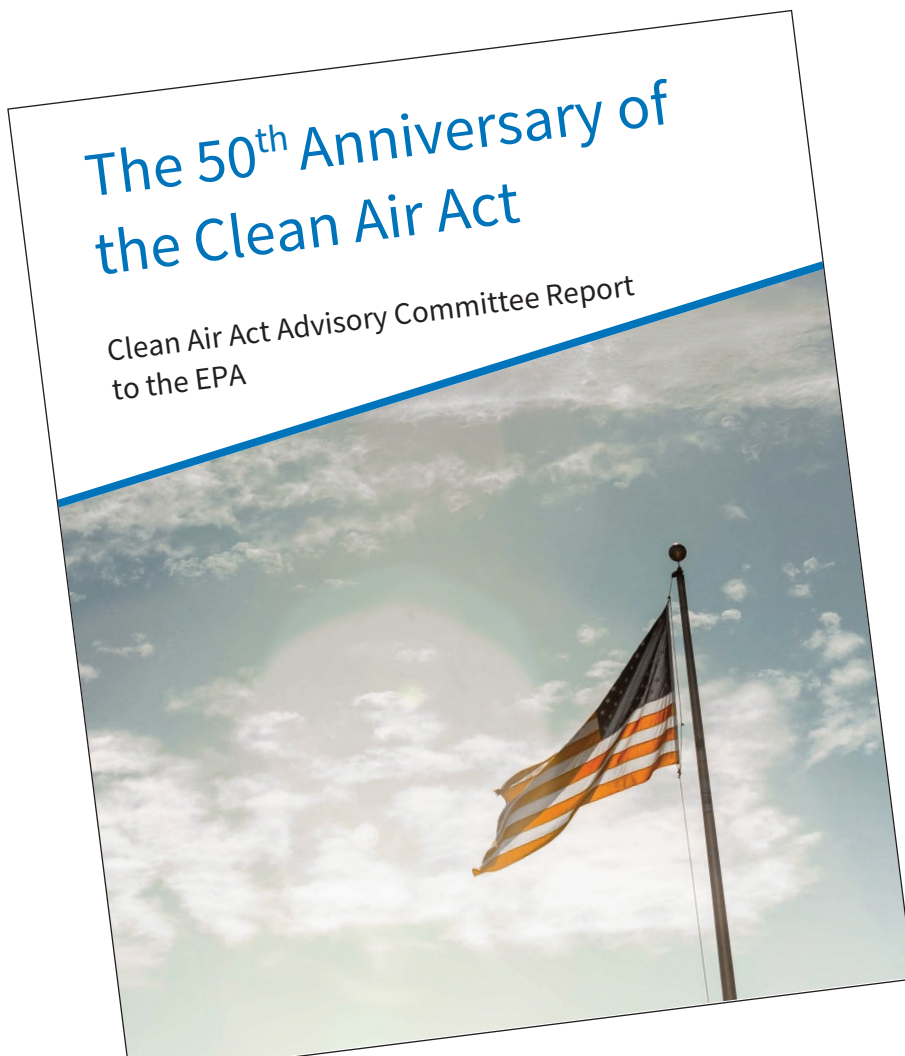


50 Years On, It's Time to Do Some Serious Thinking About the Clean Air Act

by Robert J. Meyers



The Clean Air Act Advisory Committee's *50th Anniversary Report* judiciously reviews the decades-long success of the U.S. Clean Air Act, but also notes the substantial challenges that remain to protect human health and the environment.

In late December 1970, less than four weeks after the initial organization of the U.S. Environmental Protection Agency (EPA) by newly confirmed Administrator William Ruckelshaus, Congress approved the 1970 Clean Air Act Amendments. Often referred to as the "modern" Clean Air Act (CAA), the 1970 law built upon earlier enactments designed to provide for air pollution research, air quality planning, and the control of air emissions from motor vehicles.

Given its central place in the history of EPA, a Clean Air Act Advisory Committee (CAAAC; <https://www.epa.gov/caaac>) Work Group was formed in 2020 to assess the accomplishments of the CAA, remaining challenges in implementing the law, and to make recommendations concerning the future implementation of the CAA. The final report—adopted by the full CAAAC a little over a year later and referred to as the *50th Anniversary Report*—contains detailed analysis and dozens of recommendations

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concerning how the CAA could be improved and better implemented. And, while focused on making recommendations concerning the implementation of current law, the report also noted several areas where the CAA may need updating. EPA is now in the process of reviewing and providing comment on the report.

This article attempts to address broad areas and conclusions of the report, including the lessons learned in over five decades of EPA rulemaking and enforcement. Readers are directed to the report itself for further detail.¹

Greenhouse Gases and Climate Change

No analysis of the CAA could ignore the central issue of climate change. But with respect to assessing the use of the CAA in this area, a typical glass half-empty/half-full analysis is possible. Despite the substantial progress that has been made in improving energy efficiency and reducing greenhouse gas (GHG) emissions relative to economic growth, GHG emission levels in the United States are approximately the same level as they were 30 years ago (see Figure 1). This leaves a large gap between where we are now, and various goals articulated by federal, state, and local authorities to reduce GHGs by orders of magnitude in the next three decades.

The report takes note of 15 separate EPA actions since the seminal 2007 U.S. Supreme Court decision in *Massachusetts v. EPA* (finding

authority within the CAA to regulate GHGs as “air pollutants”). These rules and determinations have addressed light, medium-, and heavy-duty vehicles; electric generating units; the oil and gas sector; transportation fuels; aircraft; and municipal solid waste landfills. Not all have been successful (e.g., CAA rules regarding GHG powerplant emissions are now before the Supreme Court) and not all have fully implemented given the sometimes-lengthy timeframes involved, but it is clear that CAA authority has been successfully exerted in many areas.

Major challenges clearly remain. In addition to the use of CAA Section 111 (new source performance standards), Section 202 (motor vehicles), Section 211(o) (renewable fuels), and Sections 231–232 (aircraft engine standards), the report cites various petitions that have been filed with EPA, some as long ago as 2009, that advocate for the use of the various CAA authorities to address climate change. Petitions have been filed to set National Ambient Air Quality Standards (NAAQS) for GHGs, to develop an “economy-wide” program to control GHGs utilizing Section 115 (international air pollution) and State Implementation Plans, and to issue Maximum Achievable Control Technology (MACT) standards under Section 112 (hazardous air pollutants). Other petitions have argued that Section 615 could be used to control GHGs through their effect on the stratosphere and ozone levels in the stratosphere. The report briefly summarizes the arguments, both pro and con, regarding use of these authorities.

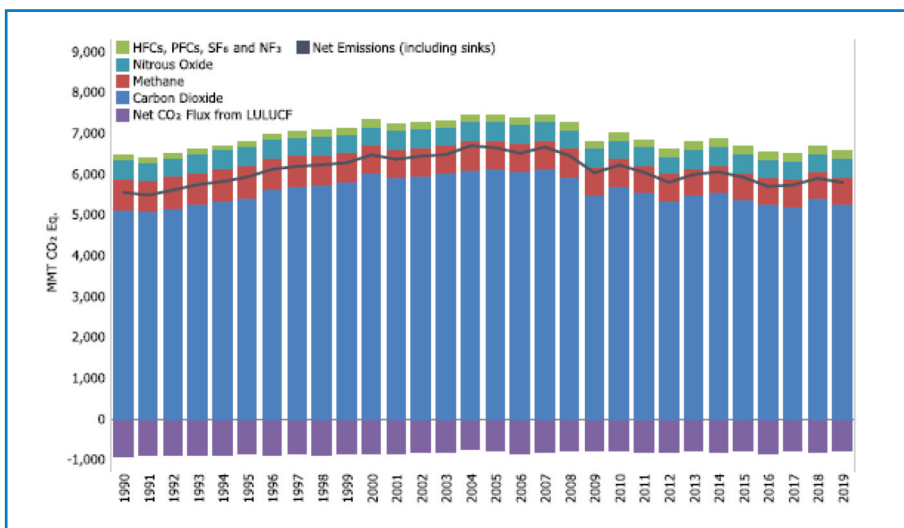


Figure 1. U.S. GHG Emissions, 1990–2019.

The current status of these petitions remains unclear. Most pending GHG petitions were denied in January 2021 by the Trump Administration, only to have this denial withdrawn by the Biden Administration six weeks later. And nearly a year later, all appear to remain “pending” without further action by the agency. While not every member of CAAAC agreed on this point, the *50th Anniversary Report* argued for a new, transparent review of all authority in the CAA to address GHGs and climate change, including those in the petitions cited above. This review could address both the parameters of available CAA authority as well as the availability (or limits to) different implementation methodologies, such as cap-and-trade, financial mechanisms,

Reference

1. *Final CAA 50th Anniversary Workgroup Report: Findings and Recommendation for the U.S. EPA (50th Anniversary Report)*. See <https://www.epa.gov/system/files/documents/2021-11/final-caaac-50th-anniversary-report-2.3.pdf>. Note: A full list of the report’s authors and workgroup members may be found on page 123. A Response to Comments document is also available. See <https://www.epa.gov/system/files/documents/2010-10/rtc-on-caa-50th-anniversary-report-oct-2021.pdf>.

and incentive programs, as well as how EPA could coordinate efforts with other federal, state, and local programs. Other recommendations in this area included keeping the focus on major sources, improving GHG measurement, and accounting methods and better defining the interaction of CAA programs with those conducted at the state or local level.

Attainment and Maintenance of NAAQS

One of the signature achievements of the 1970 CAA was the creation and implementation of NAAQS for carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide, and considerable progress has been made to address these standards (see Figure 2).

Since 1990, all NAAQS have reviewed multiple times under the CAA's requirement to conduct such reviews every five years. While EPA often failed to meet statutory deadlines, in many cases, NAAQS were significantly or substantially strengthened over this period—for example, the ozone NAAQS was reduced from 120 to 70 parts per billion, and the level of the lead NAAQS was reduced by 90% in 2008. Many areas of the country, however, remain in chronic nonattainment and the report highlights 11 separate issues in this area, ranging from disproportionate exposure in Environmental Justice areas to better methods to assess and account for Exceptional

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Events. Six recommendations were included with regard to improving the NAAQS review and designation process, interstate air transport, and EPA's approach to the review and consideration of state plans.

Stationary Source Controls

The CAAAC Workgroup examined several areas involving stationary source controls, specifically with regard to New Source Review (NSR), Title V operating permits, the hazardous air pollutant program, regional haze, and acid rain. In most cases, the report focused on implementation efforts after 1990, given the substantial amendments made to the CAA at that time.

In terms of hazardous air pollutants, the report noted that EPA had succeeded in issuing 97 MACT standards, addressing 68 area source categories, and completing 90 residual risk and technology reviews. Major recommendations in this area focused on addressing numerous NSR guidance documents that are difficult for both sources and

Pollutant	Timeframe	Precursor Emission Reductions	Average Ambient Concentrations
CO	1990-2020	99.8 million tons per year (tpy) CO (69%)	78% reduction in peak 8-hour CO
NO ₂	1990-2020	17.2 million tpy NO _x (68%)	58% reduction in annual NO ₂ 48% reduction in peak 1-hour NO ₂
O ₃	1990-2020	17.2 million tpy NO _x (68%) 11.1 million tpy VOC (48%)	26% reduction in peak 8-hour O ₃
Pb ¹⁰	2010-2020	0.283 thousand tpy Pb (30%)	78% decrease in peak 3-month Pb
PM ₁₀	1990-2020	1.0 million tpy PM ₁₀ (31%)	38% decrease in peak 24-hour PM ₁₀
PM _{2.5}	2000-2010	1.1 million tpy PM _{2.5} (42%) 14.3 million tpy NO _x (64%) 14.5 million tpy SO ₂ (89%) 4.9 million tpy VOC (29%)	45% decrease in annual PM _{2.5} 44% reduction in peak 24-hour PM _{2.5}
SO ₂	1990-2020	2.31 million tpy SO ₂ (92%)	94% reduction in peak 1-hour SO ₂

Figure 2. Reductions in NAAQS Air Pollutants, 1990–2020.

permitting authorities to navigate (and which can sometimes be outdated or provide conflicting guidance), difficulties faced in high growth areas, and the overall time and resources required by stationary source permitting, including for Title V permit renewals.

In contrast, Title IV (acid rain) and Title VI (stratospheric ozone) were cited for entirely different reasons. First, while extremely contentious at the time of enactment, Title IV achieved its statutory goals ahead of schedule and with virtually no litigation. Acid deposition has decreased dramatically since the Title IV program was put in place (see Figure 3). With regard to Title VI, CAA statutory deadlines to phase out halons, chlorofluorocarbons, and other ozone-depleting substances were also met or exceeded. Given the relatively long atmospheric lifetime of many ozone-depleting substances, improvement is more gradual (see Figure 4), but the ozone layer is expected to return to 1980 levels by the middle part of this century and the Antarctic ozone hole is projected to gradually close. This history led to several recommendations concerning: (1) emulating the legislative and regulatory precision of these programs; and (2) conducting a “lessons learned” exercise concerning use of allowance-based systems for reducing air pollutants.

Mobile Sources

The brown haze that hung over major metropolitan areas in the 1950s and 1960s, most notably Los Angeles, was a major impetus for enactment clean air legislation, including several antecedents of the 1970 CAA. The result is familiar to most Americans, at least those of a certain age. During the 1970s and early 1980s, lead was phased

out of gasoline and other gasoline standards and testing requirements were established. These efforts were followed by low-sulfur and ultra-low sulfur fuel for diesel engines and new engines and vehicle standards that effectively required the use of post-combustion controls.

The *50th Anniversary Report* essentially posed the question, what’s next? As various policies and programs have moved toward electrification, what is the extent of EPA’s authority in this area? Notably, new technologies may not solely depend on the controlling emissions from engines and vehicles, the focus of Section 202, but require related infrastructure not specifically addressed in the CAA. Related issues also emerge. How will EPA balance local and regional air quality concerns, with the global climate issues? How will reductions in transportation emissions (i.e., 30% of all GHG emissions) be correlated with other major source categories?

Tribal Programs and Environmental Justice

The 50th Anniversary Report includes separate sections concerning Tribal implementation of the CAA and Environmental Justice. Regarding the former, in the 2020 census, 9.7 million people identified themselves as Native American Indian or Alaska Native. The 1990 CAA Amendments enabled Tribes to assume a lead role in air quality management in Indian Country and Tribal management has markedly grown in the years since. In total, 85 Tribes now operate air monitors, and 71 Tribes have non-regulatory or regulatory treatment-as-state status, with 15 Tribes implementing regulatory or permit programs. The report, however, highlights that significant funding

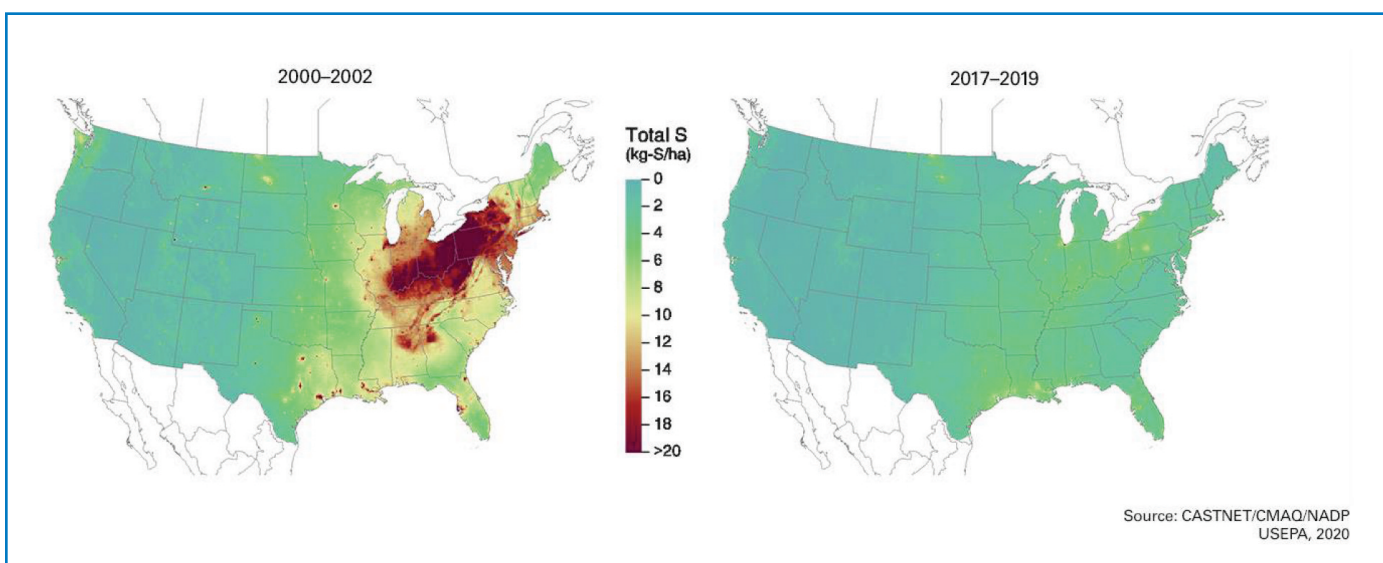


Figure 3. Sulfur Deposition in United States, 2000–2019.

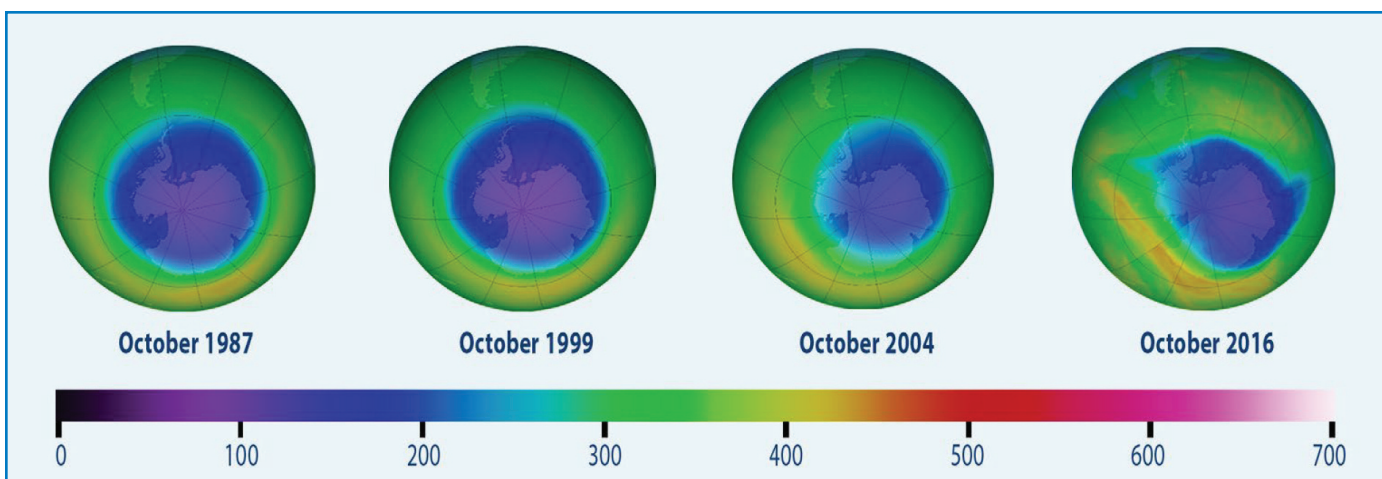


Figure 4. Antarctic Ozone Levels, 1987–2016.

and resource challenges for tribal programs still remain, and that there is a continuing need for government-to-government consultation and additional air quality monitoring.

Environmental Justice concerns—defined by EPA as, the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies—permeated many discussions within the CAAAC report process. The report acknowledges the differential impacts on air quality on communities across the United States. Specifically, despite widespread improvements in air quality since 1970 and 1990, the report cited several areas that have proved challenging, including the existence of “hotspots” and need for better measurement and characterization of community risks. The report recommends more extensive incorporation of Environmental Justice concerns in risk analysis and NAAQS reviews, enhancement of monitoring, and a focus on community-based organizations.

Voluntary Programs and Indoor Air

Voluntary programs were not part of the 1970 CAA, but the report noted the success of various efforts to assist compliance efforts to attain NAAQS, reduce diesel emissions, and improve efficiency through EnergyStar as well as other programs developed by EPA. With respect to indoor air, while recognizing its importance as a source of human exposure, the report did not include specific recommendations given limits on EPA’s authority, but rather recommended a multi-pronged framework to guide additional research and analysis.

Conclusion

The *50th Anniversary Report* offered the opportunity for the CAAAC to take a step back and examine both the forest and the trees. The report copiously reviewed the decades-long success of the CAA, but also noted the substantial challenges that remain to protect human health and the environment, and posed questions as to how these challenges might be addressed under current authority. This led to numerous recommendations (both structural and technical) focused on how EPA could consider using its current authority to address remaining issues and concerns.

The report also included two broad recommendations. First, CAAAC recommended that EPA should better communicate to Congress and the public concerning the health, environmental, and economic impacts of air pollution, along with associated benefits and costs. Second, as referenced above with respect to GHGs but also with respect to criteria and hazardous air pollutant programs, consideration should be given to potential legislative options and recommendations for updating the CAA.

Far from an indictment of current authority, this latter recommendation was based on months of reviewing whether the individual elements of the CAA had either achieved their intended goals or may need revision or supplementation. Contrary to urban myth, the CAA has been amended several times since its last major overhaul in 1990; the report does not advocate when or how any amendments should be considered, only that examination and consideration of legislative alternatives is appropriate. **em**