REBUTTING ADMINISTRATOR WHEELER'S DENIAL OF A NAAQS FOR GREENHOUSE GASES

by Eric Laschever

Eric Laschever is an affiliate faculty member at the University of Washington School of Marine and Environmental Affairs. His solo legal practice focuses on climate and ocean change issues.

In 2009, when carbon dioxide (CO_2) levels were at 387.43 parts per million (ppm),[1] the Center for Biological Diversity (CBD) and 350.org submitted a citizen petition calling on the U.S. Environmental Protection Agency (EPA) to take steps necessary to institute a national ambient air quality standard (NAAQS) for greenhouse gas (GHG) emissions under §§108-110 of the Clean Air Act (CAA).[2] For 12 years, through two administrations, the petition was simply ignored. Then, on January 19, 2021, the day he left office, President Donald Trump's outgoing EPA Administrator Andrew Wheeler issued a letter denying the petition (the Denial).[3] Wheeler's action was short-lived. Six weeks later, Acting Administrator Jane Nishida reversed the Denial, stating accurately that "the agency did not fully and fairly assess the issues raised by the petition," and committed EPA to "further consider the important issues raised by [the] petition before responding."[4]

As of the date of this writing, and 12 years after filing, the petition to adopt standards for GHG emissions under the CAA's NAAQS provisions remains pending. To aid the new Administration as it might finally and meaningfully consider the petition, this Comment addresses the flaws in the Denial's legal and factual reasoning and outlines the technological, scientific, and policy advancements made in the 12 years since the CBD and 350.org's submission, during which various administrations allowed GHGs to accumulate to the catastrophic levels—414.01 ppm[5]—outlined in the recent Intergovernmental Panel on Climate Change report.[6]

The Denial is premised on the statutory argument that the NAAQS provisions of the CAA[7] cannot meaningfully address GHGs, and policy arguments claimed to support the statutory argument. Part I of the Comment briefly introduces the NAAQS program. Part II reviews the statutory argument and demonstrates why a GHG NAAQS, particularly one focused on CO_2, meets the statute's purpose and programmatic specifics.[8] Part III presents a 2021 take on climate change policy that explains why a CO_2 NAAQS is an essential and mandatory tool in the CAA toolbox for accomplishing the Joseph Biden Administration's climate agenda. Part IV concludes.

I. A Brief Introduction to the NAAQS Program

The CAA requires EPA to establish, publish, and periodically review primary and secondary NAAQS for air pollutants that "may reasonably be anticipated to endanger public health or welfare."[9] The attainment and maintenance of primary NAAQS "are requisite to protect the public health," and secondary NAAQS are "requisite to protect the public welfare from any known or anticipated adverse effects."[10]

"Public health" includes adverse health effects for both the population at large and sensitive populations such as children, older adults, and people with asthma or other lung diseases. "Public welfare" encompasses a wide variety of effects on soil, plants, wildlife, and biota; property

Author's Note: The views expressed here are the author's own, not those of any of his affiliations or clients.

1. Ian Tiseo, *Historic Average Carbon Dioxide (CO_2) Levels in the Atmosphere Worldwide From 1959 to 2020 (In Parts Per Million)*, Statista, Jan. 15, 2021, https://www.statista.com/statistics/1091926/atmospheric-concentration-of-co2-historic/.
2. Petition from the CBD and 350.org, to EPA, Petition to Establish National Pollution Limits for Greenhouse Gases Pursuant to the Clean Air Act (Dec. 2, 2009), http://www.biologicaldiversity.org/programs/climate_law_institute/global_warming_litigation/clean_air_act/pdfs/Petition_GHG_pollution_cap_12-2-2009.pdf; 42 U.S.C. §§7401-7671q, ELR Stat. CAA §§101-618.
3. Andrew R. Wheeler, EPA Administrator, Denial of Petitions to Establish National Ambient Air Quality Standards for Greenhouse Gases, to Regulate Greenhouse Gases Under Clean Air Act Section 115, and to Regulate Greenhouse Gases as Hazardous Air Pollutants (Jan. 19, 2021) [hereinafter Petition Denial].
4. Letter from Jane Nishida, Acting EPA Administrator, to Kassie Siegel, Senior Counsel, CBD (Mar. 4, 2021).
5. Tiseo, *supra* note 1.
6. Richard P. Allan et al., *Summary for Policymakers*, *in* Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Valérie Masson-Delmotte et al. eds., Cambridge Univ. Press 2021).
7. 42 U.S.C. §§7407 et seq.
8. This Article refers to a GHG NAAQS when discussing the topic generally, and to a CO_2 NAAQS when discussing specific proposals focused on CO_2.
9. 42 U.S.C. §7408(a)(1)(A).
10. *Id.* §7409(b)(1), (b)(2).

damage; aesthetic concerns; and other non-health-related impacts such as hazards to economic values and personal comfort.[11] The definition of "public welfare" explicitly recognizes impacts to climate.[12]

For the purpose of establishing NAAQS, the Administrator must list pollutants that (1) cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare; (2) the presence of which in the ambient air results from numerous or diverse mobile or stationary sources; and (3) for which air quality criteria had not been issued before December 31, 1970, but for which he or she plans to issue air quality criteria under §108.[13]

Listing a pollutant and promulgating the standards as described above initiates several actions intended to ensure that air quality throughout the country meets those standards. EPA must designate areas as meeting (attainment) or not meeting (nonattainment) the standards. The CAA requires states to develop a general plan to attain and maintain the standards in all areas of the country and a specific plan to attain the standards for each area designated nonattainment.[14] These plans, known as state implementation plans (SIPs), are developed by state and local air quality management agencies and submitted to EPA for approval.

The Act requires EPA to thoroughly review NAAQS every five years.[15] During this review, EPA must revise the criteria and standards or promulgate new standards as appropriate.[16] To assist in this process, the Act establishes the Clean Air Scientific Advisory Committee (CASAC), which undertakes an examination of the current air quality criteria, primary NAAQS, and secondary NAAQS, and submits recommendations to EPA for "any new [NAAQS] and revisions of existing criteria and standards as may be appropriate."[17]

II. The Denial's Outdated Legal Analysis

The Denial divides its legal analysis into two parts: "Statutory Text" and "Structure." Below—following a brief discussion of the Denial's source of information for its decision—I review both the textual and structural arguments.

A. *Bush-Era Pronouncements Are Meaningless in 2021*

As a threshold matter, the Denial relies entirely on outdated opinions of several Cabinet-level agencies from the George W. Bush presidency.[18] These Cabinet officials were responding to EPA's 2008 advance notice of proposed rulemaking (ANPR)[19] that it issued after the U.S. Supreme Court ruled that the CAA applied to GHGs in *Massachusetts v. Environmental Protection Agency*.[20]

Even after the Supreme Court's ruling, the Bush Administration agencies responding to the ANPR stated their view that "[t]he Clean Air Act is a deeply flawed and unsuitable vehicle for reducing greenhouse gas emissions."[21] The comments were not confined to the NAAQS program, but the entire CAA. In contrast, acknowledging the CAA's mandate to address pollution causing climate change, the Barack Obama Administration engaged in the complicated task to begin using the Act to address the most pressing air pollution issue of our time. For the reasons detailed below in Part III, it is imperative that the Biden Administration finish the job.

B. *Rebutting the Denial's "Textual" Argument*

The Denial begins by stating that the NAAQS program must be read in the context of the statute's purpose—to establish air quality standards for pollutants that the Administrator identifies as "criteria pollutants."[22] This is correct—as far as it goes—but the Denial then singles out one of the three "statutory conditions" discussed in Part I for listing criteria pollutants, and considers that this condition alone articulates the program's purpose. The Denial then concludes—incorrectly—that GHGs do not meet that condition and, therefore, do not fall within the program.

The Denial's cramped reading of the NAAQS program's purpose fails for two reasons. First, the conditions that the Denial ignores clearly speak to the program's purpose and directly apply to GHGs. Second, the condition on which the Denial focuses is easily met—assuming for the sake of argument that it applies at all—in the current context.

The first statutory condition for imposing a NAAQS—one the Denial ignores—is a pollutant, the emissions of which the Administrator judges to "cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare." The Administrator made this determination in 2009,[23] following *Massachusetts*. The U.S. Court of Appeals for the District of Columbia (D.C.) Circuit has upheld the determination,[24] and the Supreme Court has elected not to review challenges to it.[25]

11. *Id.* §7602(h).
12. *Id.*
13. *Id.* §7408.
14. *Id.* §7410.
15. *Id.* §7409(d)(1).
16. *Id.*
17. *Id.* §7409(d)(2)(A)-(B).
18. Petition Denial, *supra* note 3, at 9-11.
19. Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44354 (ANPR July 30, 2008) [hereinafter ANPR].
20. 549 U.S. 497, 37 ELR 20075 (2007). While the passage of time alone makes these references meaningless and signals that Wheeler was essentially "phoning in" his Denial, it is worth noting that the Bush Administration had opposed using the CAA to address GHGs. That is why the issue ended up in the Supreme Court.
21. ANPR, *supra* note 19, at 44356.
22. Petition Denial, *supra* note 3, at 5.
23. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66495, 66538 (Dec. 15, 2009).
24. Coalition for Responsible Regul. v. Environmental Prot. Agency, 684 F.3d 102, 42 ELR 20141 (D.C. Cir. 2012).
25. In taking cert on the consolidated cases in *Coalition for Responsible Regulation*, the court declined to review challenges to the endangerment finding in the cases of *Virginia v. Environmental Protection Agency*, 134 S. Ct. 418

The second condition—a pollutant the presence of which results "from numerous or diverse mobile or stationary sources"—precisely fits GHGs.[26] Contrary to claims that the NAAQS program is not suited to regulate GHGs, this condition makes the NAAQS program "[b]y far the most impactful regulatory approach to greenhouse gas regulation under the existing Clean Air Act"[27]—a point I will return to in Part III.

The third listing condition, and the only one the Denial addresses, is a pollutant "for which [the Administrator] plans to issue air quality criteria under [§108]."[28] The U.S. Court of Appeals for the Second Circuit addressed this condition in *Natural Resources Defense Council v. Train*,[29] finding that it applied only to the initial list of pollutants identified for consideration as criteria pollutants and concluding, therefore, that §108 imposed a mandatory duty on EPA to list a pollutant not on the original list when the other two conditions were met.[30]

The Denial spends its first two pages explaining why EPA will not follow this precedent. CBD and 350.org (the Petitioners) have submitted additional case law to EPA buttressing *Train*.[31] However, in the current context—in which the Administrator is responding to the petition—convening the CASAC to start the NAAQS process would implicitly signal the Administrator's plan to list GHG as a criteria pollutant, mooting any argument regarding this condition.[32]

In thinking about applying the NAAQS program to GHGs using the above conditions, the central question to answer (putting aside the mandatory duty to do so) is, should the Administrator list GHGs as a criteria pollutant because doing so would reduce danger to public health or welfare by addressing emissions from their many mobile or stationary sources?[33] I answer that question affirmatively; it is time to wake up to the role a NAAQS would play in responding to climate change and begin the process of listing CO_2—the most important GHG—as a criteria pollutant.

C. *Rebutting the Denial's "Structural" Argument*

In addition to the Denial's arguments based on a flawed textual analysis of the CAA, it also relies on a flawed understanding of the Act's structure. Specifically, the Denial's analysis of the CAA revolves around the premise (made with no reference to the statute) that because "GHGs are dispersed globally throughout the atmosphere," they "cannot be remedied by local controls."[34] This statement ignores the rather obvious fact that, at the end of the day, reducing GHG emissions globally will require reducing or eliminating emission sources locally.[35] The Denial buttresses the above premise with the U.S. Department of Transportation's 2008 statement that "it is hard to see how a GHG NAAQS, which required States to take action to reduce their emissions to meet a particular air quality standard, would actually work."

This section reviews those requirements to explain why these assertions are incorrect and to outline—based on experience with other criteria pollutants and contemporary analysis—how a GHG NAAQS could work.

1. Many States Are Already Regulating GHG Emissions

The Denial on the one hand argues that states cannot effectively regulate GHG emissions,[36] and on the other that a NAAQS would create a "patchwork" of different state regulations.[37] This assessment is wrong on both counts. In his 1932 dissent in *New State Ice Co. v. Liebmann*, Supreme Court Justice Louis Brandeis popularized the phrase that states "are the laboratories of democracy."[38] Justice Brandeis

(2013), and *Pacific Legal Foundation v. Environmental Protection Agency*, No. 12-1153 (*cert. denied*, Oct. 15, 2013).

26. CBD & 350.org, Supplemental Information in Support of Petition to Establish National Pollution Limits for Greenhouse Gases Pursuant to the Clean Air Act 3 (Apr. 14, 2021) [hereinafter Supplemental Information], https://www.biologicaldiversity.org/programs/climate_law_institute/pdfs/GHG-NAAQS_response-to-withdrawal-of-denial.pdf.
27. For further comparison of the NAAQS program to single-sector CAA provisions, see Grace Weatherall, Harvard Law School Energy and Environment Program, Immediate Executive Action: Unexplored Options for Addressing Climate Change Under the Existing Clean Air Act 4-6 (2020), http://eelp.law.harvard.edu/wp-content/uploads/Immediate-Executive-Action-Weatherall.pdf. Compare, for example, 42 U.S.C. §7521, which applies only to mobile sources, and 42 U.S.C. §7411, which applies only to stationary sources of a certain size.
28. 42 U.S.C. §7408(a)(1)(C).
29. 545 F.2d 320, 7 ELR 20004 (2d Cir. 1976).
30. *Id.* at 325.
31. Supplemental Information, *supra* note 26, at 17, in which the GHG NAAQS Petitioners explain:

> EPA's erroneous reading of the phrase "for which [the Administrator] plans to issue air quality criteria under this section" would allow EPA to sit on its hands and avoid judicial review in light of scientifically proven harms. The reading of section 108(a)(1) that is consistent with the statutory text, legislative history, and broader aims of the statute, and thus, the correct interpretation of the statute, is that satisfaction of the conditions in section 108(a)(1)(A) and (B) establish a mandatory obligation to list greenhouse gases as a criteria pollution for the purpose of establishing primary and secondary NAAQS.

32. 42 U.S.C. §7409(d)(2)(A) directs the Administrator to "appoint an independent scientific review committee composed of seven members including at least one member of the National Academy of Sciences, one physician, and one person representing State air pollution control agencies" to make recommendations regarding criteria pollutants and NAAQS. For more information regarding the CASAC, see U.S. EPA, *About the Clean Air Scientific Advisory Committee*, https://casac.epa.gov/ords/sab/f?p=105:2:11838932018683 (last visited Sept. 9, 2021).
33. For a detailed discussion of how a GHG NAAQS meets these conditions, see Weatherall, *supra* note 27, at 10-15.
34. Petition Denial, *supra* note 3, at 7 (citing 73 Fed. Reg. at 44363).
35. In this regard, reducing GHGs is a quintessential exemplar of the concept of "thinking globally and acting locally." For an application of this concept to climate change, see Anna Mikulska, *Think Globally, Act Locally . . . Think Globally Again*, Wharton Risk Mgmt. & Decision Processes Ctr., https://riskcenter.wharton.upenn.edu/climate-risk-solutions-2/think-globally-act-locally-think-globally-again/ (last visited Sept. 9, 2021); Laura Kosloff & Mark Trexler, *State Climate Change Initiatives: Think Locally, Act Globally*, 18 Nat. Resources & Env't 46 (2004).
36. Petition Denial, *supra* note 3, at 7 ("There is little or nothing that a single State or region can do that will appreciably alter the atmospheric GHG concentration level in that particular State or region.").
37. *Id.* at 8.
38. "[A] state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."

might see climate change regulation as the ultimate homage to state experimentation. In fact, some conservative commentators have already done so.

For example, during Justice Amy Coney Barrett's confirmation hearing, Charlie Hernick, vice president of policy and advocacy at Citizens for Responsible Energy Solutions, argued that a more conservative Supreme Court would be good for climate change action.[39] After cataloging state-specific policies "ranging from goals or mandates for renewable power to more inclusive clean energy standards," he observed, "States are the laboratories of democracy, and the experiment is working to reduce greenhouse gases faster than predicted." Hernick, therefore, calls for more state-led climate change effort.[40]

While I would amend Hernick's praise of state action to reflect that GHG emissions are not being reduced nearly fast enough, Hernick's assessment refutes the Denial's assertion that states are unable to meaningfully reduce GHG emissions. To the contrary, and as discussed further below, states have led GHG emission reduction efforts in the United States (ironically, particularly during the recent years during which Wheeler served in EPA leadership). Moreover, as discussed below, a CO_2 NAAQS would promote greater state coordination, rather than less as the Denial wrongly asserts.

❑ *Existing state leadership*. The Denial's concern that a NAAQS would result in "independent state level decisions" that could result in "different types and levels of control in different states" comes several decades too late. In the face of the federal branches' inability to develop a proactive national climate change policy (including an energy policy emphasizing renewable rather than fossil fuel energy), the states have been making "independent" decisions and producing a variety of GHG reduction strategies for almost 30 years. In their 2020 review of state climate change policy, Rebecca Bromley-Trujillo and Mirya Holman contrast the state and federal governments' roles since the early 1990s:

> While the federal government has often evaded or struggled to adopt meaningful climate change legislation, state and local governments have been quite active in the climate policy sphere. Since the early 1990s, state and local governments moved to fill some of the climate policy void left by the federal government's inaction. The 2010s are no exception: U.S. policy activity on climate change has largely taken place via state and local governments.[41]

In this regard, several states have established GHG reduction targets; the authors note, for example, that California "passed SB100 in 2018 requiring the power grid to be carbon free by 2045."[42]

Similarly, several states directly regulate utilities, requiring them to reach specified percentages of renewable energy (so-called renewable portfolio standards) and to provide for net metering, a tracking protocol that allows energy consumers who use on-site renewable sources, such as solar, to build credit for the energy they supply to the grid.[43] Maryland, for example, sets a 50% renewable energy target by 2030, which includes specific increases in offshore wind and solar energy.[44]

Regarding stationary sources, states have also played a lead role in using cap-and-trade programs to regulate and try to reduce GHG emissions.[45] These efforts are very much works in progress, having significant issues that must be addressed. Nonetheless, these state and regional regulatory programs have helped identify strengths and weaknesses of cap-and-trade strategies for regulating CO_2 and other GHG emissions.

With regard to the transportation sector—the largest U.S. GHG source—the federal CAA allows California to adopt tailpipe emission standards for mobile sources (e.g., trucks and cars) that are stricter than the national standard.[46] The Act also permits other states to adopt these stricter standards. As of 2019, 13 states have done so.[47] California strongly defended its authority to regulate emissions against the previous Administration's efforts to remove it.[48] The tailpipe emission standards illustrate how the CAA both allows state differences and provides options for achieving consistent standards.

In sum, states are already implementing a variety of approaches to reduce GHG emissions that reflect different circumstances, including emission sources, politics, and other local conditions. Different state approaches will continue to occur with or without a GHG NAAQS.[49] But the fact that different states would use different tools to achieve the NAAQS is consistent with the NAAQS program,

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Ironically, fans of the past president cited *New State Ice* in applauding his decentralized approach responding to COVID. Bradley A. Bakeman, *States Are the Laboratories of Democracy*, Hill, May 7, 2020.

39. Charles Hernick, *A Conservative Supreme Court Will Be Better for Climate Action*, Real Clear Energy (Oct. 25, 2020), https://www.realclearenergy.org/articles/2020/10/25/a_conservative_supreme_court_will_be_better_for_climate_action_581830.html.
40. *Id.*
41. *See* Rebecca Bromley-Trujillo & Mirya Holman, *Climate Change Policymaking in the States: A View at 2020*, 50 Publius: J. Federalism 446, 447 (2020) (citations omitted); *see also* Weatherall, *supra* note 27, at 29.
42. Bromley-Trujillo & Holman, *supra* note 41, at 448.
43. *Id.* at 449. *See also* Galen Barbose, Lawrence Berkeley National Laboratory, U.S. Renewable Portfolio Standards 2018: Annual Status Report (2018).
44. Catherine Morehouse, *Maryland 50% RPS Bill Doubles Offshore Wind Target, Expands Solar-Carve Out*, Util. Dive (May 22, 2019), https://www.utilitydive.com/news/maryland-50-rps-bill-doubles-offshore-wind-target-expands-solar-carve-out/552421/.
45. Lisa Song, *Cap and Trade Is Supposed to Solve Climate Change, but Oil and Gas Company Emissions Are Up*, ProPublica (Nov. 15, 2019), https://www.propublica.org/article/cap-and-trade-is-supposed-to-solve-climate-change-but-oil-and-gas-company-emissions-are-up.
46. Alanea Cremen, *What Are California's Emissions Standards, How They're Different, and Why the Trump Administration Wants to End Them*, ABC10 (Sept. 18, 2019), https://www.abc10.com/article/news/local/california/whats-californias-emissions-standards-trump-administration/103-96808a92-d6bb-43f3-92a7-fb908039a378.
47. *Id.*
48. *Id.*
49. For an example of recent state action, see Press Release, Washington Governor's Office, Inslee Signs Climate Change Legislative Package (May 17, 2021), https://medium.com/wagovernor/inslee-signs-climate-change-legislative-package-9ebcef3015ef.

rather than the contrary. As discussed below, the statutory NAAQS provisions explicitly rely on states to develop individualized plans while simultaneously requiring common elements among state responses and coordinating among states and between the states and federal government.

❑ *A NAAQS would promote greater coordination among states and with the federal government*. While the Denial fails to establish that there is anything inherently wrong with states using their power to address emissions—a position starkly at odds with not only our federalist system but (as discussed below) the CAA itself—Wheeler also ignores how the NAAQS program would lead to more coordination of state efforts, rather than less. Several NAAQS provisions explicitly force this result.

First, the CAA assigns the states "the primary responsibility for assuring air quality within [their] entire geographic area."[50] Thus, the Act anticipates—in Brandeisian fashion—that the states will lead air pollution compliance efforts.

Second, and perhaps more importantly, NAAQS provide national, science-based standards governing the level of emissions reductions necessary to protect our health and welfare. This standard would align state efforts toward this common end in a way not currently happening. Such a standard would also align collective action in a way no other CAA provision would.[51]

Third, as discussed in Part I, the Act requires each state to develop a SIP subject to public notice and comment, and to submit that plan to EPA for approval.[52] This process assures greater federal involvement than currently exists in state climate change response. Moreover, as the NAAQS Petitioners noted in their letter to the new Administrator, "the nature of SIPs within the NAAQS program provides the broadest and most flexible approach to addressing greenhouse gas emissions from their 'numerous' and 'diverse' sources."[53]

Fourth, while states have considerable discretion in these plans, the Act requires each plan to have 13 standard components.[54] Bringing different state approaches under a shared planning structure would yield more coordination to CO^2 reduction than exists under the NAAQS-less status quo. Significantly, the SIP requirements authorize states to use "economic incentives such as fees, marketable permits, and auctions of emissions rights,"[55] a point I will return to in Part III. As discussed above, states already are reducing GHG emissions, in some cases using market mechanisms explicitly recognized by the NAAQS statute. As discussed further below, states are capable of monitoring emissions to determine the effectiveness of state actions, another of the 13 standard components.

Fifth, the Act assures greater coordination between the state and federal governments through "conformity," which applies in nonattainment and maintenance areas.[56] These conformity requirements provide that "[n]o department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan." Federally funded projects must "conform" to SIPs, meaning that the projects will not "cause or contribute to any new violation," "increase the frequency or severity of any existing violation," or "delay timely attainment of any standard or any required interim emission reductions or other milestones in any area."[57] Thus, the conformity provision provides states with leverage to ensure federal actions will further the states' efforts to meet the standards.

Finally, the NAAQS' so-called good neighbor provisions[58] force interstate cooperation and coordination by requiring upwind states to regulate emissions that affect downwind states. This mechanism is reviewed in more detail below.

Taken together, the NAAQS program (1) creates science-based national standards, (2) designates state governments as the leads in achieving the standards, (3) coordinates the state efforts, many of which are already occurring through a public and EPA review process, and (4) forces federal agencies to act consistently with state efforts. The Denial's hand-wringing about state action, therefore, further demonstrates the outdated blinders with which the previous Administration read the Act.

For these reasons, the NAAQS program is "a path to tackle climate action based on well-established federal and state jurisdictions,"[59] as generally advocated by Hernick. Put differently, the laboratories have served their purpose, and while there may be additional experiments at the local/state level, there is now decades of trial and error that can be used to formulate a national standard and SIPs, particularly where states not engaged in any climate action will prevent other states from meeting their own goals.

2. Ground-Level CO_2 Monitoring Could Be Used With a NAAQS

As a basis for denying the petition to establish a GHG NAAQS, the Denial asserts that GHGs have no localized effect that can be measured by a monitor.[60] Because monitoring is one of the required SIP components mentioned in Section I.A, the Denial asserts that a NAAQS cannot be established for GHGs.

As a legal matter, the monitoring section on which the Denial relies only requires monitoring "as appropriate." When read in context of the definition of "welfare" to include climate and regulation of other regional air pollut-

50. 42 U.S.C. §7407(a).
51. Weatherall, *supra* note 27, at 9.
52. 42 U.S.C. §7407(a).
53. Supplemental Information, *supra* note 26, at 16.
54. 42 U.S.C. §7410(a)(2)(A)-(M).
55. *Id.* §7410(a)(2)(A).
56. *Id.* §7506(c)(1), (5).
57. *Id.* §7506(c)(1)(B).
58. *Id.* §7410(a)(2)(D)(i).
59. Hernick, *supra* note 39.
60. Petition Denial, *supra* note 3, at 9.

ants, the CAA textually recognizes that all criteria pollutants may not be "appropriate" for monitoring.[61]

As a factual matter, and contrary to Wheeler's assertion, local CO_2 monitoring has been occurring and improving for almost a decade. An example of such an effort, the Berkeley Atmospheric CO_2 Observation Network (BEACO$_2$N or the Network), which uses low-cost CO_2 sensing monitors, demonstrates how local monitoring works and could be applied to a CO_2 NAAQS.[62]

The Network comprises nodes using microcontrollers, computers, and smartphones to wirelessly transmit CO_2 measurements in "near-real time."[63] This Network identifies and quantifies potential CO_2 sources by comparing signals from adjacent nodes. A higher CO_2 level measured by the downwind node compared with its upwind node indicates the presence of a CO_2 emitter in between the two. Individual nodes can detect very small changes in CO_2 (eight molecules per million). Used together in a network, they produce data sufficiently sensitive to inform atmospheric models that can identify even subtler emission phenomena.[64] Put simply, existing monitoring technology can measure local CO_2 phenomena, and it is simply wrong to assert that a GHG NAAQS is impracticable because there is no way to monitor local CO_2.

In fact, BEACO$_2$N's network has already been used to assess the impact of at least two discrete government actions on CO_2 emissions—the 2013 Labor Day weekend San Francisco Bay bridge closure[65] on traffic emissions, and more recently the COVID-19 shelter-in-place safety regulations.[66] The COVID-related analysis observed:

> The large changes within the BEACO$_2$N Domain coincide with major freeways in the San Francisco Bay Area. In particular, the largest decreases are observed over Interstate 880 (I-880) that runs north-south from San Jose to Oakland. . . . Other freeways that serve commuters also show large decreases in CO_2 fluxes (e.g., Interstates 80 and 580).[67]

The Network also provided data regarding stationary sources during the closure:

> We find that grid cells classified as stationary sources decreased by 8% (-14 tC/hr [total carbon per hour]) in response to the SIP [shelter-in-place] order. The posterior emissions indicate a small diurnal cycle in the stationary sector that is largely absent before the SIP order and is not present in the prior emissions. In contrast, we find a -48% change (-97 tC/hr) in the weekly average CO_2 emissions from grid cells that are classified as freeway whereas emissions.[68]

The above summaries show detailed data and ability to discern localized effects of discrete government actions on CO_2 emissions. The Network's developers note that its analytical capabilities will give local lawmakers the data "to critically assess individual line items on California's 73-part climate action plan," allowing communities to focus resources on the most effective emissions-reducing initiatives.[69] The Network, or other comparable technology, could similarly be used by states to monitor SIP effectiveness as required by the CAA, including the Act's "good neighbor" provisions discussed below.

3. CAA Interstate Transport and "Good Neighbor" Provisions Can Be Applied

The Denial also asserts that the CAA's interstate transport and "good neighbor" provisions "would not function as intended if applied to a hypothetical GHG NAAQS."[70] This assertion ignores EPA's decades-long experience applying these provisions to other criteria pollutants, and detailed explanations in several analyses of how EPA could use this experience to implement a GHG NAAQS. The statutory requirements, experience with other criteria pollutants, and how this experience could inform a "good neighbor" strategy for a CO_2 NAAQS are discussed below.

❑ *Good neighbor provisions*. The good neighbor provision requires states to prohibit emissions that significantly contribute to air quality problems in another state.[71] Specifically, this section requires each state's SIP to include adequate provisions to prohibit emissions that either "contribute significantly" to nonattainment or "interfere with maintenance" of federal air quality standards in another state.[72]

❑ *EPA has decades of experience implementing good neighbor provisions*. EPA and the states have implemented regional programs to address interstate ozone and fine particulate matter ($PM_{2.5}$) transport to comply with the good neighbor provisions. These programs set emission "budgets" for ozone and $PM_{2.5}$ precursors—sulfur dioxide (SO_2) and nitrogen oxide (NO_x)—and seasonal NO_x emissions.[73]

61. The NAAQS Petitioners have explained in detail that the CAA "recognized that the appropriate monitoring system for each criteria pollutant would depend on the pollutant's characteristics" and "gave EPA discretion to choose which devices, methods, and systems of air quality monitoring are 'necessary' and 'appropriate.'" Supplemental Information, *supra* note 26, at 20 (citing 40 C.F.R. pt. 53, 58 (2020) ("the NAAQS regulations define different technologies, methods, systems, and schedules for monitoring each of the six currently listed criteria pollutants")).
62. Alexis Shusterman, *Low-Cost Sensors Track CO_2 Where It Counts*, Conversation (July 21, 2015), https://theconversation.com/low-cost-sensors-track-co2-where-it-counts-43828.
63. *Id.*
64. *Id.*
65. *Id.*
66. Alexander J. Turner et al., *Observed Impacts of COVID-19 on Urban CO_2 Emissions*, 47 Geophysical Rsch. Letters, e2020GL090037 (2020), https://doi.org/10.1029/2020GL090037.
67. *Id.* at 4.
68. *Id.* at 5.
69. Shusterman, *supra* note 62.
70. Petition Denial, *supra* note 3, at 9.
71. 42 U.S.C. §7410(a)(2)(D)(i).
72. *Id.*
73. Kate C. Shouse, Congressional Research Service, The Clean Air Act's Good Neighbor Provision: Overview of Interstate Air Pollution Control 3-4 (2018), https://sgp.fas.org/crs/misc/R45299.pdf.

EPA and state efforts to implement the good neighbor provisions for these criteria pollutants were not quick or technically easy—but that did not preclude EPA from implementing them. As one observer explains:

> In the early 1990s, eastern and midwestern states, spurred by almost *25 years of failure to attain the NAAQS for ozone* and enabled by advances in computer modeling, undertook with EPA extensive analyses revealing the reality and extraordinary complexity of long-range transport of ozone and its precursors. Those analyses, by contextualizing the CAA's Good Neighbor provision, spotlighted the difficulty of giving it practical meaning and efficacy. But the analyses, along with the then-growing success of the CAA's Acid Rain program, led EPA to establish, in close collaboration with the states, three multi-state cap-and-trade programs also aimed at electric power plants.[74]

As discussed further below, the characteristics of long-term nonattainment, long-range transport, electric power plant emissions, and possible market solutions all could be relevant to a CO_2 NAAQS.

Implementing the good neighbor provisions has also been legally challenging (literally). Since 1998, each time EPA has attempted to identify when upwind states "contribute significantly" to nonattainment downwind, the effort has wound up in the Supreme Court.

In 1998, EPA issued a regulation—the so-called NO_x SIP Call—that limited NO_x emissions in 23 upwind states to the extent such emissions contributed to downwind states' nonattainment.[75] In *Michigan v. Environmental Protection Agency*,[76] the D.C. Circuit upheld the NO_x SIP Call and EPA's use of costs to determine when an upwind state's contribution was "significan[t]" within the meaning of the statute.[77]

In 2005, EPA issued the Clean Air Interstate Rule (CAIR),[78] which regulated both NO_x and SO_2 emissions that contributed to downwind nonattainment of two NAAQS.[79] The D.C. Circuit found CAIR to be arbitrary and capricious,[80] but ultimately left the rule in place and encouraged EPA to promptly address the problems it had identified.[81]

In 2011, EPA adopted the Transport Rule in response to *North Carolina v. Environmental Protection Agency*. The Transport Rule curtails NO_x and SO_2 emissions of 27 upwind states to achieve downwind attainment of three different NAAQS: the two addressed by CAIR and the 2006 NAAQS daily levels for $PM_{2.5}$.[82] In 2014, the Supreme Court upheld the Transport Rule.[83]

Some states continue to point out challenges with ozone, arguing "that they would be out of attainment even if they shut down all sources of NO_x and volatile organic compounds (VOCs)—precursors of ozone—because of emissions from the transportation sector."[84] Analysts of the ozone NAAQS nonetheless conclude, "even if the facts support these arguments . . . the NAAQS program for ozone has still progressed, leading to reductions in emissions of pollutants and public health benefits."[85]

❑ *EPA can apply lessons learned from ozone regulation*. While the Denial appears to be unaware of EPA's experience implementing good neighbor strategies to address complex interstate issues, proponents of a GHG NAAQS have connected the dots between EPA's experience setting state-by-state ozone emission budgets and the potential for a similar approach to CO_2 under a CO_2 NAAQS:

> Many of these [ozone] elements can be appropriately modified for a greenhouse gas NAAQS. Thus, for example, applying the same approach as [upheld] in *Homer*, the EPA might determine the most cost-effective thresholds of measures that can be taken to sufficiently reduce the country's emissions to stay within the carbon budget. Applying these measures across sectors in each state, the EPA could then reasonably allocate emission reduction targets among states.[86]

Relying on the above analysis, CBD and 350.org point to the ozone experience in explaining why the good neighbor provisions could achieve a nationwide pollution cap in implementing a GHG NAAQS: "The Supreme Court has upheld EPA's attempt to craft emissions budgets for

74. Peter H. Wyckoff et al., *The U.S. Supreme Court Upholds EPA's Cross-State Air Pollution Rule in* EPA v. EME Homer City Generation, L.P.*, Paving the Way to Further Use of Cap-and-Trade Programs to Control Emissions of SO_2 and NO_x From Electric Power Plants*, Pillsbury (May 9, 2014) (emphasis added) (citation omitted), https://www.pillsburylaw.com/en/news-and-insights/the-u-s-supreme-court-upholds-epa-s-cross-state-air-pollution.html.
75. Environmental Prot. Agency v. EME Homer City Generation, LP, 134 S. Ct. 1584, 1595, 44 ELR 20094 (2014) (citing Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Transport of Ozone, 63 Fed. Reg. 57356, 57358 (Oct. 27, 1998)).
76. 213 F.3d 663 (2000).
77. *Id.* at 674-79.
78. *Homer*, 134 S. Ct. at 1595 (citing Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule), 70 Fed. Reg. 25162 (May 12, 2005)).
79. The 1997 regulation for the annual measure of $PM_{2.5}$, and the other for the average ozone level gauged over an eight-hour period. *Id.* (citing 70 Fed. Reg. at 25171).
80. *See* North Carolina v. Environmental Prot. Agency, 531 F.3d 896, 921, 38 ELR 20172 (D.C. Cir. 2008) (per curiam).
81. *See* North Carolina v. Environmental Prot. Agency, 550 F.3d 1176, 1178, 39 ELR 20306 (D.C. Cir. 2008) (per curiam).
82. *Homer*, 134 S. Ct. at 1596 (citing Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. 48208, 48208-09 (Aug. 8, 2011)).
83. *Homer*, 134 S. Ct. at 1594; for a detailed analysis of *Homer*, see Daniel A. Farber, *Unpacking* EME Homer: *Cost, Proportionality, and Emissions Reductions*, 4 Mich. J. Env't & Admin. L. 213 (2015), https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1037&context=mjeal.
84. Christina Reichert et al., Revisiting the NAAQS Program for Regulating Greenhouse Gas Emissions Under the Clean Air Act 18 (Nicholas Institute for Environmental Policy Solutions, Working Paper No. 17-01, 2017), https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_wp_17-01.pdf.
85. *Id.*
86. Howard M. Crystal et al., *Returning to Clean Air Act Fundamentals: A Renewed Call to Regulate Greenhouse Gases Under the National Ambient Air Quality Standards (NAAQS) Program*, 31 Geo. Env't L. Rev. 233, 279 (2019).

states contributing to at least 1% of one of the NAAQS pollutants in a downwind state 'based on cost thresholds that apply uniformly across states and sources' as an 'efficient and equitable solution to the allocation problem.'"[87] The GHG NAAQS Petitioners explain further that EPA has already gone through the exercise of establishing state emission budgets for CO_2 as part of the Clean Power Plan, noting that this approach is just one option for approaching a CO_2 NAAQS.[88]

4. NAAQS International and Natural Cause Exceptions

The concepts of emission budgets, coupled with emissions monitoring discussed above, help rebut the Denial's assertion, described below, that the NAAQS exceptions for international emissions and those caused by natural disasters is incorrect.[89]

42 U.S.C. §7509a allows states to demonstrate that they are not meeting NAAQS "but for emissions emanating from outside of the United States." Establishing state emission budgets against which to monitor state emissions provides a basis for establishing that states are implementing the standards as required. This approach to monitoring for state compliance can occur regardless of international emissions levels.

State emission budgets could also be used to demonstrate how natural events,[90] such as wildfires' emissions, impact a state's ability to meet its budget.

5. How Attainment and Nonattainment Would Function

Part I explains how the NAAQS program sets air quality standards and requires plans that will attain those standards over time. The issue of attainment and nonattainment with a NAAQS are central to the Denial's claim that the NAAQS provisions of the CAA should not be applied to GHGs. There are several responses to the Denial's analysis.

First, there has been significant analysis and conceptual development since the 2008 agency comment on which the Denial relies. The Petitioners present one such approach in their supplement of the record and detailed article on which it relies[91]; other articles have similarly reviewed the issue.[92] A detailed examination of each approach is beyond the present scope. Any future response to the CBD/350.org petition must acknowledge and respond to these proposals, and such a review is critical to any action EPA takes on a CO_2 NAAQS. The best place for such a review to occur is with the CASAC that will prepare the technical guidance for listing CO_2 as a criteria pollutant.

Many of the Denial's arguments are premised on requirements particular to a primary NAAQS, which has a 10-year attainment deadline. The articles mentioned above outline several proposals for how a GHG NAAQS would relate to the 10-year attainment requirement.[93] However, it is important to note that the secondary NAAQS does not have a statutory attainment deadline and would not raise the issues identified in the Denial. Consequently, the CBD has noted that a secondary NAAQS would be useful.[94] Other GHG NAAQS proponents have identified a secondary-NAAQS-only strategy as an approach to a CO_2 NAAQS.[95] The CASAC that EPA convenes would undoubtedly thoroughly review each approach.

In sum, a review of the NAAQS statutory provisions shows that they are suited to regulation of GHGs and that the program can function to achieve the program's purpose.

III. Contemporary Policy Considerations Support a GHG NAAQS

As discussed above, and as the Biden Administration recognized in withdrawing it, the Denial did not set forth any legitimate reason not to establish a NAAQS for GHGs. In the intervening years since the 2009 CBD and 350.org citizen petition, however, the policy justifications for imposing a NAAQS for GHGs—and specifically for CO_2—have become even more compelling. As discussed below, the Denial's dated policy arguments would be laughable if their result was not so dangerous, and the Biden Administration's early initiatives support, and would be supported by, the singularly comprehensive approach that a GHG NAAQS focused on CO_2 would provide.

A. A GHG NAAQS Would Increase America's International Negotiating Position

Of the many faulty premises in the Denial, the claim that a GHG NAAQS would somehow undermine America's international bargaining position is the most ill-conceived. For example, the Paris Agreement illustrates how mutual steps to CO_2 reduction by the United States and China helped build international momentum and led to enhancing the U.S. leadership position.[96] Significantly, the United

87. Supplemental Information, *supra* note 26, at 15 (citing *Homer*, 134 S. Ct. at 1606-07).
88. *Id.* at 16; *see also* Reichert et al., *supra* note 84, at 21.
89. Petition Denial, *supra* note 3, at 9.
90. 42 U.S.C. §7619(b) defines "exceptional events" and establishes the process by which the Administrator develops regulations that account for such events.
91. Supplemental Information, *supra* note 26, at 12.
92. Michael A. Quirke, *We Can Fight Climate Change With the Army We Have*, 31 Vill. Env't L.J. 1 (2020), https://digitalcommons.law.villanova.edu/elj/vol31/iss1/1; Weatherall, *supra* note 27, at 19-21; Reichert et al., *supra* note 84, at 20-21.
93. *Supra* notes 91 and 92.
94. Supplemental Information, *supra* note 26, at 14.
95. Quirke, *supra* note 92, at 20, 38-40.
96. Joanna Lewis, *The U.S.-China Climate and Energy Relationship*, *in* Parallel Perspectives on the Global Economic Order: A U.S.-China Essay Collection 93 (Daniel Remler & Ye Yu eds., Center for Strategic and International Studies 2017), https://www.csis.org/analysis/parallel-perspectives-global-economic-order.

States grounded its commitments to achieve its international commitments in part in CAA strategies.[97]

Just as America's leadership was confirmed in Paris, the Trump Administration's unilateral withdrawal from the Agreement diminished the United States' role, leading Ariel Cohen, a fellow at the Atlantic Council,[98] to observe that "[t]he implications will be far-reaching. The U.S. is ceding the leadership of international energy policy to the People's Republic of China."[99] At least one Chinese scholar echoed this point: "Many have commented that the United States is ceding climate leadership to China and China should grasp this rare opportunity to assume a leading role in global climate governance for its own benefits and to consolidate its great-power status."[100] Cohen, writing in November 2019, further noted, "America's exit is not official until November 4, 2020 . . . one day after the 2020 presidential election, where climate change will be a central issue. Should Trump lose, a new president could rejoin the agreement, *but would have to put forth new climate commitments to the UN*."[101]

President Biden reentered the Paris Agreement immediately after his inauguration ceremony.[102] A CO_2 NAAQS based on an ambitious U.S. target, allocated among the 50 states, and implemented by them in SIPs as discussed above, would put in place a framework that would be an important element in meeting international objectives and reestablishing U.S. credibility on the world stage.

B. *A GHG NAAQS Would Enhance American Competitiveness*

The assertion in the Denial that a GHG NAAQS would hinder competitiveness is based on a 2008 agency comment aimed at any CAA regulation, not one focused on a GHG NAAQS.[103] That comment is outdated at best. For one thing, the agency comment is based on the absence of an international framework[104] in which the global community is similarly seeking to reduce CO_2 emissions—a premise untrue in 2021. With regard to economic competitiveness, Cohen, quoted above and writing in *Forbes* (hardly an antibusiness journal), observed:

> Not only will American prestige and leadership suffer a major blow, but so too will American business. According to the IFC [International Finance Corporation], there is over $23 trillion in climate related business opportunities to be found by 2030 in emerging markets alone. Without concerted political and economic support from the U.S. government, America's chief competitors will have a leg up in the global renewables market.[105]

Indeed, this recognition has been a cornerstone of President Biden's economic, as well as climate, policy. As the president observed in welcoming the international community to the Climate Summit he convened in April, "That's why, when people talk about climate, I think jobs. Within our climate response lies an extraordinary engine of job creation and economic opportunity ready to be fired up."[106] He continued framing what has become his signature legislative initiative: "That's why I've proposed a huge investment in American infrastructure and American innovation to tap the economic opportunity that climate change presents our workers and our communities, especially those too often that have—left out and left behind."[107]

President Biden's remarks are not mere hyperbole. In 2018, the Global Commission on the Economy and Climate's project the New Climate Economy issued a report systematically describing these opportunities, concluding, "[l]ow-carbon growth could deliver economic benefits of US$26 trillion to 2030—and this is a conservative estimate."[108] Addressing climate change can also drive America's continuing leadership in technological advancement through biotechnology and other science, technology, engineering, and mathematics fields.[109]

These economic opportunities flow from the many ways the United States will reduce CO_2 and other

97. Uma Outka, *The Obama Administration's Clean Air Act Legacy and the UNFCCC*, 48 Case W. Rsrv. J. Int'l L. 109, 119, 121 (2016), https://scholarlycommons.law.case.edu/jil/vol48/iss1/7:
> [T]he CAA rules are central to the President's effort to reassert an effective and credible leadership role for the U.S. in international climate negotiations. Further, this work provided a basis for the President to pursue bilateral climate agreements with China, India, and Brazil, widely viewed as important to shifting the dynamic that prevented U.S. participation in the Kyoto Protocol.

(noting the "CAA rules, including the Clean Power Plan, comprise six out of the eight regulatory measures identified in the U.S.'s INDC [intended nationally determined contributions] submission as completed or underway").

98. The Atlantic Council is a nonpartisan organization that focuses on U.S. leadership and engagement in the world.

99. Ariel Cohen, *U.S. Withdraws From Paris Accord, Ceding Leadership to China*, Forbes (Nov. 7, 2019), https://www.forbes.com/sites/arielcohen/2019/11/07/us-withdraws-from-paris-accord-ceding-leadership-to-china/?sh=200f0a5073c1.

100. *See, e.g.*, Yu Hongyuan, *The U.S. Withdrawal From the Paris Agreement: Challenges and Opportunities for China*, 4 China Q. Int'l Strategic Stud. 281 (2018), https://www.worldscientific.com/doi/pdf/10.1142/S2377740018500100.

101. Cohen, *supra* note 99 (emphasis added).

102. Statement of President Biden, Acceptance on Behalf of the United States of America of the Paris Climate Agreement (Jan. 20, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/20/paris-climate-agreement/.

103. ANPR, *supra* note 19, at 44376 (comment of the Department of Commerce).

104. *Id.*

105. Cohen, *supra* note 99.

106. Remarks by President Biden at the Virtual Leaders Summit on Climate Opening Session (Apr. 22, 2021), https://www.whitehouse.gov/briefing-room/speeches-remarks/2021/04/22/remarks-by-president-biden-at-the-virtual-leaders-summit-on-climate-opening-session/.

107. *Id.*

108. New Climate Economy, Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times 12 (2018); *see also* Maureen Kline, *Climate Change Is a $26 Trillion Growth Opportunity. 5 Business Models to Consider*, Inc. (June 8, 2021), https://www.inc.com/maureen-kline/climate-change-a-26-trillion-growth-opportunity.html.

109. *See* Biotechnology Innovation Organization, Biotech Solutions for Climate Report (2021), https://www.bio.org/sites/default/files/2021-04/Climate%20Report%20Executive%20Summary_FINAL.pdf.

GHGs. A NAAQS that guides these reductions would spur these opportunities.

C. A GHG NAAQS Can Build in Efficiency Tools

The Denial argues that a NAAQS cannot consider economic factors based on *American Trucking v. Whitman*,[110] which held that EPA cannot consider costs when *setting* NAAQS. As discussed in Part II, EPA can consider costs after a NAAQS is set when *implementing* it. Specifically, the CAA authorizes states to include in their SIPs "economic incentives such as fees, marketable permits, and auctions of emissions rights" to address interstate transport.[111]

The Supreme Court considered the issue of economic metrics in implementing the good neighbor provisions in the *EME Homer* case:

> The Agency has chosen, sensibly in our view, to reduce the amount [of ozone] easier, *i.e.*, less costly, to eradicate, and nothing in the text of the Good Neighbor Provision precludes that choice. Using costs in the Transport Rule calculus, we agree with EPA, also makes good sense. Eliminating those amounts that can cost-effectively be reduced is an efficient and equitable solution to the allocation problem the Good Neighbor Provision requires the Agency to address.[112]

Regarding efficiency, the Court elaborated that "EPA can achieve the levels of attainment, *i.e.*, of emission reductions, the proportional approach aims to achieve, but at a much lower overall cost." Regarding equity, the Court explained that "EPA's rule subjects to stricter regulation those States that have done relatively less in the past to control their pollution . . . [stopping them] from free riding on their neighbors' efforts to reduce pollution."[113] The Court's reasoning led one scholar to observe that "*EME Homer* suggests that EPA should have discretion to craft cost-effective, equitable standards for those [state] plans."[114]

D. A GHG NAAQS Need Not Harm Agriculture

The Denial asserts that a NAAQS would hurt American agriculture based on the assumption that under a NAAQS regulatory program, agricultural sources may need to employ reasonably available control measures, or, at a minimum, include the use of reasonably available control technologies.[115] While a detailed discussion of these regulatory tools is beyond the present scope, it is sufficient to say in response to the Denial's argument that states have considerable flexibility in how they would address agriculture in their SIPs.[116]

The NAAQS program's experience with ozone is instructive. In 2015, EPA's information on the agriculture sector noted the ozone standards "do not establish emission control requirements for any particular industry, including agriculture," and that "[t]he vast majority of states have not required the agriculture industry to take any actions that require emission reductions, instead focusing their efforts on reducing emissions of the pollutants that form ozone from sources such as industrial processes and consumer products."[117] Some states addressed agriculture by incorporating U.S. Department of Agriculture (USDA)-approved conservation practices such as addressing combustion emissions.[118]

The above approach is consistent with that taken by the Biden Administration so far. For example, President Biden's January 27, 2021, Executive Order No. 14008 (Tackling the Climate Crisis at Home and Abroad) tasked the Secretary of Agriculture to deliver a report with recommendations for a climate-smart agriculture and forestry strategy, including practices that decrease wildfire risk fueled by climate change, source sustainable bioproducts and fuels, and result in measurable conservation actions.[119] In his 90-day progress report responding to this task, Agriculture Secretary Tom Vilsack noted, "whatever we do must work for farmers, ranchers, and landowners," and must "create new markets for rural Americans and build wealth that stays in rural communities."[120] As an example, Vilsack has been exploring whether the Commodity Credit Corporation, a stand-alone agency that supports farm income, could help farmers cover their costs of carbon sequestration practices.[121]

E. A GHG NAAQS Could Help Grow Small Businesses

The business opportunities identified in Section III.B above present themselves to businesses of all sizes.[122] The Small

110. 531 U.S. 457 (2001).
111. 42 U.S.C. §7410(a)(2)(A).
112. Environmental Prot. Agency v. EME Homer City Generation, LP, 134 S. Ct. 1584, 1607, 44 ELR 20094 (2014).
113. *Id.*
114. Farber, *supra* note 83, at 259.
115. Petition Denial, *supra* note 3, at 10 (citing ANPR, *supra* note 19, at 44383).
116. U.S. EPA, EPA's Ozone Air Quality Standards and Agriculture (2015), https://www.epa.gov/sites/default/files/2015-10/documents/20151001ozone_agriculture.pdf.
117. *Id.*
118. *Id.*
119. Exec. Order No. 14008, Tackling the Climate Crisis at Home and Abroad, 86 Fed. Reg. 7619, 7627 (Feb. 1, 2021).
120. USDA, Climate-Smart Agriculture and Forestry Strategy: 90-Day Progress Report 1 (2021), https://www.usda.gov/sites/default/files/documents/climate-smart-ag-forestry-strategy-90-day-progress-report.pdf.
121. Donnelle Eller, *Can Iowa Farmers Help Climate Change? Biden's Agriculture Plan Says Yes*, Des Moines Reg. (Apr. 8, 2021), https://www.aberdeen-news.com/story/news/local/farm-forum/2021/04/08/can-iowa-farmers-help-climate-change-bidens-agriculture-plan-says-yes/43739481/. *See also* Ben Lilliston, *Agriculture's Role in President Biden's Climate Pledge to the UN*, Inst. for Agric. & Trade Pol'y (Apr. 20, 2021), https://www.iatp.org/agricultures-role-bidens-climate-pledge.
122. *Business Opportunities From Climate Change*, Harv. Gazette (Feb. 25, 2019), https://news.harvard.edu/gazette/story/newsplus/business-opportunities-from-climate-change/; Max Freedman, *23 Green Business Ideas for Eco-Minded Entrepreneurs*, Bus. News Daily (Mar. 16, 2020), https://www.businessnewsdaily.com/5102-green-business-ideas.html.

Business Administration (SBA) can help small businesses respond to challenges and seize opportunities presented by climate change.[123]

The Denial's reliance on President Bush's SBA statements regarding the CAA's negative impact on small businesses is dated. It is also sadly ironic given the Bush Administration's repeated efforts to cut the SBA's budget during his Administration.[124] Then-Sen. John Kerry (D-Mass.) noted President Bush's proposed budget at the time of the ANPR, together with earlier cuts, represented the largest cut of all the federal agencies.[125]

President Trump similarly proposed deep cuts to the SBA—25% in the proposed 2021 budget.[126] His proposed 2020 budget similarly tried to defund much of the SBA's support to small businesses. These proposed cuts would have hit "rural, minority and women-owned businesses by cutting the microloan program, drastically reduc[ing] SBA counseling to small businesses, and increase[ing] loan fees on lenders and borrowers."

In contrast, President Biden's proposed budget increased the SBA's budget by 9%,[127] including several climate-linked projects.[128]

F. A GHG NAAQS Is Consistent With and Would Further Biden's Climate Agenda

President Biden, among other favorite aphorisms, enjoys remarking on his Administration's ability to "walk and chew gum at the same time."[129] He so frequently uses this phrase that within three months of his inauguration, even foreign news outlets were referencing this "colloquial phrase popular in [President Biden's] White House"[130] to describe his approach, including his efforts to reengage with China on climate matters.

President Biden's domestic approach to climate policy has similarly been a multitasking effort. While President Biden is focusing on actions that he can take quickly and that will turn the dial to reduce emissions immediately, there is not only capacity (from a walking and gum-chewing perspective), but also a pressing need to adopt legal frameworks that complement these efforts and have staying power. A GHG NAAQS is uniquely suited to provide this framework for several reasons.

First—as discussed in Part II—the NAAQS' purpose and structure are uniquely suited to the task. Its driving purpose is to address emissions from diverse mobile and stationary sources that cause harm to our health and our welfare. A regulatory approach that comprehensively addresses these diverse sources tied to a science-based target, rather than a sector-based approach, is needed given how far behind we are in the fight. Moreover, the program's statutory provisions (1) rely on state implementation and will coordinate efforts already underway among states and with the federal government; and (2) can be implemented using approaches that have been tested through decades on the ground—as well as in litigation's crucible—for other criteria pollutants, including those with complex interstate issues generated by fossil fuel energy facilities.

Second, a NAAQS requires a rigorous scientific foundation. After listing CO_2 as a criteria pollutant, the Administrator must issue air quality criteria that "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities."[131] The NAAQS science-driven approach "liberates EPA from the confines of the existing industrial system."[132] This moment requires exactly this degree of scientific rigor and its liberating effect on the Agency's approach to GHGs. Convening the CASAC immediately is a step that can occur while the Administration pushes through and begins to implement other parts of President Biden's strategy. This step would also begin to recenter climate scientists—banished by the Trump Administration[133]—back where they belong in the climate change arena.

Third, the Administration has unilateral power to promulgate a GHG NAAQS. The first 11 months of President Biden's presidency has well—if painfully—delineated the

123. Statement of the Hon. Dean Phillips on SBA's Role in Climate Solutions, House Committee on Small Business (July 21, 2021), https://smallbusiness.house.gov/news/documentsingle.aspx?DocumentID=3868.

124. Press Release, U.S. Senate Committee on Small Business and Entrepreneurship, Bush Budget a Bust for Small Business (Feb. 4, 2008), https://www.sbc.senate.gov/public/index.cfm/pressreleases?ID=E1683886-60C8-4739-B0E2-964F05D1F9EE.

125. *Id.*

126. *FY2021 Budget: Cuts to SBA*, Nat'l Small Bus. Ass'n (Feb. 12, 2020), https://nsba.biz/fy2021-budget-cuts-to-sba/.

127. Courtney Bublé, *Biden Budget Seeks to Use Procurement to Battle the Climate Crisis, Advance Equity, and Expand Small Businesses Opportunities*, Gov't Executive (Apr. 12, 2021), https://www.govexec.com/management/2021/04/biden-budget-seeks-use-procurement-battle-climate-crisis-advance-equity-and-expand-small-businesses-opportunities/173292/.

128. Benjamin J. Hulac, *Biden Weaves Climate Crisis Throughout His Budget Outline*, Roll Call (Apr. 9, 2021), https://www.rollcall.com/2021/04/09/biden-weaves-climate-crisis-throughout-his-budget-outline/. The article notes similar proposed investments in federal agencies not typically focused on the environment, including the Departments of Health and Human Services, Housing and Urban Development, and Labor; the Pentagon; the SBA; and the General Services Administration.

129. *See*, *e.g.*, U.S. policy regarding Russia, Politico (@Politico), Twitter (Mar. 18, 2021, 12:00 AM), https://twitter.com/politico/status/1372397442587574273?lang=en, and managing COVID and rebuilding the economy, Katie Couric (@katiecouric), Twitter (Oct. 22, 2020, 9:21 PM), https://twitter.com/katiecouric/status/1319448877397889024?lang=en. After President Biden famously used the phrase in his second debate, the slogan was popularized on a T-shirt; *see* Dana Milbank, *The Only Thing Worse for Trump Than an Unwatchable Debate Is a Watchable One*, Wash. Post (Oct. 22, 2020), https://www.washingtonpost.com/opinions/the-only-thing-worse-for-trump-than-an-unwatchable-debate-is-a-watchable-one/2020/10/22/5f17735e-14c5-11eb-ba42-ec6a580836ed_story.html; *Biden Presidential Debate Walk and Chew Gum at the Same Time T-Shirt*, Amazon, https://www.amazon.com/Biden-Presidential-Debate-Walk-T-Shirt/dp/B08LT5MQP2 (last visited Sept. 9, 2021).

130. *Cooperate Despite "Genocide"? Biden Tests Ties With China, Russia*, France 24 (Apr. 20, 2021), https://www.france24.com/en/live-news/20210420-cooperate-despite-genocide-biden-tests-ties-with-china-russia.

131. 42 U.S.C. §7408(a)(2).

132. Weatherall, *supra* note 27, at 9.

133. For a detailed discussion of the Trump Administration's dismantling of EPA's scientific capacity, see Joe Goffman & Laura Bloomer, *The Legal Consequences of EPA's Disruption of the NAAQS Process*, Harv. Env't & Energy L. Program (Sept. 30, 2019), https://eelp.law.harvard.edu/2019/09/the-legal-consequences-of-epas-disruption-of-the-naaqs-process/.

limits of the U.S. Congress' ability and likelihood to enact comprehensive climate change legislation.[134] The executive's regulatory power, therefore, becomes paramount. As one observer of President Obama's CAA regulatory action observed in 2016: "[T]he CAA rulemaking eroded the perception that congressional gridlock was an impervious barrier to climate progress. There are indications now across the economy that a low-carbon turn is increasingly being seen as inevitable."[135] Regarding the link of regulatory action to international action, the same author noted that "the Administration's CAA agenda carried significance in the Framework Convention context and for the U.S. posture approaching COP21 [the 21st Conference of the Parties]."[136]

Fourth, the fact that this regulation—once the Administration adopts it—will be litigated makes it no different than NAAQS for other criteria pollutants or from every previous effort to use the CAA to address climate change, beginning with the petitions that led to *Massachusetts*.[137] As the Congressional Research Service has noted, "[A]lmost every major EPA rule [implementing the CAA] has been challenged in court."[138] Indeed, based on this history of CAA-related litigation, the Administration likely faces legal challenges over climate change whether it pursues a NAAQS or not.

Finally, a CO_2 NAAQS once in place could be difficult for subsequent administrations to undo. The four years under the Trump Administration taught many lessons. One is the fragility of progress. Another—more hopeful—is that well-conceived regulations cannot simply be undone. In this regard, the judicial branch has overturned many of the previous Administration's sloppy and ill-conceived efforts to undo solidly grounded, reason-based regulations.[139] A solidly crafted CO_2 NAAQS could well withstand subsequent administrations' efforts to roll it back.

IV. Conclusion

In sum, as EPA evaluates a CO_2 NAAQS, it should consider how a comprehensive regulation advances President Biden's overall climate agenda, which has been dubbed "Biden's Moonshot"[140] and "Earth Shot."[141] President John F. Kennedy, explaining his Moon Shot, concluded that its goal would "serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win."

In his address to the world community, President Biden emphasized his similar unwillingness to postpone addressing climate change: "We have to move. We have to move quickly to meet these challenges. We must get on the path now in order to do that."[142] In launching his Earth Shot, President Biden added to President Kennedy's rationale the "moral obligation" to address what President Biden called "the existential threat to humanity."[143]

Starting the process to list CO_2 as a criteria pollutant and develop a NAAQS "would organize and measure the best of [EPA's] energies and skills," thereby organizing the best of state-level "energies and skills" to reduce CO_2 emissions and solidifying the U.S. commitment to climate leadership. Most importantly, starting the process is an essential step in meeting this moral obligation.

134. For a prescient discussion of the challenges in enacting comprehensive climate legislation even with a Democratic president and Congress, see Weatherall, *supra* note 27, at 3-4.
135. Outka, *supra* note 97.
136. *Id.* at 121 (citing the preamble to the Clean Power Plan final rule, released before COP 21, which noted that the rule confirmed the U.S. leadership role in addressing climate change).
137. Congressional Research Service, R43699, Key Historical Court Decisions Shaping EPA's Program Under The Clean Air Act (2017).
138. *Id.* at 1.
139. New York University Law School's Institute for Policy Integrity found that courts had reversed 200 of 259 executive actions that it was tracking. *See* Institute for Policy Integrity, *Roundup: Trump-Era Agency Policy in the Courts*, https://policyintegrity.org/trump-court-roundup (last updated Apr. 1, 2021).
140. R. David Harden & Eric Haxthausen, *Biden's Moonshot*, Hill (Mar. 30, 2021).
141. Chandu Visweswariah, *Biden's Earth Shot vs. Kennedy's Moon Shot*, Cure100 (June 12, 2021), https://cure100.org/2021/06/12/bidens-earth-shot-vs-kennedys-moon-shot/. *See also* Peter Sinclair, *Ambitious Action on Climate Change Could Be Biden's "Moon Shot,"* Yale Climate Connections (May 25, 2021), https://yaleclimateconnections.org/2021/05/ambitious-action-on-climate-change-could-be-bidens-moon-shot/; Andrew Freedman & Ben German, *Exclusive: DOE Launches Push to Meet Hydrogen "Earthshot" Goal*, Axios (June 7, 2021), https://www.axios.com/biden-hydrogen-climate-change-f79de0f9-e240-4b4d-a8f2-0de2826d1d63.html.
142. Remarks by President Biden at the Virtual Leaders Summit on Climate Opening Session, *supra* note 106.
143. *Id.*