DIALOGUE

EPA'S NEW PARTICULATE MATTER STANDARD

SUMMARY

On February 7, 2024, the U.S. Environmental Protection Agency (EPA) announced a final rule imposing a stricter limit for the fine particulate matter ($PM_{2.5}$) national ambient air quality standard (NAAQS). The annual exposure standard for $PM_{2.5}$, currently set at 12 micrograms per cubic meter of air, will now be 9 micrograms per cubic meter, marking the first time in over eight years that EPA has strengthened any NAAQS. The rule is predicted to have many health benefits, such as preventing 4,500 premature deaths by 2032, which may particularly affect overburdened communities. On March 15, 2024, the Environmental Law Institute hosted a panel of experts to discuss the final rule and how it will affect various environmental sectors. Below, we present a transcript of that discussion, which has been edited for style, clarity, and space considerations.

Madison Calhoun is Senior Manager of Educational Programs at the Environmental Law Institute.
David Wooley (moderator) is Executive Director of the Center for Environmental Public Policy.
Amanda Leiter is an Associate Deputy General Counsel at EPA.
Manuel Salgado is Federal Research Manager at WE ACT for Environmental Justice.
Peter Zalzal is Special Projects Director and Lead Attorney at the Environmental Defense Fund.

Madison Calhoun: Today's moderator is David Wooley, a lecturer at University of California, Berkeley's Goldman School of Public Policy and Director of the Center for Environmental Public Policy. He has more than 30 years' experience with electric power regulation, climate policy, and Clean Air Act (CAA)[1] implementation. Previously, David served as an environmental law professor at Pace University School of Law, of counsel at the Oakland firm of Keyes & Fox, and a Vice President at the Energy Foundation. He is co-author of the *Clean Air Act Handbook* (Thomson/Reuters 2023).

David Wooley: Thanks for that introduction. The only thing I'll add is that I was an assistant attorney general at the New York State Law Department for many years working on CAA litigation leading up to the 1990 CAA Amendments.

Our panel today includes three people with deep experience with the new particulate matter (PM) standard. Amanda Leiter works at the U.S. Environmental Protection Agency (EPA), and was involved in the fine particulate matter ($PM_{2.5}$) rulemaking. She was formerly an environmental law professor at American University. Manuel Salgado is from WE ACT, an environmental justice (EJ) organization. Manuel has experience with EJ advocacy and training in atmospheric chemistry. Peter Zalzal, from the Environmental Defense Fund (EDF), is an attorney with experience in regulation of major industrial sources, including oil and gas and petrochemical industries.

Here is some context for our discussion. On February 7, EPA strengthened the national ambient air quality standard (NAAQS) for PM, specifically the primary health-based standard.[2] The action strengthened the 1997 rule, which was the first national $PM_{2.5}$ standard in the United States. The new rule lowers the allowed annual average limit on fine particles by 25%, from 12 micrograms/cubic meter ($\mu g/m^3$) down to 9 $\mu g/m^3$.

NAAQS are one of the central pillars of the federal CAA, creating the attainment objectives for state implementation plans (SIPs). NAAQS are one part of a comprehensive set of measures to reduce air pollution, which also includes a wide range of technology standards for large sources of stationary and mobile sources, as well as a range of state and local emission regulations.

On stationary sources, state and local governments can be more stringent than the federal government. In regard to mobile sources, California can have more stringent standards, with other states copying those. So, there's quite a complex web addressing air pollution in the United States.

1. 42 U.S.C. §§7401-7671q, ELR Stat. CAA §§101-618.

2. U.S. EPA, *Final Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (PM)*, https://www.epa.gov/pm-pollution/final-reconsideration-national-ambient-air-quality-standards-particulate-matter-pm (last updated Apr. 30, 2024); Reconsideration of the National Ambient Air Quality Standards for Particulate Matter, 89 Fed. Reg. 16202 (Mar. 6, 2024).

This rule is one of several important air quality regulations recently issued by EPA. The Agency finalized regulations to control methane emissions from oil and gas operations in December 2023.[3] There's a power plant rule in the works.[4] There are new vehicle emission standards recently adopted or in preparation.[5] Just yesterday, EPA issued an ethylene oxide limit on sterilization plants.[6] And its interstate air pollution standard or rule, issued under §126 of the CAA, was recently argued in the U.S. Supreme Court.[7] The Agency issued a National Climate Assessment in November.[8]

I'll turn it over to Amanda.

Amanda Leiter: I've been in the General Counsel's Office at EPA since July, so I'm still fairly new. One of the things that I've worked on since I've been there is the finalization of the new $PM_{2.5}$ NAAQS. I'll start by running through the basics of the rule.

Particle or soot pollution, and specifically small particle pollution, which we refer to as $PM_{2.5}$, is one of the most dangerous forms of air pollution. We have extensive science that links exposure to $PM_{2.5}$ to harmful cardiovascular effects, including heart attacks and strokes, as well as harmful respiratory effects, including asthma attacks and asthma-related deaths.[9]

The current standards for $PM_{2.5}$ were set in 2012.[10] The CAA requires that EPA review each NAAQS at five-year intervals and revise them as necessary based on a health-based evaluation. The prior administration reviewed the 2012 standards and made a determination in 2020 to retain the standards at their 2012 levels.[11]

However, EPA has had a variety of recent studies suggesting that the health effects of $PM_{2.5}$ exposure occur at concentrations allowed under the previous standards. In other words, concentrations that met the previous standards nevertheless were associated with significant health effects. In areas that met the previous standards, we could see improvements in health as PM levels were lowered still further below the current standards.

The quantitative risk assessment that we conducted, on which the final rule is based, also estimated that the previous standard could allow thousands of $PM_{2.5}$-associated deaths per year. The Clean Air Scientific Advisory Committee, which advises EPA on its decisionmaking in this regard, advised that we should lower the standard. So, based on our evaluation of all of the available scientific and technical information, EPA decided to revise the level of the primary health-based annual $PM_{2.5}$ standard down to 9 $\mu g/m^3$ to protect public health, with an adequate margin of safety, as the CAA requires.

To summarize, the annual primary standard had been set at a level of 12 $\mu g/m^3$. The way that the average is measured is the annual arithmetic mean averaged over three years. The prior administration, as I said, reevaluated that in 2020 and chose to retain it. We just reevaluated it and chose to lower it to 9 $\mu g/m^3$.

I'll also summarize what we did with the 24-hour standard for $PM_{2.5}$. We chose to retain it at the levels that were set in 2012. I want to describe the reason for this decision. First, if you imagine a timeline of PM levels, you could imagine daily peaks in the levels as factories cycle online and off-line, traffic increases and decreases with rush hour, and so on. The annual average, of course, controls the overall levels of PM. The 24-hour standard is intended to ensure that there aren't individual days with dangerously high spikes of PM levels.

We evaluated the 24-hour standard that was set in 2012, but the Clean Air Scientific Advisory Committee did not reach a consensus on whether we should revise that level. The majority recommended revising the level down from its current level of 35 to a range between 25 and 30. The minority recommended retaining the standard. We chose to retain it. The reason for that is that we didn't have good data teasing out the effect of the annual standard from the effect of the daily standard.

Air quality analysis suggests that the annual standard controls across most of the country, and that the annual standard will actually continue to limit peak daily concentrations as well. We couldn't conclude that the current 24-hour standard is inadequate in areas that meet the new 9 $\mu g/m^3$ annual standard. In other words, once areas come down to that 9 $\mu g/m^3$ annual standard, our data suggest that will be sufficient to control against the dangerous daily spikes that we're concerned about.

I'll tell you about a couple other aspects of the rule. First, the rule newly factors EJ considerations into the siting of PM it monitors nationwide. The idea here is to ensure that we're accurately measuring PM levels near communities that are at risk or overburdened.

The 2019 Integrated Science Assessment for Particulate Matter and Integrated Science Assessment Supplement, on which the rule is partly based, identified children, older

3. U.S. EPA, *EPA's Final Rule for Oil and Natural Gas Operations Will Sharply Reduce Methane and Other Harmful Pollution*, https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-operations/epas-final-rule-oil-and-natural-gas (last updated May 6, 2024).
4. New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, 89 Fed. Reg. 39798 (May 9, 2024).
5. Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles, 89 Fed. Reg. 27842 (Apr. 18, 2024).
6. News Release, U.S. EPA, EPA Announces Final Rule to Slash Toxic Emissions of Ethylene Oxide and Reduce Cancer Risk (Mar. 14, 2024), https://www.epa.gov/newsreleases/epa-announces-final-rule-slash-toxic-emissions-ethylene-oxide-and-reduce-cancer-risk.
7. Matthew Daly, *Supreme Court Seems Skeptical of EPA's "Good Neighbor" Rule on Power Plant Pollution*, AP News (Feb. 21, 2024), https://apnews.com/article/supreme-court-epa-good-neighbor-air-pollution-rules-9d29c120d276f4bad5b3ea2c75d107ff.
8. NCA5, *The Fifth National Climate Assessment*, https://nca2023.globalchange.gov/ (last visited May 29, 2024).
9. See U.S. EPA, *Health and Environmental Effects of Particulate Matter (PM)*, https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm (last updated Aug. 23, 2023), for additional information and links to additional sources.
10. U.S. EPA, *2012 National Ambient Air Quality Standards (NAAQS) for Particulate Matter (PM)*, https://www.epa.gov/pm-pollution/2012-national-ambient-air-quality-standards-naaqs-particulate-matter-pm (last updated Apr. 3, 2024).
11. News Release, U.S. EPA, EPA Finalizes NAAQS for Particulate Matter (Dec. 7, 2020), https://www.epa.gov/newsreleases/epa-finalizes-naaqs-particulate-matter.

adults, people with preexisting diseases, including cardiovascular and respiratory disease, minority populations, and low socioeconomic status populations as at-risk populations.[12] The new siting criteria basically require states or localities, as they're adding new air pollution monitors or moving existing monitors, to consider at-risk communities and their proximity to air pollution sources of concern, such as major ports, rail yards, airports, large industrial areas, and the like.

It doesn't require installation of new monitors. But it does say, when you are installing new monitors or if you're moving existing monitors, the proximity of these at-risk communities to air pollution sources of concern is one of the factors that should be taken into account.

To give you a sense of the breadth of EPA's existing air monitor network, there are about 4,000 of these monitors nationwide. They're operated mainly by state and tribal environmental agencies. The agencies then send their hourly or daily measurements of pollutant concentrations to EPA's database, which is called the Air Quality System. Some of the monitors are read manually, but many are automated.

A second change that the rule makes is to adjust the Air Quality Index to reflect the new scientific data we have showing greater health effects at lower levels of $PM_{2.5}$. The Air Quality Index is the tool that states, tribes, and local governments use to inform the public about air quality. You'll hear it, for example, on NPR every morning. They'll tell you today is a "red" air quality day, which is unhealthy, sensitive populations should limit their time outdoors, and so on. The modifications in this rule include an update to the lower breakpoint between yellow and orange based on the revised level of the annual standard, and an update to the upper breakpoints to reflect the latest scientific evidence we have about the dangerous effects of high levels of $PM_{2.5}$.

To summarize, the benefits that we expect from this rule include up to 4,500 avoided premature deaths, up to 800,000 avoided asthma cases, and up to 290,000 avoided lost work days. That's a projection in a single year, 2032. Our estimate is that the net benefits of the change could be as high as $46 billion.[13]

In addition, the stronger $PM_{2.5}$ max advances EJ by reducing particulate pollution that disproportionately burdens at-risk communities. Also, as I mentioned earlier, the change to the siting factor will ensure that at-risk communities are better accounted for in siting air pollution monitoring stations.

Also, the rule complements continued deployment of funding from the Bipartisan Infrastructure Law and Inflation Reduction Act (IRA), both of which aim to encourage the adoption of clean technology nationwide and to bring down both PM and other sources of pollution.

Finally, this would not be a complete EPA presentation without documenting for you that these advances can be achieved consistent with economic progress. In particular, since 2000, PM concentrations have gone down by about 42% in outdoor air nationwide. During that same time period, the U.S. gross domestic product has increased by 52%.[14]

Manuel Salgado: I'm federal research manager for WE ACT for Environmental Justice. WE ACT is an EJ organization that was started in Harlem back in the late 1980s. Since then, we have grown a great deal. We have about 50 employees now. Twelve of us reside here in Washington, D.C., where we have a federal policy office. WE ACT is one of the few, if not the only, EJ organizations with a full-time presence in D.C. We're very proud of that.

Our mission essentially is to build healthy communities by ensuring that people of color and/or low income are able to participate meaningfully in the creation of sound and fair environmental health and protection policies and practices. To put it more succinctly, we feel that the people who have been harmed the most by systemic environmental racism and carry a large amount of the burden of environmental pollution in this country should have a seat at the table in deciding how we remediate that and how we move forward with those concerns in mind.

I started at WE ACT a little under two years ago, so I've been here for the entire process of the PM NAAQS. I was part of the initial comments that we submitted. We've done a lot of advocacy on this subject. Now, I'm also part of the response to the finalized rule.

From an EJ perspective, it's safe to say that the Joseph Biden Administration has been the best administration that we've ever had in recognizing EJ concerns and uplifting them and trying to address them. Amanda just covered a lot of the ways this rule will benefit EJ communities. We're going to see improved health across the board. We're going to see lower numbers of premature deaths and fewer hospital visits due to asthma and other respiratory diseases. We're going to see fewer deaths. There are going to be a substantial number of lives that will be saved due to the implementation of these rules.

What's unfortunate is that we could have saved more. What I'm going to show is that, while we're very happy to see progress on this issue and other issues, the burden that communities will continue to carry is so substantial that we really need to be taking action that addresses that fully. When we reviewed EPA's final rule, it left us wanting to do more.

We did recommend updating the rule to the 8 $\mu g/m^3$ standard. EPA modeling shows that would have saved substantially more lives, and more importantly it would have saved Black lives. Black Americans carry a substantially

12. U.S. EPA, *Integrated Science Assessment (ISA) for Particulate Matter*, https://www.epa.gov/isa/integrated-science-assessment-isa-particulate-matter (last updated Feb. 5, 2024).

13. U.S. EPA, Final Regulatory Impact Analysis for the Reconsideration of the National Ambient Air Quality Standards for Particulate Matter 26 (2024) (EPA-452/R-24-006), https://www.epa.gov/system/files/documents/2024-02/naaqs_pm_reconsideration_ria_final.pdf.

14. U.S. EPA, *Our Nation's Air: Trends Through 2022*, https://gispub.epa.gov/air/trendsreport/2023/#home (last visited June 12, 2024).

larger burden of air pollution than any other demographic.[15] That's reflected in mortality rates within the Black population, and I think that that's something we really need to strive to address in every way possible.

There is an idea that comes to mind a lot when talking about EJ principles, and that's the idea of equality versus equity. Equality brings to mind an equal effect across the board, which is really pertinent to air pollution, while equity means that we have an end result where everyone benefits equally or has the same end result.

A study published in 2022 shows concentrations of PM since the turn of the century.[16] Since the year 2000, average PM concentrations dropped across the board. EPA has been doing a great job. NAAQS are working. We've seen that everyone across the board is exposed to less PM than they were in the year 2000. This is fantastic. This is what we want to see.

But although we have seen these decreases across the board, certain ethnicities and demographics still face a higher burden of that pollution. The racial disparity in the amount of PM that a white person is exposed to and a Black person is exposed to is still different. We still see that Black residents, Latinos, and Asians all carry a significantly higher burden than white Americans when it comes to PM pollution.

There is a history of redlining, a history of discriminatory practices in the United States that have led to people of color being in closer proximity to point sources of pollution. Figure 1 below illustrates how different industries disproportionately expose people of color to $PM_{2.5}$ pollution. If the industry's emissions are to the right of the vertical axis, that demographic receives a higher than average amount of pollution from that industry. The size of the bar then corresponds to how much that disparity is. The bar for white people shows the inverse of every other bar. They're the only demographic where the majority of industries give them a lower amount of pollution. Whereas people of color in general—Black people, Latinos, and Asians—all see a higher load of pollution from almost every industry listed.

The big one of note is industrial sources. All people of color have an above-average exposure to industrial sources while white people, on average, see a much lower amount that is below average (see Figure 1). This is because people of color are living in communities that are sited near these facilities due to historic practices, like redlining, that made sure that those polluting facilities were located in communities of color.

The regulatory impact analysis that EPA released last year when it first proposed this rule provides a really good set of data that the Agency used to guide its decisions. For example, Figure 2 (page 10540) illustrates national average total $PM_{2.5}$ concentrations for different demographic groups for current and alternative PM NAAQS levels. The demographic groups are split up by race and ethnicity, which essentially breaks down to Hispanic and non-Hispanic; poverty; educational attainment; age; and the like.

Different columns dictate the current standard, which is at 12/35, and compare that to four proposed standards. What we see is that with the 12/35 standard, which was before the rule was finalized, white persons in the United States had lower exposure than every other demographic.

That's not a surprise. But then we also see that the end result is that white Americans still have a lower exposure at the 9 $\mu g/m^3$ or at the 8 $\mu g/m^3$ level. The disparity persists regardless of the level that we started at. But we do know that the disparity is smaller at the 8 $\mu g/m^3$ level as opposed to the 9 $\mu g/m^3$ level. So, we could have made a bigger dent in these racial disparities had EPA gone with the stronger standard.

When looking at the mortality for 100,000 persons for each demographic group directly from PM, it's clear that Black persons carry a much higher burden of air pollution exposure. That's reflected in their mortality levels. This is not all due to exposure. It is due to accumulative burdens in other aspects of our socioeconomic system that inevitably impact the health of Black persons. But it shows that they are in far more danger of succumbing to poor health due to PM than any other demographic living within the United States.

Looking at reductions in mortality at different levels, we do see an 11.5 reduction at the selected 9 $\mu g/m^3$ level. This is the reduction based on the level that EPA decided to choose. But if you look at the 8 $\mu g/m^3$ level, it's more than double. We go from 11.5 to 25.6 as a reduction in mortality.[17] That is substantial. Those are lost lives that EPA has decided to leave on the table by selecting the less strict standard.

We also see additional lives saved in each one of the other demographic categories. So, while Black persons would benefit the most at the level of 8 $\mu g/m^3$, they also suffer the most. And there are benefits across the board.

I think it's clear here that people of color face higher levels of pollution across the board. Pollution mitigation strategies since the CAA was passed have had substantial effects on this. It has decreased across the board, but racial disparities remain. The new PM standards are definitely going to save a large number of lives, have a large economic benefit, and generally lead to better health outcomes for communities of color. But they aren't good enough. We have to propose bold standards. We have to do the best that we absolutely can in order to ensure that these disparities are eliminated and that we are giving everyone the same opportunity to have a healthy life. Once again, equality versus equity.

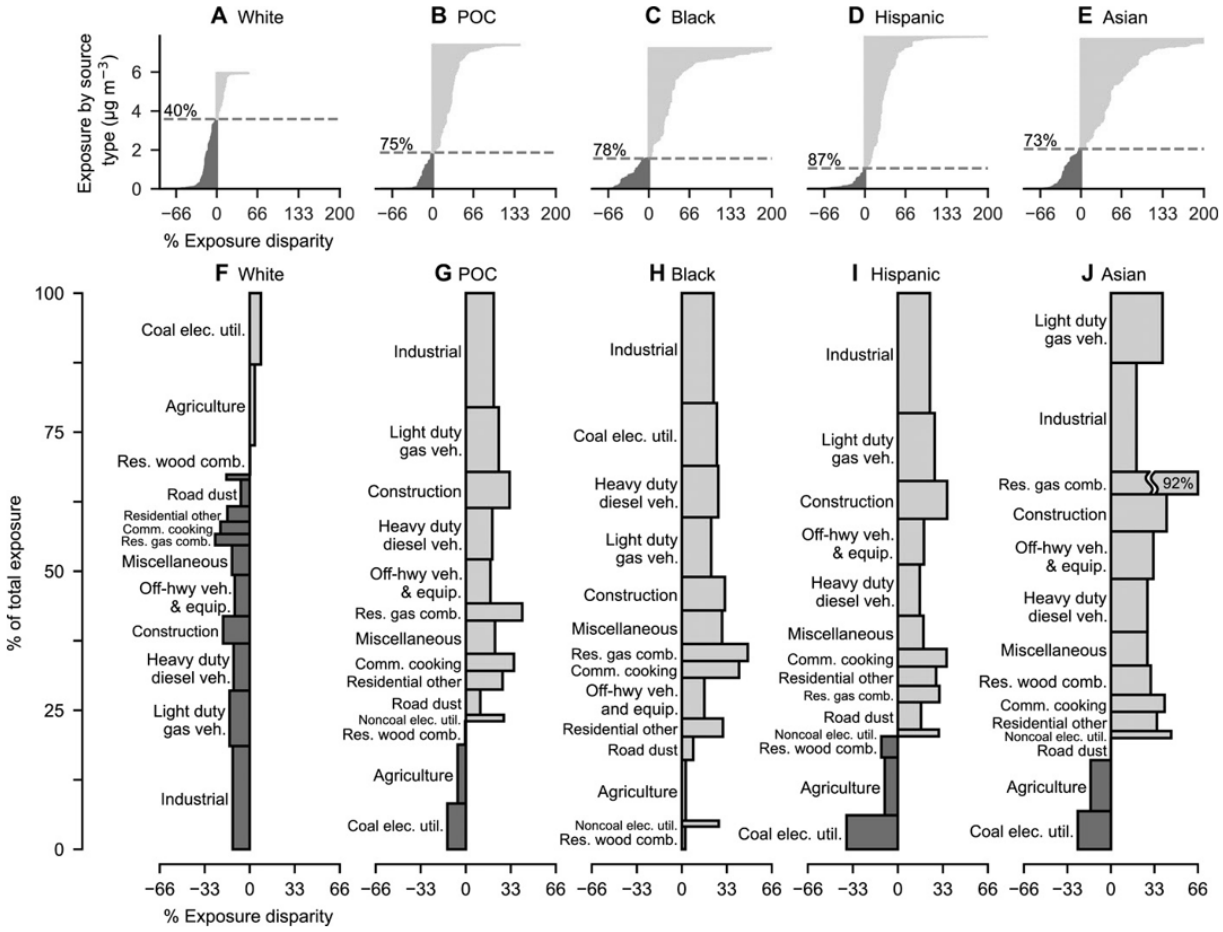
There are other upcoming rulemakings that WE ACT is engaged with that can also help with PM pollution. The

15. Christopher W. Tessum et al., *$PM_{2.5}$ Polluters Disproportionately and Systemically Affect People of Color in the United States*, 7 Sci. Advances eabf4491 (2021), https://www.science.org/doi/10.1126/sciadv.abf4491.

16. Abdulrahman Jbaily et al., *Air Pollution Exposure Disparities Across US Population and Income Groups*, 601 Nature 228 (2022), https://www.nature.com/articles/s41586-021-04190-y.

17. U.S. EPA, Regulatory Impact Analysis for the Proposed Reconsideration of the National Ambient Air Quality Standards for Particulate Matter fig. 6-15 (2022) (EPA-452/P-22-001), https://www.epa.gov/system/files/documents/2023-01/naaqs-pm_ria_proposed_2022-12.pdf.

Figure 1. Source Contributions to Racial-Ethnic Disparity in $PM_{2.5}$ Exposure



Source: Christopher W. Tessum et al., *$PM_{2.5}$ Polluters Disproportionately and Systemically Affect People of Color in the United States*, 7 Sci. Adv. eabf4491 (2021), https://www.science.org/doi/10.1126/sciadv.abf4491.

light-duty vehicle rules hopefully will be finalized soon.[18] We hope to see EPA include a requirement of gas particulate filters within that. That would have a substantial effect on PM pollution. We're also waiting on the mercury and toxic air rules to be finalized.[19] That will have an impact on PM pollution. We're also equally awaiting the CAA power plant rules to be finalized.[20] These are all rules that, in addition to having impacts in those sectors, will have impacts on PM as well.

David Wooley: That data reflects the experience we have here in the San Francisco Bay area with regard to communities near port and freight operations. That was an excellent presentation.

Peter Zalzal: I'm the associate vice president for clean air strategies at EDF. I'm an attorney on our Clean Air Team, and EDF has worked on the PM standards that EPA recently strengthened both through the last review cycle and then historically over the cycles that David and Amanda referenced. I want to briefly add a few points to the ones that Amanda and Manny raised, and also highlight some of the health impacts and benefits of the standards. Then I'll talk about some of the issues around implementation and opportunities we're seeing going forward.

We've heard this from everyone thus far, but I want to underscore from EDF's perspective as well the vital importance of strong particulate pollution standards and EPA's action here in strengthening those standards. Amanda and Manny both discussed data that EPA has produced on the benefits and importance of these actions.

As part of EDF's comments on the record here, we worked with Industrial Economics, Inc. and an independent outside firm to submit analysis during the comment period that is very consistent with the findings that have

18. Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles, 89 Fed. Reg. 27842 (Apr. 18, 2024).
19. National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review, 89 Fed. Reg. 38508 (May 7, 2024).
20. New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, 89 Fed. Reg. 39798 (May 9, 2024).

Figure 2. Heat Map of National Average Annual $PM_{2.5}$ Concentrations by Demographic for Current and Alternative PM NAAQS Levels After Application of Controls

Population Groups	Populations (Ages)	12/35	10/35	10/30	9/35	8/35
Reference	All (0-99)	7.2	7.1	7.1	7.0	6.9
Race	White (0-99)	7.1	7.0	7.0	7.0	6.8
	American Indian (0-99)	6.7	6.6	6.6	6.6	6.5
	Asian (0-99)	7.7	7.6	7.5	7.4	7.2
	Black (0-99)	7.4	7.4	7.4	7.3	7.1
Ethnicity	Non-Hispanic (0-99)	7.0	6.9	6.9	6.9	6.7
	Hispanic (0-99)	7.9	7.7	7.7	7.6	7.5
Poverty Status	Above the poverty line (0-99)	7.2	7.1	7.1	7.0	6.9
	Below poverty line (0-99)	7.2	7.2	7.2	7.1	7.0
Educational Attainment	More educated (HS or more) (25-99)	7.1	7.1	7.0	7.0	6.8
	Less educated (no HS) (25-99)	7.3	7.3	7.3	7.2	7.0
Age	Children (0-17)	7.2	7.2	7.2	7.1	6.9
	Adults (18-64)	7.2	7.2	7.2	7.1	6.9
	Older Adults (64-99)	7.0	6.9	6.9	6.9	6.7
Sex	Females (0-99)	7.2	7.1	7.1	7.1	6.9
	Males (0-99)	7.2	7.1	7.1	7.0	6.9

Figure 6-1 Heat Map of National Average Annual $PM_{2.5}$ Concentrations ($\mu g/m^3$) by Demographic for Current and Alternative PM NAAQS Levels (10/35, 10/30, 9/35, and 8/35) After Application of Controls

Source: U.S. EPA, *Regulatory Impact Analysis for the Proposed Reconsideration of the National Ambient Air Quality Standards for Particulate Matter* (2022) (EPA-452/P-22-001), https://www.epa.gov/system/files/documents/2023-01/naaqs-pm_ria_proposed_2022-12.pdf.

already been mentioned. But in particular, the analysis found that particulate pollution causes about 100,000 premature deaths each year.[21] And as Manny very well laid out, the burden of that pollution is especially harmful in communities that have long borne the heaviest burden from air pollution.

I'll share a few statistics from our own analysis. The Industrial Economics work found that Black Americans age 65 and older are three times more likely to die from exposure to soot than white Americans over 65, and people experiencing poverty are 49% more likely to live in an area that exceeded the 12 $\mu g/m^3$ standard.[22]

I want to make one thing clear about the legal framework that EPA is operating under here. The CAA requires EPA to establish national health-based standards that are requisite to protect public health with an adequate margin of safety. That evaluation does not allow for the consideration of costs in setting the standards. That's something the Supreme Court, in a decision by Justice Antonin Scalia in the *Whitman v. American Trucking* case, makes very clear.[23]

Again, building on Amanda's and Manny's comments, there is an overwhelming body of scientific evidence that supports EPA's decision to strengthen the national health-based standards. The Clean Air Scientific Advisory Committee unanimously recommended strengthening, with the majority of that Committee recommending stronger standards in the range of 8 to 10 $\mu g/m^3$. The benefits of strengthening these standards are significant.

I will highlight some findings here. Manny went into this in a lot more detail, but the work we did with Industrial Economics found that a standard of 9 $\mu g/m^3$ would avoid thousands of childhood asthma attacks, trips to the emergency room, and hospitalizations, as well as save thousands of lives. That analysis also indicated that when the rule is implemented, there would be the greatest per capita benefits from meeting a standard of 9 $\mu g/m^3$ for Black Americans. There would be a reduction in 61 air pollution deaths per 100,000 people per year.[24]

As Manny said, it's very important for us to acknowledge that many groups, including EDF, advocated for even more protective standards based on our assessment of the record evidence, including stronger 24-hour standards. There is more to do. Even with the strongest standards possible, there is more to do to protect public health and reduce disparities that communities are experiencing right now.

I want to spend some time—in addition to the level of the standard, which is quite important—on how the stan-

21. Industrial Economics, Inc., Analysis of $PM_{2.5}$-Related Health Burdens Under Current and Alternative NAAQS (2023), *available at* https://globalcleanair.org/wp-content/blogs.dir/95/files/2023/03/Updated-IEc-PM-NAAQS-Analysis-March-2023.pdf.
22. *Id.*
23. Whitman v. American Trucking Ass'ns, Inc., 531 U.S. 457 (2001).
24. Industrial Economics, Inc., *supra* note 21.

dard is implemented and to ensure that the implementation is really rigorous, which is also important. Amanda touched on this. One of the really important features of the final rule, in our view, is the way in which it starts to strengthen the existing monitoring network by ensuring that there's a consideration of siting additional monitors in at-risk communities.

Everything we discussed underscores that communities experience air pollution burdens differently and inequitably. EDF conducted an analysis in West Oakland in partnership with Google Street View's data-gathering cars that showed really substantial air pollution variability even across neighboring streets. Beginning to reflect those differences and disparities in where monitors are sited is an important step forward in what EPA has done here.

We included in our comments on the rulemaking that there are opportunities to continue to build from and strengthen those approaches. In particular, we've seen an explosion of data from new sources, advanced technologies like satellites and sensor networks that are providing really substantial information on air pollution levels outside of those that are delivered by the existing monitoring network.

In addition to informing decisions about where monitors are sited, I think there's an opportunity for EPA to start using that data more directly. There are a couple of potential ways to do that. These include using new information to supply missing data from the existing monitoring network—those one-in-three- or one-in-six-day-requirements for PM monitoring—and in addition, to factor into and consider new data as part of how the Agency makes air quality designations, particularly in areas that would be designated as attainment or unclassifiable because there's not existing monitor information there. We see that as a really important opportunity going forward to strengthen the health protections that everyone experiences.

I also want to say a word about the commonsense solutions that are available already, and that EPA is advancing, that will cut particulate pollution. Manny referenced these rules as well. We are looking forward to EPA taking final action on both light- and medium-duty vehicle standards, as well as heavy-duty vehicle standards. EDF conducted a health impacts analysis of those standards based on the proposals that EPA put out.[25] It found cumulatively they would reduce 261,000 tons of $PM_{2.5}$ and avoid more than 40,000 premature deaths. There are aspects of those standards, like the gas particulate filter requirements that were mentioned, that are critical and vital to secure those reductions.

That's just one set of standards EPA is advancing now that will help to restore healthy air quality in communities across the country. Based on the suite of measures that are under consideration and in process, EPA found that 99% of existing counties would be in attainment by 2032.[26] I think that underscores that there are solutions available that are being advanced to help restore healthy air quality.

I'd like to highlight the success of the NAAQS program more broadly. Amanda discussed how air quality has improved while we have experienced economic growth across the country over time. We'd like to build on that, despite naysayers we've seen on the likely success and impacts of the program. In 1997, then-Sen. Spencer Abraham (R-Mich.) claimed that hair salons and other businesses would be shut down on the basis of then-adopted standards for PM. But these "sky is falling" claims have been refuted over the long history of the CAA. There is a time-tested and well-documented history of innovation and collaboration. We have experienced economic growth while improving air quality over time.

The final thing I'll say is that we are even more optimistic about this going forward. I think the history has shown consistency. Economic growth is consistent with air quality improvements. Now, with laws like the IRA, we're seeing an opportunity going forward where air quality improvements can help to catalyze economic growth. For example, EDF put out a report yesterday looking at investments in the IRA and in clean vehicle manufacturing here in the United States.[27] The jobs associated with those manufacturing investments found $188 billion of investment and 200,000 jobs to make clean vehicles and batteries here, which are the very vehicles that are going to help to cut 260,000 tons of particulates and avoid 40,000 premature deaths.

There's a real opportunity going forward in this moment of inflection to accelerate clean air progress while we see increasing job growth and economic prosperity.

David Wooley: I'll lead off the questioning with one for Amanda that reflects some of the ones we've received. How do EPA, states, and source operators react to the new standard?

Also, one of the questions was on how many areas of the country would be affected. Peter touched on that, but maybe you can tell us a bit more about how many go from attainment to nonattainment in the short term. How many need to file new SIPs, for example?

Amanda Leiter: I want to start by saying that I come from an academic background, and with that hat on. I think of the NAAQS as a really blunt instrument. It's a national standard. That is a goal. The devil is in the details of the implementation and how different areas of the country work to come into attainment with that goal.

25. EDF, EPA Vehicle Standards Will Reduce Harmful Pollution and Save Thousands of Lives, https://www.edf.org/sites/default/files/2024-02/EDF_Health_Impacts_EPA_Vehicle_Standards_final.pdf (last updated Mar. 2024).

26. U.S. EPA, Final Rule to Strengthen the National Air Quality Health Standard for Particulate Matter Fact Sheet 4 (2024), https://www.epa.gov/system/files/documents/2024-02/pm-naaqs-overview.pdf.

27. Press Release, EDF, U.S. Electric Vehicle Investments Have Grown to $188 Billion, Almost 200,000 Jobs—New Report (Mar. 12, 2024), https://www.edf.org/media/us-electric-vehicle-investments-have-grown-188-billion-almost-200000-jobs-new-report.

Figure 3. Most Counties With Monitors Already Meet the Strengthened $PM_{2.5}$ Standard

Source: U.S. EPA, *Final Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (PM)*, https://www.epa.gov/pm-pollution/final-reconsideration-national-ambient-air-quality-standards-particulate-matter-pm (last updated Apr. 30, 2024).

As we're going to see, it's about 1% of the country, but it's still significant. There are some areas where it's a goal that they're still striving toward and they're not reaching. Those areas of the country are what I'm terming "at-risk communities." They tend to have a lower socioeconomic status, be communities of color, and so on.

So, what happens once the standard is reset? That's step one. We've completed that step. We did our extensive scientific review. We're barred, as you heard, from considering costs at this step. It's supposed to be, and was from my experience, based entirely on the health science: what do we know and what can we say about what levels are important to achieve better public health results.

The next step is the difficult step. It's the implementation step. States and tribes, where appropriate, need to actually bring pollution in those areas down to meet the standards. That's the point at which cost, technical feasibility, the time required to meet the standards, and so on, can all be taken into account. The final rule does not make the actual designation determinations for different areas of the country. That happens next.

The map in Figure 3 (above) illustrates areas of the country that already meet the strengthened $PM_{2.5}$ standard. I want to emphasize here that this is based on data from 2020 to 2022. It is absolutely not intended to be predictive of the outcome of our designation exercise, which will come next. That will be based on newer data. But most counties around the country do already meet this standard.

Of the 119 counties with 2020 to 2022 design values that are above 9 µg/m³, 59 of them are already totally or partially contained in nonattainment areas for the current $PM_{2.5}$ standard of 12 µg/m³. As I was saying earlier, the devil is in the details. There are still areas of the country that are not yet in attainment with the 2012 standards. This shouldn't come as a surprise. First of all, when we lower the standard, they're going to remain or are likely to remain out of attainment. It also shouldn't come as a surprise that they are disproportionately in at-risk areas.

The map in Figure 4 (page 10543), also based on 2020 to 2022 air monitoring data, shows projected emissions for 2032 based on emissions from 2016 to 2020 monitoring data. Again, I want to emphasize that it is not intended to be predictive of what's going to happen in our designation process. It reflects the emissions control rules that were finalized as of March 2023. It does not reflect some of the rules you just heard about from Peter that are still forthcoming.

More than 99% of counties are expected to meet the revised standard as of 2032. But we still have these hot spots in areas of the country that are predicted not to be in attainment as of 2032. Again, that reflects in part some of the disparate impacts that Manny was discussing.

So, within two years of having finalized the new standard, we have an obligation to designate areas as meeting or not meeting that standard—attainment or nonattainment—considering the most recent air quality monitoring data. Over the next two years, we'll be evaluating and designating areas around the country as in or out of attainment.

The process then shifts for most areas of the country to states, tribes, and localities that have the job of trying to keep the airsheds in attainment if they're in attainment or to bring nonattainment airsheds into attainment. They do that in part through permitting of large sources (I'll run through how that works) and in part through other kinds of air pollution approaches that they adopt through their SIPs.

In areas that are not in attainment, some very strict nonattainment new source review permitting standards come

Figure 4. EPA Projects More Than 99% of Counties Would Meet the Revised $PM_{2.5}$ Standard as of 2032

Source: U.S. EPA, *Final Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (PM)*, https://www.epa.gov/pm-pollution/final-reconsideration-national-ambient-air-quality-standards-particulate-matter-pm (last updated Apr. 30, 2024).

into effect. In those areas, large new sources or facilities that are going to modify in ways that are going to increase their emissions are subject to very strict standards in terms of the pollution controls that they need to adopt in order to come online.

Then at two years, we have to redesignate whether areas are in attainment or nonattainment. Within three years of the finalization of the rule, CAA §110 requires all states to submit SIP revisions that show they have the basic air quality management program in place to implement the final NAAQS. Within 18 months after the effective date of designation, in a nonattainment area, $PM_{2.5}$ SIPs are due. Then finally, at the end of the sixth calendar year after the effective date of designations, moderate nonattainment areas are expected to come into attainment. But that may be optimistic in some areas of the country.

David Wooley: Manny, one audience member asked: How can we get some more monitors as a result of this rule? Are there other things that local groups should pay attention to relative to this question about monitors?

Manuel Salgado: I honestly am not familiar with the exact protocol to get EPA to add a new monitor in a region. But what I can say is that there are a lot of grants out there right now that are part of the Bipartisan Infrastructure Law and the IRA, as well as various other sources of money that are available for groups that want to put up air quality monitoring. Especially for PM, there are a lot of excellent low-cost sensors available—like PurpleAir sensors—that you can put up to get an idea. These are not monitors that EPA will use for the regulations, but they are useful in making the case that your region is experiencing air pollution that needs to be addressed.

WE ACT has recently gotten various grants to put up a large number of monitors in northern Manhattan and, along with groups that we work with, in the Bronx. So, we're putting up upwards of 55 monitors in those two places that will give us some great real-time data. There are avenues for that kind of data to be acquired, and there's a lot of money out there right now to do that.

Amanda Leiter: There is a terrific EPA site that gives access to all of the data that we collect from the monitors nationwide.[28] You can focus in on your area and look at the data from the monitors that are closest to where you are. It also includes information about handheld monitors that you can purchase. They're not that expensive, and you can do your own monitoring.

There is information on the site on how to request that EPA use your data. I think often we don't because it needs to meet a certain level of quality assurance, but it's a question we anticipated.

Peter Zalzal: There is a good example of a community outside of Houston, in Pleasantville, identifying information through some of the techniques that Manny and Amanda mentioned to get a new PM monitor sited there, given elevated pollution levels.

I want to return to some of the points I made earlier. We have this enormous universe of information through sensor network satellites. It's not information that's produced in the same way as EPA's existing monitoring net-

28. U.S. EPA, *Air Data: Air Quality Data Collected at Outdoor Monitors Across the US*, https://www.epa.gov/outdoor-air-quality-data (last updated May 6, 2024).

work, but it is really valuable information and we see opportunities. We don't have to wait potentially years for siting of a new monitor.

How do we use that information right now to help strengthen the decisions we're making around air quality management and planning? That's an important opportunity for us to consider more directly using that data going forward.

David Wooley: From my experience in the San Francisco Bay area, there have been decades of really good citizen science. EDF contributed heavily to that with the new mobile monitoring. But it strikes me it will be useful for citizens to go to their regional EPA offices, ask what's being done with regard to monitor siting, get a briefing from them, and raise questions based on their local knowledge of emission sources and sensitive populations.

One question, particularly pertinent to the western states, is whether the rule affects the ability to do prescribed burns, fire prevention efforts, and how PM from fires affects nonattainment and state planning. Have any of you thought about that?

Amanda Leiter: This is something we heard a lot about in the rule preparation. In November 2023, EPA, the U.S. Department of the Interior, the U.S. Department of Agriculture, and the Centers for Disease Control and Prevention signed an updated memorandum of understanding on wildland fire and air quality.[29] We have a work plan to address some of the concerns that you heard in the question.

First, and most important, is to protect communities from the impacts of wildfire smoke while scaling up prescribed fire to reduce the risk of larger and more severe fires; to ensure that we have pathways under the CAA to permit and allow for increased prescribed fire; to resolve some of the challenges through on-the-ground tabletop exercises that will support prescribed fire and public health protection; and to understand how best to do a prescribed fire in a way that minimizes the health impact.

We are working on putting together an efficient user-friendly pathway for excluding data that are impacted by prescribed fire and wildfire smoke from the NAAQS evaluation to help states address the exceptional events process. As climate concerns increase, this of course is going to be very important to both minimize those impacts and assist states with coming into compliance in spite of the need to do these prescribed fires.

David Wooley: Another audience question: Is it possible that litigation will affect the attainment designations, or will that go forward regardless of the petitions for review filed in the U.S. Court of Appeals for the District of Columbia (D.C.) Circuit?

Peter Zalzal: A number of states, led by Kentucky, filed a legal challenge.[30] Texas has filed a separate legal challenge,[31] and I believe there's a challenge that's been filed by a number of industry trade organizations as well. Our expectation is the designation process would move forward as Amanda describes and as it always has under the provisions of the CAA.

Amanda Leiter: The industries I've seen that have filed legal challenges include the National Association of Manufacturers, American Chemistry Council, American Forest and Paper Association, American Petroleum Institute, American Wood Council, U.S. Chamber of Commerce, National Mining Association, and Portland Cement Association. I agree with Peter that we would go forward with designation unless, of course, the rule is stayed. I add that only because that's been a remedy that some courts have applied with increasing frequency recently.

David Wooley: There is an interesting question about how states should implement the new standard with regard to minor source permits. What impact does the rule have on relatively small sources of PM?

Manuel Salgado: I think that, in the end, it really depends on what the nonattainment areas are that EPA designates. It's important to note that these are not going to be aimed at any one facility or any one industry. These are areas where the air quality has been deemed to not meet these standards.

It's a holistic approach in that everything that emits PM from that area is subject to being part of that designation. So, I think that largely is not going to be something where the straw is going to break the camel's back. It's going to be these bigger influences that are overarching throughout the region that have the biggest impact and are going to be most in danger of being regulated. We haven't really been too worried about that from WE ACT's perspective.

Peter Zalzal: Most of what we've heard are questions that have been raised around the major source permitting issues that Amanda identified. So, in areas that are in attainment or unclassifiable, the prevention of significant deterioration permits that big facilities are required to get when they construct or make a major modification; or in nonattainment areas, the nonattainment new source review permits. To be clear, we think that there are a lot of approaches those facilities could take to reduce their pollution and be in compliance with the law and also clean up the air. We have not heard the same questions around the impacts on minor sources from a permitting standpoint.

29. Memorandum of Understanding Between the United States Department of Agriculture Forest Service and the United States Department of the Interior and the United States Environmental Protection Agency and the United States Centers for Disease Control and Prevention Re: Wildland Fire and Air Quality Coordination (Nov. 8, 2023), https://www.usda.gov/sites/default/files/documents/usda-epa-doi-cdc-mou.pdf.

30. Kentucky v. U.S. Env't Prot. Agency, No. 24-1050 (D.C. Cir. filed Mar. 6, 2024).

31. Texas v. United States Env't Prot. Agency, No. 24-1052 (D.C. Cir. filed Mar. 6, 2024).

David Wooley: The states and local air quality authorities have been moving forward on a wide variety of small sources. The Bay Area Air Quality Management District, for example, has adopted rules affecting gas furnace systems in buildings, at the same time as it moved to impose tighter PM limits on refineries in the region.

In southern California, the South Coast Air Quality Management District is looking for new sources to control because it's hard to attain fine particle standards in that region. So, local air quality control administrators are considering new forms of regulation, such as "indirect source" rules applicable to warehousing and transportation centers. Emission controls on operation of ocean-going vessels in coastal waters is another potential emission control option.

My sense is that the new standard will stimulate a lot of questions about where to go next in fine particle pollution regulation. The technology is evolving very quickly, and you will see a wide range of innovation, and new categories of sources will be considered for controls.

Amanda Leiter: Going up to a 20,000-foot-level on the way the CAA works, when areas are designated as nonattainment, certain major source permitting requirements kick in automatically under the Act. But for minor sources, it's left very deliberately up to states, tribes, and localities to assess the best approach for their region.

For example, I'm in Washington, D.C., where we have some anti-idling rules. Those address PM, smog, and various other forms of pollution from idling engines. That's a D.C.-based decision, that one of the ways they want to address NAAQS for those pollutants is to reduce idling on public streets, intercept parking, make changes to ports, move the location of different kinds of development, and so on. Zoning laws are ways that states and localities can choose to address pollution. The zoning laws, of course, are one of the sources of the redlining problems that Manny highlighted earlier. But those decisions tend to be made at the local level.

David Wooley: I can't resist asking, how hard would it be for a Republican president to repeal this rule or undermine its implementation? My sense is that it's not automatic, but do you see a risk there?

Peter Zalzal: I think if a future administration wanted to revisit the rule, there would have to be a process of administrative reconsideration: a proposal, a public comment process, consideration of those comments, and a final action. That's a long process.

The other thing is, we're all talking about shifts in different administrations over time. It's important to ground ourselves in the law and the substance here. I think the law is very clear in terms of what EPA needs to consider when it sets these standards: the public health considerations alone. Of course, in the implementation process, as we were all just talking about, there are provisions for considering cost and making sure approaches work to restore healthy air quality.

But that's clear in terms of the legal framework. Then the scientific evidence is overwhelming on the need for stronger standards. I think both of those factors that were operating under a settled legal framework—the opinion by Justice Scalia, unanimously per the Supreme Court, and an enormously strong factual record—suggest that it would be quite difficult if that's what a future administration wants to do. We certainly hope that's not the case.

David Wooley: How do these standards compare with what other countries have done? I'm thinking particularly about the European Union (EU).

Manuel Salgado: I think the EU just recently updated the annual average.[32] We didn't talk about the daily average. The EU currently, I believe, has a standard of 25 $\mu g/m^3$. They're updating that to 10 $\mu g/m^3$. That's a much stronger threshold than we currently have here.

We believe that there is scientific consensus for updating that standard. I know that EPA mentioned the Clean Air Scientific Advisory Committee didn't unanimously recommend that, but it's my understanding that it was a pretty large majority and maybe only one vote against it. So, I'd say that, generally, Europe has stronger rules regarding PM pollution than we do. That's a direction that WE ACT would like the United States to move toward.

David Wooley: Manny, could you expand a bit on what states and local governments can do specifically to reduce exposure in minority and low-income areas? It seems to me that there's a wide range of options, in addition to implementing the new standard.

Manuel Salgado: D.C. has specific ordinances that are aimed at curbing air pollution that other places can implement as well. States are not limited to just following the national PM standard. They are able to enforce state laws that are applied regulations in addition to what the EPA guidance says. EPA sets a national level, but states are free to come in and set higher levels or add additional reviews on top of what's required by the CAA. There's a lot of freedom there.

We see some states taking steps to alleviate some of these burdens that are disproportionate to communities of color. Those are really welcome steps. I think what's unfortunate is that other states don't do that. The way other states implement the CAA can be detrimental to communities of color in those states. I'm thinking specifically of Texas and Louisiana, where enforcement at the state level is nothing like it is in California or New Jersey.

It's kind of a double-edged sword in that states can, by choosing different enforcement regimes or making additional hurdles for industry to pass, help protect these communities. But that also means that in places where the

32. *EU Strikes Deal to Strengthen Air Quality Standards*, Reuters (Feb. 21, 2024), https://www.reuters.com/business/environment/eu-strikes-deal-strengthen-air-quality-standards-2024-02-21/.

state governments aren't thinking about prioritizing the health of communities of color, they can do the opposite and instead prioritize industry. It's the nature of having a federal regulation that requires some state implementation, but it's something to keep in mind.

David Wooley: Is the Supreme Court's decision to revisit *Chevron*[33] something that could affect litigation over the new standard or its implementation?

Peter Zalzal: We are deeply concerned by arguments that are seeking to overturn the *Chevron* doctrine. I might go back to the earlier question and my response to that. This is an area where EPA cannot consider costs in setting the standards. As stated in the *American Trucking* case, "Were it not for the hundreds of pages of briefing respondents have submitted on the issue, one would have thought it fairly clear that this text does not permit the EPA to consider costs in setting standards."[34] That decision did not rely on *Chevron*, and the Court made its conclusions based on the best reading and the clear reading of the statute.

This is an area where EPA, as evidenced by the final rule, is acting in the heartland on its expertise in evaluating technical considerations and an enormous amount of data. Those are the sorts of things that came up in the argument around this where it seems like, however the Court resolves the broader questions around *Chevron*, these are areas where respect should be accorded to the Agency's determinations.

David Wooley: Several audience questions talk about how this will affect power plants. Some people may also be thinking about refineries. If you're an operator of a power plant trying to keep the lights on, how do you and the state air quality agencies implement this in a way that reduces the emissions but doesn't create other hazards? Refineries have similar questions in regard to meeting demand for vehicle fuel supply.

Amanda Leiter: I'll note that, if you are coming along with your permit in place, this doesn't affect you. This affects large facilities that are moving into an area, building new facilities in an area, or modifying in a way that will significantly increase their emissions. That's the point at which the permitting obligation is triggered. Then that's the point at which, depending on whether you're in an attainment area or a nonattainment area, you would have to work with your permitting authority to assure that you are meeting the statutory standards.

Those statutory standards, in terms of what kind of pollution control you need to install, vary from a nonattainment area to an attainment area. But also, you're working with whatever other obligations the permitting authority is imposing. So, the timeline by which you have to install those controls is the sort of interaction point at which the state can increase the requirements if it wants to come up above the federal floor, and so on. If you're humming along, there are no implications for you. But if you need to get a new permit, that's where this rule would have an effect.

David Wooley: But local governments might decide that, in order to meet the standard, reduced emissions from power plants are one option. Am I right about that? Although, I hasten to add there are lots of other ways to attain the new standards. Other regulations will tend to reduce electric generation emissions, such as the power plant rule. Those things, along with the $PM_{2.5}$, will be emerging over a fairly long period of time. It's not like anything happens tomorrow to affect power plant or refinery operations.

Peter Zalzal: That was the only addition I was going to make, that it really is operating on two different timescales. There are the permitting requirements that Amanda discussed, which are really particular to certain facilities and for which there are a number of flexibilities and solutions available. Then there is the broader implementation of the program that, as you noted, will occur over many years and is a part of a process led by state and local air quality regulators.

David Wooley: All of this occurs in the context of a rapid evolution in technology for meeting electric power demand, and dramatic changes in the cost of the alternative forms of power generation. There are lots of crosscurrents occurring at the same time. We have several refineries here in the San Francisco Bay Area. Refinery emissions are a controversial subject, particularly for minority communities living near those facilities. The same is true in southern California. What effect do you think the new $PM_{2.5}$ standards might have on refinery emissions?

Peter Zalzal: I think it's similar to what we just talked about for power plants. There are real opportunities to reduce particulate pollution from refineries. It's important to do that. So, to the extent that PM standards are, as we discussed, providing a framework to support and allow those reductions to occur, it's really important to support them.

Amanda Leiter: Again, refinery by refinery, the implications are—as I said before—if you're permitted, you're permitted. That said, the regulatory landscape is changing. There are a variety of rules that we've issued recently. There are some others that people are eagerly awaiting—including the diethylene oxide rule that came out yesterday—all of which are more directly aimed at some of the high-polluting facilities. And those do or could have more direct impacts on refineries. I obviously can't speak to any of the rules that haven't yet been promulgated.

David Wooley: There is one question about how population density plays into the revision of the rule or the implementation of the rule.

33. Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 14 ELR 20507 (1984).
34. Whitman v. American Trucking Ass'ns, Inc., 531 U.S. 457, 465 (2001).

Amanda Leiter: In terms of the science, I don't actually know whether we take population density into account. As we evaluate the data for health impacts, we're obviously looking per certain population size in terms of asthma rates, death rates, and the like, per standardized population size. I know that we take population density into account in locating the monitors, but beyond that I'm not sure how else population density is factored in.

Manuel Salgado: I'll say that if you look at the map of the areas that Amanda mentioned, we definitely see cities included in there. The counties that are projected to be in nonattainment possibly do contain cities. But we also see a large swath of rural counties, especially out west. So, the problem of PM is definitely one that's associated with your location.

There are situations, like being in an urban environment, that make you predisposed to be at higher exposure. You're closer to areas of higher traffic. A lot of times, you're sited closer to areas of dense industrial activity. But out west, you're also in rural areas. You're sited in areas of large agricultural activity, which could be a large contributor as well. I think that while being in the city can make you predisposed to certain forms of PM that come from sources that are typically located in the city, you also face that in rural environments. It's just different sources.

I wouldn't say that being in the city puts you in a high PM environment. There are plenty of cities out there, very dense areas, that do not have PM levels that exceed NAAQS, and there are rural areas that do. I think that there is a relationship depending on the industry, but it's not a predetermined thing where rural or urban makes you assured to be in attainment or nonattainment.

Peter Zalzal: The other way in which at least I am aware of it coming into play is in the designation process. Sometimes when EPA is considering whether an area contributes to nonattainment in another area, there is an evaluation of population and how those populations relate to the area with unhealthy air quality. But not in the setting of the standards.