

2 MODERNIZING AIR REGULATION

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The United States has clean air. Over 50 years ago, nobody could have accurately made this claim. However, for decades, the nation's air quality has continuously improved and it is now cleaner than the air quality of almost every other country.¹ The Clean Air Act (CAA), which took its modern form in a law enacted in 1970,² with major amendments in 1977 and 1990,³ has played a leading role.⁴ While there may be some disagreement as to whether this improvement would have occurred independently of the statute or been achieved through more effective means,⁵ there is no question that air quality has drastically improved since its enactment. The Environmental Protection Agency (EPA) deserves credit.

That is the good news. The bad news is the EPA, and specifically its Office of Air and Radiation that implements the CAA, acts as if it is still facing the same challenges that existed in the 1970s. The agency has repeatedly tried to tighten air quality standards even if it imposes massive costs to achieve marginal gains.⁶ To justify much of its existing work, the agency uses questionable science that lacks transparency, plays fast and loose with alleged benefits from its actions, and minimizes the importance of costs or even ignores them altogether.

The agency has all too often used any ambiguities and discretion in the text of the CAA to promulgate regulations that are unprecedented in scope. This scope problem is even worse due to the inherently broad-based effect of regulating greenhouse gas emissions, which have nothing to do with air quality as commonly understood.

The EPA now regularly issues CAA rules that are so sweeping in nature that the agency's environmental mission has become, directly or indirectly, a means to drastically change the economy and the way Americans live. Recent examples include the agency's rule designed to limit the availability of gas-powered vehicles⁷ and its new power plant rule⁸ which, even after the spectacular demise of the 2015 Clean Power Plan rule⁹ in the landmark 2022 Supreme Court case *West Virginia v. EPA*,¹⁰ would once again have the agency functionally adopt the role of the nation's electricity grid manager.

The EPA and its approach to air regulations must be modernized. In the past 50 years, one of the agency's challenges may have been to make drastic improvements to the nation's air quality. However, that focus is not warranted today. This is not to say that maintaining or even improving air quality is not an important objective, but it should be carried out with due recognition of the current state of the environment and an appreciation for the incredible costs and tradeoffs that generally occur in air regulations. Congress needs to modernize the CAA so that it is a statute for the future not for the past.

Air quality

When analyzing federal air regulation, it is important to first understand the state of the nation's air quality. The EPA establishes National Ambient Air Quality Standards (NAAQS) for what are known as "criteria" pollutants. These are six principal air pollutants emitted from a wide range of stationary and mobile sources: carbon monoxide, lead, nitrogen dioxide, ground-level ozone, particulate matter, and sulfur dioxide.¹¹ While the EPA has statutory authority to identify additional criteria pollutants, it has not added to this list since the 1970s.¹²

EPA's data show how much air quality has drastically improved over time for these pollutants. The following data¹³ on air concentration levels are shown in Table 1. Based on concentration levels, from 1980-2023, carbon monoxide concentration levels decreased 88 percent, nitrogen dioxide (annual standard) decreased 68 percent, ozone decreased 26 percent, and sulfur dioxide (one-hour standard) decreased 95 percent. For lead, concentration levels decreased by 98 percent from 1980-2005.¹⁴ The agency changed its methodology for measuring concentration levels after 2005, which likely explains why there is no 1980-2023 number. However, the EPA does show that from 2010-2022, lead concentration levels declined by 87 percent.

For particulate matter, and specifically fine particulate matter (PM_{2.5}), concentration levels decreased by 37 percent from 2000-2023.¹⁵ From 2010-2023, air concentration levels have continued to decline, even as it becomes increasingly difficult to make improvements. PM₁₀ concentration levels (particulate matter with a diameter of 10 microns or less) remained constant, although as can be seen in Table 2 on emissions, direct PM₁₀ emissions declined by 14 percent during that time.¹⁶

Table 1. Air Quality Trends, percent change in air quality

Pollutant	1980 vs 2023	1990 vs 2023	2000 vs 2023	2010 vs 2023
Carbon Monoxide	-88	-79	-65	-18
Lead	---	---	---	-87
Nitrogen Dioxide (annual)	-68	-62	-54	-30
Nitrogen Dioxide (1-hour)	-66	-55	-40	-23
Ozone (8-hour)	-26	-18	-12	-1
PM ₁₀ (24-hour)	---	-29	-36	0
PM _{2.5} (annual)	---	---	-37	-15
PM _{2.5} (24-hour)	---	---	-29	+1
Sulfur Dioxide (1-hour)	-95	-92	-87	-78

Source: EPA, Air Quality—National Summary

Table 2. Emissions Trends, percent change in emissions

Pollutant	1980 vs 2023	1990 vs 2023	2000 vs 2023	2010 vs 2023
Carbon Monoxide	-76	-71	-59	-28
Lead*	-99	-88	-78	-36
Nitrogen Oxides (NO _x)	-75	-73	-69	-55
Volatile Organic Compounds (VOC)	-58	-46	-26	-5
Direct PM ₁₀	-62	-27	-24	-14
Direct PM _{2.5}	—	-28	-35	-11
Sulfur Dioxide	-94	-93	-90	-76

Source: EPA, Emissions Trends.

Note: Ozone itself is generally not emitted into the air directly by regulated sources, but rather is formed by a chemical reaction between nitrogen oxides and volatile organic compounds.¹⁷

From 1970-2023, even as aggregate emissions of the six criteria pollutants declined by 78 percent from 1970-2023, there were major increases in vehicle miles travelled (194 percent), population (63 percent), and energy consumption (42 percent).¹⁸

The EPA’s primary criteria pollutant of concern is arguably PM_{2.5}. The EPA in 2020 explained how well the United States does in comparison to other countries regarding this pollutant:

The U.S. has some of the lowest fine particulate matter levels in the world – approximately five times below the global average, six times below Chinese levels, and 20 percent lower than France, Germany, and Great Britain. Between 2000 and 2019, average PM_{2.5} concentrations in the U.S. fell by 44 percent and average PM₁₀ concentrations similarly fell by 46 percent.¹⁹

Looking at a three-year average using the latest World Health Organization data (2017-2019),²⁰ the United States had the 22nd lowest fine particulate matter concentrations among 192 countries. Only eight advanced economies had lower concentration levels.²¹ Further, only three European Union (EU) countries (Estonia, Finland, and Sweden) had lower PM_{2.5} concentration levels than the United States. The other 24 EU countries²² had higher concentration levels, with almost all of them having much higher levels (See Table 3).²³

Table 3. PM2.5 concentration levels by country (3-year average for 2017-2019): EU countries compared to the United States

Country	Average PM 2.5 2017 to 2019
Finland	5.47
Sweden	5.99
Estonia	6.32
United States of America	7.76
Portugal	8.09
Ireland	8.21
Luxembourg	9.48
Spain	9.88
Denmark	9.88
Lithuania	10.47
France	10.99
Netherlands (Kingdom of the)	11.29
Germany	11.40
Belgium	11.92
Latvia	12.11
Austria	12.17
Malta	13.11
Romania	14.74
Cyprus	14.83
Greece	15.17
Italy	15.31
Hungary	16.04
Czechia	16.28
Slovenia	16.31
Croatia	17.50
Slovakia	17.82
Bulgaria	19.33
Poland	21.10

Source: SDG Indicator 11.6.2 Concentrations of fine particulate matter (PM2.5) (who.int)

Finally, while most of the attention on air quality is focused on the criteria pollutants, it is also important to note EPA's success when it comes to air toxics.²⁴ According to the EPA, these pollutants, also known as hazardous air pollutants, "are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects."²⁵ Examples of the currently listed 188 air toxics²⁶ include asbestos, benzene, and mercury.²⁷ The EPA explains that from 1990-2017, air toxics emissions declined by 74 percent.²⁸

Problems with EPA's air regulations

America's clean air is a major achievement that often gets lost, in part because many environmental groups, other special interest groups, and the media paint a picture of doom and gloom.²⁹ As soon as the EPA establishes a new, stricter standard for a criteria pollutant, areas of the country that were perfectly fine under the earlier, less stringent standard are then portrayed as posing a new danger to the population. This moving of the goalposts helps create a constant narrative of fear. In part, the frequently changing standards are a result of Congress requiring the EPA to review, and if appropriate revise, the standards on a five-year basis. This does not mean the agency must keep making the standards stricter, but this statutorily created process has led to this outcome.

While the nation's air *quality* has gotten better, this does not mean that EPA's air *regulations* have gotten better for the nation. There are many problems with the EPA's air regulations, including:

Massive costs

In its 2017 "Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act,"³⁰ the Office of Management and Budget (OMB) analyzed the annual benefits and costs of major federal rules over the 10-year period of October 1, 2006 to September 30, 2016. According to OMB, EPA rules accounted for "55 percent to 64 percent of the monetized costs" from the rules across the federal government.³¹ The Office of Air and Radiation rules accounted for 92 percent of the costs of EPA rules.³² This means, if using the middle of the range (59.5 percent), the Office

of Air and Radiation rules accounted for 55 percent of all monetized costs from the federal rules analyzed.³³

OMB also explained that EPA rules in general accounted for “71 percent to 80 percent of the monetized benefits” from the rules across the federal government and the Office of Air and Radiation rules accounted for over 95 percent of the monetized benefits of the EPA rules.³⁴ These claimed benefits are often questionable, as discussed in Chapter 1. Regardless, the costs and benefits of these rules show the incredible magnitude of the air regulations.

Using data from the American Action Forum’s Regulation Rodeo web site,³⁵ during the Biden administration, air regulations accounted for almost all the EPA’s regulatory costs (97 percent or higher in each of Biden’s first three years). In two of those years, air regulations accounted for more than half of all regulatory costs across the entire federal government.³⁶

One specific rule from 2024 provides a useful example of the massive costs from EPA air rules. The Office of Air and Radiation’s final vehicle “tailpipe” rule regulating emissions from light-duty and medium-duty vehicles is projected to impose a compliance cost of \$760 billion.³⁷ This number accounts only for compliance costs and does not even include the costs of the subsidies the agency relies upon to drive the massive shift away from gas-powered vehicles and towards electric vehicles that is the rule’s central policy design, nor the costs incurred by Americans including through higher vehicle ownership costs and forced reliance on vehicles with inferior range and long charging times.³⁸

To put this \$760 billion cost in context, the projected cost of the 2009 stimulus bill (the American Recovery and Reinvestment Act) was \$787 billion.³⁹ Therefore, the EPA, without Congress ever speaking clearly on whether it wants to authorize the agency to impose such a major change in policy, has imposed about the same projected costs in this one rule as Congress did with its 2009 controversial and massive stimulus package.

Excessive scope

There is a recurring theme with the EPA’s air regulations: the agency repeatedly promulgates rules that are not just massive in scope due to their costs, but also due to their reach and effect. This includes

restricting freedom and consumer choice, influencing how Americans live, and changing major portions of the economy, such as the production of electricity. The environmental mission has morphed into a means to achieve economy-wide and societal objectives. Greenhouse gas regulation, which is a large part of this problem, is inherently going to be sweeping in nature due to the broad range of sources that emit greenhouse gases and the lack of affordable, proven ways of controlling greenhouse gas emissions. EPA's regulations of greenhouse gases have too often taken the form of reshaping the economy and directing investment away from one type of activity to another.

No agency, including the EPA, should have such wide powers. Congress should be making policy choices of this magnitude and not the EPA. The legislative process has numerous protections to ensure widespread public buy-in for major changes in national policy, starting with the fact that legislators are elected officials.⁴⁰ The regulatory process does not have such protections. The biggest decisions affecting Americans should be made by the legislators who have the lawmaking power under the US Constitution, not unelected officials at the EPA.

Lacking legitimacy

The scope of the rules undermines any legitimacy as does the agency's questionable authority. It is bad enough when Congress forces through major bills that most legislators have not even read. But it is far worse when an agency makes major changes in national policy with Congress never speaking directly on the issue.

The EPA, like other agencies, tries to get creative to achieve its ends by taking advantage of broad or ambiguous language to expand its powers into areas that Congress never authorized. Joseph Goffman, the Biden Administration's Assistant Administrator of the Office of Air and Radiation, has even been called (by supporters) the "EPA's Law Whisperer," because "his specialty is teaching old laws to do new tricks."⁴¹

The abuse of the CAA statutory language to achieve the agency's ends is just part of the legitimacy problems with the air rules. Three other examples include the problems with transparency, the agency's scientific process, and so-called "citizen suits." There are major

concerns regarding transparency because the public and outside experts are not able to properly evaluate the studies and data used by the agency to promulgate rules. The Trump administration finalized a transparency rule to address these concerns,⁴² but the Biden administration not only refused to defend the rule, but managed to eliminate it without going through a public rulemaking process by supporting environmental groups in their efforts to have it vacated.⁴³

EPA Administrator Michael Regan, shortly after his confirmation near the start of the Biden administration, purged *all* members of two statutorily required science panels, the Clean Air Scientific Advisory Committee and Science Advisory Board.⁴⁴ This shocking and unprecedented step was originally pushed by former EPA employees opposed to Trump administration policies.⁴⁵ John Graham, who had led the EPA's disbanded Science Advisory Board, stated after this purge: "Now for the first time in the agency's 50-year history, we have an administrator interested in scientific advice only from those scientists he has personally appointed."⁴⁶

There is also the problem of citizen suits. The CAA is filled with mandatory requirements, including requiring the EPA to regulate if certain low thresholds are met, or to regularly review existing air quality standards, which can provide the basis for the agency to make regulations more stringent. Such requirements are enforceable by outside parties in citizen suits and Congress appears to have given little thought when it first enacted the citizen suit provision in the CAA, section 304,⁴⁷ as to how these many mandatory requirements, including the carousel of required review, would play out over the decades. One of the key problems is this has allowed outside organizations to use lawsuits to require the agency to conduct reviews and often to promulgate regulations due to the nature of the review processes. These lawsuits effectively help these organizations set the agency's agenda.

Failure to properly consider costs and tradeoffs

When promulgating its 2012 Mercury and Air Toxics Standards (MATS) rule,⁴⁸ the Office of Air and Radiation concluded that costs were unimportant and should not be considered. This is despite the fact that the costs were estimated to be as much as \$9.6 *billion* a year,

while benefits of reducing emissions of mercury and other air toxics were only \$4-\$6 million a year.⁴⁹ Fortunately, in 2015, the Supreme Court in *Michigan v. EPA* struck down this complete disregard for the costs of the agency's rule, ruling that EPA could not legally disregard costs when making the statutorily required determination that it was "appropriate and necessary" to regulate power plants under the air toxics program.⁵⁰ Sometimes the agency not considering costs, as with the NAAQS process, is not the agency's fault due to language in the CAA, which the Supreme Court has held precludes considerations of costs when setting NAAQS standards.⁵¹

To the extent that the agency does consider costs, it often will move forward with rules even if the benefits are almost exclusively (and sometimes actually exclusively) attributable to the claimed ancillary benefits (or "co-benefits") of reducing other pollutants that are not the targeted pollutants subject to regulation under the statutory authority it is exercising. The EPA is particularly wont to use PM_{2.5} ancillary benefits in this manner.

Improperly considering risk

The CAA is filled with language that triggers regulations based on very low and easily met thresholds based on the possibility of harm to health. There is a precautionary approach that captures the idea of "better safe than sorry" in which the unknown is an excuse to regulate. This mindset fails to properly consider risk and tradeoffs, including the potential of creating more harm than good, or even failing to understand the harm that is allegedly being avoided.⁵²

In the 1970s, some may have been concerned that the new EPA would not properly enforce environmental laws. Therefore, reducing agency discretion whether to regulate may have been viewed as an appealing option. However, in 2025, such a concern is not only unjustified, but the opposite is true: the EPA is too quick to regulate and too expansive in the nature of its regulations.

What EPA's air regulations should look like

The EPA should continue to play an important role in protecting the nation's air quality. However, this role should be focused on actual

pollutants that dirty the air or directly harm human health, as opposed to greenhouse gases that meet neither of these requirements. The agency should stick to implementing specific statutory requirements and exercising specific statutory authorities detailed by Congress, rather than continuing to expand and twist longstanding statutory language to arrive at major new policy decisions and expansions of its own authority. The air regulations should not be so sweeping in nature that they reorganize major portions of the economy, reshape or kill off industries, restrict freedoms, or otherwise make decisions of such magnitude that Congress should make itself.

The agency should be not just authorized but required to consider costs and tradeoffs when it faces the choice whether to regulate. These considerations should be as objective as possible within the CAA to reduce the level of discretion the agency has in determining whether regulation is warranted.

Science should inform the agency's regulatory decisions. Whether a regulation is warranted or at what level of stringency a regulatory standard should be set are not questions science alone can answer. For example, science can help provide answers on the health effects of air pollutants at different concentration levels, but it does not answer what concentration level to set an air standard. The level to set the standard is a subjective question requiring a subjective answer. Judgments about other issues are always going to be involved when making regulatory decisions, such as costs and benefits, risk tradeoffs, and policy priorities, even if such judgments are not expressly acknowledged.⁵³

However, that means an agency must be careful not to confuse its scientific conclusions with other judgments that inform its regulatory decisions. The agency's science should be focused on the science itself and not muddled with unrelated issues. In 2009, President Barack Obama issued a memorandum on scientific integrity, arguing that "the public must be able to trust the science and scientific process informing public policy decisions."⁵⁴ A major way to promote scientific integrity and for the public to trust agency science is to ensure that policy considerations do not influence the science used by agencies.

Except when Congress has expressly directed the agency to promulgate a specific rule, the CAA should provide the agency

discretion as to whether regulations are warranted, and whether and on what schedule to revise existing regulations. This discretion when to promulgate rules though should not be so broad that the agency can make decisions that Congress should be making.

A modernized Office of Air and Radiation would stay well within the bounds of the CAA and use sound and transparent science when making any decisions to regulate. Its air regulations would primarily be focused on ensuring no backsliding and addressing cross-state transport of pollutants that severely hinder meeting federal standards. States should be allowed to address air quality issues themselves instead of having the federal government imposing ever-stricter standards and more sweeping regulations that may not only be unnecessary but also inconsistent with the goals and priorities of the states. This is not the 1960's where environmental considerations may not have been that prominent in the public consciousness. Environmental issues are an important concern for the public and state policymakers are well aware of this.⁵⁵

The next section of this chapter details key issues for Congress, which if addressed, would help to modernize air regulations. For each key issue, there are specific recommendations for Congress.

KEY ISSUE

Eliminate or limit greenhouse gas regulation

Congress never envisioned that the CAA would be used to regulate greenhouse gases.⁵⁶ The statutory language itself does not authorize such regulation,⁵⁷ although the Supreme Court in *Massachusetts v. EPA*⁵⁸ concluded otherwise. The Court held that the agency does have authority to regulate greenhouse gases under the statute.⁵⁹

The following point may get lost, but the EPA *did not originally want to regulate greenhouse gases under the provision at issue in Massachusetts v. EPA*, Section 202(a)(1) of the CAA,⁶⁰ which authorizes EPA to establish standards for air pollutant emissions from new motor vehicles or new motor vehicle engines. The agency concluded that the CAA's definition of "air pollutant" did not allow it to regulate greenhouse gases. In addition, it concluded that due to a variety of factors, such as scientific uncertainty, problems with the models, and the greenhouse gas emissions of developing countries, regulation of greenhouse gases from new motor vehicles was not warranted at that time.⁶¹

The Court found the agency's reasoning to be insufficient, ruling that the EPA had to regulate greenhouse gases from new motor vehicles if in the Administrator's judgment those vehicles' greenhouse gas emissions, in the language of Section 202(a)(1), "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." This analysis regarding endangerment is what is referred to as the "endangerment finding." Other provisions of the CAA include the same or similar language⁶² as a predicate for regulating air pollutants, not allowing the agency to consider costs and tradeoffs of adopting regulation.

The regulation of greenhouse gases is inherently sweeping in nature and involves decisions that no agency should have the discretion to make on its own. About 80 percent of US energy comes from fossil fuels, such as coal, natural gas, and oil, which produce greenhouse gas emissions.⁶³ It is hard to think of a single industry, including the renewable energy industry, which does not use energy derived from fossil fuels.

The assertion by the executive branch or interpretation of statutory text by courts to provide authority to regulate greenhouse gas emissions under the CAA gives the EPA incredible power to impose regulations that go way beyond environmental concerns and can be used, intentionally or unintentionally, to control energy production and use. Since energy affects every facet of our lives, there is little the agency could not regulate either directly or indirectly. The EPA is an agency that exists to protect the environment, within the bounds established by Congress, not to centrally plan the economy. Yet the power to control greenhouse gas emissions is a regulatory blank check enabling the agency to influence or even dictate what technologies can produce our electricity, provide our transportation, and even grow our food.

This is not a hypothesis, but a statement of reality, as illustrated by the EPA's new power plant rule⁶⁴ that uses greenhouse gas emission standards to dictate how electricity is generated in this country. As a plan that would help kill off existing coal generation and block investment in new natural gas generation, this new rule is arguably even more heavy-handed than the Obama administration's Clean Power Plan, which was struck down by the Supreme Court.

There is also the EPA's new vehicle tailpipe rule (its latest regulation under Section 202 regulating vehicle emissions), which sets *de facto* fuel economy standards automakers cannot meet without rapidly shifting production and sales from gasoline-powered cars to electric vehicles, regardless of what consumers want.⁶⁵ So long as the EPA acts under a claim of authority to regulate greenhouse gases, the agency will continue to push such extreme regulations, absent some limitations imposed by Congress or possibly through the courts.

There are other provisions within the CAA that are not regulatory in nature but do give the agency the power to address greenhouse gas emissions. One example is the Greenhouse Gas Reduction Fund⁶⁶ created through the Inflation Reduction Act.⁶⁷

Recommendations for Congress

Expressly prohibit the regulation of greenhouse gases. Congress should expressly clarify in statute that the EPA does not have authority

to regulate greenhouse gases under the CAA. If the EPA were to have any authority to regulate greenhouse gas emissions, it should only be to implement a narrow and specific requirement expressly authorized by Congress that involves no judgement or discretion on the part of the agency. This qualification may be very difficult to achieve, which is yet another reason why expressly prohibiting EPA greenhouse gas regulation is the best solution.

If this solution is not adopted, then Congress should:

Clarify that the agency has the discretion not to regulate greenhouse gases. The Supreme Court in *Massachusetts v. EPA*⁶⁸ rejected strong arguments made by the EPA as to why it should not regulate greenhouse gas emissions from new motor vehicles, even if authorized to do so. For CAA sections that have been used or could be used to authorize greenhouse gas regulation, Congress should clarify that the EPA may only decide to regulate under the applicable section if it properly considers the costs and tradeoffs. This would include factors such as scientific uncertainty, problems with the models, energy reliability, vehicle safety, and consumer choice.

These factors should be specific so that the agency does not have too much discretion and the decision to regulate is based on clear Congressional requirements. The review of the factors should not be a mere box-checking exercise. It should require sufficient analysis to strongly support the agency's decision to regulate. This section should also expressly prohibit rules that would restrict or limit the availability of types or categories of cars. Language such as that in Section 202(a) (1) that states the agency "shall" promulgate regulations should be changed to "may."⁶⁹

This recommendation ensures that agency science informs any regulatory decision but does not trigger the subjective policy decision that regulation is warranted. There are many factors that should be considered when making regulatory decisions, especially regulations of this magnitude. If Congress is not going to be making the choices as it should, then it at least should create some protections to ensure that the EPA properly considers the full range of effects of greenhouse gas regulations.

Do not inadvertently authorize regulation of greenhouse gases or confuse greenhouse gases with “air pollutants” as properly understood. This is an important point that applies to the above recommendation and all the recommendations in this book. Congress has not spoken directly to the issue of whether the EPA can regulate greenhouse gases. Legislators should make sure this does not change. They should also recognize that expressly prohibiting the regulation of greenhouse gases in one provision of the CAA may inadvertently suggest that Congress believes other provisions in the statute do authorize such regulation. Similarly, Congress should be sure to avoid stating that greenhouse gases are air pollutants in other legislation. Such language would only provide ammunition for those who want to demonstrate that the CAA authorizes greenhouse gas regulation.

The IRA did insert *references* to greenhouse gases at various places in the CAA,⁷⁰ and did create new Section 136 within the statute that authorizes EPA to charge a *fee* for “waste” methane emissions from the petrochemical sector above certain thresholds and subject to certain exemptions,⁷¹ but the IRA provided the EPA with no new authority to *restrict* greenhouse gas emissions through binding, compulsory regulation. To leave no doubt that this language may not be used to assert the EPA has authority to regulate greenhouse gases, the language should be repealed.

Follow the recommendations in Chapter 1, including prohibiting the use of the “social cost” metrics of greenhouse gases. Chapter 1 of this book includes numerous recommendations, including how to improve transparency and the quality of science used and disseminated by the EPA. These recommendations are especially important when it comes to the regulation of greenhouse gases. The social cost of greenhouse gas metrics warrants special attention. The most discussed of these, the social cost of carbon, is the estimated present value of projected cumulative damages from one ton of carbon dioxide (CO₂) emitted in a particular year, or conversely, the benefit of eliminating that ton of CO₂ emissions.⁷² It is a metric that has been regularly abused by the EPA and it unrealistically inflates harms to justify regulatory actions. Congress should prohibit the EPA from using these metrics⁷³ in any regulatory actions or disseminating any information that suggests agency support if that information uses these measures.

Establish reasonable thresholds for the endangerment finding. The standard “may reasonably be anticipated to endanger public health or welfare” should be replaced with a standard that is not unreasonably risk adverse and provides clarity from Congress as to what level of risk and harm the EPA is required to find before it regulates. The language was “which endangers the public health or welfare” before the CAA was amended in 1977 to create the existing standard.⁷⁴ The original language, if it were used again, would not mean that a pollutant must already be hurting humans. The term “endangers” captures the idea that the agency would need to identify ahead of time whether there is a risk of harm to public health or welfare.⁷⁵ The endangerment determination under the original language requires that some risk of harm, whatever that might be, does exist. In contrast, the “may reasonably be anticipated” language appears to suggest that the potential existence of a risk—the risk of a risk—constitutes endangerment. This is unreasonably risk averse.⁷⁶

In both versions of the endangerment language, there is no clarity as to what level of risk or what level of harm is sufficient to qualify as endangerment. To help provide some clarification and create a more objective standard, “endangers” should be defined or replaced so that the threshold question is whether a pollutant “is reasonably likely to impose significant harm to public health or welfare” or comparable language. The term “reasonably likely” captures the level of risk and “significant harm” clarifies the level of harm (it should not be insignificant). Maybe these thresholds are too high or low for some, but regardless, Congress should answer what level of risk and harm should constitute endangerment, not the EPA.

KEY ISSUE

Reform the NAAQS process

The process for establishing the national ambient air quality standards (NAAQS) is inherently subjective in nature. There is no objective scientific answer as to the right level for the standards. The process is not somehow divorced from policy and subjective considerations.

As the air continues to get cleaner, it becomes increasingly difficult to identify ways to improve air quality.⁷⁷ The EPA is making NAAQS decisions that are sweeping in nature, from their effects on development, jobs, to infrastructure. For these reasons, Congress should be making the decisions regarding NAAQS. At a minimum, the EPA should properly address the costs and tradeoffs of their NAAQS decisions. This will also help ensure transparency in the decision-making process instead of trying to hide behind a façade of objectivity.

The improvements in air quality since the 1970s are so significant that the current NAAQS should be considered the floor—i.e., the final national standards. States could establish more stringent standards, as they are allowed to now,⁷⁸ but not less stringent standards. NAAQS are one-size-fits all, which is not ideal given the differences across the states. The ostensible need for the EPA to continue making the standards more stringent, which has become a norm, makes little sense now that so much progress has been made. States can certainly take air quality issues from here with the EPA making sure states comply with existing standards and there is no backsliding (i.e., not meeting existing federal standards).

States and local communities are the ones directly affected by air quality and have incentive to address any concerns. If they choose not to make their standards more stringent than the already very stringent federal standards, then that is a choice they should be able to make. There are other concerns and priorities that states might view as more important than air quality concerns. Alternatively, they very well might decide that making standards more stringent is appropriate. The federal role when dealing with interstate and international air transport issues should be to ensure these sources do not contribute significantly to a state being in nonattainment with federal standards.⁷⁹

Background

Every five years, the EPA is required to review, and if appropriate revise, the standards that are established for criteria pollutants. There are two types of NAAQS: primary standards and secondary standards. The EPA explains:

Primary standards provide public health protection, including protecting the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.⁸⁰

In setting the primary standards, the Administrator must use his judgment to set standards that are “requisite to protect public health with an adequate margin of safety.”⁸¹ “Requisite” protection means establishing “standards that are neither more nor less stringent than necessary.” Secondary standards are based on the Administrator’s judgment as to what is “requisite to protect the public welfare.”⁸² According to the Supreme Court, the agency may not consider the implementation costs when setting either of these standards.⁸³

Subjective

Regardless of whether it is a primary or secondary standard, science does not by itself provide a definitive answer regarding the right level for the standard. Any Administrator is making subjective, values-informed decisions, including what level of risk is appropriate.

Regarding the primary standards, the DC Circuit of Appeals in *Mississippi v. EPA* explained, “In *Lead Industries Association*, we held that the choice of how to set a margin of safety is ‘a policy choice of the type that Congress specifically left to the Administrator’s judgment.’”⁸⁴ In *Whitman v. American Trucking Associations*, Justice Breyer wrote in his concurrence, “the statute [CAA], by its express terms, does not compel the elimination of all risk; and it grants the Administrator sufficient flexibility to avoid setting ambient air quality standards ruinous to industry.”⁸⁵

During the Obama administration, when the EPA was about to set more stringent ozone standards after reconsidering the existing

standards, President Obama explained that he was directing the agency to drop the pending rule in part due the effect on the economy.⁸⁶ The reconsideration of a standard is different from the regular five-year review process and therefore such economic discretion is arguably allowed. Even so, while not expressly done, economic and regulatory burden considerations are going to be part of the five-year review process.⁸⁷ The same concerns will exist for any administration be it a reconsideration or part of the regular review process. Not making the economic considerations transparent does not mean the EPA Administrator is not considering them. Policy considerations, including costs, are consciously or subconsciously going to affect the setting of standards.

There is not even objectivity in the agency science used to inform the standards. For example, in 2021, EPA Administrator Michael Regan dismissed every member of the Clean Air Scientific Advisory Committee that helps to inform the science underpinning NAAQS (as discussed earlier). While setting the standards inherently requires policy and subjective decisions, the scientific process should be as objective as possible.

Increasingly difficult to make improvements

There are fewer ways to achieve improvements in air quality given the improvements that have already been made. Ozone concentration levels are so low they are reaching background levels in some areas (the concentration levels that exist due to natural and foreign sources of the pollutants).⁸⁸ There is very little that can be done regarding PM_{2.5} emissions, when most of the emissions come from non-point sources like wildfires and road dust.⁸⁹

Implementation

The EPA sets the standards and then states are required to develop a “State Implementation Plan” (SIP). This is a plan for regulating emission sources in the state that will allow the state to “attain” the standards and ensure that it is not “significantly contributing” to “nonattainment” in neighboring states. The state must then submit its SIP to the EPA, which must either approve or disapprove it. Only

if a state does not submit an approvable SIP does the EPA have the authority (and the obligation) to issue a Federal Implementation Plan (FIP) to satisfy the unmet air-quality-planning obligations. As part of this process, states must impose controls on existing sources to the extent necessary to meet the federal standards and require state construction permits for new and modified sources.⁹⁰ The EPA can impose severe penalties on states for failing to submit a satisfactory SIP or for failing to properly implement a SIP.⁹¹ This includes, in some instances, the potential to lose federal highway funding.⁹² The EPA will step in and issue a FIP if the state has not met its requirements.⁹³

When determining state compliance with the NAAQS, the EPA may under certain circumstances disregard air-quality data attributable to “exceptional events” like wildfires and other natural events.⁹⁴ For PM_{2.5}, the EPA admits that wildland fires (wildfires and prescribed fires) “account for 44 percent of the nation’s primary emissions of fine particulate matter.”⁹⁵ Despite the pervasiveness of exceptional events, the EPA is not automatically required to exclude air quality data when there are exceptional events. There is a high standard that must be met to exclude data, specifically there must be “a clear causal relationship... between the measured exceedances of a national ambient air quality standard and the exceptional event to demonstrate that the exceptional event caused a specific air pollution concentration at a particular air quality monitoring location.”⁹⁶

Recommendations for Congress

Set the standards. The decision whether to establish more stringent standards is of such a magnitude that Congress itself should make the decision, not agencies. As has been explained, the setting of the standards is not an objective, purely scientifically informed decision. It is a subjective policy decision that is best left to policymakers, not agency officials. The legislative process helps to ensure the costs and benefits are properly considered and there is wide buy-in from across the country on a policy decision that has national implications.

Further, Congress is perfectly capable of setting specific standards and has done so in the past, as seen when Congress established certain

vehicle emission standards in Section 202(b) of the CAA.⁹⁷ It should be noted that states can already choose to set stricter standards for themselves, and nothing would change with this recommendation. The existing standards should act as a fixed floor moving forward, as described earlier, and states would be able to establish more stringent standards than what is required by the national standards if they choose, just as they can now. The agency's main role would be to ensure there is no backsliding.⁹⁸

If the ideal solution is not adopted, then there are other alternatives approaches to developing the standards. Some of the following recommendations could be mixed and matched together:

Require congressional approval. The EPA could go through a NAAQS review process as it does now and make a recommendation regarding a new standard. This would allow the agency to continue its NAAQS work and then for Congress to make the ultimate decision. Such a process should be no more frequent than every 10 years. This in no way means that the agency is unable to review science before the 10-year schedule and communicate any concerns. However, the actual formal process would be based on a 10-year schedule.

Allow states to have a voice regarding more stringent standards. A variation of the petition for rulemaking process that exists under the Administrative Procedure Act could exist just for states and NAAQS.⁹⁹ States could be allowed to petition the EPA to initiate a NAAQS review process and if a supermajority of states support the petition, the EPA would be required to undergo the review process. This recommendation would only apply if there were no longer a scheduled review process in place.

Extend the time between reviews. One recommendation that has been included in legislation, such as in the National Ambient Air Quality Standards Implementation Act introduced by Sen. Shelley Moore Capito (R-WV) in 2023, would change the five-year review process to 10 years.¹⁰⁰ The congressional approval recommendation also suggests a 10-year process. This extended time period would be a beneficial change, but by itself would not address many of the problems that exist with the NAAQS process. Capito's legislation though did include other useful provisions, such as those that would "Authorize the EPA

to consider technological feasibility consideration when revising NAAQS” and “Ensure that for certain ozone and particulate matter nonattainment areas, states are not required to include economically infeasible measures in their plans.”¹⁰¹

The time reform is a change that should be part of other reforms too. The EPA is often trying to set stricter standards even before many states have had a reasonable amount of time to meet existing standards. Another way to establish a time element is to have a minimum 10-year timeline before setting more stringent standards and to prohibit new stringent standards until at least 75 percent of the population is living in areas already meeting the existing standards.

Clarify the role of science in regulatory decisions. If the EPA is going to make decisions on whether to make the standards more stringent, the science regarding criteria pollutants used by the agency should inform both the decision as to what is an adequate margin of safety (the risk element) and the inherent policy choices made in setting a standard. However, there should be no pretense that this science by itself can provide the answers to these questions. For example, science can help provide answers on what health effects to expect at different concentration levels. That is different from and does not answer the regulatory question of whether to maintain or revise a standard.¹⁰²

Require proper consideration of costs and tradeoffs. Congress should be making policy decisions regarding how to set a standard. However, if the EPA is going to make this decision, it should be expected to properly consider the costs and tradeoffs of the regulatory decision based on specific factors that are as objectively drafted in statute as possible. The agency should be prohibited from setting stricter standards if there is a reasonable basis to conclude that there are not readily achievable means for doing so in all states. There should be no expectation that states would have to significantly undermine development, infrastructure, the financial well-being of its residents, or otherwise hurt its residents to achieve the standards.

Give states more flexibility with SIPs. By properly considering the costs and tradeoffs and not being heavy-handed with what states have to do for compliance, this should make the SIP process much

easier. The agency should not set standards that are so stringent that it requires states to impose significant harm on themselves.

Change the exceptional events process. Under the CAA, it is too difficult for states to establish that exceptional events are causing problems with compliance. This needs to change. If a state (or other party) can demonstrate that an event has occurred and it may reasonably be anticipated to have caused or contributed to an exceedance, then the agency should be required to adjust the air quality data accordingly.

Address problems with CASAC. Some specific requirements worth mentioning here include ensuring a proper balance based on viewpoints, staying focused on hard science, prohibiting individuals currently receiving EPA funding from serving, and not considering grant proposals from current advisory board members until one year after their term of service expires. The individuals who are receiving money from the EPA are especially problematic when it comes to conflicts of interest because they easily could act more like an agent of the agency than expressing their own independent views.

KEY ISSUE

Establish boundaries the EPA may not cross in its air regulations

In many instances, the CAA does not allow the EPA to use its discretion to consider the costs and tradeoffs of regulating, such as with the endangerment finding in Section 202(a)(1),¹⁰³ at least as interpreted by the Supreme Court in *Massachusetts v. EPA*.¹⁰⁴ These types of provisions,¹⁰⁵ which require the agency to regulate based on scientific conclusions about a pollutant's¹⁰⁶ health, welfare, or environmental effects, can even have a presumption in favor of regulating such as in Section 112(b)(3) dealing with hazardous air pollutants.¹⁰⁷

Under Section 112(b)(3), it is easy to get a substance regulated, but difficult to get it deregulated. Consider first the language for adding new hazardous air pollutants (HAPs) to the list. The EPA *shall* add a substance to the list of hazardous air pollutants if it is an air pollutant and “emissions, ambient concentrations, bioaccumulation or deposition of the substance are known to cause or *may reasonably be* anticipated to cause adverse effects to human health or adverse environmental effects.”¹⁰⁸ The “shall” and “may reasonably be” language makes the addition of a substance fairly easy.

In contrast, listed HAPs can only be deleted from the list if “there is adequate data on the health and environmental effects of the substance to determine that emissions, ambient concentrations, bioaccumulation or deposition of the substance *may not* reasonably be anticipated to cause *any* adverse effects to human health or adverse environmental effects.”¹⁰⁹ [Emphasis added]. This language makes removal unlikely.

In both instances under Section 112(b)(3), the agency is instructed to add or delete a listed hazardous air pollutant without allowing the agency to consider whether regulation is warranted based on costs, tradeoffs, the effectiveness of regulating the pollutant, and other non-science factors that should inform whether to promulgate regulations.

Recommendations for Congress

Recognize that scientific conclusions alone should not trigger the decision to regulate. The EPA should not be forced to regulate due to scientific conclusions alone such as those regarding health effects. The decision to regulate is a policy choice,¹¹⁰ which is subjective in nature. Science on health effects should inform the decision to regulate, not dictate it. Language that says a substance must continue to be regulated if there are *any* adverse health or environmental effects is such a low-risk threshold that it is unclear when it would not be met. There needs to be realistic risk considerations in the statute.

Provide the EPA discretion on whether to regulate, while requiring that it properly consider the effects of regulations. Language that says the agency “shall” regulate if certain scientific conclusions have been reached, such as in Section 202(a)(1) of the CAA,¹¹¹ should be changed to “may.” Further, the EPA should only be allowed to regulate if it properly considers factors such as price and energy effects, the likely effectiveness of a rule, alternatives to regulation, and other costs and tradeoffs.

KEY ISSUE

Reduce outside influence in setting EPA's air agenda

There are many provisions in the CAA that impose mandatory duties on the agency.¹¹² When the agency is required to take action without having the discretion on whether it makes sense to do so, it can give undue influence over the agency's work to outside organizations, usually environmental groups. These organizations frequently sue the agency to meet these non-discretionary requirements, often using the citizen suit provision under Section 304 of the CAA.¹¹³ This is a major problem because the environmental groups are in effect setting the agenda for the agency.¹¹⁴

Recommendation for Congress

Limit mandatory requirements, especially those triggering regulation. The agency, not outside organizations, should set its agenda. It should also set the agenda in a transparent manner instead of arguably *de facto* relying on lawsuits by outside groups to set its priorities or justify taking actions that it might not otherwise take. Reducing the number of mandatory requirements, from conducting studies to periodically reviewing air quality standards, will minimize the influence of outside groups on priority setting. This is especially important for those mandatory requirements that trigger regulation and as a result mean outside organizations could be helping to establish policy priorities.

KEY ISSUE

Establish boundaries in EPA air regulations

The CAA is a complicated statute. However, sometimes it gets easy to lose the forest for the trees. Often the simplest answer is the right answer. When the agency asserts power that is so beyond what Congress ever would have authorized, Congress should not sit idly by and let the agency just do whatever it wants. It should expressly prohibit such extreme actions. Unlike trying to address abuses across the entire government, it is much easier to prohibit statute-specific abuses without possible concerns for being overbroad.¹¹⁵

Nobody, at least with a straight face, can claim that Congress wanted the EPA to use air regulations to stop Americans from driving gas-powered vehicles. Nor can they claim that Congress wanted the EPA to shift the fuel mix used to generate electricity in the United States at the nationwide level, or to override the resource-planning and fuel-mix decisions made by the states. As an objective matter, Congress never told the agency to take such actions or even hinted at it.

Recommendation for Congress

Prohibit shutting down types of businesses, banning or limiting types of goods, and other actions that common sense tells us Congress never authorized. Congress should just say what it does not want the agency to do under the CAA. Specifically, the agency should be expressly prohibited from promulgating the types of rules that common sense tells us the agency was never authorized to promulgate.¹¹⁶

The EPA should not treat shutting down businesses as a compliance option that it presents to regulated parties. It should not directly or indirectly ban or severely limit the availability of categories of goods (such as gas-powered vehicles) or reshape or change the nature of an industry or a broader portion of the economy (such as changing how electricity is generated).

The agency should also be prohibited from promulgating rules that are beyond its regulatory expertise, as it did with the Clean Power Plan in its efforts to change how electricity is generated. It is now doing the same thing with the Biden administration's new rule addressing greenhouse gas emissions from power plants. One of the major arguments for the existence of agencies in the first place is their alleged expertise. If the EPA does not have expertise on a certain issue (such as how to ensure that the electrical grid remains stable and reliable) then this is a sure sign that Congress never intended for the agency to address that issue.

It is important to prohibit rules that directly or *indirectly* lead to such outcomes. The EPA will claim that it is merely setting standards and the effect may be, for example, to kill off coal or get people out of gas-powered vehicles, but that is not their intent. However, the effect of a rule matters, in addition to its stated intent.

The examples of prohibitions listed in this recommendation should just be the starting point. In the unlikely event that there are needed exceptions for general prohibitions, then this is something that can easily be addressed. The purpose of this recommendation is for Congress to make it clear that there are lines that the EPA shall not cross.

Repeal or Limit California waivers and authorizations under Section 209

Section 209(a) of the CAA preempts states from establishing emissions standards for new motor vehicles or new motor vehicle engines.¹¹⁷ However, there is a provision, Section 209(b), under which California, and only California, may apply to EPA for a waiver of this preemption. The provision does not explicitly name California, but instead imposes conditions on seeking a waiver which only California could ever have met; namely, that the state has certain standards in place before a certain date, which only California did. The state's standards, as determined by California, have to be "in the aggregate, at least as protective of public health and welfare as applicable Federal standards."¹¹⁸ The EPA shall not grant the waiver if, among other things, "such State does not need such State standards to meet compelling and extraordinary conditions."¹¹⁹

Even though only California may apply to EPA for a preemption waiver, once EPA grants the waiver for a set of California regulations, pursuant to CAA Section 177,¹²⁰ other states are allowed to adopt California's emissions standards in lieu of the corresponding federal ones. The main requirement is having standards that are identical to California.¹²¹

When the CAA was enacted, California had unique air quality problems, particularly on its urban southern coast, that were exacerbated, as the EPA explained in 2019, by the state's "peculiar characteristics" such as wind and ocean currents, and topography.¹²² Yet for decades California's air quality has gotten much better.¹²³ For example, according to the South Coast Air Quality Management District, which regulates air quality covering large areas of Los Angeles and Orange counties, among other areas (the region covers 44 percent of the state's population),¹²⁴ the number of days in the air basin that exceeded federal ozone standards dropped significantly between 1980-2020. Based on the 1979 standard, there were 167 days in 1980 that violated this old standard, while in 2020 there were only 27 days.¹²⁵ The major improvements in air quality do not justify continuing this special treatment.

Waivers and greenhouse gases

When it comes to greenhouse gas emissions, the waiver makes no sense. There is nothing compelling or extraordinary that makes California especially susceptible to any harm caused by greenhouse gas emissions, nor is there any particular connection between car emissions in California and climate impacts in California (unlike with traditional pollution/“smog,” where California’s problems have historically been unique and where there is such a particular, direct connection between California emissions and California impacts).¹²⁶ In 2007, when the EPA for the first time denied a California waiver request (the first such request for greenhouse-gas regulation), EPA Administrator Stephen L. Johnson wrote:

EPA has considered and granted previous waivers to California for standards covering pollutants that predominantly affect local and regional air quality. In contrast, the current waiver request for greenhouse gases is far different; it presents numerous issues that are distinguishable from all prior waiver requests. Unlike other air pollutants covered by previous waivers, greenhouse gases are fundamentally global in nature. Greenhouse gases contribute to the problem of global climate change, a problem that poses challenges for the entire nation and indeed the world. Unlike pollutants covered by the other waivers, greenhouse gas emissions harm the environment in California and elsewhere regardless of where the emissions occur. In other words, this challenge is not exclusive or unique to California and differs in a basic way from the previous local and regional air pollution problems addressed in prior waivers.¹²⁷

This accurately captures the problem. There is nothing special about a car emitting greenhouse gases in California compared to a car in Texas. Those greenhouse gas emissions will have the same effect on California.

Nonroad engines or vehicles

Section 209(e) preempts state standards for nonroad engines or vehicles.¹²⁸ This provision was added to the CAA in later amendments and, unlike the on-road waiver in Section 209(b) discussed above,

it explicitly names California as the only state privileged to seek a waiver. Under 209(e)(1), there is no waiver available for states to set standards for “new engines which are used in construction equipment or vehicles or used in farm equipment or vehicles and which are smaller than 175 horsepower” or “new locomotives or new engines used in locomotives.”¹²⁹ For “other nonroad engines or vehicles,” which are addressed under 209(e)(2), the waiver process (which is called an authorization) is similar to the waiver process applicable to new motor vehicles. Other states can adopt the California standards for these engines as well.¹³⁰

Recommendations for Congress

Repeal waiver and authorization authority under Section 209.

Congress should repeal the waiver authority under Section 209(b) (as well as the related Section 177 for states adopting California’s standards since the provision would be moot)¹³¹ and the comparable authorization authority under Section 209(e).¹³² The justification for this special treatment for California no longer exists because California’s remaining air quality issues do not equate to compelling and extraordinary conditions. In September, 2024, Sen. Mike Lee (R-UT) introduced legislation, the Stop California from Advancing Regulatory Burden Act (STOP CARB Act) that would achieve this objective.¹³³ Rep. Troy E. Nehls (R-TX) introduced a House companion bill.¹³⁴

If this ideal solution is not adopted, then Congress should:

Clarify that the waiver and authorization authority does not apply to greenhouse gases. As stated, there is nothing unique about California when it comes to greenhouse gases. If such a clarification were made, Congress would need to be clear that in no way is it suggesting that greenhouse gases could otherwise be regulated under the CAA.

Prohibit the EPA from granting a waiver or authorization to California that would exceed the agency’s own authority. There is a difference between California going beyond a federal floor established by the EPA and the state taking action that the EPA itself is not authorized to take. For example, if the EPA is not authorized by Congress to use its

power under the CAA to reduce the number of gas-powered vehicles, it should not then be able to give California the authority to take that prohibited action. Notably, California in 2022 adopted regulations (known as Advanced Clean Cars II or ACCII) that feature an escalating “zero-emission vehicle” sales mandate that culminates by 2035 in an outright ban on the sale of new internal-combustion-engine-driven cars in the state.¹³⁵ EPA sought comment on this waiver request, as required by statute prior to acting on the request, with comments due in early 2024.¹³⁶ In December of 2024, the EPA granted the waiver request.¹³⁷

Require California to consider the same factors as the EPA. Under existing law, the EPA has some factors that it considers when it sets emissions standards for new motor vehicles, such as “appropriate consideration” of compliance costs¹³⁸ However, this language should be made much stronger with clear prohibitions on limiting the availability of different types of vehicles and placing high priority on properly considering safety, consumer choice, and all relevant costs, including the costs for car dealers and customers. These same considerations should apply for California when the EPA considers a waiver or authorization request.¹³⁹

KEY ISSUE

Prohibit unreasonable technological requirements

The CAA is filled with numerous provisions that require the agency to set standards that in effect necessitate the application of specific technologies. The agency does not usually *explicitly* require companies to install any particular technology. Rather, by setting an emission standard based on what can be achieved with a particular technology, the agency essentially requires the use of this technology, even though it can often be excessively costly and impractical. In recent years, the requirements too often reflect whatever the agency wants regardless of feasibility. One example is the agency's vehicle tailpipe rule and its unrealistic assumptions regarding electric vehicle adoption.¹⁴⁰

Another example is Section 111 that addresses standards of performance for stationary sources and informs the new power plant rule regulating greenhouse gases.¹⁴¹ It highlights many of the problems with how the EPA sets technological requirements.

Under Section 111(a)(1), a standard of performance is defined in the following way:

The term "standard of performance" means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.¹⁴²

Improper use of subsidies

When determining the best system of emission reduction, the agency must take into account the total cost of achieving such reduction. There is nothing that indicates that this cost only refers to the direct compliance costs to the regulated company. Yet the EPA in its new power plant rule considers only the direct compliance cost to the regulated company and assumes that regulated companies will be able to take advantage of tax subsidies.¹⁴³ The agency should be taking

into account the total societal cost. The EPA's refusal to consider the broader societal costs, including the cost to taxpayers of the subsidies themselves, therefore significantly underestimates the cost of regulation.

The EPA uses the mere existence of subsidies to help claim that a technology, like carbon capture and storage (CCS), is a best system of emission reduction that has been adequately demonstrated. In the Inflation Reduction Act, Congress expanded the availability of the 45Q tax credit that incentivizes the use of CCS.¹⁴⁴ This policy, which was supposed to be a “carrot” to help power plants, is being used by the EPA to justify the unreasonable imposition of CCS. This will result in helping to kill off power plants. Legislators, like Sen. Joe Manchin (I-WV), who supported this tax credit were almost certainly not intending to spend billions on the 45Q tax credit to help coal just so the EPA could then use the subsidy to help kill off coal.¹⁴⁵

The agency's reliance on subsidies is also problematic because their mere existence does not demonstrate anything. Spending money does not mean that a technology is viable, especially on a commercial scale, nor that it will be viable any time in the future. Assuming that subsidies will continue to exist is itself a faulty assumption.

Inadequately demonstrated

The EPA in its new power plant rule makes a mockery of the adequately demonstrated language. For example, the rule establishes a 90 percent carbon capture requirement for new baseload natural gas power plants.¹⁴⁶ There is no utility scale natural gas CCS plant in existence today—anywhere in the world. There has only been one small-scale facility that was ever built—Florida Power & Light's 40 MW CCS gas plant in Bellingham, Massachusetts.¹⁴⁷ It closed in 2005. Yet the EPA claims its CCS requirement for natural gas baseload plants has been adequately demonstrated.¹⁴⁸

There is also another problem with the agency's analysis of adequately demonstrated in its power plant rule. A central feature in the business plans of almost every utility-scale commercial CCS powerplant ever built or proposed in North America is an arrangement to sell its captured CO₂ to companies engaged in enhanced oil recovery (EOR).¹⁴⁹

Injecting CO2 into older oil fields increases production by increasing field pressure while reducing the oil's viscosity. Thirty-eight states do not have EOR operations.¹⁵⁰ Both natural gas and coal powerplants in those states (more than 75 percent of all states) would have little or no prospect of ever becoming financially viable.

Recommendations for Congress

Clarify that cost means all costs. At a minimum, when the CAA says costs should be considered when ascertaining the imposition of a technological requirement, this should be clarified to mean all costs, including subsidies. The fact that this would even need to be clarified helps to illustrate the problems with the EPA and its efforts to improperly interpret statutes to achieve its agenda.

In places where the language is unclear or mentions compliance costs, this should be changed to clarify that the agency must consider all costs. There are costs to parties well beyond those being regulated, be it taxpayers through subsidies or consumers who may bear the cost of having regulated parties pass on their costs to them.

Prohibit the consideration of subsidies in justifying technological requirements. The EPA should not consider the mere existence of subsidies to support a specific technology. When Congress enacts a subsidy for the adoption of a technology, it should not have to worry that this investment will then be used to impose unrealistic technological requirements on recipients of the subsidy, such as how the 45Q tax credit has been used against coal plants. Further, the continued existence of any subsidies is not something that can just be assumed.

This recommendation is hardly novel. In the past, Congress addressed the EPA's potential abuse of subsidies in setting technological requirements in rules. Section 402 of the Energy Policy Act of 2005,¹⁵¹ which has since expired, prohibited the EPA from determining CCS to be adequately demonstrated "solely by reason of" the emission reductions achieved by subsidized clean coal demonstration projects.¹⁵² This recommendation is slightly different than Section 402. It is focused on the EPA relying on the mere existence of subsidies to

justify technological requirements, not on whether the agency can look towards subsidized special projects to justify any requirements. Having said this, the EPA should also not be able to use special subsidized projects like the Section 402 clean coal projects to establish technological requirements.

Clarify that technological requirements must be technically and economically feasible. Technological requirements, be it in Section 111 or elsewhere, should be feasible. This means at a minimum that the required technology should be commercially available, reflect current market conditions (e.g., no predicting future consumer demand), and not be cost-prohibitive in the absence of any subsidies. The technology should be available everywhere across the country and its successful adoption should be in the control of regulated parties, both within their physical operations and existing business models. This last point regarding control gets to a problem in the new power plant rule where power plants have no control over enhanced oil recovery that is a prerequisite for CCS.

KEY ISSUE

Address the abuse of co-benefits

The Office of Air and Radiation has regulated air pollutants even when it has identified little to no monetized benefits from regulating these pollutants.¹⁵³ When moving forward with these rules, the agency has pointed to the ancillary benefits (sometimes referred to as “co-benefits”) of reducing the emissions of pollutants that are not the focus of the statutory sections or the purpose of the rules.¹⁵⁴ The costs of the rules may dramatically outweigh the benefits from reducing the emissions of the pollutants that are the focus of the statutory sections or the purpose of the rules (direct benefits). In fact, there may be no direct benefits.

According to NERA Consulting data, in the two-year period from 2009-2011, the EPA did not quantify any direct benefits for six major CAA rules. PM_{2.5} ancillary benefits accounted for all of the quantified benefits.¹⁵⁵ In 21 of the 26 major non-particulate matter rulemakings analyzed from 1997-2011, the particulate matter ancillary benefits accounted for more than half of the total quantified benefits. The PM_{2.5} ancillary benefits accounted for greater than 99 percent of the total quantified benefits for 10 of the rulemakings.¹⁵⁶

In 2016, the EPA issued a supplemental finding to justify the MATS rule (dealing with mercury and other hazardous pollutants, or HAPs) that was struck down by the Supreme Court in *Michigan v. EPA* because the agency refused to consider costs when determining whether the regulation was “appropriate and necessary” as required under the applicable statutory provision, 112(n)(1)(A).¹⁵⁷ In the supplemental finding, the agency provided two forms of cost analysis. The primary analysis considered the costs of MATS against a variety of cost metrics for the utility industry. But the alternative analysis, which was based on cost-benefit analysis, explicitly looked to co-benefits, justifying the rule on that basis even though 99.9 percent of the total quantified benefits came from the alleged ancillary benefits of reducing non-HAP emissions.¹⁵⁸ Once again, the monetized ancillary benefits focused on PM_{2.5} ancillary benefits.¹⁵⁹

The EPA finalized a new MATS rule in 2024,¹⁶⁰ which is currently being challenged in court.¹⁶¹ The new rule has zero monetized HAP-

related benefits.¹⁶² All of the monetized benefits are ancillary benefits from non-HAP pollutants, including PM_{2.5}. The agency again uses the statutory section (Section 112) that exists to regulate HAPs despite being unable to monetize any benefits from regulating HAPs.

In 2020, the EPA itself sought to address the abuse of ancillary benefits in the MATS context,¹⁶³ but that rulemaking was rescinded by the Biden administration.¹⁶⁴ The EPA in the 2020 rule explained that ancillary benefits from criteria pollutants could only play a “marginal role” in deciding whether to regulate HAPs from power plants.¹⁶⁵ The agency rightfully pointed to the fact that the CAA already regulates criteria pollutants under the NAAQS program¹⁶⁶

Legal concerns

The EPA should not be using a statutory section addressing one pollutant to regulate another pollutant—especially when Congress has adopted other programs specifically designed to regulate the latter. This may or may not be the agency’s intent, but it certainly is the effect. For example, when the EPA regulates mercury but is unable to show any monetized direct benefits and instead points exclusively to criteria pollutant ancillary benefits, then the rule, for all practical purposes, is not a HAP rule, it is a criteria pollutant rule. The EPA is taking a section that Congress passed to deal with pollutant A and using it to deal with pollutant B (intentionally or in effect). This acts as an end-run around Congress.¹⁶⁷ Using ancillary benefits from criteria pollutants in this manner when it comes to Section 112 is especially egregious because the agency is likely prohibited from regulating criteria pollutants under Section 112.¹⁶⁸

It is possible that for a rule with a miniscule amount of monetized HAP direct benefits and massive criteria pollutant ancillary benefits, the EPA’s primary objective may not be to reduce criteria pollutants. Instead, the primary objective may be to promulgate HAP regulations that would otherwise seem unreasonable to regulate based on the small amount of monetized HAP direct benefits. The 2012 MATS rule could be interpreted that way—claiming huge PM_{2.5} co-benefits was a way to try and make it seem reasonable to promulgate a rule whose costs exceeded direct benefits by as much as 2400 to 1.¹⁶⁹ But whatever the motive,

whether ancillary PM_{2.5} reductions are the primary objective or a means to an end, the agency is improperly using ancillary benefits.

Ignores basic requirements of regulatory analysis

The EPA, like any agency, should first clearly identify the problem that it intends to address through a rule.¹⁷⁰ Another key requirement of regulatory analysis is to identify alternatives. When a rule purporting to address pollutant A (e.g., mercury) is functionally a rule to address pollutant B (e.g. PM_{2.5}), the agency has not properly identified the problem (at least not publicly) nor is it likely to properly consider the alternative strategies for addressing pollutant B. By using such indirect means to regulate a pollutant without careful analysis, the agency is unlikely to be making the best decisions regarding how to address the pollutant.¹⁷¹

Recommendations for Congress

The overarching recommendation is to give effect to the will of Congress and to ensure that the EPA does not contrive end runs around the law. To inform whether to regulate, the EPA should compare costs to benefits for its air rules. When the EPA is conducting these comparisons, ancillary benefits should not be used to make up for having an insufficient amount of monetized direct benefits to justify a rule. The following are two bright line approaches to achieving this objective:

Allow ancillary benefits to account for at most a marginal amount of the benefits compared to the costs. If ancillary benefits are used when comparing costs to benefits in air rules, they should at most constitute a marginal amount of the monetized benefits used in the comparison. This should mean less than 5 percent of the benefits.

Allow ancillary benefits to account for under 50 percent of the benefits compared to the costs. This is a less desirable option but would still help to achieve the objective. If ancillary benefits are used when comparing costs to benefits in air rules, they should at most constitute under 50 percent of the monetized benefits used in the comparison. This means the monetized direct benefits should constitute at least 50 percents of the benefits.

KEY ISSUE

Repeal or limit the Regional Haze Program

The Regional Haze Program was added as part of the 1977 Amendments to the Clean Air Act.¹⁷² Unlike the primarily health-based measures elsewhere in the CAA, regional haze is purely an aesthetic concern. It largely focuses on emissions from coal-fired power plants that could potentially impair visibility in national parks and other scenic vistas, especially in the Western United States. The statute provides states with wide discretion in determining both the objectives and the compliance strategies to address regional haze, with only minimal EPA oversight.

Federal takeover of the Regional Haze Program

During the Obama administration, however, the EPA devised a strategy to wrest control of the program from states and impose far more stringent and costlier provisions. Specifically, the agency, in conjunction with environmental organization litigants, used “sue and settle” to create a series of consent decrees, and did so with minimal state input.¹⁷³ Although the consent decrees on their face merely imposed timing requirements for the EPA to either approve state regulations or issue its own, the agency was then able to bootstrap the deadlines established in these consent decrees to declare state compliance efforts inadequate and impose its own set of Federal Implementation Plans on several states.

Turning Regional Haze into a war on coal

The agency has used this newfound control to take the Regional Haze Program well beyond the original intent. No longer is the focus on improving visibility but rather to mandate the installation of costly control technology on industrial facilities – and especially on coal-fired power plants that are not, in EPA’s view, adequately regulated under other programs. This has been part of the agency’s sweeping climate change agenda because many plants are not economically viable if they are required to retrofit with costly control technology and will be shut down unless the rules are revoked. The resulting

federal requirements were, in some cases, as much as an order of magnitude costlier on impacted coal-fired facilities than what the states had proposed.¹⁷⁴

Aggressive actions under the Biden administration

This litigation strategy has been aggressively revived by the Biden administration. Most significantly, a recent draft consent decree between several environmental groups and the EPA would affect 33 states, requiring these states to either produce a regional haze plan acceptable to the agency or submit to a Federal Implementation Plan.¹⁷⁵ The focus is on the dwindling fleet of coal-fired electric-generation still operating in these states, and will likely result in additional measures on top of the many other CAA provisions already applicable to such facilities.

It should be noted that, while these costly provisions have likely contributed to the wave of closures of coal-fired power plants and will continue to do so, it is far from clear that the actual purpose of the program - improved visibility of scenic vistas - has been positively advanced. Little if any evidence has emerged of improvements in visibility significant enough for people to actually notice.¹⁷⁶

Recommendations for Congress

Repeal the Regional Haze Program. While the visibility benefits of the program are debatable, the EPA has morphed it into another costly assault on coal. The public would be better off without it, and states would remain free to address visibility as they see fit, including working with neighboring states.

Restore state primacy on regional haze. More than most CAA provisions, the Regional Haze Program indisputably placed states in charge, but the EPA has subverted the federalist intent of Congress. Congress should restore that intent by ending or at least limiting the agency's authority to impose FIPs in the place of state-authored strategies to address regional haze.

KEY ISSUE

Repeal or constrain the AIM Act

The EPA's regulation of refrigerants began with Title VI of the 1990 Amendments to the Clean Air Act, under which the agency phased out a class of compounds known as chlorofluorocarbons (CFCs) on the grounds that they were depleting the earth's ozone layer.¹⁷⁷ CFCs were in turn replaced in many air conditioning and refrigeration applications by hydrofluorocarbons (HFCs). However, HFCs later became targets because of their claimed contribution to climate change, culminating in restrictions on them enacted in the 2020 American Innovation and Manufacturing Act (AIM Act).¹⁷⁸ The EPA is in the process of aggressively implementing the AIM Act through an ongoing series of regulations promulgated under Title VI.

While repeal of the ill-advised AIM Act is the ideal solution, Congress should at least place limits on the agency's authority to make the AIM Act even costlier through additional regulatory restrictions.

AIM Act quotas

The core of the AIM Act is its phasedown of HFC production. As of 2024, the quotas require a 40 percent cut from baseline levels, which tightens to 70 percent in 2029 and culminates with an 85 percent cut in 2036 and later years.¹⁷⁹ There is no flexibility in the statute should compliance raise prices more than anticipated.

Note that these targets parallel those of a 2016 United Nations treaty, the Kigali Amendment to the Montreal Protocol on Substances That Deplete the Ozone Layer (Kigali Amendment).¹⁸⁰ The US Senate ratified the Kigali Amendment in 2022, two years after passing the AIM Act.¹⁸¹

Effects of the AIM Act and related EPA rules

Not surprisingly, the government-mandated quotas on HFC supplies have led to a several-fold increase in their price.¹⁸² This includes the HFCs needed to service most home air conditioning systems, along with many other categories of air conditioning and refrigeration equipment used in millions of businesses as well as schools, hospitals,

and other public buildings. The prices for HFCs will likely continue to rise as the quotas get more stringent in the years ahead.

The AIM Act does not stop with the statutory limits on HFC supplies and in fact gives the EPA wide discretion to promulgate additional restrictions on how these HFCs may be used. The agency is in the process of setting and implementing costly prohibitions on the use of certain HFCs in newly manufactured air conditioning and refrigeration equipment, along with new requirements on the handling of HFCs during the installation and servicing of systems.¹⁸³ Both the cost of new equipment as well as repairs of existing units will be adversely affected by these regulations, and more such measures are likely in the years ahead.

Perhaps the worst of the EPA's added requirements under the AIM Act is the one mandating that all new residential central air conditioners manufactured after January 1, 2025 use refrigerants deemed sufficiently climate-friendly by the agency.¹⁸⁴ As it turns out, the only viable refrigerants meeting EPA's stringent new environmental standards are classified as mildly flammable, which introduces safety risks to go along with potentially higher costs.¹⁸⁵ This measure alone is likely to raise residential equipment prices by at least 10 percent and also add to installation costs.¹⁸⁶

It should be noted that the EPA estimates that HFCs contribute no more than 3.1 percent of the greenhouse gas emissions the agency blames for contributing to anthropogenic climate change.¹⁸⁷ Thus, even assuming that reductions in greenhouse gas emissions are a worthwhile objective, the AIM Act accomplishes very little of it to justify the costs. This is particularly true of the new regulations that make the AIM Act provisions marginally more stringent but can add significantly to burdens on homeowners and businesses.

Recommendations for Congress

Repeal the AIM Act as well as Title VI of the 1990 Amendments and withdraw from the Montreal Protocol. The phaseout of ozone depleting refrigerants is largely complete, thus retaining Title VI serves little purpose. Further, allowing the EPA to expand the

application of these provisions under the AIM Act to target additional refrigerants considered greenhouse gases is resulting in greater-than-expected economic pain for miniscule environmental gain.

Repeal the EPA's authority to add new regulatory restrictions. In other words, limit the AIM Act to the HFC quotas, and nothing else. Targeting the already-dwindling supply of HFCs with additional red tape is not worth the cost to consumers and businesses.

Create regulatory relief specific to homeowners who are being hit very hard under the AIM Act. This could include expanding the supply of the HFCs needed to service existing residential air conditioning systems as well as repealing the costly new requirements affecting new equipment purchases.

Add a safety valve should regulatory costs prove greater than anticipated. The prices for HFCs have already risen and may skyrocket in the future, leaving owners of millions of air conditioning and refrigeration systems with exorbitant maintenance costs. For some applications, it is not clear that substitute refrigerants are up to the task. Unfortunately, there are no effective provisions in the law to provide any relief should trouble arise.

Conclusion

The United States has some of the cleanest air in the world. This does not mean that improvements should not be made. However, it does mean that when analyzing the federal regulatory role in addressing air quality, the state of the air in 2025 should inform decisions, not the air that existed decades ago.

Current EPA regulations and the CAA itself have serious flaws that Congress should address. It is inexcusable for the EPA to promulgate regulations without considering whether those rules do more harm than good. Yet this happens and some of the statutory language requires this flawed approach to regulation. When the EPA decides whether to regulate, it should look to the best available science. Yet this is just one part of the equation. To answer whether to regulate, the EPA must make subjective decisions and examine other critical factors such as costs and tradeoffs.

Air regulations have become incredibly costly and sweeping in nature. Given the sheer magnitude of the rules, Congress should be making many of these decisions that have been passed off to the agency. In many instances, Congress likely did not even authorize such rules. Therefore, it is important for Congress to stop the agency from using air regulations to get into areas that were never authorized or ever envisioned to be a function of the agency.

When thinking of EPA overreach, air regulations rightfully are at the forefront of this concern. The agency has used its power to act more like the “Economic Planning Agency” than the Environmental Protection Agency. Much of this is due to the agency getting into the regulation of greenhouse gases. The ability to regulate greenhouse gases is the ability to try and use regulatory power to reshape the economy.

A modernized EPA would have air regulations that do not focus on greenhouse gases. The air regulations would stay focused on pollutants that actually affect air quality, that is, pollutants that dirty the air or directly harm human health. The EPA’s air regulatory work would be narrower in scope and not just because the agency would stop regulating greenhouse gases. States would be taking the lead on

air quality issues. Congress would be reasserting its lawmaking power and making decisions it should be making as opposed to the EPA. Congress would have established clear limits on the agency's power so it does not promulgate air regulations beyond what was intended by legislators.

No political party or ideology has a monopoly on being concerned with air quality. Americans in general want clean air and they should have clean air. Our country can maintain and improve air quality by using the best available science, applying sound regulatory and risk analysis, and recognizing the proper limits of federal regulation.

