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VIA E-MAIL AND CERTIFIED MAIL

**Petition 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**

Dear Acting Administrator Perciasepe,

Pursuant to the Administrative Procedure Act, 5 U.S.C. § 553(e), the Clean Air Act, 42 U.S.C. § 7401 et seq., and other relevant regulations and practices, the Institute for Policy Integrity (Policy Integrity)¹ hereby files this Petition with the Environmental Protection Agency (EPA) to initiate rulemaking proceedings and a call for information under the Clean Air Act. Specifically, Policy Integrity requests that EPA take required actions under Section 115, Title VI, Section 111, and Title II of the Clean Air Act to control greenhouse gas emissions.²

Section 115 creates a mandatory duty for EPA to respond to U.S. emissions that endanger public health and welfare in foreign countries. All the prerequisites for action under Section 115 have been satisfied for greenhouse gases: EPA has already acknowledged—based in part on reports from an international body—that greenhouse gases from the United States endanger foreign countries; and other countries, such as Canada, have given the United States reciprocal rights. Policy Integrity petitions EPA to:

1. Make a formal finding that all the prerequisites for action to control international air pollution under Section 115 have been satisfied for greenhouse gases;
2. Require states to revise their Clean Air Act implementation plans to control their dangerous greenhouse gas pollution by making reasonable progress toward abatement; and
3. Advise states on their options for implementation under Section 115, including flexible regulatory tools like market incentives.

Section 115 provides a mandatory, efficient, and comprehensive approach to regulating greenhouse gas emissions. It is therefore the preferred mechanism under the Clean Air Act for responding to the dangers of climate change. Alternatively, Title VI of the Clean Air Act—specifically Section

¹ Policy Integrity is a non-partisan think tank at New York University School of Law. Policy Integrity is dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the areas of administrative and environmental law, economics, and public policy. Policy Integrity is a collaborative effort of faculty at New York University School of Law; a full-time staff of attorneys and policy experts; law students; and a Board of Advisors comprised of leaders in public policy, law, and government.

² Greenhouse gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases.

615—also creates a potentially mandatory obligation for comprehensive control of greenhouse gases. Under Section 615, EPA must control pollution that affects the stratosphere and so impacts public health and welfare. Scientific evidence already supports the conclusion that greenhouse gases are affecting the stratosphere in ways that endanger the public, particularly by contributing to ozone depletion. EPA may, however, require additional information before making such a formal finding. Policy Integrity petitions EPA to:

4. Initiate a public call for information under Title VI regarding the effect of greenhouse gases on the stratosphere and ozone in the stratosphere;
5. If the scientific evidence exist, issue an endangerment finding under Section 615; and
6. Upon issuing an endangerment finding, control greenhouse gas emissions through flexible regulatory tools like markets.

The remaining authorities under the Clean Air Act do not provide as simple a route to comprehensive greenhouse gas controls as Sections 115 and 615 offer. Nevertheless, even sector-by-sector regulation under other provisions can be pieced together to build a comprehensive response to climate change.

Therefore, as a third-best option, EPA should continue the path it has already begun following, issuing greenhouse gas standards under Section 111 and Title II. Section 111 requires EPA to regulate categories of stationary sources that significantly contribute to dangerous pollution. EPA has already begun the process of regulating power plants for their greenhouse gas emissions under this provision, and the agency has been petitioned or sued to regulate additional source categories. Besides promptly finalizing such regulations, for both new and existing sources, Policy Integrity also petitions EPA to:

7. List additional source categories that contribute significantly to greenhouse gas pollution, including agricultural sources, and to develop performance standards for such categories within a year of their listing;
8. Revise the performance standards for already-listed source categories to cover significant greenhouse gas emissions, such as for landfills, natural gas and petroleum systems, and various manufacturing industries;
9. Instruct states to develop performance standards for existing sources, and to do so in coordination with EPA's new source performance standards, to avoid grandfathering;
10. For both new and existing sources, define a market as the "best system" of control; and
11. Automatically phase in stronger performance standards over time.

EPA can use Section 111 to create an efficient and largely comprehensive market for controlling emissions from stationary sources. But to control mobile sources, EPA will have to use its authority under Title II of the Clean Air Act. EPA has already begun regulating some sources under Title II, and has been petitioned or sued to regulate additional source categories: in particular, Policy Integrity has petitioned EPA to enact comprehensive controls by regulating vehicle fuels. If EPA does not enact vehicle fuel controls, Policy Integrity further petitions EPA to:

12. Promulgate emissions standards for all significant mobile sources not yet regulated or petitioned to be regulated, including motorcycles and the trailers of heavy-duty trucks.

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I. EPA Must Require States to Regulate Greenhouse Gases under Section 115.

Section 115 of the Clean Air Act addresses international air pollution and requires EPA to respond to U.S. emissions that endanger public health and welfare in foreign countries. The provision creates a mandatory duty to act if certain prerequisites are met:

- First, EPA must have received “reports, surveys or studies” from a “duly constituted international agency.”³
- Second, the reports received must give EPA “reason to believe that any air pollutant or pollutants emitted in the United States cause or contribute to air pollution” that “may reasonably be anticipated to endanger public health or welfare in a foreign country.”⁴
- Third, EPA must determine that a foreign country “has given the United States essentially the same rights with respect to the prevention or control of air pollution occurring in that country.”⁵
- If all those conditions are satisfied, EPA must require any states containing sources of the international air pollution to revise their applicable implementation plans to “prevent or eliminate” the danger to foreign health or welfare.⁶

All the prerequisites for action have been satisfied for greenhouse gases: EPA has already acknowledged—based in part on reports from the Intergovernmental Panel on Climate Change—that greenhouse gases from the United States endanger foreign countries; and other countries, such as Canada, have given the United States essentially reciprocal rights. EPA therefore must direct states to control their greenhouse gas emissions under Section 115.

EPA has received reports and studies from a duly constituted international agency—the Intergovernmental Panel on Climate Change.

Though the statute does not define “duly constituted international agency,” courts have found the meaning to be self-evident.⁷ The only two cases that treat Section 115 involve acid rain pollution drifting into Canada from Midwestern states—an environmental issue that had been studied by the International Joint Commission. D.C. Circuit courts found the International Joint Commission to “concededly” be a duly constituted international agency,⁸ highlighting that the Commission was established by treaty and charged with the responsibility of resolving trans-boundary water disputes.⁹ Perhaps also relevant, the Commission’s membership is split between the United States and Canada, and experts from both countries submit evidence to the body.¹⁰

The Intergovernmental Panel on Climate Change shares all those relevant characteristics and, therefore, is also a duly constituted international agency. The Panel was established by two United Nations organizations and endorsed by a United Nations General Assembly Resolution, which charged the Panel with conducting a comprehensive review of the state of knowledge of climate change, the social impact of climate change, and possible response strategies.¹¹ The Panel is

³ 42 U.S.C. § 7415(a). Alternatively, the Secretary of State can present such information.

⁴ *Id.*

⁵ *Id.* § 7415(c).

⁶ *Id.* § 7415(b).

⁷ See *New York v. Thomas*, 613 F. Supp. 1472, 1482 (D.D.C. 1985), *reversed on other grounds*, *Thomas v. New York*, 802 F.2d 1443 (D.C. Cir. 1986).

⁸ *Thomas v. New York*, 802 F.2d at 1445; *Her Majesty the Queen v. EPA*, 912 F.2d 1525, 1529 (D.C. Cir. 1990).

⁹ *New York v. Thomas*, 613 F. Supp. at 1482.

¹⁰ Int’l Joint Comm’n, *Who We Are*, http://www.ijc.org/en/background/ijc_cmi_nature.htm (last visited Apr. 14, 2012).

¹¹ U.N. G.A. Res. 43/53 (1988); see also *Massachusetts v. EPA*, 549 U.S. 497, 508 (2007) (calling the Intergovernmental Panel “a multinational scientific body organized under the auspices of the United Nations”).

composed of members from several countries, including the United States.¹² Scientists from around the world contribute to the Panel's reports, which are reviewed and approved by member countries.¹³ Congress has even instructed U.S. federal agencies to base their climate change plans on the reports of the Intergovernmental Panel on Climate Change.¹⁴

EPA has received studies regarding greenhouse gas emissions from the Intergovernmental Panel on Climate Change. Most notably, when EPA issued a finding in 2009 that greenhouse gases endanger U.S. health and welfare, the agency relied in part on the Panel's reports.¹⁵ In that finding, EPA reasoned that it did not need to independently review the Panel's reports because EPA took "an active part in [their] review, writing, and approval."¹⁶ EPA went on to state that the Intergovernmental Panel's assessments "have been reviewed and formally accepted by, commissioned by, or in some cases authored by, U.S. government agencies and individual government scientists. These reports already reflect significant input from EPA's scientists and the scientists of many other government agencies."¹⁷

In summary: EPA has received reports on greenhouse gas emissions from the Intergovernmental Panel on Climate Change—a duly constituted international agency.

Those reports gave EPA reason to believe that greenhouse gases emitted in the United States cause or contribute to pollution that endangers foreign health or welfare.

Though the statute does not define "reason to believe," the D.C. Circuit found that the phrase—combined with the word "whenever"—does "imply a *degree* of discretion underlying the endangerment finding."¹⁸ Yet that discretion is not limitless: in particular, EPA cannot exercise its degree of discretion in an arbitrary or capricious manner,¹⁹ and once the endangerment finding is made, "the remedial action that follows is both specific and mandatory—the Administrator *shall* notify the Governor of the specific State emitting the pollution and require it to revise its SIP."²⁰ When a report provides an "ample basis" of information supporting an endangerment finding, and when EPA in fact relies on a report in making an assessment about danger to health and welfare, the "reason to believe" prong is satisfied.²¹

In 2007, the Intergovernmental Panel on Climate Change issued its *Fourth Assessment Report*. The *Report* concluded that greenhouse gas emissions from human activities are a cause of climate change. It highlighted the globally rising atmospheric concentrations of gases like carbon dioxide and methane,²² and found that the United States was the second-largest source worldwide of both carbon dioxide and methane emissions (after China).²³ The *Report* further determined that climate change will harm public health and welfare, by impacting malnutrition, extreme weather events, cardio-respiratory diseases, infectious diseases, food production, coastal erosion, water scarcity,

¹² IPCC, Organization, <http://www.ipcc.ch/organization/organization.shtml> (last visited Jan. 31, 2013).

¹³ *Id.*

¹⁴ *E.g.*, 10 U.S.C. § 118(g) (instructing the Department of Defense to examine national defense strategy in light of the effects of climate change, and to base its plans on projections from the Intergovernmental Panel on Climate Change).

¹⁵ Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,510 (Dec. 15, 2009) (citing to the Panel's *Fourth Assessment Report* of 2007).

¹⁶ *Id.* at 66,511.

¹⁷ *Id.*

¹⁸ *Her Majesty the Queen*, 912 F.2d at 1533 (emphasis added).

¹⁹ *See* 5 U.S.C. § 706.

²⁰ *Her Majesty the Queen*, 912 F.2d at 1533.

²¹ *New York v. Thomas*, 613 F. Supp. at 1482.

²² IPCC, CLIMATE CHANGE 2007: SYNTHESIS REPORT 36 (2007).

²³ IPCC, CLIMATE CHANGE 2007: WORKING GROUP III: MITIGATION OF CLIMATE CHANGE at 4.2.2 (2007).

economic development, ocean acidification, and ecosystem resilience.²⁴ These impacts to health and welfare were documented for each region of the globe: Africa, Asia, Australia and New Zealand, Europe, Latin America, North America, Polar Regions, and Small Island nations.²⁵

The *Fourth Assessment Report* clearly provides EPA with an ample basis of information supporting an endangerment finding. EPA has determined that the *Report* is comprehensive, is grounded in the peer-reviewed literature, and underwent “a rigorous and exacting standard of peer review by the expert community, as well as rigorous levels of U.S. government review and acceptance.”²⁶

Moreover, EPA has already based a determination of the dangers of greenhouse gases on the *Fourth Assessment Report*. When EPA issued a finding in 2009 that greenhouse gases endanger U.S. health and welfare, the agency relied in part on the Panel’s reports.²⁷ Both EPA’s 2009 finding and the *Fourth Assessment Report* already support the related conclusion that U.S. emissions endanger foreign health and welfare. United States emissions clearly “cause or contribute” to global greenhouse gas concentrations. Notably, Section 115 sets no threshold amount for the contribution requirement. Regardless, the U.S. contribution is sizable: the second-largest emitter overall, producing about 18 percent of the world’s greenhouse gases.²⁸ Those global greenhouse gas concentrations are also clearly “anticipated to endanger public health or welfare in a foreign country.” Drawing from the *Fourth Assessment Report’s* details on the global impacts of climate change, EPA’s own 2009 finding noted the “unavoidable global nature of the climate change problem” and described how impacts on foreign health and welfare “may exacerbate problems that raise humanitarian, trade, and national security issues for the U.S.”²⁹ Indeed, the entire Part V of EPA’s *Technical Support Document* for the endangerment finding was entitled “Observed and Projected Human Health and Welfare Effects from Climate Change in Other World Regions.”³⁰

In short, EPA has already relied on reports from a duly constituted international agency to determine that the United States contributes significantly to greenhouse gas pollution, and that greenhouse gas pollution endangers foreign health and welfare. In effect, EPA has already made the necessary endangerment finding to trigger Section 115, through its 2009 finding, which underwent the required notice-and-comment process.³¹ But even if EPA believes a separate, Section 115-specific endangerment finding is necessary, to be issued for notice-and-comment together with a reciprocity finding and SIP-call, EPA certainly has “reason to believe” that U.S. emissions endanger foreign health and welfare, and the agency must act under Section 115.

EPA has evidence correlating the endangerment to sources within particular states.

In *Her Majesty the Queen v. EPA*, the D.C. Circuit found EPA’s interpretation that Section 115 required a “unitary proceeding” was reasonable, but not clearly or unambiguously required by the statutory text.³² Under the “unitary proceeding” interpretation, EPA “must have sufficient evidence correlating the endangerment to sources of pollution within a particular State before [the agency]

²⁴ IPCC, SYNTHESIS REPORT, *supra* note 22, at 48, 52.

²⁵ *Id.* at 50, 52.

²⁶ 74 Fed. Reg. at 66,511.

²⁷ *Id.* (citing to the Panel’s *Fourth Assessment Report* of 2007).

²⁸ *Id.* at 66,539 (citing IPCC estimation and reporting procedures).

²⁹ *Id.* at 66,535.

³⁰ EPA, *Technical Support Document for Endangerment and Cause of Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act* (2009).

³¹ *Cf. Thomas v. New York*, 802 F.2d at 1446-47.

³² 912 F.2d at 1533.

can exercise [its] discretion to make endangerment findings.”³³ To start, EPA is free to change its statutory interpretation.³⁴ But even if EPA chooses not to change its interpretation, the sufficient evidence criterion has been met for greenhouse gases.

EPA already possesses considerable evidence of major greenhouse gas sources and emissions levels per state.³⁵ Since 1990, in accordance with the U.N. Framework Convention on Climate Change, EPA has developed a national greenhouse gas emissions inventory each year.³⁶ Moreover, since 2010, EPA has collected greenhouse gas emissions data from major individual sources nationwide, including power plants, refineries, chemical manufacturing, landfills, the metal and minerals sectors, the pulp and paper industry, government and commercial sources, and dozens of other industrial sectors—6,700 facilities in total, broken down by state.³⁷ In short, all fifty states (plus the District of Columbia, Puerto Rico, and U.S. territories) emit greenhouse gases, and EPA must give notice to each state of the need to revise its applicable Clean Air Act implementation plans to prevent or eliminate the endangerment to foreign health and welfare.

Foreign countries have given the United States “essentially the same rights.”

The reciprocity language of Section 115 limits its scope to countries that have “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.”³⁸ Precedent suggests that reciprocity is “based on an analysis of facts and law as they exist at a particular time.”³⁹ The finding is therefore not technically legalistic and does not demand an assurance that reciprocity will exist in perpetuity. Instead, all that is required is EPA’s initial determination that the United States receives “essentially the same rights,” plus periodic reexamination by EPA to ensure reciprocity continues to exist.⁴⁰

The only explicit right granted to foreign countries under Section 115 is the right to appear at any public hearing associated with the relevant revisions to state implementation plans.⁴¹ Additionally, foreign countries implicitly stand to benefit from the United States’ commitment to prevent or eliminate its share of harmful international air pollution.⁴²

The rights under the foreign country’s law must be “essentially” the same, not necessarily identical.⁴³ In previous cases, EPA reasoned it was sufficient that another country’s laws provided

³³ *Id.*

³⁴ See *Nat’l Cable & Telecomm. Assoc. v. Brand X Internet Services*, 545 U.S. 967 (2005).

³⁵ See, e.g., EPA, 2010 Greenhouse Gas Emissions from Large Facilities, <http://ghgdata.epa.gov> (last visited Jan. 31, 2013); EPA, GHGRP 2010: Reported Data, <http://www.epa.gov/ghgreporting/ghgdata/reported> (last visited Jan. 31, 2013); EPA, *CO₂ Emissions from Fossil Fuel Combustion (2010)* (listing carbon dioxide emissions by sector and by state).

³⁶ EPA, U.S. Greenhouse Gas Inventory Report, <http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html> (last visited Jan. 31, 2013); see also U.N. Framework Convention on Climate Change, National Reports, http://unfccc.int/national_reports/items/1408.php (last visited Jan. 31, 2013).

³⁷ EPA, Greenhouse Gas Data, <http://www.epa.gov/ghgreporting/ghgdata> (last visited Jan. 31, 2013); see also EPA, *Greenhouse Gas Reporting Program Fact Sheet (2012)*; EPA, *Number of Facilities Reporting GHG Emissions by State—2012*, http://www.epa.gov/ghgreporting/documents/pdf/2010/ghgdata_figures.pdf.

³⁸ 42 U.S.C. § 7415(c).

³⁹ *New York v. Thomas*, 613 F. Supp. at 1483.

⁴⁰ *Id.* (“a change of either facts or law might require reexamination of the determination”).

⁴¹ 42 U.S.C. § 7415(b).

⁴² See *id.*

⁴³ See *New York v. Thomas*, 613 F. Supp. at 1492 (reproducing Admin. Costle’s finding that the difference between the United States’ detailed requirements for state implementation plan revisions and Canada’s “more general requirement . . . for provincial consultation and reasonable efforts,” “does not significantly restrict the ability of the Government of Canada to provide essentially the same rights to the United States”).

the government with the authority to give the United States essentially the same rights as Section 115.⁴⁴ Therefore, reciprocity can exist simply because a country has indicated through affirmative conduct its intent or ability to cooperate with the United States in abating international air pollution.⁴⁵ It follows that a country's laws or actions can satisfy this standard: either the text of a country's law indicates that it could control air pollution harming the United States, or a country's actions demonstrate that its law is interpreted to allow for the control of such harmful air pollution.

Because there is scant case law on Section 115, the precise parameters of the reciprocity standard are difficult to define. However, under the most plausible readings of Section 115(c), reciprocity already exists for greenhouse gases through the laws and actions of several foreign countries. Because Section 115 refers to "a foreign country," EPA need only find a single country that satisfies the reciprocity requirement for its duties under Section 115 to be triggered.

Canada's Environmental Protection Act satisfies Section 115(c)'s reciprocity requirement.

In 1981, EPA found that Canada's Clean Air Act, Section 21.1, created reciprocal rights to Section 115. Indeed, the Canadian legislation was enacted specifically to meet the requirements of Section 115.⁴⁶ Key features of Canada's Section 21.1 that created reciprocity with Section 115 include:⁴⁷

1. Authorizing a federal official to make a finding of foreign endangerment caused by domestic emissions and to prescribe specific emissions limits to reduce or prevent such danger;
2. Allowing local government to take abatement actions and authorizing the federal government to limit emissions if the locality fails to provide an adequate remedy; and
3. Providing opportunities for public hearings on proposed actions and allowing participation in the hearing by the affected foreign government.

The 1981 reciprocity finding made by EPA was upheld by the district court in *New York v. Thomas*,⁴⁸ and the validity of these findings was never addressed on appeal.

Canada's Clean Air Act was subsequently replaced by the Canadian Environmental Protection Act (CEPA).⁴⁹ The relevant provisions from Section 21.1 were substantially recreated in Division 6 of Part 7 of that new legislation, which also fulfills reciprocity:⁵⁰

1. CEPA Section 166(1) authorizes the Federal Minister of Environment to take preventative action if "a substance released from a source in Canada into the air creates, or may reasonably be anticipated to contribute, to air pollution in a country other than Canada."
2. CEPA Section 166(2) instructs the Minister to consult with local governments responsible for sources of international air pollution, to develop a response plan; if the local government

⁴⁴ See *id.* at 1483 (citing EPA's reciprocity finding).

⁴⁵ The district court in *Thomas* stressed this point as well. In reproducing EPA's reciprocity determination, the court added its own emphasis as follows: "In my view, the amendments to the Canadian Clean Air Act do give *adequate authority to the Government of Canada to provide essentially the same rights to the United States as Section 115 provides to Canada.*". *Id.* at 1491.

⁴⁶ Dean Adam Willis, *Thomas v. New York: Sisiphean Tragedy on the Environmental Stage*, 10 *Loyola Int'l & Comp. L. Rev.* 469, 474 (1988); Am. Soc. of Int'l Law, *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 *Int'l Legal Materials* 762 (1981) (reprinted from *Canadian Common Debates*, Dec. 16, 1980).

⁴⁷ See *New York v. Thomas*, 613 F.Supp. at 1488 (reproducing Admin. Costle's letter to Sec'y Muskie and Sen. Mitchell).

⁴⁸ *Id.* at 1483-84.

⁴⁹ Environment Canada, *The History of CEPA*, <http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=4FA2C2C7-1> (last visited Aug. 5, 2012); *Canadian Environmental Protection Act*, (S.C. 1999, c.33).

⁵⁰ Notably, CEPA Section 166(4) also contains its own reciprocity requirement.

cannot “prevent, control or correct the air pollution,” the Minister “shall” then take abatement action under Section 166(3).

3. CEPA Section 168 requires notification to affected foreign countries of such proposed regulations, and provides opportunity for foreign countries to submit written comments. Under Section 166(5), the Minister must take such comments into account.

These provisions of the Canadian Environmental Protection Act are applicable to greenhouse gases. Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are all listed in CEPA Schedule 1 as toxic substances, thus making them subject to the development of pollution prevention plans.⁵¹

The legal authority provided by CEPA for Canada to address its international emissions of greenhouse gases is alone sufficient to satisfy Section 115’s reciprocity requirement. But, in fact, Canada has also taken action to reduce its emissions. In 2012, it finalized greenhouse gas standards for coal-fired electricity plants, noting that Canada’s approach to climate change “is broadly aligned with that of the U.S.,” and calculating the regulatory benefits based on “the avoided global damages associated with GHG emission reductions brought forth by Canadian action.”⁵² Importantly, the mandatory actions that EPA and the states must take under Section 115 are not limited by the scope of pollution controls already achieved in other countries. Once reciprocity is established—as it has been by Canada’s legal authority to address international greenhouse gas emissions, and by Canada’s commitment to continual, constructive action on climate change⁵³—U.S. states must act generally to “prevent or eliminate” their dangerous emissions levels, and not just to the extent that other countries have already reduced their pollution.

Thus, the Canadian Environmental Protection Act provides the United States with essentially the same rights as those given by Section 115, and so reciprocity is satisfied.

The laws of other countries, like South Africa, also satisfy the reciprocity requirement.

Besides Canada’s Environmental Protection Act, South Africa’s Air Quality Act also meets the reciprocity requirement. The law’s preamble emphasizes that “atmospheric emissions of ozone-depleting substances, greenhouse gases and other substances have deleterious effects on the environment, both locally and globally.”⁵⁴ The act authorizes the Minister of Environmental Affairs to investigate “any situation which creates, or may reasonably be anticipated to contribute to air pollution across the Republic’s boundaries.”⁵⁵ If the investigation shows that domestic emissions may have a “significant detrimental impact on air quality, the environment or health” in a foreign country, the Minister may prescribe measures to “prevent, control or correct” the domestic emissions.⁵⁶ Finally, the act allows the government to provide notice to foreign countries before publication of any such regulations.⁵⁷ Based on the same analysis performed for Canada, South Africa’s Air Quality Act meets the test for creating a legal authority to act on greenhouse gas emissions, which grants the United States essentially the same rights as under Section 115.

Other countries may also have similar laws that would meet the test for reciprocity.

⁵¹ See CEPA § 56(1) (noting the applicability of Section 166(1) to Schedule 1 pollutants).

⁵² Reduction of Carbon Dioxide Emissions from Coal-Fired Generation of Electricity Regulation, SOR/2012-167 (Can.). Canada has also proposed regulations for motor vehicles to “align with the mandatory national standards of the United States.” Environment Canada, *Regulatory Greenhouse Gas Emissions from Light-Duty Vehicles* (Nov. 27, 2012).

⁵³ See Reducing Greenhouse Gases, <http://climatechange.gc.ca/default.asp?lang=En&n=4FE85A4C-1> (visited Jan. 9, 2013).

⁵⁴ National Environmental Management: Air Quality Act 39 of 2004 (S. Afr.).

⁵⁵ *Id.* § 50(1) (“Transboundary Air Pollution.”)

⁵⁶ *Id.* § 50(2).

⁵⁷ *Id.* § 50(5).

Existing international agreements and actions demonstrate essentially similar commitments for foreign countries to control greenhouse gas pollution.

The “essentially the same rights” standard likely does not require the mirroring of Section 115’s language found in the laws of countries like Canada. If a government has obligations similar to those created by Section 115, it effectively grants the United States essentially the same rights. Existing international agreements indicate that many countries have such obligations.

The leading example of such an international agreement is the United Nations Framework Convention on Climate Change (UNFCCC), to which the United States, along with 190 other countries, is a party.⁵⁸ Differing commitments exist under the UNFCCC, depending on whether a country is developed or developing, but all parties are obligated to formulate national programs to mitigate climate change by addressing sources of greenhouse gases.⁵⁹

Each UNFCCC country, and in particular those that are already reducing greenhouse gas emissions, has satisfied the reciprocity requirement of Section 115. By participating in the UNFCCC, a country is cooperating with the United States in agreeing to reduce air pollution that endangers global health and welfare. The United States has the right to attend the UNFCCC’s meetings and otherwise stay informed about what countries are doing to reduce their greenhouse gas emissions.⁶⁰ Some of the obligations created by international agreements like the UNFCCC may not be strictly enforceable. However, an enforceability mechanism is not likely a requirement for reciprocity under Section 115. Section 115 does mandate certain actions by EPA and states, but it does not explicitly grant foreign countries the right to sue in United States courts to enforce the provision.⁶¹

Many countries are already taking steps to reduce their greenhouse gas emissions, in compliance with their obligations under the UNFCCC and the subsequent Kyoto Protocol. Because any reduction in global greenhouse gas emissions benefits the United States, and because several countries have expressed interest in cooperating with the United States in controlling greenhouse gas pollution, the reciprocity requirement is satisfied.

In particular, the European Union operates a cap-and-trade system across thirty-one countries to control greenhouse gas emissions and meet its UNFCCC obligations.⁶² Those countries participating in the European Union’s emissions trading scheme submit reports on implementation to the UNFCCC Conference of Parties.⁶³ The European Commission has also indicated its willingness to further reduce emissions if other major emitters make proportional commitments.⁶⁴ The European Union’s trading system therefore also satisfies the reciprocity requirement of Section 115(c).

⁵⁸ See UNFCCC, Parties & Observers, http://unfccc.int/parties_and_observers/items/2704.php (last visited Apr. 18, 2012).

⁵⁹ United Nations Framework Convention on Climate Change, art. 4(1)(b), May 9, 1992 (“*All Parties*, taking into account their common but differentiated responsibilities . . . *shall . . .*”) (emphasis added).

⁶⁰ See *id.* art. 4(1)(j) (requiring parties to communicate information related to implementation); *id.* art. 12.

⁶¹ Canada did sue EPA for denial of its rulemaking petition that sought implementation of Section 115, but the jurisdictional provision invoked was not Section 115 itself, but rather Section 307(b)(1). *Her Majesty the Queen v. EPA*, 912 F.2d at 1529-31. However, the test for reciprocity under Section 115(c) requires only “essentially the same rights . . . as is given . . . *by this section*,” referring just to the rights granted within the text of Section 115 itself, and not the broader Clean Air Act. In the alternative, it is possible that the United States already enjoys enforcement rights through customary international law, which prohibits countries from injuring one another through trans-boundary pollution and provides remedies for such harms. See *generally* RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW §§ 601–02 (1987).

⁶² Eur. Comm’n, Emissions Trading System, http://ec.europa.eu/clima/policies/ets/index_en.htm (last visited Jan. 31, 2012); see also Directive 2009/29/EC, of the European Parliament & the Council, of 23 April 2009, to Improve and Extend the Greenhouse Gas Emission Allowance Trading Scheme, 2009 O.J. (L 140/63) (referencing the UNFCCC objective).

⁶³ See UNFCCC, Compilation & Synthesis of Fifth National Communications, SBI/2011/INF.1/Add.1, 23 May 2011, at 47.

⁶⁴ Eur. Comm’n, Working with International Partners, <http://www.ec.europa.eu/clima/policies/international> (last visited Jan. 31, 2013) (“The EU is offering to step up its 2020 reduction targets to 30% if other major economies commit.”).

Countries outside Europe are taking action as well. New Zealand, for example, enacted a Climate Change Response Act in 2002, aimed at meeting its obligations under the UNFCCC.⁶⁵ The act requires cooperation with other countries and recommends integrated international approaches to reducing greenhouse gas emissions.⁶⁶ As such, it provides the public health and welfare benefits and the participation rights that Section 115(c) requires. These examples are not exhaustive: many other countries may also currently have statutes or regulations that would satisfy the reciprocity requirement, and future activities may create reciprocity in additional countries as well.

EPA must issue a reciprocity finding.

Because other countries—at least those like Canada and South Africa with legislative language mirroring the text of Section 115, if not all countries that have climate obligations under international law and are already taking action to reduce emissions—have granted the United States essentially the same rights as those found in Section 115, EPA must make a determination that the reciprocity requirement has been met for greenhouse gas emissions.

Since the criteria for both an endangerment finding and a reciprocity finding have been met, and since EPA has sufficient evidence correlating the endangerment to sources of pollution within particular states, the mandatory provisions of Section 115 are triggered. EPA must notify all the states of the need to revise their Clean Air Act implementation plans to prevent or eliminate the dangerous levels of greenhouse gas emissions.

EPA must require states to revise their implementation plans to eliminate dangerous greenhouse gas pollution, and should advise states on the most workable regulatory options.

Once the endangerment and reciprocity findings are made under Section 115, “the remedial action that follows is both specific and mandatory—the Administrator *shall* notify the Governor of the specific State emitting the pollution and require it to revise its SIP.”⁶⁷ For greenhouse gases, those prerequisites have been satisfied, and EPA has sufficient evidence of the major emissions of greenhouse gases in all fifty states (as well as the District of Columbia, Puerto Rico, and U.S. territories). Therefore, EPA must instruct the states to revise their Clean Air Act implementation plans in order to “prevent or eliminate the endangerment.”⁶⁸

EPA should provide guidance to the states on what revisions to their implementation plans will be necessary to adequately prevent or eliminate the danger to foreign health and welfare. In particular, even though Section 115 triggers a revision of State Implementation Plans, it does not trigger setting National Ambient Air Quality Standards for greenhouse gases. The requirement to “prevent or eliminate the endangerment” also will not require states to achieve zero emissions of greenhouse gases. EPA should emphasize that market-based tools are available to states to control greenhouse gases under their revised implementation plans. To clarify these points, EPA should issue either official guidance or a proposed Federal Implementation Plan for states to follow.

Regulation of greenhouse gases under Section 115 does not require the use of NAAQS.

Section 115 says that EPA’s notice to the states of their dangerous international emissions constitutes a finding under Section 110(a)(2)(H)(ii), which requires revision of the states’

⁶⁵ Climate Change Response Act 2002, Public Act 2002 No. 40 (N.Z.); *see also* New Zealand Ministry for Enviro., Reducing Greenhouse Gas Emissions, <http://www.mfe.govt.nz/issues/climate/policies-initiatives/index.html> (last visited Jan. 31, 2013) (discussing emissions targets and trading scheme under the Climate Change Response Act).

⁶⁶ *Id.* Schedule 2, art. 2 § b (“Cooperate with other such Parties to enhance the individual and combined effectiveness of their policies and measures”); *id.* art. 10 § c.

⁶⁷ *Her Majesty the Queen*, 912 F.2d at 1533.

⁶⁸ 42 U.S.C. § 7415(b) (referencing the SIP revision process under § 7410(a)(2)(H)(ii)).

implementation plans.⁶⁹ Section 110 deals with the development of state implementation plans, which are most commonly designed to achieve the National Ambient Air Quality Standards (NAAQS) set by EPA for certain designated “criteria pollutants.” Nevertheless, states’ use of Section 110 to carry out their obligations under Section 115 does not require classifying greenhouse gases as criteria pollutants or establishing NAAQS for them.

EPA’s most recent interpretation of the Section 115/110 interplay would suggest the opposite, that revision of implementation plans will trigger NAAQS.⁷⁰ And, indeed, Section 110 does facially appear exclusive to the NAAQS program due to its title, “State Implementation Plans for National Primary and Secondary Ambient Air Quality Standards.”⁷¹ However, both statutory text and legislative history reveal that Section 110 is not exclusive to NAAQS. EPA should return to its prior position, which recognized the true breadth of Sections 110 and 115.⁷²

The statutory text of Sections 115 shows that NAAQS need not be used to control international air pollution. Section 115 requires regulation of “any air pollutant,”⁷³ which suggests a broader ambit than the category of criteria pollutants subject to the NAAQS program. Additionally, Section 115(d) specifies that international emissions controls developed before 1977 “shall remain in effect with respect to *any pollutant for which no national ambient air quality standard has been established.*”⁷⁴ In other words, the scope of Section 115 is broader than just pollutants subject to NAAQS.

Similarly, the statutory text of Section 110 indicates that implementation plans cover more than just criteria pollutants. Section 110(a)(2)(H)(ii) specifies that state implementation plans must be revised whenever EPA “finds . . . that the plan is substantially inadequate to attain the [NAAQS] which it implements *or to otherwise comply with any additional requirements established under this chapter.*”⁷⁵ The use of the word “or” implies that implementation plans may be used to achieve statutory obligations wholly distinct from the NAAQS.⁷⁶ Furthermore, when Section 110(a)(2)(D) specifies that implementation plans must control international pollution under Section 115,⁷⁷ the same subsection also references interstate pollution.⁷⁸ There, states are instructed to control emissions of “any air pollutant” that interferes with another state’s achievement of NAAQS. Again, “any air pollutant” is broader than the category of criteria pollutants directly subject to NAAQS. Even if a non-criteria pollutant interferes with another state’s achievement of NAAQS, that non-criteria pollutant still must be controlled by the state implementation plan, under the terms of Section 110(a)(2)(D). Likewise, state implementation plans must enforce obligations under Section 115, even for non-criteria pollutants.⁷⁹

⁶⁹ *Id.*

⁷⁰ See Advance Notice of Proposed Rulemaking for Regulating Greenhouse Gas Emissions under the Clean Air Act, 73 Fed. Reg. 44,354, 44,482–83 (July 30, 2008).

⁷¹ 42 U.S.C. § 7410.

⁷² EPA previously explained that Section 115 “is broadly drafted to encompass all forms of air pollution-related endangerment to public health or welfare and is not limited to interference with U.S. air quality standards or significant deterioration programs.” Letter from Douglas M. Costle, Admin. EPA, to Edmund S. Muskie, Sec’y of State (Jan. 13, 1981), *reprinted in New York v. Thomas*, 613 F. Supp. at 1472, 1488. This understanding of Section 115 is repeated in scholarship from that time. See, e.g., Bennett A. Caplan, *The Applicability of Clean Air Act Section 115 to Canada’s Transboundary Acid Precipitation Problem*, 11 B.C. ENVTL. AFF. L. REV. 539, 570 (1983).

⁷³ 42 U.S.C. § 7415(a).

⁷⁴ *Id.* § 7415(d) (emphasis added).

⁷⁵ *Id.* § 7410(a)(2)(H)(ii) (emphasis added).

⁷⁶ Hannah Chang, *Cap and Trade Under the Clean Air Act?: Rethinking § 115*, 40 ENVTL. L. REP. NEWS & ANALYSIS 10,894, 10,896 (2010).

⁷⁷ 42 U.S.C. § 7410(a)(2)(D)(ii).

⁷⁸ *Id.* § 7410(a)(2)(D)(i).

⁷⁹ Chang, *supra* note 76.

A recent article's detailed analysis of the legislative history of Section 115 further demonstrates that the provision does not necessarily trigger NAAQS.⁸⁰ The 1970 amendments to the Clean Air Act distinguished between domestic pollution, which became subject to state implementation plans, and international pollution, which was then regulated by an abatement conference approach that gathered relevant parties to negotiate pollution controls. By the 1977 amendments, however, the conference approach was deemed a failure, and Congress wanted to take advantage of the more successful implementation plan process. Consequently, Congress opted to address international pollution through use of state implementation plans, but nowhere did Congress express an intent to eliminate the distinction between emissions with only domestic impacts, which were subject to NAAQS following an endangerment finding under Section 108, and international pollution, which was not subject to NAAQS and was regulated following a separate endangerment finding under Section 115.⁸¹

Section 115 only requires reasonable progress toward greenhouse gas abatement, and not the elimination of all emissions.

The statute instructs states to “prevent or eliminate the endangerment” to foreign countries that their emissions have contributed to.⁸² However, due to existing atmospheric concentrations of long-lived greenhouse gases, and the continuing emissions by other countries, even if all U.S. states reduced their emissions to zero, they still could not truly “eliminate” all the climate change dangers faced by foreign countries. Even short of such extreme actions, greenhouse gas reductions beyond a certain point will start to become prohibitively expensive. An overly narrow reading of Section 115, therefore, could seem to create a standard impossible or impractical for states to achieve. However, statutory context and legislative history⁸³ counsel in favor of a more flexible interpretation of Section 115, one that only requires reasonable progress toward abatement.

First, the text of Section 115 does not exclusively refer to “elimination.” Section 115(c) says that, to establish reciprocity, foreign countries must grant similar rights “with respect to the prevention or control of air pollution.”⁸⁴ By essentially equating the “prevent or eliminate” requirement with the broader formulation “control of air pollution,” Section 115 gives EPA discretion to determine the extent of emissions reductions required. Similarly, even Section 115(b) does not mandate the elimination of all *emissions* that affect foreign countries. Instead, it instructs states to eliminate the *danger* to which U.S. emissions have *contributed*.⁸⁵ EPA does have some discretion in making its endangerment finding, both on what constitutes a danger to foreign health and welfare, and on what contribution U.S. emissions have made to such danger.⁸⁶ More generally, courts have long recognized EPA's discretion under the Clean Air Act to determine “how much of the regulated harm is too much,”⁸⁷ and have acknowledged that protecting the public does not require “a world that is free of all risk—an impossible and undesirable objective.”⁸⁸ Rather, EPA can consider context when

⁸⁰ *Id.* at 10,897–901.

⁸¹ *Id.*

⁸² 42 U.S.C. § 7415(b).

⁸³ See *Whitman v. Am. Trucking Assoc.*, 531 U.S. 457, 471 (2001) (“interpreted in its statutory and historical context”).

⁸⁴ 42 U.S.C. § 7415(d) (emphasis added).

⁸⁵ Section 115 envisions both preemptive and reactive responses to international air pollution: “prevent or eliminate” the “anticipated” danger. In this case, however, “preventing” the danger is likely impossible, since climate change has already begun to impact global health and welfare. Therefore, the applicable statutory language is “eliminate the endangerment.”

⁸⁶ See *Her Majesty the Queen*, 912 F.2d at 1533 (“imply a degree of discretion underlying the endangerment finding.”).

⁸⁷ *Whitman*, 531 U.S. at 475 (“But even in sweeping regulatory schemes we have never demanded . . . that statutes provide a ‘determinate criterion’ for saying ‘how much [of the regulated harm] is too much.’ In *Touby*, for example, we did not require the statute to decree how ‘imminent’ was too imminent, or how ‘necessary’ was necessary enough, or even—most relevant here—how ‘hazardous’ was too hazardous.”) (citations omitted).

⁸⁸ *Id.* at 494 (Breyer, J., concurring).

“deciding what risks are acceptable in the world in which we live.”⁸⁹ In short, EPA can determine what level of greenhouse gas reductions is necessary for states to comply with Section 115.⁹⁰

Second, Section 115 notably lacks any rigid deadline for achieving full compliance. In contrast with the strict timelines and penalties for states that fail to achieve or maintain NAAQS using their implementation plans,⁹¹ Section 115 sets no compliance schedule that states must adhere to when revising their implementation plans to mitigate international air pollution. Section 110 reinforces that, by granting states the ability to set “schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of this chapter.”⁹² Furthermore, Section 110 implies that revised plans need only be “substantially adequate” to comply with Section 115,⁹³ a loose standard that should grant some discretion to both EPA and the states. Indeed, states may have even more authority than EPA does to consider factors like costs in designing their implementation plans.⁹⁴

Finally, Section 115’s legislative history suggests that states may only be required to achieve reasonable progress toward abatement. Congress added the “prevent or eliminate” language when it revised Section 115 in the 1977 Clean Air Act Amendments.⁹⁵ However, the language did not appear in the original bill proposed by the Senate (the House bill had no comparable revisions to Section 115).⁹⁶ Instead, the phrase was added in Conference. The Conference Report gives little explanation, other than the slight qualification that plans must be revised “*only to the extent necessary* to prevent or eliminate the endangerment.”⁹⁷ Therefore, the Senate’s description of its original bill is the best source for interpreting Congressional intent. The Senate Report suggests that applying the implementation plan process to Section 115 was the driving motivation for the revisions, and not changing the standard for stringency of controls. The Senate Report even states, “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”⁹⁸—*control*, not eliminate. Before the 1977 revision, the stringency of controls for international pollution was determined by abatement conferences and public hearings. Under that model, the standard was “effective progress toward abatement,”⁹⁹ to be achieved by adopting “reasonable and suitable [measures].”¹⁰⁰

Based on the statutory text, context, and legislative history, Section 115 should be interpreted to require the more achievable standard of reasonable progress toward abatement. EPA can use its

⁸⁹ *Id.* at 495 (quoting *NRDC v. EPA*, 824 F.2d 1146, 1165 (D.C. Cir. 1987)).

⁹⁰ *Cf. id.* at 496 (“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.’”).

⁹¹ *E.g.* 42 U.S.C. §§ 7502, 7509.

⁹² *Id.* § 7410(a)(2)(A).

⁹³ *Id.* § 7410(a)(2)(H)(ii) (“provide for revisions . . . whenever the Administrator finds . . . that the plan is *substantially inadequate* . . . to otherwise comply with any additional requirements established under this chapter”) (emphasis added).

⁹⁴ *Whitman*, 531 U.S. at 470 (“It is to the States that the Act assigns initial and primary responsibility for deciding what emissions reductions will be required from which sources. . . . It would be impossible to perform that task intelligently without considering which abatement technologies are most efficient, and most economically feasible—which is why we have said that ‘the most important forum for consideration of claims of economic and technological infeasibility is before the state agency formulating the implementation plan.’”).

⁹⁵ Compare Clean Air Act of 1977 § 115 with Clean Air Act of 1970 § 115.

⁹⁶ S. Rep. 95-127, pt. 2 at 56 (1977). The Senate version did not say “prevent or eliminate,” but only that “[t]he notice of the Administrator shall operate as finding under clause (ii) of subparagraph (H) of subsection (a)(2) of section 110 of this Act.” The House bill had no comparable revisions to Section 115, *see* H.R. Conf. Rep. 95-564, at 1517 (1977).

⁹⁷ H.R. Conf. Rep. 95-564, at 1517 (emphasis added).

⁹⁸ S. Rep. 95-127 at 65.

⁹⁹ Clean Air Act of 1970 § 115(e).

¹⁰⁰ *Id.* § 115(f)(2).

discretion to determine what level of greenhouse gas reductions is required to eliminate the global dangers that U.S. emissions contribute to. Setting the standard at the point where the marginal abatement costs, based on reasonable technology projections, equal the global social cost of carbon would be the most appropriate approach to the requirement. Additionally, EPA can approve state implementation plans that propose a reasonably long timeline for full compliance, to avoid any issues of technological or economic feasibility.

Section 115 permits flexible regulatory options, including market-based tools.

Unlike other sections of the Clean Air Act, greenhouse gas regulations under Section 115 would not be limited to a piecemeal approach, applying to only one sector at a time. Instead, states would be free to craft the most cost-effective implementation plan, taking advantage of the lowest-cost abatement opportunities no matter whether the source were stationary or mobile, new or existing.¹⁰¹

In particular, states could implement market-based systems for emissions control. This authority is strengthened by Section 115's directions to use the state implementation plan process under Section 110, which explicitly allows states to adopt "economic incentives such as fees, marketable permits, and auctions of emissions rights."¹⁰² A nationwide cap-and-auction scheme, with dividends rebated back to lower-income consumers, would create the most efficient and fairest program for reducing greenhouse gas emissions.¹⁰³ EPA could use its authority under Section 115 to set either a national cap or state-based budgets at the level required to eliminate the global dangers that U.S. emissions contribute to; again, comparing the social cost of carbon against marginal abatement costs would be the optimal way to set this budget. Though EPA cannot mandate the form of states' implementation plans, it can encourage states to coordinate their plans to create a nationwide auction system.¹⁰⁴ By maximizing the geographic and sectoral scope of the market, such a national cap-and-auction system would maximize regulatory efficiency.

Section 115 provides a mandatory, efficient, and comprehensive approach to regulating greenhouse gas emissions.

All the prerequisites to trigger Section 115 have been satisfied for greenhouse gases: EPA has received reports from a duly constituted international agency that give the agency sufficient reason to believe that U.S. emissions are endangering foreign health and welfare; and other countries have granted the United States reciprocal rights. Consequently, EPA is required to instruct states to revise their implementation plans to achieve reasonable progress toward abatement of greenhouse gases. States have the authority to construct an integrated, nationwide cap-and-auction control system, covering all sectors of the economy in the most cost-effective manner.

Section 115 is therefore the preferred mechanism under the Clean Air Act to regulate greenhouse gases, and Section 115-based regulation would make most greenhouse gas regulations under other provisions of the Clean Air Act largely redundant.

¹⁰¹ Though there are some restrictions on states' ability to directly regulate emissions from new motor vehicles and non-road vehicles, 42 U.S.C. § 7543, as well as from aircraft, *id.* § 7573, states can incorporate vehicle fuel controls in their implementation plans, *id.* § 7545(c)(4)(A), since EPA has neither issued greenhouse gas controls for vehicle fuels nor made a finding that no greenhouse gas controls are necessary for vehicle fuels under paragraph (c)(1). EPA has indirectly regulated the greenhouse gas content of fuels through its renewable fuel program, but that regulation is under paragraph (o) of § 7545, not under (c)(1).

¹⁰² *Id.* § 7410(a)(2)(A).

¹⁰³ Inimai Chettiar & Jason Schwartz, *The Road Ahead: EPA's Options and Obligations for Regulating Greenhouse Gases*, ch. 4 (Policy Integrity Report 3, 2009).

¹⁰⁴ *Id.* at ch. 5.

II. EPA Should Evaluate the Impact of Greenhouse Gases on the Stratosphere and Respond with Appropriate Regulation under Title VI.

A call for information under Title VI would advance EPA's current understanding of the interaction between greenhouse gas emissions and the stratosphere. If EPA finds that greenhouse gases affect the stratosphere or ozone in the stratosphere in a way that endangers public health or welfare, it must develop regulations, preferably a cap-and-auction system, through Title VI. Such controls would be redundant and unnecessary if EPA has already enacted comprehensive regulations through Section 115, but Title VI is also available—and potentially mandatory—as an alternative.

Greenhouse gases likely affect the stratosphere and endanger public health or welfare.

If, in EPA's judgment, "any substance, practice, process, or activity may reasonably be anticipated to affect the stratosphere" or "ozone in the stratosphere" in a way that endangers public health or welfare, then EPA is required by Section 615 of the Clean Air Act to regulate such substance, practice, process, or activity.¹⁰⁵ While EPA has rarely issued regulations under this particular statutory authority, it could be utilized to regulate greenhouse gases.

The first statutory inquiry is whether greenhouse gas emissions affect the stratosphere. "Affect" is a broad term: EPA need only find that greenhouse gases interact, in some way, with the stratosphere or ozone in the stratosphere. Existing scientific literature supports this conclusion. For example, a 2010 report produced by the United Nations Environment Program stated, "stratospheric ozone can be affected by the increases in the concentration of GHGs."¹⁰⁶ Feedback loops may also exist between climate change and ozone depletion.¹⁰⁷

Nitrous oxide—a greenhouse gas—is of particular importance for ozone in the stratosphere. Since at least 2009, scientists from the National Oceanic and Atmospheric Administration have acknowledged the need to address nitrous oxide emissions because of their ozone-depleting potential.¹⁰⁸ While the Montreal Protocol has advanced the protection of the ozone layer, anthropogenic emissions of nitrous oxide, such as from agriculture, continue to contribute to the destruction of ozone.¹⁰⁹ In addition to nitrous oxide, scientific reports indicate that methane affects the stratosphere and ozone depletion.¹¹⁰ The impact of carbon dioxide on the ozone layer is less clear-cut, but evidence suggests carbon dioxide does have some impact on the stratosphere.¹¹¹

The second statutory inquiry is whether the effects of greenhouse gases on the stratosphere endanger public health or welfare. Existing scientific literature suggests that some greenhouse gas emissions may meet that standard, but that additional information is needed on the impacts of

¹⁰⁵ 42 U.S.C. § 7671n (" . . . the Administrator shall promptly promulgate regulations . . . ").

¹⁰⁶ U.N. ENV'T PROGRAMME, ENVIRONMENTAL EFFECTS OF OZONE DEPLETION AND ITS INTERACTIONS WITH CLIMATE CHANGE 1 (2010).

¹⁰⁷ See M. Sigmond et al., *Drivers of Past and Future Southern Ocean Change: Stratospheric Ozone Versus Greenhouse Gas Impacts*, 38 GEOPHYSICAL RES. LETTERS L12601 (2011) (arguing that depleting of stratospheric ozone impacts ocean circulation and temperatures, which also affects the global carbon cycle); M. Lal & T. Holt, *Ozone Depletion Due to Increasing Anthropogenic Trace Gas Emissions*, 1 CLIMATE RES. 2, 85 (1991).

¹⁰⁸ NOAA, *Study Shows Nitrous Oxide Now Top Ozone Depleting Emission*, Aug. 27, 2009; see also A.R. Ravishankara et al., *Nitrous Oxide (N₂O): The Dominant Ozone-Depleting Substance Emitted in the 21st Century*, 326 SCI. MAG. 123 (2009).

¹⁰⁹ Martyn Chipperfield, *Atmospheric Science: Nitrous Oxide Delays Ozone Recovery*, 2 NATURE GEOSCIENCE 742 (2009); Catherine Hénault & Cecile Revellin, *Inoculants of Leguminous Crops for Mitigating Soil Emissions of the Greenhouse Gas Nitrous Oxide*, 346 PLANT & SOIL 1-2, 289 (2011); see also UNITED NATIONS ENV'T PROGRAMME, QUESTIONS AND ANSWERS ABOUT THE ENVIRONMENTAL EFFECTS OF THE OZONE LAYER DEPLETION AND CLIMATE CHANGE: 2010 UPDATE 17 (2010).

¹¹⁰ WORLD METEOROLOGICAL ORG., SCIENTIFIC ASSESSMENT OF OZONE DEPLETION: 2010, at 1.76 (2010) ("Increasing concentrations of methane and its effects on hydrogen oxides can enhance the destruction of ozone in the upper stratosphere."); see also UNITED NATIONS ENV'T PROGRAMME, *supra* note 109, at 43 (describing methane as an ozone-depleting gas).

¹¹¹ WMO, *supra* note 110, at 5.22 (concluding carbon dioxide may both increase and deplete stratospheric ozone).

other emissions. The stratospheric ozone layer protects Earth from ultraviolet radiation, which can cause skin cancer and other health and environmental problems.¹¹² Therefore, to the extent that greenhouse gases contribute to ozone depletion, they endanger public health and welfare. As noted above, the scientific literature already supports that nitrous oxide and methane emissions deplete stratospheric ozone.¹¹³ Carbon dioxide emissions affect the stratosphere, but it is less clear whether they have an ozone-enhancing or ozone-depleting effect.¹¹⁴ EPA should further explore this gap in the literature. Additionally, more information should be collected on how changes in the stratosphere may affect climate, and the health and welfare impacts of that interaction.

EPA should therefore issue a public call for information, requesting that the scientific community and other interested parties submit the most recent and relevant information concerning the interaction between greenhouse gases and the stratosphere, especially ozone in the stratosphere, and the health or welfare effects thereof. Based on the information collected, EPA should identify any remaining limitations in the scientific evidence and conduct its own assessment.

EPA should issue an endangerment finding if, based on the collected information, EPA determines that greenhouse gases affect the stratosphere in a manner that endangers health or welfare. If EPA makes such a finding, it will then be required under Section 615 to develop a regulatory program that addresses greenhouse gas emissions.¹¹⁵ Title VI also requires international cooperation on the protection of the stratosphere.¹¹⁶ EPA should consider promoting international cooperation on the reduction of greenhouse gas emissions not covered by the Montreal Protocol.

EPA should establish market-based regulation for greenhouse gases under Title VI.

Should EPA regulate greenhouse gases through Title VI, a market-based approach would be optimal. EPA has the authority to establish market-based regulation under Title VI.¹¹⁷ Section 615 states that once EPA issues an endangerment finding, it “shall promulgate regulations respecting the control” of the substance, practice, process, or activity for which it made the finding.¹¹⁸ The use of the word “control” is significant. Though the term is not defined in the Clean Air Act, it is often used throughout the statute in connection with explicit grants of authority for use of market-based tools.¹¹⁹ The legislative history of Title VI further demonstrates that Congress intended to give EPA discretion in determining the kind of regulatory program it wishes to pursue, and in the past EPA developed a trading scheme pursuant to the precursor to Section 615.¹²⁰

Title VI provides an alternate source of mandatory, efficient, and comprehensive regulation.

If EPA finds a connection between greenhouse gas emissions, stratospheric impacts, and public health or welfare, then Section 615 offers a potentially comprehensive, efficient, and mandatory source of authority for greenhouse gas regulation.

¹¹² See EPA, Ozone, <http://www.epa.gov/ozone>; ERIKA WILSON, EPA, CLIMATE CHANGE, STRATOSPHERIC OZONE, AND THE CLEAN AIR ACT (2011) (explaining depletion of stratospheric ozone leads to “skin cancer, cataracts and ecological damage”).

¹¹³ See also M. Prather & J. Hsu, *Coupling of Nitrous Oxide and Methane by Global Atmospheric Chemistry*, 330 Sci. 952 (2010).

¹¹⁴ WORLD METEOROLOGICAL ORG., *supra* note 110, at 5.22.

¹¹⁵ 42 U.S.C. § 7671n.

¹¹⁶ *Id.* § 7671p.

¹¹⁷ See Chettiar & Schwartz, *supra* note 103, at 72-73; *but see id.* at 67-68 on limitations of rebating auction revenue to consumers.

¹¹⁸ 42 U.S.C. § 7671n.

¹¹⁹ See Chettiar & Schwartz, *supra* note 103, at 65-67.

¹²⁰ *Id.* at 72-73.

III. EPA Must Regulate Significant Stationary Sources under Section 111.

Section 111 requires EPA to promulgate performance standards for categories of stationary sources that significantly contribute to dangerous pollution. Because the criteria have been met, EPA must regulate significant stationary sources of greenhouse gases under Section 111:

- First, EPA “shall” create a list of source categories that, in its judgment, “cause, or contributed significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.”¹²¹
 - EPA has already determined that greenhouse gas pollution endangers health and welfare. Several categories of stationary sources, including agricultural sources and coal mines, have not yet been “listed” under Section 111, but contribute significantly to greenhouse gas pollution. EPA must list such source categories.
 - Listing a new source category gives EPA one year to propose “Federal standards of performance for new sources within such category.”¹²²
- Second, some stationary sources have already been “listed” and regulated for other, non-greenhouse gas pollutants, but also emit significant quantities of greenhouse gases. EPA “shall,” at least every eight years, revise the performance standards for already-listed source categories.¹²³
 - No pollutant-specific endangerment or contribution finding is required before EPA can revise the performance standards for already-listed source categories to cover greenhouse gas emissions. EPA has already begun developing new source performance standards for some categories, but many important sources already listed under Section 111 are not yet regulated for greenhouse gases.
 - EPA should use cost-benefit analysis to prioritize and issue greenhouse gas standards, such as for: natural gas and petroleum systems, landfills, iron and steel producers, cement producers, nitric acid plants, and wastewater treatment facilities.
- Third, once EPA has developed performance standards for new sources of greenhouse gas emissions under Section 111(b), EPA must also instruct states under Section 111(d) to develop performance standards for existing sources in the same categories.

EPA is already in the process of developing new source performance standards for some categories, and has been petitioned or sued to develop them for other categories.¹²⁴ EPA must promptly finalize these regulations, for both new sources and existing sources—in particular, for new and existing power plants. But EPA must also regulate greenhouse gases from all other significant sources of emissions, and is hereby petitioned to do so, if such sources are not already covered by action taken under Sections 115 or 615. EPA should develop performance standards for new and existing sources simultaneously, to avoid grandfathering; should allow states to use flexible, market-based mechanisms in the regulation of existing sources; and should set schedules to automatically phase in stronger standards over time.

¹²¹ 42 U.S.C. § 7411(b)(1)(A).

¹²² *Id.* § 7411(b)(1)(B).

¹²³ *Id.*

¹²⁴ *E.g.*, Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22,392, 22,412-13 (proposed Apr. 13, 2012) (to be codified at 40 C.F.R. pt. 60); *see also* Lawrence Hurley, 7 States Plan to Sue EPA over Methane Emissions, Greenwire, Dec. 11, 2012 (discussing litigation over performance standards for the oil and natural gas industry).

EPA must list additional source categories that significantly emit greenhouse gases.

Section 111(b) requires that EPA “shall . . . publish (and from time to time thereafter shall revise) a list of categories of stationary sources. [EPA] shall include a category of sources if in [its] judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” Once listed, EPA must develop performance standards for such sources. Important source categories, such as agriculture and coal mines, contribute significantly to dangerous greenhouse gas pollution and, therefore, must be regulated.

Revising the list of categories is a mandatory obligation.

Even though the statute says EPA only need revise its list of regulated categories “from time to time,” EPA’s discretion in this matter is sharply limited by the repeated command word “shall,” which appears three times in Section 111(b)(1). Interpreting nearly identical language under Section 231 of the Clean Air Act, a D.C. Circuit district court recently found that though EPA may have some discretion as to timing, the phrase “shall from time to time” does provide a standard for judicial review of unreasonable delay.¹²⁵ In other words, when EPA has reason to believe that an unregulated stationary source contributes significantly to greenhouse gas pollution, the agency is allowed some leeway in prioritizing its own docket of rulemakings, but it must articulate a reasonable explanation for its timing and cannot indefinitely delay. EPA must develop a process for making reasonable progress toward listing additional, significant source categories of greenhouse gases.

EPA already has evidence of endangerment and significant contribution for several categories, including agricultural sources and coal mines.

EPA has already determined that generally, and for purposes of Section 111 regulation, greenhouse gas pollution endangers public health and welfare.¹²⁶ Therefore, the only prerequisite to listing additional source categories is a finding of significant contribution to greenhouse gas pollution.

Though the term “significantly” is not defined in the Clean Air Act, EPA recently indicated that the qualifier does not restrict its ability to broadly address greenhouse gas emissions under Section 111. EPA reasoned that even “a limited amount of contribution would meet [the significant contribution] standard in light of the fact that GHG air pollution is caused by a large number of types of sources and that no one source category dominates the entire inventory.”¹²⁷ EPA already has sufficient evidence of the significant contributions of unregulated source categories, through its national greenhouse gas inventory. Rather than setting any sort of numerical threshold for the significant contribution criterion, EPA should simply prioritize listing those unregulated source categories that make the largest contributions to greenhouse gas pollution.

For example, EPA has determined that agricultural sources, such as livestock, soil management, and rice production, constitute 7% of U.S. greenhouse gas emissions.¹²⁸ Coal mines, including abandoned underground mines, constitute 1.1% of all U.S. greenhouse gas emissions.¹²⁹ Again, while EPA should not set any rigid numerical threshold for significance, it is notable that in related contexts, EPA has found contributions as low as 0.5% of nationwide emissions to be “significant.”¹³⁰

¹²⁵ *Ctr. for Biological Diversity v. EPA*, 794 F. Supp. 2d 151, 161–62 (D.D.C. 2011).

¹²⁶ 77 Fed. Reg. at 22,412–13; *see also* 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).

¹²⁷ 77 Fed. Reg. at 22,413.

¹²⁸ EPA, Sources of Greenhouse Gas Emissions, <http://www.epa.gov/climatechange/ghgemissions/sources.html> (last visited Jan. 31, 2013) (based on EPA’s 2012 *Inventory of U.S. Greenhouse Gas and Sinks: 1990-2010*).

¹²⁹ Calculated from EPA, *Inventory of U.S. Greenhouse Gas and Sinks: 1990-2010* (2012).

¹³⁰ *See, e.g.*, Control of Emissions from Nonroad Large Spark-Ignition Engines, and Recreational Engines (Marine and

A coalition of environmental groups already petitioned, in 2010, for EPA to list coal mines as a source category under Section 111, due to their greenhouse gas emissions and other pollution.¹³¹ More recently, in December 2012, EPA indicated its openness to a settlement agreement in the litigation related to that petition.¹³² This petition simply renews the call for EPA to regulate greenhouse gas emissions from coal mines as expeditiously as possible.

Similarly, in 2009, a coalition of environmental and animal rights organizations petitioned EPA to list concentrated animal feeding operations under Section 111, due to their greenhouse gas and other harmful emissions.¹³³ This petition both renews that call and extends it to cover all significant agricultural sources of greenhouse gas emissions.

The Clean Air Act does not prohibit the listing of agricultural sources under Section 111. EPA previously reasoned that agricultural sources are not exempt from Clean Air Act requirements for the purposes of New Source Review.¹³⁴ The definition of “stationary source” under the New Source Review program is the same as the definition of stationary source for Section 111: “any building, structure, facility, or installation which emits or may emit [pollution].”¹³⁵ It follows that agricultural sources likewise may fall within the scope of Section 111 and can be regulated as stationary sources. EPA should regulate agricultural sources under Section 111 due to their significant contribution to greenhouse gas pollution.

Other currently unlisted sources of greenhouse gas emissions may also meet the criteria for significant contribution. Once a category is listed, EPA must propose new source performance standards within one year.¹³⁶

EPA must issue greenhouse gas standards for already-listed source categories.

Many important sources of greenhouse gas emissions have already been listed under Section 111 and regulated for their non-greenhouse gas pollution. Once a source category has been listed under Section 111, EPA “shall, at least every 8 years, review and, if appropriate, revise such [performance] standards.”¹³⁷ Performance standards are defined broadly as “standard[s] for emissions of air pollutants,”¹³⁸ but Section 111 does not explicitly lay out a decisionmaking framework to guide EPA

Land-Based), 67 Fed. Reg. 68,242, 68,245 (Nov. 8, 2002) (“Nationwide, [spark-ignition] engines and vehicles are a significant source of mobile source air pollution. As described below, *of all mobile source emissions* in 2000 they accounted for about 9 percent of HC emissions, 4 percent of CO emissions, 3 percent of NOX emissions, and 2 percent of *direct PM emissions*.”) (discussing the significance test under Section 213 of the Clean Air Act) (emphasis added). But mobile source emissions of PM, for example, only constituted 23% of total man-made sources, *id.* at 68,246, and 2% of 23% is about 0.5%.

¹³¹ Petition from Earthjustice et al., to EPA, for Rulemaking under the Clean Air Act to List Coal Mines as a Source Category and to Regulate Methane and Other Harmful Air Emissions from Coal Mining Facilities Under Section 111, June 16, 2010.

¹³² Manuel Quinones, *Enviro-EPA Settlement Possible on Mine Emissions*, Greenwire, Dec. 10, 2012.

¹³³ Petition from the Humane Society of the U.S. et al., to EPA, to List Concentrated Animal Feeding Operations under Clean Air Act Section 111(b)(1)(A) and to Promulgate Standards of Performance under Clean Air Act Sections 111(b)(1)(B) and 111(d), Sept. 21, 2009.

¹³⁴ See, e.g., Revisions to the California State Implementation Plan; San Joaquin Valley Unified Air Pollution Control District, 69 Fed. Reg. 27,837 (May 17, 2004) (indicating that the SIP in question could not be approved if it exempted agricultural sources from permitting); see also *Ass’n of Irrigated Residents v. Fred Schakel Dairy*, 2005 U.S. Dist. LEXIS 36769, *37 (E.D. Cal. 2005) (rejecting the argument that the farm in question was exempt simply for being a farm under the reasoning that there is no apparent exemption for agricultural sources under the Clean Air Act and that “it is EPA’s position that CAA does not exempt major stationary agricultural sources”).

¹³⁵ Compare 40 C.F.R. § 51.165 (a)(1)(i) (2011), with 42 U.S.C. § 7411(a)(3); see also 42 U.S.C. § 7602(z).

¹³⁶ 42 U.S.C. § 7411(b)(1)(B).

¹³⁷ *Id.*

¹³⁸ *Id.* § 7411(a)(1).

on which air pollutants get standards of performance and which do not. Nevertheless, EPA's discretion to make this determination is limited by the statutory context, principles for rational rulemaking, and executive orders. For greenhouse gases, EPA must use cost-benefit analysis to prioritize and issue additional performance standards for already-listed, significant categories.

Statutory context and principles for rational decisionmaking support adding performance standards for any significant sources of a dangerous pollutant.

Listing source categories and issuing performance standards are, under Section 111, two distinct processes, and only the former explicitly requires an endangerment and contribution finding. EPA has adopted the position that neither endangerment nor contribution findings are prerequisites to adding a performance standard for a new pollutant emitted by an already-listed source category.¹³⁹ Certainly, requiring entirely new, repetitive, formal endangerment and contribution findings every time EPA wanted to add greenhouse gas performance standards for a category could prove to be unnecessarily burdensome, costing time and money and causing delays without adding any new information. Instead, EPA's existing endangerment finding from 2009 should be sufficient to prove the danger of greenhouse gases emitted by any stationary source category,¹⁴⁰ and the agency's greenhouse gas inventory, which lists the annual emissions by source category, should provide ample evidence that particular source categories contribute significant emissions.¹⁴¹

However, just because endangerment and contribution findings are not formal prerequisites to adding performance standards for already-listed categories does not mean EPA has limitless discretion to decide which pollutants are regulated and which are not. For example, if cement manufacturers were not already a listed source category, and if EPA found that cement manufacturers contributed significantly to dangerous greenhouse gas pollution (which they do), the statute would require the agency to list cement manufacturers as a source category and develop performance standards for them.¹⁴² It would make little sense, then, for EPA not to be required to set performance standards for greenhouse gas emissions from cement manufacturers just because that source category was listed before EPA fully realized the dangers of greenhouse gases.

Furthermore, any discretion EPA has to determine which pollutants get performance standards and which do not is limited by principles for rational, non-arbitrary decisionmaking.¹⁴³ EPA has already begun moving forward with greenhouse gas performance standards during its Section 111 review of power plants. It would be inconsistent and arbitrary for EPA to refuse to regulate significant greenhouse gas emission from other source categories during future Section 111 reviews.¹⁴⁴

Thus, based on the context of Section 111 and principles for rational decisionmaking, EPA should be required to develop performance standards for already-listed sources that contribute significant emissions of dangerous greenhouse gas pollution.

¹³⁹ 77 Fed. Reg. at 22,412-13.

¹⁴⁰ 74 Fed. Reg. at 66,496.

¹⁴¹ EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010*, *supra* note 129.

¹⁴² See 42 U.S.C. § 7411(b)(1)(A) ("The Administrator shall . . . publish (and from time to time thereafter *shall revise*) a list of categories of stationary sources. He *shall* include a category of sources in such list if in his judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.") (emphasis added).

¹⁴³ See *Motor Vehicle Mfrs. Ass'n of the U.S. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (defining the arbitrary and capricious standard in rulemaking).

¹⁴⁴ In the past, EPA has not been open to regulating greenhouse gases under Section 111, and has asserted that it can exercise its discretion under the statute not to issue such regulations. For a discussion of such previous EPA positions, as well as an explanation of the limitations of EPA's discretion under Section 111, see Letter from Policy Integrity to EPA, on New Source Performance Standards for Nitric Acid Plants, June 23, 2011.

Executive orders support prioritizing subsequent performance standards according to a cost-benefit test, such as for landfills and industrial processes.

While EPA's discretion may be limited, neither should EPA be required to regulate every air pollutant emitted by listed categories—even pollutants that do not pose a danger to public health or welfare, that are not emitted in significant quantities, or that could only be regulated at costs grossly disproportionate to benefits. Cost-benefit analysis is a rational way to exercise discretion, is required by executive orders, and is not prohibited by statute. EPA should assess the costs and benefits of setting performance standards for additional pollutants emitted by listed categories, and should select those policies that maximize net benefits.

As a general policy matter, regulation should maximize social welfare. Cost-benefit analysis is the best tool that agencies can use to achieve this goal, to rationally, consistently, and transparently make policy choices.¹⁴⁵ According to executive orders, agencies must use cost-benefit analysis to guide their regulatory decisions when not otherwise prohibited.¹⁴⁶ Section 111 of the Clean Air Act does not foreclose the use of cost-benefit analysis. On the contrary, phrases in the definition of “standard of performance”—such as “take into account the cost” and “best”¹⁴⁷—are consistent with cost-benefit analysis. While courts have determined that this language does not *mandate* that EPA base its decisions on cost-benefit analysis, “because Congress did not assign this specific weight . . . of these factors, the Administrator is free to exercise his discretion in this area.”¹⁴⁸

When revising these standards of performance, EPA should begin by focusing on categories whose emissions reductions would yield the greatest net benefits. This does not necessarily mean that the largest emitters should be regulated first. Certain smaller categories may lend themselves to particularly low-cost reductions in emissions. The largest categories may nonetheless represent the greatest opportunities to realize improvements to public health and welfare. Indeed, EPA recognizes that this is usually the case.¹⁴⁹

EPA should of course first finalize its pending performance standards for power plants, for both new and existing sources, which as a category make the largest contribution to greenhouse gas pollution. Several other already-listed categories would also pass a cost-benefit test for adding greenhouse gas performance standards. EPA should focus subsequent regulations on some of these larger sources, including natural gas and petroleum systems, landfills, iron and steel producers, cement producers, nitric acid plants, and wastewater treatment facilities.¹⁵⁰

Importantly, adopting a cost-benefit framework does not mean that performance standards under Section 111 cannot be technology-forcing. Indeed, as discussed further below, the statute

¹⁴⁵ RICHARD L. REVESZ & MICHAEL A. LIVERMORE, *RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH* 10 (2008).

¹⁴⁶ Exec. Order No. 12,866 § 1(a), 58 Fed. Reg. 51,735 (Sept. 30, 1993); Exec. Order No. 13,563 § 1(b), 76 Fed. Reg. 3,821 (Jan. 18, 2011) (stipulating that agencies must “propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs”).

¹⁴⁷ 42 U.S.C. § 7411(a)(1).

¹⁴⁸ *New York v. Reilly*, 969 F.2d 1147, 1150 (D.C. Cir. 1992). This position is consistent with that taken in the relevant Executive Orders, as well as recent Supreme Court decisions. *See, e.g.*, *Entergy v. Riverkeeper*, 129 S. Ct. 1498 (2009).

¹⁴⁹ *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 Fed. Reg. at 66,538–39 (“Thus, when analyzing whether a source category that emits well-mixed greenhouse gases in the United States contributes to the global problem, it is appropriate for the Administrator to consider how that source category fits into the larger picture of U.S. emissions.”); *Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units*, 77 Fed. Reg. at 22,395 (“The EPA is focusing first on reducing emissions from the largest emitters through measures with reasonable costs”); *id.* at 22,396 (“The special characteristics of GHGs make it important to take initial steps to control the largest emissions categories without delay.”).

¹⁵⁰ *See EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2010*, *supra* note 129.

authorizes EPA to make reasonable extrapolations of technological performance. EPA need not be limited to comparing the benefits of greenhouse gas reductions against current compliance costs. Instead, EPA can make technological projections and set a schedule for automatically phasing in stronger standards over time.

Existing sources must be regulated under Section 111(d), and regulation should avoid grandfathering.

For greenhouse gases, the development of new source performance standards for source categories under Section 111(b) will automatically trigger the need for states to develop performance standards for existing sources within those categories. Performance standards for new and existing sources should be developed in a coordinated fashion, to avoid grandfathering.

Section 111(b) regulation triggers Section 111(d) regulation.

Section 111(d) stipulates that EPA shall guide states on issuing performance standards for existing sources of pollutants not regulated under Section 108 (National Ambient Air Quality Standard program) or 112 (Hazardous Air Pollutant program), and that would otherwise be regulated under Section 111 if they were emitted by new sources.¹⁵¹ Section 111(d) explains that states should develop plans for the implementation and enforcement of the performance standards.¹⁵²

Greenhouse gases are not currently regulated under Sections 108 or 112. Therefore, as EPA carries out its mandatory obligations to regulate certain new sources of greenhouse gas emissions under Section 111(b), states will need to submit plans to control these pollutants at existing facilities.¹⁵³ Under the current regulations governing the use of Section 111(d), EPA is required to first publish a guidance document.¹⁵⁴ Subsequently, each state must submit implementation plans with emissions standards, which can take the form of either “an allowance system or prescri[ption of] allowable rates of emissions.”¹⁵⁵ As argued below, in order to maximize net benefits, states should utilize the allowance provisions to implement a flexible, market-based program under Section 111(d).

EPA should determine standards for new and existing sources at the same time, to limit grandfathering.

Creating more lenient standards for existing sources than for new sources typically creates incentives to keep existing plants in operation longer than is economically efficient. EPA should develop standards for existing and new sources in a coordinated fashion to minimize such inefficiencies.

The critical concern for grandfathering is the “old plant effect,” in which existing facilities stay in operation longer than is optimal under an efficient pollution-pricing scheme. Differential standards for new and existing plants distort the economic analysis that plant owners undertake when

¹⁵¹ See 42 U.S.C. §§ 7411(d)(1)(A)(i)–(ii) (“The Administrator shall prescribe regulations which shall establish a procedure . . . under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from a source category which is regulated under section 7412 of this title but (ii) to which a standard of performance under this section would apply if such existing source were a new source.”).

¹⁵² *Id.* § 7411(d)(1)(B).

¹⁵³ See, e.g., Approval and Promulgation of State Plans for Designated Facilities and Pollutants; State of Iowa, 69 Fed. Reg. 51,957 (“Section 111(d) of the CAA requires states to submit plans to control certain pollutants (designated pollutants) at existing facilities (designated facilities) whenever standards of performance have been established under section 111(b) of the same type, and EPA has established emission guidelines for such existing sources.”).

¹⁵⁴ 40 C.F.R. § 60.22.

¹⁵⁵ *Id.* § 60.24(b)(1).

deciding whether to build a new plant or to continue operating the existing one.¹⁵⁶ New construction becomes relatively more expensive (and keeping an older plant in operation becomes relatively cheaper) than it would be if the level of regulation were consistent across all plants. These problematic incentives create an old plant effect, keeping existing plants running and delaying the timely closure of old, inefficient facilities.¹⁵⁷ (For a summary of the empirical evidence for “old plant effects” under historical Clean Air Act regulations, see Policy Integrity’s letter to EPA and OIRA on the new source performance standards for power plants.¹⁵⁸)

In addition to the old plant effect, the Clean Air Act’s New Source Review provisions create a “significant improvement effect.” Since New Source Review is triggered by significant modifications,¹⁵⁹ differential standards for modified and non-modified plants will cause existing plants to make large modifications less frequently than is optimal.¹⁶⁰ This adds a second barrier to new construction and investment in up-to-date power plant facilities. EPA should avoid reinforcing the Clean Air Act’s existing barriers to socially optimal investment decisions.

It is the discrepancy between the standards for new and existing sources that creates the potential for negative grandfathering effects. Therefore, EPA should develop its performance standards for new and existing sources in coordination and at the same time, so the agency can examine such discrepancies and try to minimize the negative effects of grandfathering.¹⁶¹ By jointly setting new and existing source standards, EPA can optimize the regulatory regime: it may achieve greater emissions reductions at the same cost or achieve the same emissions reductions at a lower cost than by following the past practice of enacting strict new source standards with full grandfathering. This decisionmaking process will ensure that the overall regulatory regime offers optimal incentives for the timely retirement of older plants.

EPA should define a market as the “best system.”

In EPA’s proposed performance standards for power plants, the agency defines natural gas combined cycle units as the “best system of emission reduction,”¹⁶² and sets the performance standard at 1,000 pounds of carbon dioxide per megawatt-hour, based on the demonstrated performance of that technology.¹⁶³ However, EPA offers little justification for why that technology is the “best system” or why that standard is the most efficient. In future rulemakings, EPA should interpret “best system” to allow for flexible compliance mechanisms like markets.

By enabling firms to identify and take advantage of the lowest-cost opportunities for emissions reductions, flexible compliance mechanisms increase the overall efficiency of regulation.¹⁶⁴ Several

¹⁵⁶ Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation: The Law and Economics of New Source Review*, 101 NW. U. L. REV. 1677 (2007); see also Garth Heutel, *Plant Vintages, Grandfathering, and Environmental Policy*, 61 J. ENVTL. ECON. & MGMT. 36 (2010).

¹⁵⁷ Nash & Revesz, *supra* note 156, at 1708.

¹⁵⁸ Letter from Policy Integrity, to OIRA and EPA, on Forthcoming Greenhouse Gas New Source Performance Standards for Electric Utility Steam Generating Units, Dec. 1, 2011.

¹⁵⁹ See 40 C.F.R. § 52.24(f)(6).

¹⁶⁰ See Nash & Revesz, *supra* note 156, at 1713-14.

¹⁶¹ See Richard L. Revesz & Allison L. Westfahl Kong, *Regulatory Change and Optimal Transition Relief*, 105 NW. U. L. REV. 1581 (2011).

¹⁶² Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. at 22,414.

¹⁶³ *Id.* at 22,394.

¹⁶⁴ Chettiar & Schwartz, *supra* note 103, at 62–63; Robert N. Stavins, *Policy Instruments for Climate Change: How Can National Governments Address a Global Problem?*, 1997 U. CHI. LEGAL. F. 293, 297–98.

types of flexible compliance are legally available to EPA under the statute and are economically justified, up to and including market-based structures.

EPA should interpret “standard of performance” and “best system” to permit flexible compliance mechanisms.

As defined in Section 111(a)(1), a standard of performance is based on “the degree of emission limitation achievable through the application of the *best system* of emission reduction . . . taking into account the cost.”¹⁶⁵ The broad terms of this provision, as well as a recent Supreme Court decision holding “most efficient” as one reasonable interpretation of the “best” regulatory approach,¹⁶⁶ give EPA ample authority to incorporate flexible compliance into its greenhouse gas performance standards. EPA should exercise its discretion and define flexible compliance mechanisms, like trading, as a vital part of the most efficient and best system for reducing greenhouse gas emissions under Section 111.

Nothing in the expansive definition of “standard of performance” precludes the use of flexible compliance mechanisms, and no negative inference against authority to apply flexible mechanisms is warranted. In the current text, the standard is defined in terms of a “system,” rather than a particular technology or design.¹⁶⁷ In 1990, Congress amended Section 111 to remove the word “technology” from its definition of performance standards, demonstrating congressional intent to increase the flexibility of the “standard of performance” phrase and freeing Section 111(a)(1) from any statutory requirement that the standards be technology-based.¹⁶⁸ Similarly, in the context of new and modified sources, Section 111(b)(5) expressly states that, except as provided for in Section 111(h) (which addresses work practice and other alternative standards), “nothing in this section shall be construed to require . . . any new or modified source to install and operate any particular *technological system* of continuous emission reduction to comply with any new standard of performance.”¹⁶⁹ Thus, the statutory text and legislative history support EPA’s authority to apply flexible compliance mechanisms.

In addition, the presence of a general definition of “standard of performance” in Section 302(l) of the Clean Air Act does not preclude the use of flexible compliance mechanisms under Section 111.¹⁷⁰ While the definitions in Section 302 do apply to the Clean Air Act as a whole, “[s]pecific terms prevail over the general in the same or another statute which otherwise might be controlling.”¹⁷¹ The general provision contained in Section 302(l) should not trump the definition of “standard of performance” contained in Section 111(a)(1).

Even if EPA believes that the text of Section 302(l) is relevant to interpretation of Section 111(a)(1), use of flexible compliance mechanisms is not prohibited. While Section 302(l) defines a “standard of performance” as requiring “continuous emission reduction,”¹⁷² the absence of similar language in Section 111 indicates that this requirement does not apply to new source performance

¹⁶⁵ 42 U.S.C. § 7411(a)(1) (emphasis added).

¹⁶⁶ See *Entergy Corp. v. Riverkeeper, Inc.*, 129 S.Ct. 1498, 1506 (2009) (“‘[B]est technology’ may . . . describe the technology that most efficiently produces some good. In common parlance one could certainly use the phrase ‘best technology’ to refer to that which produces a good at the lowest per-unit cost.”).

¹⁶⁷ 42 U.S.C. § 7411(a)(1).

¹⁶⁸ See Jonas Monast, Tim Profeta & Brooks Rainey Pearson, *Pre-Workshop Paper: Regulating Greenhouse Gas Emissions from Existing Sources: Section 111(d) and State Equivalency* 7–10 (2011) (citing EPA’s reference to these amendments).

¹⁶⁹ 42 U.S.C. § 7411(b)(5) (emphasis added).

¹⁷⁰ *Id.* at § 7602(l).

¹⁷¹ *Fourco Glass Co. v. Transmirra Prods. Corp.*, 353 U.S. 222, 228–29 (1957) (citations and quotation marks omitted).

¹⁷² 42 U.S.C. § 7602(l).

standards.¹⁷³ If EPA still believes that the requirement is by inference applicable to Section 111, the agency can incorporate strategies to ensure “continuous emissions reduction” that are compatible with flexible compliance mechanisms. By setting a standard more stringent than current emissions levels and requiring uninterrupted compliance, EPA’s regulation would achieve “continuous emission reduction.” Further, EPA is required under Section 111(b) to revise the standards “from time to time”¹⁷⁴ and could provide for automatic future reductions in the rule (a meritorious approach in its own right, as described below). EPA could also ensure “continuous emission reduction” by including projections of plants’ remaining useful lives in any emissions budget allocation or by retiring the emissions allowances of retired plants.¹⁷⁵

EPA itself has interpreted the phrase “standard of performance” to allow trading in two recent Section 111 rulemakings. In its Clean Air Mercury Rule, EPA enacted a cap-and-trade system for existing sources under Section 111.¹⁷⁶ In that rulemaking, EPA declared that a tradable permit program fit within “a careful reading of the section 111(a) definition [of] standard of performance,” finding support in both the statutory text and the legislative history of the 1977 Clean Air Act Amendments.¹⁷⁷ Previously, EPA had also authorized a trading scheme under Section 111(d) for emissions of nitrogen oxides.¹⁷⁸

Recent court decisions on EPA trading programs have left intact EPA’s authority to include trading mechanisms within Section 111 regulations. The D.C. Circuit’s decision in *New Jersey v. EPA* did strike down the Clean Air Mercury Rule’s tradable permit program, but the court’s vacatur was spurred by EPA’s failure to follow procedures specific to Section 112.¹⁷⁹ The court never reached the entirely unrelated issue of EPA’s authority to establish tradable permit programs under Section 111.¹⁸⁰ Similarly, the decisions in *North Carolina v. EPA* and *EME Homer City Generation v. EPA* involved EPA’s trading programs under Section 110, but the D.C. Circuit’s decisions to overturn those rules were spurred by language specific to Section 110(a)(2)(D) and unrelated to Section 111’s provisions.¹⁸¹ The requirements of Section 110 are not reflected in the capacious language of Section 111; therefore, the *North Carolina* and *EME Homer City* holdings do not apply here.

Furthermore, flexible compliance mechanisms have been “adequately demonstrated” as required in Section 111(a). Multiple EPA regulations have successfully incorporated emissions trading. The

¹⁷³ As discussed above, § 111(b)(5) expressly states that, except as provided for in § 111(h) (which addresses work practice and other alternative standards), “nothing in this section shall be construed to require . . . any new or modified source to install and operate any particular technological system of *continuous emission reduction* to comply with any new standard of performance.” *Id.* § 7411(b)(5) (emphasis added).

¹⁷⁴ *Id.* § 7411(b).

¹⁷⁵ Further discussion of the role of § 302(l) in interpretation of § 111(a)(1) is available in Chettiar & Schwartz, *supra* note 103, at 86–88.

¹⁷⁶ Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, 70 Fed. Reg. 28,606, 28,616–17 (May 18, 2005) [hereinafter CAMR].

¹⁷⁷ *See id.*

¹⁷⁸ 40 C.F.R. § 60.33b.

¹⁷⁹ Prior to issuing CAMR, EPA had removed electric utility generating units from the list of sources of mercury regulated under § 112 without following the specific delisting procedures enumerated in § 112(c)(9). The court concluded that electric utility generating units were therefore still listed as sources of mercury under § 112 and thus regulation of their mercury emissions under § 111 was unlawful. 517 F.3d 574, 578 (D.C. Cir. 2008).

¹⁸⁰ *Id.* at 584 (“In view of our disposition, the court does not reach other contentions of petitioners or intervenors.”).

¹⁸¹ 531 F.3d 896, 907 (D.C. Cir. 2008) (“Because CAIR is designed as a complete remedy to section 110(a)(2)(D)(i)(I) problems, as EPA claims, CAIR must do more than achieve something measurable; it must actually require elimination of emissions from sources that contribute significantly and interfere with maintenance in downwind nonattainment areas. To do so, it must measure each state’s ‘significant contribution’ to downwind nonattainment even if that measurement does not directly correlate with each state’s individualized air quality impact on downwind nonattainment relative to other upwind states.” (citations omitted)); *see also* *EME Homer City Generation v. EPA* (D.C. Cir. Aug. 21, 2012).

Acid Rain tradable permit program enacted under the 1990 Clean Air Act Amendments reduced sulfur dioxide emissions dramatically in its first twelve years, even as electricity generation increased during the same period.¹⁸² The nitrogen oxides SIP Call also used a tradable permit scheme to reduce emissions within the covered twenty-one states and the District of Columbia.¹⁸³

The argument for trading applies to both new and existing sources in almost identical form. Both Sections 111(b) and (d) use the term “standard of performance,” defined in Section 111(a), which can include trading mechanisms within its scope as described above. Nevertheless, some commentators have argued that legal authority for trading may be more secure under Section 111(d), for existing sources.¹⁸⁴ Section 111(d) instructs states to use an implementation plan-like process similar to what is established under Section 110. Since Section 110 specifically references states’ ability to use market-based mechanisms in their implementation plans,¹⁸⁵ the statutory argument for flexibility is arguably stronger for existing sources. However, ultimately the inclusion of flexible compliance mechanisms under Section 111 turns on the definition of “standard of performance,” which applies equally to new and existing sources.

EPA has great discretion to interpret terms like “best system” under the statute, but the agency should exercise this discretion consistently with the goals of the executive orders—namely, to make regulatory decisions that maximize net benefits and utilize efficient, flexible compliance options.¹⁸⁶ As such, EPA should define the “best system” as a flexible, market-based approach, which will incentivize firms to discover the most efficient ways to reduce pollution.

Multiple flexible mechanisms, including cap-and-auction markets, are available to EPA.

As discussed more extensively in previous submissions to EPA from Policy Integrity, multiple flexible mechanisms are available under Section 111, including “bubbling,” “banking and borrowing,” intra-category and inter-state trading, and re-defining source categories broadly to facilitate intra-sector trading.¹⁸⁷ But EPA has the even greater authority to base its performance standards on a system of inter-category trading with offsets, such as that achieved by a cap-and-auction program. Given the increased efficiency that comes from increasing the geographic and sectoral coverage of a market by allowing regulated entities to take advantage of the lowest-cost abatement opportunity in any state and in any industry, and given the instructions of executive orders to maximize regulatory efficiency, EPA should pursue market-based performance standards.

EPA has several arguments that it has legal authority to apply a cap-and-auction program under Section 111.¹⁸⁸ The broad definition of “standard of performance” in Section 111(a)(1) requires EPA to determine the “best system of emission reduction”; the statute makes no explicit requirement that such a “system” be a plant-based emissions control rather than a trading scheme. Similarly, the statute makes no requirement that the emissions reductions attributed to a facility be made on-site at the facility itself.¹⁸⁹ For existing sources, some additional legal justifications come

¹⁸² See CAMR, 70 Fed. Reg. 28,606, 28,617 (describing the Acid Rain program).

¹⁸³ *Id.* (describing the NO_x SIP Call).

¹⁸⁴ See, e.g., Resources for the Future, Ctr. for Climate Change Law & Inst. for Policy Integrity, *Prevailing Academic View on Compliance Flexibility under § 111 of the CAA* 4-6 (2011).

¹⁸⁵ 42 U.S.C. § 7410(a)(2)(A) (“Each such plan shall include enforceable emission limitations and other control measures, means, or techniques including economic incentives such as fees, marketable permits, and auctions of emissions rights.”).

¹⁸⁶ Exec. Order No. 12,866 at § 1(a); Exec. Order No. 13,563 at § 1(b).

¹⁸⁷ See, e.g., Comments from Policy Integrity, to EPA, on the Proposed Rule on Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources, June 25, 2012.

¹⁸⁸ EPA may be limited in its ability to rebate auction revenue directly back to consumers, but states would likely retain such authority. See Chettiar & Schwartz, *supra* note 103, at 67-68.

¹⁸⁹ Section 111(b) specifies that EPA “shall publish proposed regulations, establishing Federal standards of performance for new sources”; similarly, § 111(d) states that EPA “shall prescribe regulations . . . under which each State shall submit to

into play. Section 111(d) explicitly refers to the procedures of Section 110, which allow states plans to include “economic incentives such as fees, marketable permits, and auctions of emission rights.” Similarly, EPA regulations under Section 111(d) authorize states to adopt an “allowance system” in their plans. EPA exercised this authority when it applied a cap-and-trade approach in its Clean Air Mercury Rule.¹⁹⁰ That program’s legality was never resolved in court, as the rule was vacated on other grounds.¹⁹¹

For more on EPA’s authority to construct a cap-and-auction program covering all regulated source categories under Section 111, on the efficiency advantages of that approach over a rate-based approach, and on building in legal safeguards by making the trading provisions severable from the overall regulations, see Policy Integrity’s comments to EPA on its proposed greenhouse gas performance standards for power plants.¹⁹²

EPA should automatically phase in stronger standards over time.

EPA should phase in stronger standards over time under Section 111. This approach would allow performance standards to reflect and foster emerging greenhouse gas reduction strategies, such as new efficiency technologies, new generation options, and carbon capture and sequestration. A predetermined schedule of emissions reductions would clarify future obligations and allow regulated entities to plan investments far in advance—a particularly salutary feature for the predetermined, capital-intensive investment pattern of many regulated sectors.

Under Section 111, EPA must set a “standard of performance” that reflects the “degree of emission limitation achievable through the application of the best system of emission reduction which . . . has been adequately demonstrated.”¹⁹³ With respect to new sources, the D.C. Circuit has ruled that Section 111 has a technology-forcing mandate and “looks toward what may fairly be projected for the regulated future, rather than the state of the art at present.”¹⁹⁴ Thus, neither “adequately demonstrated” nor “achievable” means that the standard is limited to what can already be routinely achieved. While EPA cannot base standards on pure theory or speculation, it can make reasonable extrapolations of technological performance. A performance standard that prescribed future phases based on reasonable expectations of future technology could fall within EPA’s discretion to interpret what is “adequately demonstrated.”¹⁹⁵

the Administrator a plan which [] establishes standards of performance *for any existing source.*” 42 U.S.C. §§ 7411(b)(1)(B), (d)(1) (emphasis added). This language does not include any requirement that emissions reductions occur at the source. Instead, it requires EPA to set standards for each source. As long as EPA applies its “standard of performance” to any new and (through state plans) existing sources, its standard fulfills the requirements of § 111, regardless of whether sources comply by implementing their own emissions abatement measures or by purchasing credits or allowances from qualified sources.

¹⁹⁰ See CAMR, 70 Fed. Reg. 28,606, 28,616 (“In the final rule, EPA interprets the term ‘standard of performance,’ as applied to existing sources, to include a cap-and-trade program. This interpretation is supported by a careful reading of the section 111(a) definition of the term, quoted above: A requirement for a cap-and-trade program (i) constitutes a ‘standard for emissions of air pollutants’ (i.e., a rule for air emissions), (ii) ‘which reflects the degree of emission limitation achievable’ (i.e., which requires an amount of emissions reductions that can be achieved), (iii) ‘through application of (a) . . . system of emission reduction’ (i.e., in this case, a cap-and-trade program that caps allowances at a level lower than current emissions).”).

¹⁹¹ See *New Jersey v. EPA*, 517 F.3d 574, 578 (D.C. Cir. 2008).

¹⁹² See *supra* note 187.

¹⁹³ 42 U.S.C. § 7411(a)(1).

¹⁹⁴ *Portland Cement Ass’n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973).

¹⁹⁵ See *Lignite Energy Council v. EPA*, 198 F.3d 930, 934 (D.C. Cir. 1999) (quoting *Portland Cement*, 486 F.2d at 391); *Sierra Club v. Costle*, 657 F.2d 298, 346 (D.C. Cir. 1981) (NSPS should “not stymie innovation. So long as EPA considers innovative technologies in terms of their prospective economic, energy, nonair health and environmental impacts the agency is within the scope of its authorized analysis.”); *Nat’l Asphalt Pavement Ass’n v. Train*, 539 F.2d 775, 785–86 (D.C. Cir. 1976)

The mandate in Section 111 that EPA consider costs also argues in favor of EPA discretion to establish a predetermined, incremental schedule.¹⁹⁶ If the agency were forced to set a single standard to govern for the foreseeable future, the standard would likely be more stringent at the outset and thus more costly. EPA can argue that setting a standard that increases in stringency over time is an allowable exercise of its discretion to consider costs.¹⁹⁷

In the past, EPA has committed to phasing in increasingly stringent emissions limits under Section 111. The Clean Air Mercury Rule's cap-and-trade program for new and existing sources, which was established as a "standard of performance" under Section 111, included two phases and mandated a more stringent emissions limit in the second phase.¹⁹⁸ The rule's first phase calculated its cap based only on emissions reductions achievable as co-benefits from the Clean Air Interstate Rule.¹⁹⁹ EPA asserted that information on mercury-specific technologies was "only adequate for us to conclude that such technologies are adequately demonstrated for use" in the second phase.²⁰⁰ As a result, EPA factored additional reductions from use of mercury-specific controls into its calculation of the second phase cap, but not into calculations for the first phase.²⁰¹

In the final Clean Air Mercury Rule, EPA stated that a two-phase approach was permissible for new sources under precedent that interpreted § 111(b) as "authoriz[ing] EPA to 'look toward what may fairly be projected for the regulated future, rather than the state-of-the-art at present.'"²⁰² For existing sources, EPA maintained that because Section 111(d) afforded more flexible compliance deadlines, a two-phase approach was also permissible.²⁰³ While the D.C. Circuit later vacated that mercury rule (which has since been replaced, and is currently under new litigation in the D.C. Circuit), the court ruled on unrelated grounds and did not address the legality the two-phase approach under Section 111.²⁰⁴

Past precedent and the imperative that EPA consider costs in this rulemaking make clear that EPA can and should phase in stricter standards over time, both to comply with the letter of the statute and to best serve the underlying goal of achieving optimal levels of emissions reductions.

EPA must set performance standards for unregulated, significant stationary sources.

In addition to promptly finalizing its performance standards for new and existing power plants, and responding to all other pending petitions under Section 111, EPA must take actions to regulate significant stationary sources of greenhouse gases, whether already-listed (such as landfills) or unlisted (such as agriculture). Adopting market-based regulations can harmonize this sector-by-sector approach and maximize efficiency. But to comprehensively address greenhouse gas pollution, EPA must complement such stationary source regulation with action on mobile sources.

("adequately demonstrated does not mean that existing [facilities] must be capable of meeting the [new source] standard; to the contrary, 'section 111 looks toward what may fairly be projected for the regulated future, rather than the state of the art at present.')" (quoting *Portland Cement*, 486 F.2d at 391).

¹⁹⁶ 42 U.S.C. § 7411(a)(1) ("taking into account the cost of achieving such reduction").

¹⁹⁷ For further discussion, see *Prevailing Academic View*, *supra* note 184, at 9–10.

¹⁹⁸ See CAMR, 70 Fed. Reg. 28,606, 28,607.

¹⁹⁹ *Id.* at 28,618.

²⁰⁰ *Id.* at 28,617–18.

²⁰¹ *Id.* at 28,620–21 ("The EPA has . . . established a Phase II Hg emissions cap based on the reductions in Hg emissions founded in the CAIR program and reductions that can be reasonably obtained through the use of Hg-specific controls.").

²⁰² *Id.* at 28,620 (quoting *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973)).

²⁰³ *Id.* ("We believe that EPA standards set under the authority of CAA section 111(d), where the compliance deadlines are not so immediate, afford EPA significant flexibility, commensurate with the amount of lead-time being given to affected sources.").

²⁰⁴ See *New Jersey v. EPA*, 517 F.3d 574, 584 (D.C. Cir. 2008).

IV. EPA Should Regulate All Significant Mobile Sources under Title II.

If EPA does not enact comprehensive regulations under Section 115 or Title VI, it will need to supplement its stationary source controls with mobile source regulation under Title II. EPA has begun to address greenhouse gas emissions from mobile sources through Title II, but existing regulations are incomplete: several significant categories of mobile sources remain unchecked. To most efficiently address mobile sector emissions, EPA should establish a cap-and-trade system for vehicle fuels. Alternatively, EPA could instead develop efficiency standards or other regulations to control emissions from aircraft, marine vessels, non-road vehicles, buses, locomotives, motorcycles, and truck trailers.

EPA has received several formal petitions to regulate greenhouse gases emissions from mobile sources.²⁰⁵ By law, EPA must, within a reasonable amount of time, issue its final determination with respect to these pending petitions.²⁰⁶ In particular, in 2009, Policy Integrity petitioned EPA to institute a cap-and-trade system for greenhouse gas emissions from vehicle fuels.²⁰⁷ The action called for is detailed in Policy Integrity's petition, as well as its subsequent letter sent November 28, 2012. Those documents also explain why a cap-and-trade for vehicle fuels would be the most efficient way to regulate the mobile source sector.

If EPA regulates vehicle fuels, then supplemental regulation of greenhouse gas emission from air conditioning systems may be sufficient to cover all significant emissions from mobile sources. Otherwise, however, EPA will need to develop efficiency standards for unregulated mobile sources to ensure comprehensive coverage of greenhouse gases.

Several parties have already petitioned EPA to set greenhouse emissions standards for unregulated mobile sources such as marine vessels, aircrafts, and non-road vehicles.²⁰⁸ Litigation is pending on some of these petitions. Where the statute sets a mandatory duty to regulate dangerous emissions, as it does for aircraft, EPA must move toward emissions standards without unreasonable delay. Where the statute grants EPA more discretion, as it does for non-road and marine vehicles, the agency should nevertheless develop any cost-benefit justified regulation.

A few remaining categories of mobile source have not been the subject of petitions. Policy Integrity hereby petitions EPA for greenhouse gas regulation of those remaining sources, in particular motorcycles and the trailers of heavy-duty trucks. Motorcycles contribute 2.1 million tons of carbon dioxide annually to total U.S. emissions.²⁰⁹ EPA should also establish design standards for trailers. As EPA recognizes, "the aerodynamic and tire rolling resistance improvements to trailers represent a significant opportunity to reduce fuel consumption and GHGs."²¹⁰

²⁰⁵ See JAMES E. MCCARTHY, CONG. RESEARCH SERV., CARS, TRUCKS, AND CLIMATE: EPA REGULATION OF GREENHOUSE GASES FROM MOBILE SOURCES 6 (2010).

²⁰⁶ 42 U.S.C. § 7604(a) (2006) (granting jurisdiction to district courts to "compel...agency action unreasonably delayed"). On March 20, 2012 the D.C. District Court ordered EPA to respond, within ninety days, to the Center for Biological Diversity's three outstanding petitions regarding the regulation of GHGs from marine vessels, aircraft, and other non-road engines and vehicles. *Ctr. for Biological Diversity v. EPA*, 2012 U.S. Dist. LEXIS 37870, *3 (2012).

²⁰⁷ Petition from Policy Integrity, 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 (2009).

²⁰⁸ See, e.g., Petition from California, to EPA, for Rule Making Seeking the Regulation of Greenhouse Gas Emissions from Ocean-Going Vessels (2007); Petition from *Ctr. for Biological Diversity et al.*, for Rulemaking Under the clean Air Act to Reduce the Emission of Air Pollutants from Marine Shipping Vessels that Contribute to Global Climate Change (2007).

²⁰⁹ See McCarthy, *supra* note 205, at 4, 7 (indicating that mobile sources represent 23.6% of U.S. emissions and that motorcycles constitute .1% of that amount). When regulating motorcycles, EPA must "consider the need to achieve equivalency of emissions reductions between motorcycles and other motor vehicles." 42 U.S.C. § 7521(a)(3)(E).

²¹⁰ Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 76 Fed. Reg. 57,106, 57,111 (Sept. 15, 2011).

Conclusion

Greenhouse gases represent a significant threat to global health and welfare. EPA has already begun developing some regulations under the Clean Air Act to control this dangerous pollution, and it should continue to exercise those authorities: in particular, EPA should promptly finalize its pending performance standards for new and existing power plants.

However, many remaining sources of authority in the Clean Air Act have not yet been utilized to respond to the environmental crisis of climate change. Some of these authorities are mandatory and would enable EPA to develop efficient and comprehensive regulation of greenhouse gases. Policy Integrity petitions EPA to act on these statutory obligations:

1. Make a formal finding that the prerequisites for action to control international air pollution under Section 115 have been satisfied for greenhouse gases; require states to revise their Clean Air Act implementation plans to control their dangerous greenhouse gas pollution by making reasonable progress toward abatement; and advise states on their options for implementation under Section 115, including flexible regulatory tools like markets.
2. Initiate a public call for information under Title VI regarding the effect of greenhouse gases on the stratosphere; if the scientific evidence exists, issue an endangerment finding under Section 615; and upon issuing an endangerment finding, control greenhouse gas emissions through flexible regulatory tools like markets.
3. Use Section 111 to list additional source categories that contribute significantly to greenhouse gas pollution, including agricultural sources, and to develop performance standards for such categories within a year of their listing; revise the performance standards for already-listed source categories to cover significant greenhouse gas emissions, such as for landfills, natural gas and petroleum systems, and various manufacturing industries; instruct states to develop performance standards for existing sources, and to do so in coordination with EPA's new source performance standards, to avoid grandfathering; for both new and existing sources, define a market as the "best system" of control; and automatically phase in stronger performance standards over time.
4. Use Title II to promulgate emissions standards for all mobile sources not yet regulated or petitioned to be regulated, including motorcycles and the trailers of heavy-duty trucks.

The provisions of this petition are severable: if any part is invalid or unenforceable, the invalidity or lack of legal obligation shall not affect other terms. As required by law, EPA must give this petition prompt consideration. Petitioner requests a substantive response within 180 calendar days.

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