to regulation of GHGs. This argument would appear to be foreclosed by the Supreme Court’s decisions in *American Electric Power Company v. Connecticut*, 564 U.S. 410 (2011), and *Utility Air Regulatory Group*, 134 S. Ct. 2427, and by subsequent GHGs regulation through SIPs by EPA and the states. *See supra* notes 170-178. Moreover, “applicable implementation plan” is defined in the Clean Air Act as “the portion (or portions) of the implementation plan . . . which has been approved under section 110 . . . or promulgated under section 110(c) . . . and which implements the relevant requirements of this chapter.” 42 U.S.C. § 7602(q). Section 115 is a “relevant requirement” of the Clean Air Act because it is implemented through section 110. It follows that there should be an applicable implementation plan

Even if a court determined that the statute was ambiguous on this point, it would be patently reasonable for EPA to read section 110 as applying to GHGs in the context of a section 115 determination. Section 115 seeks to address “international air pollution” from “any” air pollutant, and it contains no limiting language which would suggest that greenhouse gases or climate change somehow fall beyond the scope of this imperative. Moreover, because section 115 concerns foreign public health and welfare, where *domestic* NAAQS necessarily will not apply, there is no reason to assume that NAAQS are relevant. The relationship between sections 115 and 110 appears designed to take advantage of the SIP process and the flexibility it gives states to adopt a wide range of pollution reduction approaches; not to limit international air pollution abatement to the six criteria pollutants EPA has to date identified.

The legislative history of section 115 further demonstrates that this reading accords with congressional intent. As discussed above, an international air pollution provision was first added to the Clean Air Act in 1965.¹⁸⁵ According to the Senate report, the purpose of this new provision was to enable the United States to “authorize cooperative action with foreign countries when air pollution is endangering the health or welfare or their people” and “in the interest of international amity and in fairness to the people of other countries, afford them the benefit of protective measures.”¹⁸⁶ There is nothing in the language of the legislative history that refers to NAAQS, as NAAQS did not exist at that time.

In 1970, Congress moved the international air pollution provision to section 115 of the Clean Air Act,¹⁸⁷ and in 1977, Congress endeavored to streamline and make more effective the process for achieving reductions in U.S. emissions affecting other nations by replacing the previous domestic and international conference procedures with new EPA authority to require states to revise their SIPs to abate international air pollution.¹⁸⁸ There is no indication in the legislative history of either the 1970 or 1977 laws that these changes were intended to limit the provision to addressing air pollution associated with domestically determined NAAQS.¹⁸⁹

III. POTENTIAL LEGAL ISSUES FOR SECTION 115 IMPLEMENTATION

In *Her Majesty the Queen in Right of Ontario v. EPA*, the D.C. Circuit held that section 115 “creates a specific linkage between the endangerment finding and the remedial procedures,” such that EPA’s interpretation that it required information

that implements section 115 in every state. If there is not, EPA’s responsibility would be to require one under section 110(a)(2)(H)(ii) or promulgate a federal one under section 110(c).

185. Clean Air Act Amendments and Solid Waste Disposal Act, Pub. L. No. 89-272, 77 Stat. 392, 396 (1965).

186. S. REP. NO. 89-192, at 6 (1965).

187. Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676, 1677 (1970).

188. S. REP. NO. 95-127 (1977).

189. See also Chang, *supra* note 58, at 10,897–901.

sufficient to track emissions to specific sources prior to making an endangerment finding was reasonable, and its decision not to initiate rulemaking without such information was not arbitrary and capricious.¹⁹⁰ Though the case pertained to the narrow question of tracing emissions to sources, it supports a broader conclusion as well: EPA may postpone issuing an endangerment finding and reciprocity determination while it investigates ways of implementing a remedy. In the case of climate change that means EPA should have a plan in mind, and the substance of the SIP call ready, when it issues its findings.¹⁹¹

This Part addresses six implementation issues that EPA may want to consider under section 115: (1) how EPA could set an aggregate limit for national GHG emissions reductions under section 115; (2) how EPA could allocate a national emissions limit among the states; (3) how EPA could establish federal implementation plans for states that fail to modify their state implementation plans to comply with the requirements of section 115; (4) how EPA and the states could integrate a section 115 GHG emissions reduction regime with existing GHG emissions reduction programs under section 111; (5) how EPA and the states could address emissions from transportation fuels and commercial and consumer use of natural gas under section 115; and (6) how EPA and the states could permit the use of offsets in a prospective cap-and-trade program under section 115.

A. THE AGGREGATE LIMIT FOR NATIONAL EMISSIONS

Section 115(b) provides that if EPA invokes section 115, EPA must require each state to revise “so much of the applicable implementation plan as is inadequate to prevent or eliminate the endangerment” identified by the Agency pursuant to section 115(a). Yet climate change is not a typical upwind-downwind air pollution problem. Rather, GHGs are global pollutants that fully mix in the atmosphere and impact the planet’s climate. Accordingly, emissions from all U.S. states contribute to foreign endangerment, and reductions from any state would contribute equally to solving the problem. To put it a different way, a ton of carbon pollution eliminated in Washington has the same effect as a ton of carbon pollution eliminated in Florida. Therefore, independent state determinations of the GHG reductions necessary to “prevent or eliminate the endangerment” under section 115 would prove unhelpful. Successful implementation would instead require EPA to establish the aggregate amount of U.S. emissions reductions necessary to prevent foreign endangerment.

As a matter of both law and policy, it would be eminently reasonable for EPA to establish a national GHG emissions target under section 115 based on the United States’ contribution to a global effort to reduce GHG emissions, such as

190. *Her Majesty the Queen in Right of Ont. vs. EPA*, 912 F.2d 1525, 1533–34 (D.C. Cir. 1990).

191. *But see* Petition from Inst. for Pol’y Integrity, NYU Sch. of Law, to EPA, *supra* note 175.

the U.S. INDC submitted to the UNFCCC in March 2015.¹⁹² EPA's position would be that U.S. action under section 115 that is part of a coordinated global effort to combat climate change is adequate to "prevent or eliminate" the U.S. contribution to global climate change as required by section 115(b).

In interpreting statutory meaning, "we begin with the language of the statute."¹⁹³ Here the provision has two terms, *prevent* and *eliminate*, separated by the coordinating conjunction *or*. Looking first at the word "eliminate," it would appear impossible for SIP revisions under section 115 to "eliminate" the endangerment caused by U.S. GHG emissions. Due to existing atmospheric concentrations of long-lived GHGs, including the substantial percentage of those gases emitted within the United States, along with the continuing emissions by other countries, even if every state immediately reduced its emissions to zero, foreign countries would continue to suffer the increased risks and adverse consequences of climate change, as in fact would the United States.

However, it is possible for SIP revisions under section 115 to "prevent" endangerment that U.S. emissions cause foreign countries. To "prevent" endangerment under section 115 does not require removing all risk. For example, seat belts are not one hundred percent effective at eliminating motor vehicle fatalities, yet they are widely regarded as an effective form of "preventing" such fatalities. Among drivers and front-seat passengers, seat belts reduce the risk of death by forty-five percent, and cut the risk of serious injury by fifty percent.¹⁹⁴ Few would argue that the Centers for Disease Control and Prevention and its National Center for Injury Prevention and Control could not fund programs to promote seat belt use under a grant program enacted to "prevent or eliminate" motor vehicle fatalities. As long as EPA is setting aggregate emission limits that will over time—and in conjunction with reciprocal actions by other nations—significantly reduce the risks of climate change, EPA can reasonably claim it has acted to prevent endangerment from climate change.

This understanding of "prevent" finds support in leading definitions. The *Oxford English Dictionary* defines "prevent" to mean "[t]o anticipate or act in advance."¹⁹⁵ And *Black's Law Dictionary* defines it to mean "[t]o hinder or impede."¹⁹⁶ Action by EPA that is consistent with a global framework for avoiding the worst impacts of climate change would be action that "anticipates" and "hinders or impedes"—hence "prevents"—dangerous climate change.

192. U.S. INDC, *supra* note 140.

193. *Barnhart v. Sigmon Coal Co.*, 534 U.S. 438, 450 (2002).

194. *Seat Belts: Get the Facts*, CTNS. FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/motorvehiclesafety/seatbelts/facts.html> (last updated Aug. 20, 2015).

195. *Prevent*, OXFORD ENGLISH DICTIONARY (2015).

196. *Prevent*, BLACK'S LAW DICTIONARY (10th ed. 2014).

Statutory context counsels in favor of an interpretation of section 115 that requires pollution control rather than the cessation of all GHG emissions.¹⁹⁷ Section 115(c) states that in order to establish reciprocity, foreign countries must grant similar rights “with respect to the prevention or control of air pollution.”¹⁹⁸ Thus, the substantive rights the United States confers, and which it must receive in return, pertain not to elimination of pollution but to its “prevention or control.” Looking to other provisions of the Clean Air Act, courts have long recognized EPA’s discretion to determine “how much of the regulated harm is too much,”¹⁹⁹ and have acknowledged that protecting the public does not require “a world that is free of all risk—an impossible and undesirable objective.”²⁰⁰ Rather, EPA can and should consider context when “deciding what risks are acceptable in the world in which we live.”²⁰¹

The legislative history further supports an interpretation that grants EPA discretion in setting an appropriate aggregate limit for domestic GHG emissions. Congress added the “prevent or eliminate” language when it revised section 115 in the 1977 Clean Air Act Amendments. According to the Senate report, “section 115 as revised . . . will require the State in which the source of those emissions is located to revise its implementation plan to control those emissions.”²⁰² The stated purpose is to *control* emissions, not to *eliminate* them altogether.

This understanding of prevention is consistent with the general concept of pollution prevention, as inscribed throughout environmental law.²⁰³ Perhaps most tellingly, the Pollution Prevention Act of 1990 does not require the elimination of any particular forms of pollution or of any pollution sources. Instead, the Pollution Prevention Act equates prevention with “source reduction.”²⁰⁴ Source reduction is defined in the statute as “any practice which . . . (1) reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment . . . and (2) reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.”²⁰⁵ Notably, source

197. *Whitman v. Am. Trucking Ass’ns, Inc.*, 531 U.S. 457, 496 (2001) (Breyer, J., concurring) (“Nor need regulation lead to deindustrialization. Preindustrial society was not a very healthy society; hence a standard demanding the return of the Stone Age would not prove ‘requisite to protect the public health.’”).

198. 42 U.S.C. § 7415(c) (2012).

199. *Whitman*, 531 U.S. at 475.

200. *Id.* at 494 (Breyer, J., concurring).

201. *Id.* at 495 (quoting *Nat. Res. Def. Council, Inc. v. EPA*, 824 F.2d 1146, 1165 (D.C. Cir. 1987)).

202. S. REP. NO. 95-127, at 57 (1977).

203. See 33 U.S.C. § 1252(a) (2012) (requiring EPA to “prepare or develop comprehensive programs for preventing, reducing or eliminating the pollution of the navigable waters and ground waters”).

204. 42 U.S.C. § 13101(a)(5) (2012) (“As a first step in preventing pollution through source reduction, the Environmental Protection Agency must establish a source reduction program which collects and disseminates information, provides financial assistance to States, and implements the other activities provided for in this subtitle.”).

205. *Id.* § 6603(5)(A).

reduction includes a broad range of approaches, including “equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.”²⁰⁶ In essence, the Pollution Prevention Act treats prevention as synonymous with, among other things, air pollutant emissions reductions.²⁰⁷

It is clear that the international community needs to set itself on a course toward a zero-carbon economy.²⁰⁸ However, there is no recognizable pathway to immediate decarbonization, either domestically or worldwide. Based on the language of section 115, its place in the context of the Clean Air Act, its legislative history, and the common understanding of “pollution prevention” as reflected in U.S. environmental law, EPA should have ample discretion to establish aggregate national targets for GHG emissions reductions that substantially reduce the U.S. contribution to climate change, especially if the aggregate limit is tied to the international commitments the United States has made in the UNFCCC negotiations.²⁰⁹ The question that follows is how to allocate the targeted reductions among the states.

B. ALLOCATION TO STATES

Once EPA has set an aggregate level of emissions reductions, section 115 would then require the Agency to inform affected state governors (which in the case of GHGs is all state governors) of the need to revise their SIPs to “prevent or eliminate” their portion of emissions that are creating endangerment.²¹⁰ To implement this second step, EPA would need to apportion responsibility for necessary emissions reductions among states. Section 115 does not dictate a methodology for apportionment, leaving EPA with the power to consider costs, or to decline to consider costs, and to consider any number of other factors in making allocation decisions.

206. *Id.*

207. *See also* Memorandum from F. Henry Habicht II to all EPA personnel, EPA Definition of “Pollution Prevention” (May 28, 1992), <http://www2.epa.gov/sites/production/files/2015-07/documents/pollprev.pdf> (noting that “the concept of pollution prevention is broadly applicable—a tool to accomplish many environmental task”; that “[p]ollution prevention requires a cultural change—one which encourages more anticipation and internalizing of real environmental costs by those who may generate pollution”; and that in the energy sector, pollution prevention strategies include “increasing efficiency in energy use; substituting environmentally benign fuel sources; and design changes that reduce the demand for energy”).

208. *See* DEEP DECARBONIZATION PATHWAYS PROJ., PATHWAYS TO DEEP DECARBONIZATION 2015 REPORT (2015), http://deepdecarbonization.org/wp-content/uploads/2015/12/DDPP_2015_REPORT.pdf.

209. Other reasonable approaches exist. *See* Petition from Inst. for Pol’y Integrity, NYU Sch. of Law, to EPA, *supra* note 175, at 15 (proposing that EPA might set the standard “at the point where the marginal abatement costs, based on reasonable technology projections, equal the global social cost of carbon”).

210. 42 U.S.C. § 7415(a)–(b).

To do so, EPA might utilize a variety of formulas. For example, EPA might require each state to meet an equal percentage reduction, as measured from a selected baseline year (the “equal percentage” approach). Alternatively, it might require each state to reduce its emissions to a point where marginal cost reductions are equal across states, thereby achieving the same target but assigning responsibility based on implementation costs rather than equal percentage reductions (the “equal marginal cost” approach). Each of these methodologies would produce relative winners and losers among the states. To temper these disparate impacts, EPA might choose a third methodology that combines these two methods, assigning a portion of required reductions as a percentage of state emissions but another portion on the basis of cost (the “combined” approach). If EPA were to select a methodology that resulted in different costs among states, it could permit states to adopt cross-state trading in order to lower implementation costs, as it would under the backstop FIP discussed in section C below.

EPA might also adopt an approach similar to that taken in the Clean Power Plan. There, EPA examined the source category to be regulated—existing power plants—and established state targets based on the Agency’s state-by-state determination of the “best system of emissions reduction” achievable through select policy and technology choices.²¹¹ For existing power plants, these include measures that can be applied at individual coal plants, such as efficiency improvements; measures that allow plant owners credit for fuel-switching, or shifting the mix of electricity generation away from existing coal plants toward existing gas plants; and measures that allow plant owners credit for electricity generation from zero-carbon and renewable sources, such as nuclear facilities, wind turbines, and solar plants. The mix would be different under section 115, as it would involve more source categories than the Clean Power Plan, but EPA could likely embark on a similar analysis. The outcome should be even less susceptible to legal challenge than the allocation of emissions reduction obligations under the Clean Power Plan, as section 115 standards are not constrained by the “best system of emissions reduction” standard.

The Court’s April 2014 decision in *EPA v. EME Homer City Generation, L.P.*²¹² adds significant weight to a line of cases affording EPA substantial deference in determining how to allocate responsibility for meeting air quality obligations among states. This case involved the Clean Air Act’s “good neighbor” provision, which prohibits states from “emitting any air pollutant in amounts which will . . . contribute significantly” to unacceptable levels of air pollution in downwind states.²¹³ Like section 115, the good neighbor provision requires EPA

211. See generally Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; 80 Fed. Reg. 64,661 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60) [hereinafter Carbon Guidelines].

212. *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584 (2014).

213. 42 U.S.C. § 7410(a)(2)(D)(i).

to apportion emissions reductions among states, and EPA has long struggled with how to apportion responsibility for these emissions reductions among upwind states.²¹⁴

EME Homer provided important clarity (and a victory) for EPA. The Court considered the validity of EPA's "Transport Rule,"²¹⁵ which apportioned good neighbor responsibility for sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions among upwind states based on the availability of cost effective pollution reduction options within the state—in other words, based on an equal marginal cost methodology. In its opinion below, the D.C. Circuit had read the "contribute significantly" limitation of the good neighbor provision to require apportionment based on physical pollutant contributions alone, rather than cost, and therefore invalidated EPA's methodology.²¹⁶ The Supreme Court disagreed. First, it found no language in the good neighbor provision that dictated a particular allocation methodology. Then, invoking *Chevron* deference,²¹⁷ it found EPA's selected methodology a reasonable response to the "thorny causation problem" of how EPA should "allocate among multiple contributing upwind States responsibility for a downwind State's excess pollution."²¹⁸ The Court went on to praise EPA's use of cost criteria as an "efficient and equitable solution to the allocation problem."²¹⁹

EME Homer should give EPA confidence that it can approach the question of GHG allocation under section 115 in a similarly flexible manner. Indeed, section 115 contains no limiting language about allocation, whereas the good neighbor provision requires states to reduce emissions that cross state borders only if the emissions "contribute significantly" to downstate pollution. Any of the three allocation methodologies mentioned here—equal percentage reductions, equal marginal costs, or a combined methodology—should be defensible as a reasonable choice.

If EPA chose to use an equal marginal cost allocation methodology, *EME Homer* would be directly on point, as the Court endorsed a cost-based methodology under a similarly ambiguous section of the Act.²²⁰ But *EME Homer* also provides leeway to EPA to require equal percentage GHG reductions. The *EME*

214. See *EME Homer*, 134 S. Ct. at 1593.

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

216. *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7, 25–26 (D.C. Cir. 2012), *rev'd*, 134 S. Ct. 1584 (2014).

217. *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837 (1984).

218. *EME Homer*, 134 S. Ct. at 1604.

219. *Id.* at 1607.

220. As described in *EME Homer*, before employing a cost-based methodology to allocate good-neighbor responsibility, EPA first screened out those states whose contributions to downwind pollution it found to be *de minimis*, deeming them not to be significant contributors. See *id.* at 1596. However, it is unlikely that any states would have *de minimis* GHG emissions, making this consideration less relevant here.

Homer majority rejected a requirement of proportional reductions in the good neighbor context on the grounds of unworkability,²²¹ but it nowhere suggested that this methodology would be unreasonable in contexts where it would prove workable. In the case of section 115 GHG reductions, proportionality would prove easy to implement, as a ton emitted in any state equally affects all foreign countries' endangerment. Moreover, because both the D.C. Circuit and Justice Scalia's dissent in *EME Homer* read the good neighbor provision not only to permit proportionality but to *require* it,²²² this approach should survive judicial scrutiny.²²³

States that have made relatively greater historical investments in cleaner energy might use *EME Homer* to object to an equal percentage reduction methodology under section 115 as inequitably (and therefore unreasonably) penalizing these states "for having done more to reduce pollution in the past."²²⁴ Likewise, states that have more polluting sources of energy that are less expensive to control might argue that an equal marginal cost allocation would force them to make disproportionately large reductions. A combined approach, such as one that allocated a portion of the emissions reductions on cost and a portion on emissions, would balance these competing equities. There is no language in section 115 that would suggest that EPA could not seek to balance states' competing equities in this manner.

In sum, under the deference accorded to EPA to fill gaps in the face of statutory silence, it would likely be permissible for EPA to allocate section 115 GHG reduction obligations to states by requiring equal percentage reductions, equal marginal cost reductions, or some combination of these two methodologies, including an approach similar to that utilized in the Clean Power Plan.

C. FEDERAL IMPLEMENTATION PLANS

In implementing section 115, EPA may also need to promulgate federal implementation plans for some states. Under the Clean Air Act, states have the primary responsibility for addressing air pollution.²²⁵ Section 110 of the Act, the

221. *Id.* at 1594, 1604–05 (explaining the impossibility of devising a proportional reduction scheme for NO_x and SO₂ given the "thousands" of "overlapping and interwoven linkages between upwind and downwind States").

222. *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7, 24–25 (D.C. Cir. 2012), *rev'd*, 134 S. Ct. 1584, 1611 (2014) (Scalia, J., dissenting).

223. The Supreme Court's recent decision in *Michigan v. EPA* does not dictate that EPA *must* consider costs in allocating GHG emissions reductions to the states under section 115. In that case, the Court held that EPA's determination that regulation under section 112 is "appropriate" required the Agency to consider costs. Here, nothing in the language or structure of the statute so limits EPA's discretion. Indeed, the only relevant limiting criteria here is that the states' SIPs be revised to "prevent" endangerment.

224. *EME Homer*, 134 S. Ct. at 1607.

225. See 42 U.S.C. § 7401(a)(3) (2012) ("air pollution prevention . . . is the primary responsibility of States and local governments").

mechanism for responding to pollution identified under section 115, requires each state to submit to EPA a SIP to comply with certain requirements of the Clean Air Act, including section 115.²²⁶ If, however, a state does not submit a SIP, or submits a SIP that is inadequate to meet Clean Air Act requirements, EPA must promulgate a FIP for that state.

Under section 115, once EPA has made requisite findings for endangerment and reciprocity, it must give notice to states whose emissions cause or contribute to international endangerment.²²⁷ This notice is deemed a finding under section 110(a)(2)(H)(ii) that the state's SIP is "substantially inadequate" to comply with Clean Air Act requirements.²²⁸ This finding triggers section 110(k)(5), which provides that whenever EPA finds a SIP "substantially inadequate," it must call on the state to revise its SIP.²²⁹ This process is commonly known as a "SIP call." Upon issuing a SIP call, EPA may set "reasonable deadlines" for states to submit SIP revisions, not to exceed eighteen months.²³⁰ If at the expiration of a revision deadline, a state has failed to submit a SIP revision, or if a state submits a revision that EPA finds inadequate, section 110 requires EPA to promulgate a FIP within two years, unless the state first corrects the deficiency sufficiently to receive EPA's approval.²³¹

States have strong incentives under the Clean Air Act to submit SIPs.²³² By developing a SIP, a state retains control over its emissions and the compliance mechanisms that it uses to control these emissions. The Clean Air Act allows states to meet their air pollution obligations through a wide range of compliance options, including "economic incentives such as fees, marketable permits, and auctions of emissions rights."²³³ If, however, a state fails to submit an adequate SIP, it surrenders control to EPA to design a FIP, which is then binding upon the state.

EPA may issue guidance or model rules for how states can achieve compliance either to encourage states to submit SIPs, to reduce the administrative burden on states, or to encourage uniformity sought by industry. For example, when EPA issued a SIP call for states to address NO_x emissions contributing to interstate

226. *Id.* § 7410(a)(2)(H)(ii) (requiring SIPs to "contain adequate provisions" to ensure compliance with section 115).

227. *Id.* § 7415(a).

228. *Id.* §§ 7415(b), 7410(a)(2)(H)(ii).

229. *Id.* § 7410(k)(5).

230. *Id.*

231. *Id.* § 7410(c)(1).

232. See DANIEL SELMI, STATES SHOULD THINK TWICE BEFORE REFUSING ANY RESPONSE TO EPA'S CLEAN POWER RULES (2015), https://web.law.columbia.edu/sites/default/files/microsites/climate-change/selmi_-_states_should_think_twice_before_refusing_any_response_to_epas_clean_power_rules.pdf.

233. 42 U.S.C. § 7410(a)(2)(A). The choice of SIP compliance mechanism belongs wholly to states; in determining state obligations, EPA may not require a state to adopt any particular compliance method. See *Virginia v. EPA*, 108 F.3d 1397, 1410 (D.C. Cir. 1997) ("Section 110 does not enable EPA to force particular control measures on the states.").

ozone pollution (the “NO_x SIP Call”), EPA allowed states to elect to join a program established by EPA by adopting a “model rule” promulgated by the Agency.²³⁴ States could choose to incorporate this model rule by reference, or could adopt the rule separately, provided a state did not make significant changes to EPA’s rule.²³⁵ If the state’s rules closely followed those of EPA’s model rule, states were eligible for a streamlined SIP approval process.²³⁶ EPA has adopted a similar approach in the Clean Power Plan.²³⁷ It could likewise use a model rule to help states design SIPs that comply with the requirements of section 115, as well as to promote consistency among states.

Nevertheless, some states might remain non-compliant either by refusing to submit a SIP or by submitting an obviously inadequate one.²³⁸ In such a case, EPA would be required to promulgate a FIP to address GHG pollution. EPA could take several different more or less resource-intensive approaches. A streamlined approach that utilizes market-based mechanisms, minimizes administrative burdens on EPA, and maximizes the likelihood of state participation could have four core components:

- (1) a federal requirement that all covered sources in the state turn in allowances for each ton of GHG emitted each year;
- (2) a federal distribution of allowances to each state, equal to the state’s emissions budget as determined by EPA;
- (3) an opportunity for the state to allocate the allowances to sources in whatever manner the state deems most appropriate, supported by a back-stop of a federal auction of the allowances if a state is unwilling to do so; and
- (4) a system for sources to trade allowances.

This streamlined FIP would have several advantages. By employing a cap-and-trade mechanism, the FIP would increase flexibility and reduce compliance costs for industry. It would also incentivize state participation by giving a state the opportunity to determine how to allocate the allowances even where it does not

234. Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, 63 Fed. Reg. 57,356, 57,456 (Oct. 27, 1998) (to be codified at 40 C.F.R. pt. 75) [hereinafter NO_x SIP Call].

235. *Id.* at 57,458.

236. *Id.* All affected states adopted the rule within EPA’s flexibility guidelines. See NATHAN RICHARDSON ET AL., GREENHOUSE GAS REGULATION UNDER THE CLEAN AIR ACT: STRUCTURE, EFFECTS, AND IMPLICATIONS OF A KNOWABLE PATHWAY 12 (Res. for the Future, Discussion Paper RFF DP 10-23, 2010), <http://www.rff.org/documents/RFF-DP-10-23.pdf>.

237. Carbon Guidelines, 80 Fed. Reg. at 64,832–33.

238. See, e.g., *Texas v. EPA*, 726 F.3d 180, 186 (D.C. Cir. 2013). Here, the court quotes a letter sent by Texas authorities to EPA, in response to EPA’s call for the state to address GHGs within its PSD program requirements, which declared that the state had “neither the authority nor the intention of interpreting, ignoring, or amending its laws in order to compel the permitting of greenhouse gas emissions.” *Id.*

submit a plan.²³⁹ If a state chose not to allocate the allowances, EPA would auction them under the FIP, with the proceeds going to the federal treasury. This would be an option that the states—and the sources in the state—would in all likelihood find unappealing. In addition, as discussed below, EPA could rely substantially on its prior efforts to address interstate ozone pollution, which used cap-and-trade approaches that have already been shown to be both practicable and legally sound.

There would appear to be little question about EPA's authority to pursue this streamlined approach. The Clean Air Act specifically authorizes states or EPA to use market mechanisms within section 110 implementation plans. Section 110(a)(2)(A) requires SIPs to include "enforceable emission limitations and other control measures, means or techniques," which may include "economic incentives such as fees, marketable permits, and auctions of emissions rights."²⁴⁰ Section 302(y) defines "Federal implementation plan" by echoing this language, allowing EPA to use "economic incentives, such as marketable permits or auctions of emissions allowances" to correct an inadequate SIP.²⁴¹ EPA also has general authority under section 301(a) "to prescribe such regulations as are necessary to carry out [its] functions" under the Clean Air Act.²⁴²

EPA has previously used market-based approaches under section 110 to address interstate pollution that could be models for a section 115 FIP. In its 1998 NO_x SIP Call, EPA introduced a cap-and-trade program for NO_x pollution, known as the NO_x Budget Trading Program.²⁴³ The 2011 Transport Rule, a more stringent successor to the NO_x Budget Trading Program, likewise implemented similar trading programs for both NO_x and SO₂.²⁴⁴ In issuing these rules, EPA specifically invoked its authority under sections 110 and 302(y), as well as

239. Allowance allocation can affect multiple policies: for example, allowances can be given away freely to polluting sources to reduce their compliance costs; they can be sold at auction, with the proceeds used to finance investments in clean energy or energy efficiency, or to offset costs that might be borne by consumers; or they can be used to support industries disadvantaged by high compliance burdens, to ease transition burdens, and so forth—all decisions that a state would likely want to control. These are policy choices that are appropriate for states to make, but fall outside of EPA's expertise.

240. 42 U.S.C. § 7410(a)(2)(A) (2012).

241. *Id.* § 7602(y).

242. *Id.* § 7601(a)(1); see also *Citizens to Save Spencer Cty. v. EPA*, 600 F.2d 844, 873 (D.C. Cir. 1979) (noting that section 301(a) does not provide EPA with "[c]arte blanche authority to promulgate any rules, on any matter relating to the Clean Air Act, in any manner that the Administrator wishes," but approving EPA interpretive rulemaking as necessary to carry out its functions).

243. See NO_x SIP Call, 63 Fed. Reg. at 57,456.

244. Transport Rule, 76 Fed. Reg. at 48,208. The Transport Rule was a revision to an earlier trading program known as the Clean Air Interstate Rule, Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule); Revisions to Acid Rain Program; Revisions to the NO_x SIP Call, 70 Fed. Reg. 25,162, 25,273 (May 12, 2005) (to be codified at 40 C.F.R. pts. 51, 72–74, 77–78, 96) [hereinafter Clean Air Interstate Rule], which was struck down by the D.C. Circuit for reasons unrelated to EPA's section 110 authority to assign tradable emissions allowances, *North Carolina v. EPA*, 531 F.3d 896, 906–08 (D.C. Cir. 2008).

its general authority under section 301(a).²⁴⁵

The NO_x Budget Trading Program, in particular, offers a good model. Under the NO_x Budget Trading Program, which ran from 2003 to 2008 through EPA's Clean Air Markets Division, EPA determined emission budgets for each state. EPA issued allowances to each state according to its emission budget, giving states the opportunity to allocate these allowances to sources within their borders according to a wide range of criteria, including by auction. Once states allocated the allowances, sources could buy and sell the allowances through a trading market.²⁴⁶ States were allowed to join the program voluntarily by SIP, but any state that failed to submit an adequate SIP became subject to the program by FIP.²⁴⁷ The program was generally successful in reducing ozone pollution,²⁴⁸ and the Transport Rule built on its model for allowance allocations and trading.²⁴⁹ The primary difference in the Transport Rule and the NO_x Budget Trading Program is that EPA from the outset implemented the Transport Rule by FIP rather than SIP.²⁵⁰ Importantly, both of these programs have survived legal challenge.²⁵¹

Under the streamlined section 115 FIP sketched here, EPA could follow the same procedures that it utilized in these programs to require sources to obtain allowances equal to their emissions and to oversee trading activities. The streamlined FIP departs from this model slightly, in ways that may improve upon these earlier programs. For example, by allowing states the opportunity to determine how allowances should be distributed in lieu of a federal auction, EPA may be able to involve even the most reluctant states in the administration of section 115 requirements.

D. INTEGRATION OF SECTION 115 WITH SECTION 111

Any action EPA undertakes pursuant to section 115 will take place while EPA also implements other critical GHG emissions regulations, including the New

245. EPA cited section 301(a) in its NO_x SIP Call as authority for issuing state emissions budgets, compliance deadlines, and reporting requirements, and in the Transport Rule as authority to clarify Clean Air Act interstate pollution requirements and to quantify state emissions reduction obligations. *See* Transport Rule, 76 Fed. Reg. at 48,217, 48,289; NO_x SIP Call, 63 Fed. Reg. at 57,370, 57,449, 57,479.

246. *See generally* Sam Napolitano et al., *The NO_x Budget Trading Program: A Comprehensive, Innovative Approach to Solving a Regional Air Program*, 20 ELEC. J. 65 (2007).

247. *See* NO_x SIP Call, 63 Fed. Reg. at 57,356; Federal Implementation Plans to Reduce the Regional Transport of Ozone, 63 Fed. Reg. 56,394 (proposed Oct. 21, 1998) (to be codified at 40 C.F.R. pt. 52).

248. CLEAN AIR MKTS. DIV., U.S. ENVTL. PROT. AGENCY, EPA 430-R-06-013, NO_x BUDGET TRADING PROGRAM: 2005 PROGRAM COMPLIANCE AND ENVIRONMENTAL RESULTS (2006), <http://www.epa.gov/airtrends/2006/ozonebp/ozonebp.pdf>.

249. Transport Rule, 76 Fed. Reg. at 48,208.

250. *Id.* at 48,208. Each state could then submit either a full SIP or an "abbreviated SIP" that adopted certain provisions set out in EPA's FIP. *Id.* at 48,327.

251. *See* EPA v. EME Homer City Generation, L.P., 134 S. Ct. 1584 (2014) (approving Transport Rule); Michigan v. EPA, 213 F.3d 663 (D.C. Cir. 2000) (approving NO_x SIP Call). Both decisions cited *Chevron* deference as a reason for approving EPA's actions.

Source Performance Standards (“NSPS”) established under section 111 for new power plants, the Clean Power Plan established under section 111 for existing power plants, and methane emissions reductions standards for the oil and gas sector and municipal landfills. The question that arises is whether EPA and the states can integrate these existing rules with a more comprehensive GHG emissions regime established under section 115. The answer appears to be a straightforward “yes.” Indeed, integration of these statutory programs would be a fairly straightforward task for EPA and the states. Moreover, using section 115 to coordinate future regulation and to integrate the existing NSPS for gas- and coal-fired power plants, the Clean Power Plan, and the methane emissions reduction initiatives is lawful and makes good policy sense, as all of these sections are mutually supportive, allowing for both greater regulatory coherence and greater flexibility for states and industry than a piecemeal, sector-by-sector approach.

There are three key provisions of the Clean Air Act at play here: sections 111(b), 111(d), and 115. Section 111(b) gives EPA the authority to establish NSPS for stationary sources of an air pollutant.²⁵² Section 111(d) gives EPA the authority to establish procedures by which states can establish plans for implementing and enforcing performance standards for existing sources of a certain air pollutant, once EPA has already established NSPS for that pollutant under 111(b).²⁵³ In January 2014, EPA proposed NSPS for GHG emissions from new fossil fuel-fired power plants.²⁵⁴ In June 2014, EPA proposed performance standards for GHG emissions from existing power plants in its “Clean Power Plan Rule.”²⁵⁵ In October 2015, EPA published the final versions of both the NSPS²⁵⁶ and the Clean Power Plan.²⁵⁷ In addition, in August 2015 EPA issued a proposal under section 111(d) to reduce municipal solid waste landfills’ emission of pollutants other than methane by nearly one-third.²⁵⁸ And in September 2015, EPA proposed to amend the NSPS for the oil and natural gas source category by setting standards for both methane and volatile organic compounds (“VOCs”) for certain equipment, processes and activities in the sector.²⁵⁹

252. 42 U.S.C. § 7411(b) (2012).

253. *Id.* § 7411(d).

254. Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 1430 (proposed Jan. 8, 2014) (to be codified at 40 C.F.R. pts. 60, 70–71, 98).

255. Carbon Pollution Guidelines for Existing Stationary Sources: Electric Utility Generation Units, 79 Fed. Reg. 34,829 (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60).

256. Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,510 (Oct. 23, 2015) (to be codified at 40 C.F.R. pts. 60, 70–71, 98).

257. Carbon Guidelines, 80 Fed. Reg. at 64,661.

258. Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills, 80 Fed. Reg. 52,100 (proposed Aug. 27, 2015) (to be codified at 40 C.F.R. pt. 60).

259. Oil and Natural Gas Sector: Emission Standards for New and Modified Sources, 80 Fed. Reg. 56,593 (proposed Sept. 18, 2015) (to be codified at 40 C.F.R. pt. 60).

Assuming EPA established a national target for GHG emissions reductions under section 115 and allocated state budgets along one of the lines discussed above, these various section 111 standards could then be integrated with the section 115 requirements through the SIP revision process. As a practical matter, states and EPA regularly integrate existing clean air standards and programs, including section 111 performance standards, into SIPs.²⁶⁰ This may be accomplished either by (1) quantifying the reductions produced by existing standards and programs and using that number to reduce the baseline emissions forecast of a pollutant, or (2) incorporating the existing standards and programs by reference and claiming credit for the reductions they produce. The example below illustrates how this integrative process can work under the latter method:

Imagine that State X is in noncompliance with the National Ambient Air Quality Standard for sulfur dioxide (SO_x). Imagine also that State X has to submit a SIP that reduces SO_x emissions by 1000 tons per year to meet the NAAQS for SO_x. Finally, imagine that a section 111(d) plan for existing municipal solid waste landfills that seeks to reduce emissions of a non-criteria pollutant produces a co-benefit of SO_x reductions amounting to 200 tons. These 200 tons are surplus, required, enforceable, and quantifiable. The state can claim credit for the 200 tons and apply it to the 1000 tons required in the SIP, meaning other sources will need to reduce their SO_x emissions by only 800 tons.

In the same way, EPA can allow states to claim credit for section 111(b) and 111(d) plans for GHG emissions and apply those credits toward their section 115 targets.²⁶¹ What's more, if the timelines permit EPA could allow states to submit a combined plan for the Clean Power Plan and section 115, for instance, so as to conserve administrative resources, achieve greater efficiency, and promote regulatory coherence.

As a matter of statutory interpretation, there is little question that the integration of section 111 and section 115 programs is permissible. The plain meaning of

260. ROY S. BELDEN, *THE CLEAN AIR ACT* 57 (2001) (“[F]ederal NSPS may be delegated or a separate state NSPS approved as part of the SIP.”); Approval and Promulgation of Implementation Plans and Designation of Areas for Air Quality Planning Purposes; Louisiana; Baton Rouge Ozone Nonattainment Area: Redesignation to Attainment for the 1997 8-Hour Ozone Standard, 76 Fed. Reg. 53,853, 53,866 (proposed Aug. 30, 2011) (to be codified at 40 C.F.R. pts. 52, 81) (including federally-enforceable NSPS as part of the permanent and enforceable emissions controls implemented in SIP for ozone). These standards are also regularly integrated into Title V permits for individual facilities. See 40 C.F.R. § 70.2 (2015) (defining “applicable requirements” to be incorporated into Title V permits).

261. For methodologies for incorporating existing programs into implementation plans, see U.S. ENVTL. PROT. AGENCY, EPA-456/D-12-001A, *ROADMAP FOR INCORPORATING EE/RE POLICIES AND PROGRAMS INTO STATE AND TRIBAL IMPLEMENTATION PLANS* (2012), <http://www3.epa.gov/airquality/eere/pdfs/EEREmanual.pdf>. See also NICHOLAS INST. FOR ENVTL. POL’Y SOLS., *BEYOND CARBON DIOXIDE: CAPTURING AIR QUALITY BENEFITS WITH STATE SECTION 111(D) PLANS* 10–16 (2014), https://nicholasinstitute.duke.edu/sites/default/files/publications/wp_14-04.pdf (discussing ways to incorporate collateral criteria pollutant reductions from the Clean Power Plan into the NAAQS compliance regime).

the statutory language gives EPA authority to address domestic air pollution problems through section 111 and international air pollution problems through section 115.²⁶² These are mutually supportive provisions, and nothing in either provision suggests that overlapping air pollution problems must or even should be treated independently, or that Congress intended for an “either/or” choice as between them. To the extent that the Clean Air Act could be said to be silent or ambiguous on this point, an EPA interpretation that seeks to harmonize regulatory programs addressing GHG emissions—thereby increasing efficiency for federal regulators, states, and industry—would most likely be found to be a reasonable one.²⁶³

On a technical level, integration can be accomplished relatively straightforwardly. EPA could declare in its section 115 SIP call, as it has in the final Clean Power Plan Rule, that “existing state programs can be aligned with” the section 115 plan so long as the state program satisfies certain criteria and contains the requisite elements.²⁶⁴ Alternatively, EPA could use the SIP call to allow states to coordinate planning efforts and create a combined section 111/115 plan. The harmonization of different types of emissions measurements should also be workable. The final Clean Power Plan Rule calls for a rate-based emissions standard, but allows for states to convert that standard to a mass-based emissions standard.²⁶⁵ Given that existing GHG emissions trading regimes—including the Regional Greenhouse Gas Initiative, the California Greenhouse Gas Cap-and-Trade Program, and the European Union Emissions Trading System—all utilize mass-based emissions standards, a section 115 regime would likely utilize a mass-based emissions standard. Presumably, a section 115 SIP call could use a similar formula to that permitted in the final Clean Power Plan Rule to allow for conversion from rate-based emissions reductions achieved through 111(d) to mass-based emissions reductions.

Any preexisting regulation of stationary sources under section 111 thus can be integrated with a section 115 program. But compared with additional regulation of other individual stationary source categories under section 111, a comprehensive program under section 115 is more sensible. Indeed, although EPA has finalized NSPS and a 111(d) rulemaking for power plants, and has initiated

262. *See* *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 842 (1984) (in interpreting a statute, “[f]irst, always, is the question whether Congress has directly spoken to the precise question at issue”). It bears noting that while the trigger for exercising EPA’s authority under section 111 is danger to domestic health and welfare, EPA may still consider the global benefits of action in calibrating its greenhouse gas standards under section 111, and in particular may use the global Social Cost of Carbon metric to evaluate such standards.

263. *Id.* at 843 (“[I]f the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the Agency’s answer is based on a permissible construction of the statute.”).

264. Carbon Guidelines, 80 Fed. Reg. at 64,668.

265. A rate-based emissions standard measures emissions in pounds of pollutant emissions per unit of generating output. A mass-based emissions standard measures emissions in tons of carbon emissions.

rulemakings for certain oil and gas sector operations and for municipal landfills, there are many other source categories that remain to be regulated. Individually, source categories like oil refineries, steel mills, chemical plants, pulp and paper mills, and cement plants are much smaller emitters than power plants, but collectively they are a significant source of emissions.²⁶⁶ One analysis recently estimated that to meet the United States' international pledge of a twenty-six to twenty-eight percent reduction by 2025, emissions from these sources must be reduced by eighteen percent.²⁶⁷ EPA could undertake a separate rulemaking for each of potentially dozens of industrial source categories, but this would be time-consuming and expensive for the Agency and burdensome for state regulators to implement. It would also result in a series of industry-specific rules that would deny the industrial sources the flexibility and cost-savings that could occur under a market-based approach that would allow cross-sectoral trading.

In comparison, addressing these emissions through one section 115 proceeding offers multiple advantages. For EPA and the states, section 115 allows consolidation of multiple separate rulemakings into a single process. The SIP process through which a section 115 regime would take shape would also allow the states maximum flexibility, including the opportunity to incorporate the use of market mechanisms.²⁶⁸ It is likely that relatively low-cost emissions reductions will remain in the power sector even after implementation of the Clean Power Plan.²⁶⁹ Recognizing this, states could reasonably conclude that a cross-sectoral emissions credit trading program among the different source categories is the most efficient and lowest-cost way to reduce GHG emissions. This would provide industrial sources the option of buying allowances from the power sector to meet their emissions reduction obligations, thereby reducing costs for the industrial sector while simultaneously providing additional economic opportunity for the power sector. This kind of broad market-based flexibility appears to be a special feature of regulation under section 115.

266. EPA estimates that collectively, industrial sources of GHG emissions are responsible for fifteen percent of U.S. emissions, compared to thirty-seven percent for the electricity sector. U.S. ENVTL. PROT. AGENCY, 430-R-15-004, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2013, at ES-5 tbl.ES-2 (2015), <http://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2015-Main-Text.pdf>.

267. Hausker et al., *supra* note 1, at 12.

268. 42 U.S.C. § 7410 (2012); *see also* Virginia v. EPA, 108 F.3d 1397 (D.C. Cir. 1997).

269. The Clean Power Plan will reduce power plant emissions by thirty-two percent below 2005 levels by 2030. U.S. ENVTL. PROT. AGENCY, OVERVIEW OF THE CLEAN POWER PLAN: CUTTING CARBON POLLUTION FROM POWER PLANTS (2015), <https://www.epa.gov/sites/production/files/2015-08/documents/fs-cpp-overview.pdf>. According to the Energy Information Administration, however, emissions reductions of over sixty percent below 2005 levels are possible from the power sector under a \$25-ton carbon price that increases by five percent (real) per year. Compare ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2014 App. D tbl.D5 (2014), [http://www.eia.gov/forecasts/aeo/pdf/0383\(2014\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2014).pdf) (showing electric power emissions of 826 million metric tons in 2030 under the \$25 carbon price case), with ENERGY INFO. ADMIN., EMISSIONS OF GREENHOUSE GASES IN THE U.S. fig.15 (2011), http://www.eia.gov/environment/emissions/ghg_report/ghg_carbon.cfm (showing electric power emissions of 2.417 billion metric tons in 2005). Hausker et al. estimate that power sector emissions reductions of over fifty percent below 2005 levels by 2030 would be cost effective. Hausker et al., *supra* note 1, at 4.

In addition, under a section 115 SIP, states could claim credit for GHG emissions reductions that result from efforts in areas not covered under section 111, such as non-section 111 industrial sources, commercial and residential sources, transportation fuels, or urban transportation planning.²⁷⁰ These credits could, in turn, reduce the emissions reductions necessary from individual source categories.

Finally, a section 115 regime would provide an important legal backstop for EPA's other regulatory efforts. Although EPA's GHG regulations—including the NSPS for power plants and the Clean Power Plan—should be found to be permissible interpretations of the Clean Air Act and should withstand legal challenge, there is a risk that in the course of anticipated litigation the courts will find otherwise. In the event a court overturns all or a part of these rules, EPA would nonetheless have authority to comprehensively regulate GHG emissions in the United States under section 115. Moreover, in the event of a loss in court, states and industry actors who have made or planned to make investments in anticipation of GHG emissions regulations would not lose the benefits of their foresight. Rather, they would be able to receive full credit for their GHG emissions reductions under section 115.

E. TRANSPORTATION FUELS REGULATION

One potential challenge for state policymakers and EPA (in the event it produces a model implementation plan or a FIP) will be how to address GHG emissions from transportation fuels. The challenge is worth thinking about: The combustion of fossil fuels for transportation is the second-largest contributor to total greenhouse gas emissions in the United States, accounting for about twenty-seven percent of GHG emissions.²⁷¹ Section 115 would enable states to develop implementation plans that could employ transportation fuels regulation, expanding the universe of covered sources. The most attractive option might be to integrate transportation fuels into a cross-sectoral, interstate market-based trading program, thus achieving the cost-savings and efficiency of a universal cap. In such a market-based trading system, suppliers would hold emissions allowances based on the carbon content of the fuels they sell, as a reliable proxy for actual downstream emissions that will result from combustion by end-users. Alternatively, states might opt for a low carbon fuel standard ("LCFS") under a section 115 SIP. A carbon tax and other approaches would also be available to states under section 115.

270. See WORLD RES. INST., *supra* note 5, at 4 (noting that energy efficiency measures account for eight percent of necessary GHG emissions reductions).

271. *Sources of Greenhouse Gas Emissions*, U.S. ENVTL. PROT. AGENCY, <http://www3.epa.gov/climatechange/ghgemissions/sources/transportation.html> (last visited Feb. 21, 2016).

At the federal level, EPA regulates transportation greenhouse gas emissions both through fleet-wide emission standards for new motor vehicles (which are primarily satisfied by improvements in fuel economy)²⁷² and through annual quotas for renewable fuel use (the “renewable fuel standard”).²⁷³ State transportation fuel regulations must co-exist with these existing federal regulations. Pursuant to section 211(c)(4)(a) of the Clean Air Act, states are authorized to regulate vehicle-fuel emissions so long as EPA has neither implemented its own controls for the relevant pollutant under section 211(c)(1), nor issued a formal finding that no controls are necessary. Because EPA has never set direct limits on greenhouse gas emissions from vehicle fuels, and EPA’s renewable fuel standard comes under a separate Clean Air Act provision (Section 211(o)), state plans under a section 115 regime would be able to set limits on emissions from transportation fuels. If EPA later decides to set direct limits on greenhouse gas emissions from fuels,²⁷⁴ conflicting state fuel standards may be preempted by EPA regulations, pursuant to section 211(c)(4)(a). However, states could request a waiver from this provision, rely on a pre-existing waiver, or potentially credit emissions reductions that exceed the federal standards through offset programs.²⁷⁵

1. Including GHGs from Transportation Fuels in Emissions Trading Programs

In a market-based trading system, fuel suppliers would hold emissions allowances based on the carbon content of the fuels or gas they sell, as a reliable proxy for actual downstream emissions that will result from combustion by end-users. States could freely allocate allowances to these suppliers or require the suppliers to purchase them in an auction, or directly from other covered sources. State plans adopting this approach would encompass GHG emissions from both stationary and mobile sources, thus achieving the cost-saving efficiency of a broad-based cap.

California’s cap-and-trade program is a good model for how such a program could operate. California incorporated transportation fuels in its cap-and-trade program beginning in January 2015.²⁷⁶ Transportation fuel suppliers need to

272. The National Program for greenhouse gas emissions and fuel economy standards was developed jointly by EPA and the National Highway Traffic Safety Administration and applies to light duty cars and trucks in model years 2012-2016 (first phase) and 2017-2025 (second phase). *See, e.g.*, 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624, 62,624 (Oct. 15, 2012) (to be codified at 40 C.F.R. pts. 85, 86, 600).

273. 2014 Standards for the Renewable Fuel Standard Program, 78 Fed. Reg. 71,732, 71,734 (proposed Nov. 29, 2003) (to be codified at 40 C.F.R. pt. 80).

274. *See* Petition from Inst. for Pol’y Integrity, NYU Sch. of Law, to EPA for Rulemaking Under Sections 211 and 231 of the Clean Air Act to Institute a Cap-and-Trade System for Greenhouse Gas Emissions from Vehicle Fuels (July 29, 2009), <http://policyintegrity.org/documents/7.29.09IPIPetitiontoEPA.pdf>.

275. *See* 42 U.S.C. §§ 7545(c)(4)(B), 7543(b) (2012).

276. California has already initiated a program to regulate these emissions and incorporate them into the state’s trading program. *See* CAL. CODE REGS. tit. 17, § 95802(a)(161) (2015); *see also* Cal. Air Res. Bd.,

purchase allowances covering the full amount of their greenhouse gas emissions.²⁷⁷ Suppliers can then pass on the full cost of those allowances to consumers, through higher fuel prices. To avoid “regressive effects” on lower-income consumers, who spend a great percentage of their income on fuel, the California Air Resources Board (“CARB”) has discussed a per capita consumer rebate program that would distribute a lump sum portion of auction proceeds to residents. The California Legislature would need to adopt such a program.

A state seeking to use this approach will have to determine the appropriate point at which to regulate. Transportation fuels are channeled through a complex system, with an “upstream” moment when the fuel enters the economy, a “downstream” moment when the fuel is combusted and GHGs are released into the atmosphere, and “midstream” moments when the fuel is being transported between supply and demand. An “upstream” regulatory approach would regulate fuels at the point at which the energy is produced, such as the well or refinery. As a practical matter, this would be difficult to implement under a section 115 regime, as most producers are located in a small number of states, yet end-user greenhouse gas emissions occur in all 50 states. A truly “downstream” approach would regulate at the point of emission: the tailpipe. The most effective means of achieving this type of regulation would be through a carbon tax on gasoline, which has proven politically difficult.

California has addressed this issue by regulating fuels midstream. In California, transportation fuels are regulated upon exit from the fuel distribution terminal, or “rack.” A terminal rack refers to the fuel pump mechanism that delivers fuel from the terminal storage tanks into trucks, trailers, or railcars for distribution.²⁷⁸ In California, the owner of the fuel when it is moved out of the fuel terminal and into the distribution system (such as truck, rail, or pipeline) must comply with all cap-and-trade requirements.²⁷⁹ The rack is a convenient point of regulation for California because it is also the point at which all fuel taxes are assessed. For any fuels that enter California without passing through California’s terminal racks, California requires suppliers to report the volumes delivered and sold to fueling stations. Such fuel suppliers are termed “enterers,” and are required to report as fuel suppliers if they import transportation fuels outside of the bulk terminal system in quantities exceeding the state’s reporting threshold.²⁸⁰

A similar midstream approach could be appealing for other states. Many other states also assess their gas taxes at terminal racks, making this an attractive

Greenhouse Gas Reporting Guidance for Suppliers of Transportation Fuels and Natural Gas Fuel § 2.1 (Feb. 25, 2016), <http://www.arb.ca.gov/cc/reporting/ghg-rep/guidance/fuel-supplier.pdf>.

277. See CAL. CODE REGS. tit. 17, § 95852.

278. *Id.* § 95121; see also Cal. Air Res. Bd., *supra* note 276, § 2.1.

279. Cal. Air Res. Bd., *supra* note 276, § 2.2.

280. CAL. CODE REGS. tit. 17, §§ 95101, 95812(d)(1); see also Cal. Air Res. Bd., *supra* note 276, § 2.1.

method of regulation that could be scaled up in a potential section 115 regime.²⁸¹ Even a small state, such as Rhode Island, has six fuel terminals and collects all tax on motor fuels at the terminals.²⁸² States must be careful not to regulate fuel suppliers more than once, and to only regulate fuels with a final destination in their state; however, this is already accounted for in assessing gas taxes. By using the same point of regulation for state gas taxes and greenhouse gas regulation, states may increase efficiency and reduce government and industry compliance burdens.

EPA may also need to address transportation fuel emissions under a section 115 FIP. The same legal rationale that authorizes EPA to issue a section 115 FIP, discussed above, applies equally here. EPA has authority to regulate transportation fuels directly.²⁸³ The Agency could include transportation fuels under the emissions trading program it establishes in the FIP.

2. Alternative Transportation Fuels Emissions Reduction Strategies

In considering a potential section 115 program and corresponding state implementation plans, policymakers would have several additional options for addressing emissions from transportation fuels, including carbon taxes, low carbon fuel standards, and regional transportation planning.

Carbon taxes would be a permissible element of a section 115 SIP because section 110(a)(2)(A) expressly authorizes states to use “economic incentives such as fees” to reduce emissions.²⁸⁴ Carbon taxes are in use in several places, including Finland, Sweden, Great Britain, Quebec, and British Columbia. The program in British Columbia, for example, taxes different fossil fuels at different rates depending upon the intensity of their carbon emissions. Moreover, a carbon tax need not be limited to transportation fuels; a section 115 state implementation plan could adopt a carbon tax for multiple sources and source categories. A properly calibrated carbon tax would provide an economic incentive for all regulated sources to reduce emissions. The design of a carbon tax involves similar choices and trade-offs as those involved in designing a cap-and-trade program. State carbon taxes could only be imposed on greenhouse gas emissions from specified sources and activities within the state’s legal jurisdiction.

Another alternative to a cap-and-trade program that would cover the transportation sector is a fuel performance standard, LCFS. An LCFS typically sets a

281. For example, the current excise tax on vehicle fuels in Washington, or the “gas tax,” is charged at the terminal rack. *See* WASH. CARBON EMISSIONS REDUCTION TASKFORCE, INCLUDING TRANSPORTATION IN A WASHINGTON STATE CAP-AND-TRADE SYSTEM: WHY AND HOW? 2 (2014), http://www.governor.wa.gov/issues/climate/documents/20140909_CERT_MeetingMaterials.pdf.

282. Telephone interview with David M. Sullivan, Tax Adm’r, R.I. Div. of Taxation, conducted by Jayni Hein (Nov. 7, 2014).

283. *See* 42 U.S.C. § 7545(c) (2012).

284. *Id.* § 7410(a)(2)(A).

target for life-cycle greenhouse gas or emissions intensity from transportation fuels. The most effective LCFS would cover all existing transportation fuels, and would include future energy sources (e.g., advanced biofuels that have not yet been developed), which could be phased in at a later date. State LCFS programs under a section 115 regime could be designed to link to California's existing LCFS, and to harmonize with existing federal standards.

In 2007, California established a state LCFS, a performance standard mandating a ten percent reduction in the full lifecycle carbon intensity of California's fuel mix by 2020.²⁸⁵ In 2011, California's LCFS was challenged in federal court by industry groups who claimed that it violated the dormant Commerce Clause of the U.S. Constitution.²⁸⁶ The Ninth Circuit Court of Appeals held that the LCFS did not facially discriminate against out-of-state ethanol or oil producers because it made geographic distinctions based on carbon impact and intensity of various fuels, rather than based purely on state-of-origin.²⁸⁷ The Ninth Circuit then remanded the case to the district court to determine whether the ethanol provisions discriminate in purpose or effect.²⁸⁸ In August 2015, the district court dismissed the claims regarding the LCFS's crude oil provisions, but allowed plaintiffs to proceed with their claim that the ethanol provisions discriminate against interstate and foreign commerce.²⁸⁹ That claim will ultimately be determined through the application of the balancing test laid out in *Pike v. Bruce Church*.²⁹⁰

State programs to encourage public transportation, high-density infill development, and energy efficiency could also be part of state implementation plans. For

285. Cal. Exec. Order No. S-01-07, Low Carbon Fuel Standard (2007); see also ALEXANDER E. FARREL & DANIEL SPERLING, UC DAVIS INST. OF TRANSP. STUDIES, A LOW-CARBON FUEL STANDARD FOR CALIFORNIA, PART 2: POLICY ANALYSIS (2007), http://www.energy.ca.gov/low_carbon_fuel_standard/UC_LCFS_study_Part_2-FI_NAL.pdf. CARB assigns carbon intensity baseline values to different fuels based on the source of fuel involved, such as biomass or crude oil, as well as the "pathways" used to deliver the fuel to consumers. See CAL. CODE REGS. tit. 17, § 95486. A fuel provider generates credits, if the carbon intensity of its product is lower than the statewide average. Fuels with a score above the statewide average will create deficits that providers must offset with previously accumulated credits or by purchasing credits from other regulated entities. *Id.* California exempts certain fuels from its program, including those used for aircraft, racing vehicles, locomotives, and ocean vessels. *Id.* § 95482.

286. *Rocky Mountain Farmers Union v. Goldstene*, 843 F. Supp. 2d 1071 (E.D. Cal. 2011), *rev'd sub nom.* *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013). The federal district court held that the LCFS facially discriminated against out-of-state ethanol, impermissibly engaged in the extraterritorial regulation of ethanol production, discriminated against out-of-state crude oil in purpose and effect, and was not saved by California's preemption waiver in the Clean Air Act.

287. *Id.*

288. *Rocky Mountain Farmers*, 730 F.3d at 1100.

289. *Am. Fuels & Petrochem. Mfrs. Ass'n v. Corey*, Nos. 1:09-cv-2234, 1:10-cv-163 (E.D. Cal. Aug. 13, 2015).

290. See *Pike v. Bruce Church*, 397 U.S. 137, 142 (1970) ("[W]here the statute regulates evenhandedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits.").

example, in California, regional transportation planning to reduce motor-vehicle use is part of the AB 32 Scoping Plan²⁹¹ and led to passage of SB 375, the Sustainable Communities and Climate Protection Act of 2008.²⁹² SB 375 instructs the California Air Resources Board to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization for each region must then develop a “Sustainable Communities Strategy” that integrates transportation, land-use, and housing policies to plan for achievement of the emissions target for their region. In the same manner, other states could develop regional transportation targets to reduce vehicle emissions in their section 115 implementation plans.

In short, Clean Air Act section 115 could likely be used to regulate emissions from transportation fuels, highlighting one of the main benefits of a section 115 regulatory approach: the ability to reach multiple sectors and enable cross-sector trading, which provides efficiency gains. State and federal policymakers should consider whether greenhouse gas reductions would be best achieved through a cap-and-trade program or other viable methods, such as carbon taxes or performance standards. Moreover, many of the considerations that apply to regulating transportation fuels would also apply to regulating commercial and consumer natural gas. Reaching these sources through an emissions trading program created through a section 115 SIP or carbon tax would be relatively straightforward.²⁹³

F. OFFSETS

The final implementation issue we address in this article is whether section 115 permits the use of offsets, and whether EPA could impose quality- or quantity-based restrictions on the use of offsets in state implementation plans under section 115. Offsets enable a pollution source that is subject to regulatory emissions standards to earn credit for the emissions reductions or sequestrations achieved by an actor not covered under the same regulatory scheme. As with all flexibility mechanisms, the primary objective of offsets is to achieve the same environmental goals at lower compliance costs—or to achieve additional environmental gains by supporting increased regulatory stringency without raising overall compliance costs—by taking advantage of potentially low-cost abatement opportunities in unregulated sectors. A secondary advantage of offsets is the

291. CAL. AIR RES. BD., CLIMATE CHANGE SCOPING PLAN (2008), http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf.

292. 2008 Cal. Stat. c. 728, at 5065 (codified as amended in scattered sections of the Cal. Gov't Code and the Cal. Pub. Res. Code).

293. In regulating commercial and consumer natural gas through section 115, states could require the local utility or distribution company obtain allowances equal to the emissions that will be generated in the state when the fuel is consumed. For example, California regulates emissions from commercial and residential use of natural gas. *See* CAL. CODE REGS. tit. 17, §§ 95852, 95811 (2015).

potential stimulation of activity and innovation in unregulated sectors, including, in the case of international offsets, knowledge transfers to and engagement with developing countries.

When carefully regulated, offsets have been successfully incorporated into cap-and-trade programs. In California, emitting sources can use offsets to satisfy up to eight percent of their compliance obligation.²⁹⁴ These offsets have been estimated to reduce marginal compliance costs from over \$100 per ton to under \$20 per ton, while maintaining program integrity by meeting high quality standards.²⁹⁵ On the other hand, the EU has been criticized for allowing poor quality offsets to undermine program integrity.²⁹⁶

There are two basic types of offsets: offsets that reduce emissions from otherwise unregulated sources and offsets that result from sequestration of greenhouse gases already in the atmosphere. From the perspective of a state's implementation plan, these two types of offsets could occur in three different locations: inside the state, outside the state but inside the United States, or in other nations. This creates a matrix of six possible categories of offsets: (1) in-state emission-reduction offsets; (2) in-state sequestration offsets; (3) inter-state emission-reduction offsets; (4) interstate sequestration offsets; (5) foreign emission-reduction offsets; and (6) foreign sequestration offsets.

Under section 115, EPA should have considerable discretion to allow or disallow offsets in these categories. Moreover, as section 115's obligations are implemented through section 110's SIP process, section 110's explicit authorization of "economic incentives" suggests that cost-minimizing compliance options like offsets should be broadly available under section 115. The only offset category the Agency may not be able to prohibit is in-state emission-reduction offsets. For any category of offsets that EPA permits, the Agency should have broad authority to set quality standards that ensure that only real, verifiable offsets count toward compliance.

EPA's discretion is most limited in the case of intrastate offsets from uncovered sources that reduce emissions. Section 115 requires states to revise their implementation plans to "prevent or eliminate the endangerment" to foreign nations from air pollution in the United States.²⁹⁷ The provision never mentions placing controls on any specific sources or sectors. In fact, the law is clear that under

294. BRIEANNE AGUILA, CAL. AIR RES. BD., CALIFORNIA'S COMPLIANCE OFFSET PROGRAM (2014), https://www.thepmr.org/system/files/documents/ARB%20Offsets%20PMR%20webinar%202014%20FINAL_Mexico.pdf.

295. ENVTL. DEF. FUND, HOW HIGH QUALITY OFFSETS KEEP COST LOW AND DRIVE ENVIRONMENTAL CO-BENEFITS IN CALIFORNIA'S CAP-AND-TRADE REGULATION (2013), http://www.edf.org/sites/default/files/Cap_and_trade_offsets_basics-FINAL_March_1_2013.pdf.

296. Anja Kollmuss et al., *Has Joint Implementation Reduced GHG Emissions?: Lessons Learned for the Design of Carbon Market Mechanisms* 5–6 (Stockholm Env't Inst., Working Paper 2015-07, 2015), <http://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-WP-2015-07-JI-lessons-for-carbon-mechs.pdf>.

297. 42 U.S.C. § 7415(a)–(b) (2012).

section 110, states may select their own mix of flexible compliance options when devising plans to meet section 115's obligations.²⁹⁸ So long as the SIP satisfies the state's section 115 obligation by achieving the emissions target set by EPA, the state should have authority to count emissions reductions from any source within the state, including offsets from otherwise unregulated sources of emissions.²⁹⁹

EPA is likely to have discretion to allow or disallow the other five types of offsets. In the case of interstate emissions-reduction offsets, EPA would have discretion to interpret both the language in section 115(a) calling for notification of "*the State in which* such emissions originate" of the need to revise its implementation plan,³⁰⁰ as well as the general absence in both sections 115(b) and 110 of any limitation on SIPs restricting out-of-state efforts. As a result, EPA should have discretion either to require that all reductions occur inside the state, which would prevent use of interstate emission-reduction offsets, or to allow states to satisfy their obligations by obtaining reduction credits from outside the state, which would permit these offsets. However, prohibition of interstate offsets could complicate the legal authority for interstate trading.³⁰¹

EPA is even more likely to have discretion to authorize or not authorize international emission-reduction allowances. Section 115 applies to "any air pollutant or pollutants emitted in the United States" that endanger other countries.³⁰² EPA could reasonably interpret this language as requiring that all reductions required under section 115 be from "pollutants emitted in the United

298. *Train v. Nat. Res. Def. Council, Inc.*, 421 U.S. 60, 79 (1975) ("[S]o long as the ultimate effect of a State's choice of emission limitations is compliance with the national standards for ambient air, the State is at liberty to adopt whatever mix of emission limitations it deems best suited to its particular situation."); *Texas v. EPA*, 690 F.3d 670, 675 (5th Cir. 2012); *Bethlehem Steel Corp. v. Gorsuch*, 742 F.2d 1028, 1036 (7th Cir. 1984) ("EPA determines the ends—the standards of air quality—but Congress has given the states the initiative and a broad responsibility regarding the means to achieve those ends through state implementation plans."); *Wildearth Guardians v. McCarthy*, No. 13-CV-1275-WJM-KMT, 2014 WL 943136, at *5 (D. Colo. Mar. 11, 2014) ("An important aspect of the CAA is each state's 'wide discretion' in formulating its SIP." (citing *United Elec. Co. v. EPA*, 427 U.S. 246, 250 (1976); *Train*, 421 U.S. 60)).

299. *See, e.g., Train*, 421 U.S. at 79 ("The Act gives the Agency no authority to question the wisdom of a State's choices of emission limitations if they are part of a plan which satisfies the standards of § 110(a)(2)."); *Ala. Envtl. Council v. EPA*, 711 F.3d 1277, 1280 (11th Cir. 2013) ("If the SIP revision meets the requirements in the Clean Air Act, the EPA must approve it."); *Michigan v. EPA*, 213 F.3d 663, 668 (D.C. Cir. 2000) ("[T]he states remain free to implement other 'cost-effective' and 'reasonably cost-effective' measures in place of the ones identified by EPA."); *Texas v. EPA*, 690 F.3d at 675; *Virginia v. EPA*, 108 F.3d 1398 (D.C. Cir. 1997) (applying *Train*, 421 U.S. 60).

300. 42 U.S.C. § 7415(a) (emphases added).

301. It is unclear whether EPA could allow interstate trading of GHG allowances while prohibiting use of interstate emission-reduction offsets. The rationale for prohibiting interstate emission-reduction offsets—namely, that the emissions reductions must be achieved within the state—would appear to apply equally to interstate trading. As a practical matter, allowing interstate trading while prohibiting interstate offsets would not be an effective strategy, because sources in other states could game the system by using offsets in their states to generate tradable allowances, nullifying the effect of the prohibition on interstate offsets.

302. 42 U.S.C. § 7415(a).

States.” On the other hand, the reciprocity language in section 115(c) expressly contemplates an internationally collaborative approach to global pollution problems.³⁰³ The legislative history also emphasizes the importance of “cooperative action with foreign countries.”³⁰⁴ Because the statutory language is silent, EPA could permissibly interpret the internationalism embodied in section 115 as allowing foreign emission-reduction offsets.

Offsets involving sequestration, such as those resulting from planting trees or capturing carbon in other plants or soil, present a slightly different question. In the case of sequestration offsets, no pollution-emitting sources are reducing their emissions; instead, they are seeking to claim a credit for activities that pull GHGs out of the atmosphere. Section 115 references “pollution emitted in the United States,” but the statute is silent on whether EPA must therefore require states to reduce gross emissions or if a net reduction in total GHG pollution is sufficient. EPA could read the statute narrowly to require states to come into compliance exclusively through emissions reductions or more broadly to permit states to claim credits for efforts to sequester GHGs from the atmosphere.

After EPA decides what categories of offsets to permit or deny, the Agency must also determine what quality standards the offsets must meet. Under section 110, EPA is charged with reviewing the adequacy of state implementation plans, which must be “enforceable,”³⁰⁵ “insur[e] compliance” with section 115 requirements,³⁰⁶ and provide for adequate personnel to ensure compliance.³⁰⁷ These provisions give EPA authority to require that offsets are: (1) quantifiable and measured against a realistic baseline; (2) “real” (i.e., not fraudulent or accounting artifacts), “additional” (i.e., would not have occurred otherwise without the financial incentive provided by the offset credit), and have not caused “leakage” (e.g., not allowing offsets from a deforestation program in one region to shift deforestation to another region); (3) monitored and permanent (e.g., preventing reforestation credits from being erased years later by fire); and (4) unambiguously owned and not double counted.³⁰⁸ In fact, existing EPA regulation of

303. *Id.* § 7415(c).

304. S. REP. NO. 89-192, at 6 (1965).

305. 42 U.S.C. § 7410(a)(2)(A).

306. *Id.* § 7410(a)(2)(D)(ii).

307. *Id.* § 7410(a)(2)(E).

308. *See, e.g.*, OFFSET QUALITY INITIATIVE, ENSURING OFFSET QUALITY: INTEGRATING HIGH QUALITY GREENHOUSE GAS OFFSETS INTO NORTH AMERICAN CAP-AND-TRADE POLICY (2008), http://www.offsetqualityinitiative.org/pdfs/OQI_Ensuring_Offset_Quality_7_08.pdf. Another common quality goal for offsets may be harder for EPA to enforce under sections 110 and 115. Ideally, offsets should do no harm, or at least the marginal benefits compared with traditional compliance options should outweigh any additional harm. For example, some mine methane capture or mitigation techniques can risk explosions, putting miners in danger. *See* HARWORTH POWER LTD., CMM FLARING (2007), http://www.epa.gov/cmop/docs/cmm_conference_sep07/uk_coal_flaring.pdf. Yet except for certain air-related countervailing risks, it is not clear that EPA has any authority under sections 110 and 115 to block offsets that would create such additional costs. Of course, other regulatory authorities, perhaps wielded by other agencies or governments, may sometimes be able to directly address such countervailing risks.

offsets under the Clean Air Act's nonattainment new source review program sets some similar quality goals for state implementation plans.³⁰⁹ EPA can also ensure that states adopt a reliable and adequate mix of quality assurance techniques—such as third-party verification, regular audits, and a discount factor to account for uncertain quality—and can also require monitoring and reporting.³¹⁰

California's example shows the role that quality requirements can play. The California Air Resources Board could have authorized about 62.5 million offset credits from 2013 through February 2016 (when this paper was drafted) as by state law covered sources may count offsets toward compliance for eight percent of annual allowance budgets.³¹¹ The Air Resources Board, however, approved only about 38.4 million credits through February 2016 as meeting the state's standards.³¹² Even though California's law allows international offsets, none have yet been qualified as meeting the state's requirements.³¹³ Enforcement has also been used to ensure the quality of offsets in California's program. The state recently concluded an investigation into 4.3 million offsets for quality violations and invalidated 89,000 credits as faulty or fraudulent.³¹⁴

Finally, EPA may have avenues to limit the quantity of offsets in a SIP. One approach could be to develop a model offset program containing a quantity limit that states could elect to incorporate into their SIPs. Another might be to allow states access to a quantity-limited pool of offsets pre-approved by EPA. In the case of international offsets, an additional approach EPA could consider would be to allow offsets only from nations with which the United States has entered into an agreement that ensures the quality of the offsets and protects against double-counting. A component of the agreement could be an understanding that the foreign nation would limit the quantity of offsets available for compliance with section 115.

309. *E.g.*, 40 C.F.R. § 51.165(a)(3)(ii)(C)(1)(i) (2015) (“Emissions reductions . . . may be generally credited for offsets if they . . . are surplus, permanent, quantifiable, and federally enforceable.”).

310. 42 U.S.C. § 7410(a)(2)(F)(i)–(ii). However, courts hesitate to allow the Agency to reject a state's selection of one quality assurance technique over another. *See, e.g.*, *Texas v. EPA*, 690 F.3d 670, 681–84 (5th Cir. 2012) (“EPA disapproved the [monitoring, record-keeping, and recording] provisions as . . . too vague and not replicable We find that the EPA's action amounts to an insistence on a particular control measure and is inconsistent with the principles of cooperative federalism that are an essential part of the [Clean Air Act.]”).

311. *See* BGC ENVTL. BROKERAGE SERVS., CALIFORNIA CARBON CAP AND TRADE OFFSETS OVERVIEW: REGULATIONS AND TRADING 12 (2011), <http://www.climateactionreserve.org/wp-content/uploads/2009/05/BGC-Carbon-Offsets-Market-Overview.pdf>. The potential offset budget for years 2013 and 2014 collectively was 26.8 million credits. *Id.* The potential offset budget for years 2015–2017 is 91.8 million credits total, which, on average, is about 2.55 million credits per month. *Id.* From the start of 2013 through the end of February 2016, therefore, the potential offset budget was 26.8 million [years 2013 and 2014] + 30.6 million [year 2015] + 5.1 million [January and February 2016] = 62.5 million. *See id.*

312. CAL. AIR RES. BD., ARB OFFSET CREDITS ISSUED 1 (2016), https://web.archive.org/web/20160317072216/http://www.arb.ca.gov/cc/capandtrade/offsets/issuance/arb_offset_credit_issuance_table.pdf.

313. *International Sector-Based Offset Credits*, CAL. AIR RES. BD., <http://www.arb.ca.gov/cc/capandtrade/sectorbasedoffsets/sectorbasedoffsets.htm> (last updated Mar. 16, 2016).

314. Gloria Gonzalez, *Despite Market Outcry, California Voids Some Carbon Offsets*, ECOSYS. MARKET-PLACE (Nov. 14, 2014), <http://www.ecosystemmarketplace.com/articles/despite-market-outcrycalifornia-voids-carbon-offsets/>.

CONCLUSION

Section 115 of the Clean Air Act is an untapped, but potent source of federal authority to regulate greenhouse gas emissions and help achieve the United States' long-term climate change goals. These goals include achieving significant GHG emissions reductions in an economically and administratively efficient manner that provides for ample flexibility for states and regulated entities and opportunities for continuing innovation. EPA and the states could implement a section 115 regime with less difficulty than the current sector-by-sector, source-by-source approach. It would allow EPA and the states to combine multiple sectors and source types in a single rulemaking that could establish a nationwide, cross-sectoral emissions trading program. This program would arguably provide the most effective and efficient means of furthering climate action in the United States in the absence of new legislation.

Regulation of GHG emissions under section 115 would also be legally defensible. There is no question that GHG emissions are causing and contributing to anthropogenic climate change, nor that climate change endangers the public health, welfare, wellbeing, and in some instances the very existence of foreign countries. In addition, the conferral of mutual procedural rights and shared substantive commitments to GHG emissions reductions made by the United States and other countries through the UNFCCC, including the Paris Agreement, and multiple bilateral and multilateral arrangements establish reciprocal benefits that satisfy section 115's reciprocity requirement. Indeed, the very purpose of section 115 is to enable the United States to cooperate more effectively with foreign countries to address international air pollution problems.

Finally, the issues that would arise in implementing a section 115 regime are complex, but manageable. EPA is well-positioned to establish a national aggregate GHG emissions reduction target, to allocate emissions among the states, to integrate existing climate change regulations with a new section 115 program, to incorporate transportation fuels and commercial and residential natural gas, and to determine whether and how to utilize emissions offsets in an emissions trading program. The benefits of working through these issues would be significant. Ultimately, regulation of GHG emissions under section 115 would provide EPA with the opportunity to develop a comprehensive, market-based, nationwide platform that would increase the scope of emissions covered, streamline administrative efforts, and maximize market efficiencies.

The United States has pledged to reduce GHG emissions to a degree that likely requires action beyond current regulatory efforts. And in order to avoid the worst impacts of climate change, the nation and the world will have to go far beyond current pledges. Section 115 offers a statutory basis to pursue our current and future GHG emissions reduction ambitions, and could provide the tools we need to address climate change in an effective and efficient manner.