The Need for a Three-Year Effective Date for PM NAAQS and Actions EPA Should Take to Address Permitting Gridlock

Summary: AF&PA and AWC support our nation's clean air goals and have made significant investments in emission reductions while supporting sustainable manufacturing and jobs. As EPA contemplates revisions to the PM NAAQS, we believe EPA has the authority to extend the effective date three years for the PM NAAQS if it proceeds with promulgation of a final rule. This would allow for a smoother compliance transition and provide time for EPA to develop and put in place an implementation plan that could avoid or minimize permitting gridlock. A workable plan would address monitoring and PM test method issues as well as provide essential modeling improvements. Delaying NAAQS promulgation until a workable implementation plan is developed would solve permitting challenges while air quality from industrial sources continues to improve under many ongoing air quality programs.

Any revised PM2.5 NAAQS should be implemented with a 3-year effective date to mitigate permitting gridlock and unintended adverse outcomes on economic development.

Permitting gridlock is already starting to occur because of the discretionary, proposed PM2.5 NAAQS revision. At this very moment, industrial manufacturing companies and their regulatory partners are already in the untenable position of being forced to plan for projects that have to operate in compliance immediately upon the effective date of a revised standard:

(1) at an uncertain level given the proposed range,
(2) simulated in conformance with air quality analysis regulations and policies that require accounting for background concentrations near the level of the revised standard that are known to generally be over-estimated with a substantial bias, and
(3) relying upon emission measurement techniques that are known to be deficient.

If EPA proceeds with a final NAAQS, at a minimum we urge EPA to include a 3-year effective date to align permitting with a critical regulatory milestone for implementation of the revised NAAQS: the requirement for state regulatory agencies to submit state implementation plans (SIP) under Clean Air Act (CAA) Section 110(a)(2), so-called "infrastructure SIPs," which require regulatory agencies to demonstrate capabilities for monitoring, modeling, and permitting (among other management tools).

We believe that implementation costs and feasibility are relevant factors to consider when undertaking a discretionary reconsideration of a NAAQS, and in addition, EPA has correctly recognized that tools and policies must be in place to effectively implement a revised standard.[1] EPA also has consistently

[1] EPA (2023): "The Clean Air Act specifies that cost, technical feasibility and the time needed to meet the standards are all factors that should be taken into account in this phase." https://www.epa.gov/system/files/documents/2023-01/PM%20NAAQS%20Reconsideration%20Proposal%20-%20Overview%20Presentation_0.pdf.

recognized that practical implementation of the PM2.5 NAAQS specifically requires overcoming certain well-defined “technical difficulties” related to source emissions measurement, ambient PM2.5 concentration measurement, and modeling techniques. Although EPA has claimed since 2008 that those difficulties “have largely been resolved,”[2] there remain substantial deficiencies in tools and policies available to permit applicants and permitting agencies that will once again constrain economic development if the NAAQS is revised to a lower level, and these problems will be amplified if EPA lowers the standard close to background levels. Implementation of permitting requirements for any revised standard should not occur until these technical difficulties in source measurement, ambient measurement, and modeling are resolved to mitigate adverse effects and unintended outcomes for economic development that are contrary to the dual purpose of the CAA, “to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.”[3]

How could it be that permitting gridlock has already begun before the NAAQS is revised?

EPA’s position on the relevant policies is clear.

1. EPA’s current policy is that permits issued on and after the effective date of the revised NAAQS must demonstrate attainment with that standard.[4] “EPA generally interprets the CAA and EPA's PSD permitting program regulations to require that each final PSD permit decision reflect consideration of any NAAQS that is in effect at the time the permitting authority issues a final permit.” [5] EPA affirms that it is not considering any grandfathering in the proposal as well. In other words, although a permit applicant may have filed a PSD application 6 months, or even a year ago (before the revision was proposed), the final permit must reflect terms and conditions that would demonstrate attainment of the NAAQS as of the date the permit is issued. Even if that application’s air quality modeling analysis demonstrated annual average PM2.5 concentrations of, for example, 10.5 $\mu g/m^3$, well below the current annual standard of 12.0 $\mu g/m^3$, that permit cannot be issued once the revised NAAQS is effective.
2. EPA policy has affirmed that grandfathering of pending permit applications is not allowed. In light of the preceding, pending applications that are not issued in final form before the effective date cannot be issued if the applicant’s air quality analysis does not demonstrate attainment with the revised standard.[6]

Two crucial timing factors must be recognized: (1) at this moment, stakeholders do not know where in the proposed range the standard will be revised, and (2) if EPA policy conforms to precedent and

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[2] EPA, “Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5) (Final Rule),” *Federal Register* Vol. 73/No. 96, May 16, 2008. “The 1997 guidance stated that sources should continue to use implementation of a PM10 program as a surrogate for meeting PM2.5 NSR requirements until certain difficulties were resolved, primarily the lack of necessary tools to calculate the emissions of PM2.5 and related precursors, the lack of adequate modeling techniques to project ambient impacts, and the lack of PM2.5 monitoring sites. With this final action and technical developments in the interim, these difficulties have largely been resolved.” https://www.govinfo.gov/content/pkg/FR-2008-05-16/pdf/E8-10768.pdf.

[3] 42 U.S.C 7401 (The Clean Air Act Section 101) (b)(1). https://uscode.house.gov/view.xhtml?path=/prelim@title42/chapter85/subchapter1&edition=prelim.

[4] EPA, “Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards,” April 1, 2010. https://www.epa.gov/sites/default/files/2015-07/documents/psdnaaqs.pdf.
[5] EPA, “Applicability of the Federal Prevention of Significant Deterioration Permit Requirements to New and Revised National Ambient Air Quality Standards,” April 1, 2010. https://www.epa.gov/sites/default/files/2015-07/documents/psdnaaqs.pdf.)
[6] https://www.epa.gov/sites/default/files/2015-07/documents/psdnaaqs.pdf.

establishes an effective date 60 days after publication of the final revision (i.e., published in the *Federal Register* as a final rule). State permitting agencies have advised applicants that applications in development are highly unlikely to be acted upon in a timely manner, and applications that have been submitted but not reached the draft permit stage of review when the revision is published will not likely be finalized before the effective date, and instead returned to the applicant to be re-engineered in attainment with the revised standard.

Permitting gridlock has already begun because manufacturers whose applications have been submitted but remain under review, and all other manufacturers who are contemplating projects in the next 6 months, 12 months, and beyond, do not know what to anticipate. Capital planning and engineering design for projects subject to PSD permitting may take upwards of a year (or more); it often takes 3-6 months to develop the technical application, and typically 3-9 months for the state regulatory agency to issue the final permit. These efforts cannot proceed when the level of the revised standard is unknown and the effective date of the revised standard is imminent. For this reason, among others to follow, we believe a 3-year effective date for the revised standard is imperative and justifiable to minimize adverse effects and unintended consequences of implementation for permitting continued economic development.

Why is it so difficult for manufacturers to prepare for a NAAQS when EPA proposed a range of limits?

Focusing on the annual average NAAQS and ignoring the upper (11.0 $\mu g/m^3$) and lower (8.0 $\mu g/m^3$) bounds for which EPA solicited comment, the proposed range of 9.0 to 10.0 $\mu g/m^3$ is broad enough to make a world of difference to those manufacturers proposing projects subject to PSD permitting. There is ample evidence to demonstrate this; however, it is not readily apparent to the layperson, and may not be intuitive even to experienced environmental managers or policy makers.

- In raw numbers, reducing the annual standard from 12.0 to 10.0 $\mu g/m^3$would be 2.0 $\mu g/m^3$ lower, or 17% lower. Likewise, reducing the standard from 12.0 to 9.0 $\mu g/m^3$would be 3.0 $\mu g/m^3$ lower, or 25% lower. Those figures may or may not sound significant. But consider that EPA has recommended significant impact levels (SILs) at the level of 0.2 $\mu g/m^3$ for annual average PM2.5 as a policy to guide permitting decisions.[7] Relative to the SIL, the proposed range of 9.0-10.0 $\mu g/m^3$ is between 10X and 15X more stringent than the current level – that is a significant lowering of the standard in the regulatory sense.
- More consequentially, permit applicants are not allowed to account for the entire NAAQS; they must demonstrate through the air quality modeling analysis that the simulated concentrations resulting from their operation attains the standard when added to the background concentration representing all other sources – natural and manmade, nearby and far downwind (perhaps of international origin) – that affect the same area. We describe this concept as "headroom," the difference between the level of the annual standard (currently 12.0 $\mu g/m^3$) and the background concentration.[8] In practice, the background concentration is determined

[7] EPA, "Guidance for Ozone and Fine Particulate Matter Permit Modeling," July 29, 2022. https://www.epa.gov/system/files/documents/2022-07/Guidance_for_O3_PM25_Permit_Modeling.pdf.

[8] Stella, G.: "Headroom for Development Under EPA's Proposed Reconsideration of the National Ambient Air Quality Standards for Particulate Matter." Air & Waste Management Association *EM Magazine* (May 2023). https://airandwmapa.sharepoint.com/:b:/s/AWMA_Website/EbvaGjAB8F5MmJGqV8RFvKUBSp-Ee-jqNtqCgO6dLCNvQw?e=YhsNEg.

for the specific geographic area of the project, typically by reference to ambient monitors operated by state regulatory agencies and used by those agencies and EPA to determine that air quality standards are attained, or are in nonattainment and require control strategies. On average, monitors across the US measure approximately 8 $\mu g/m^3$ annual average PM2.5, well below the current level of 12.0 $\mu g/m^3$ with headroom of 4 $\mu g/m^3$. But individual monitors that attain the standard typically range from 6 to 9 $\mu g/m^3$, meaning current typical headroom is between 3 to 6 $\mu g/m^3$. Depending on the location and year, background levels could rise as a result of wildfires (an increasing problem) or agricultural activities shrinking headroom further or pushing some areas into non-attainment. When the standard is lowered, less headroom will be available within which new projects can be permitted.

Figure 1. Estimated "headroom" (based on 2020-2022 design values) for permitting relative to the current annual average PM2.5 NAAQS of 12.0 $\mu g/m^3$. Green indicates attainment areas with sufficient headroom to permit a typical project; pink indicates attainment areas but with insufficient headroom for most projects; red indicates expected nonattainment areas, (subject to proposed and final designations).

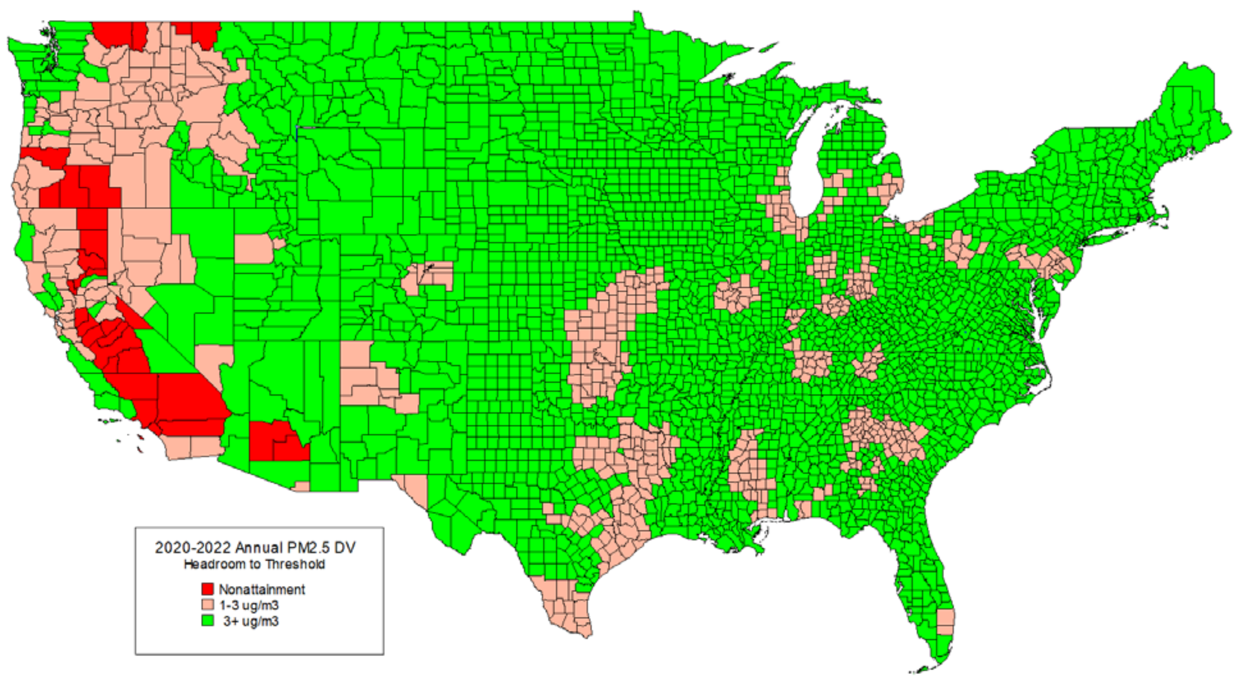
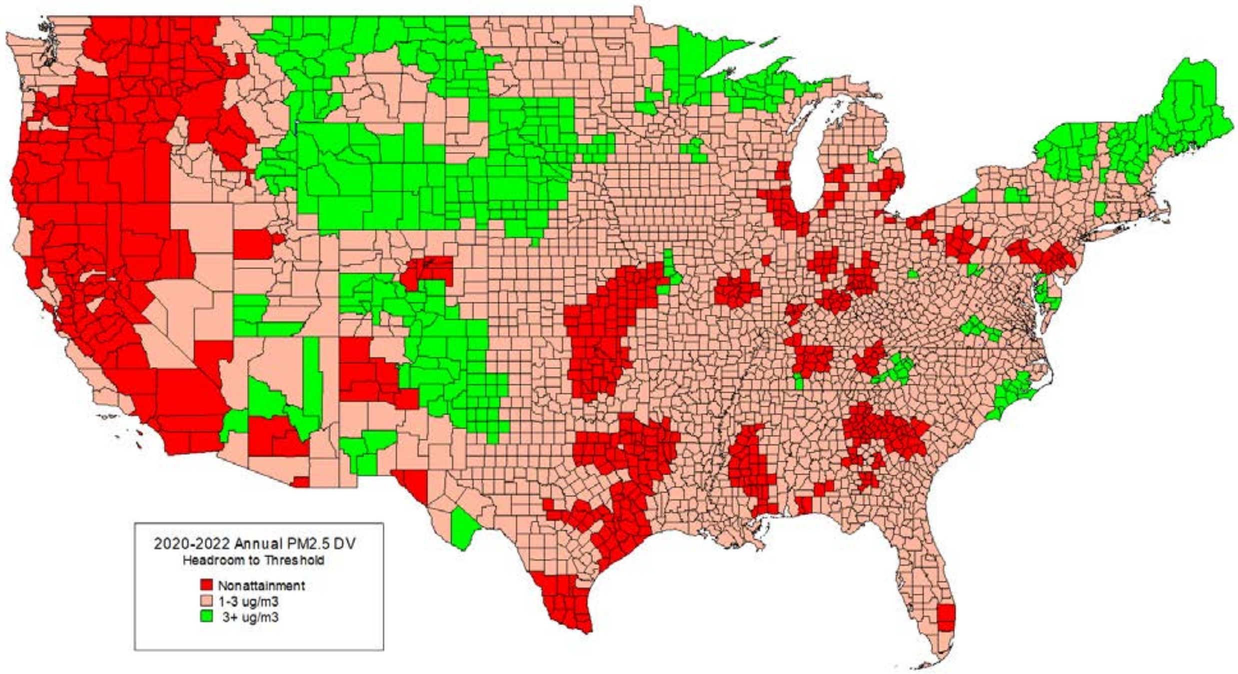


Figure 2. Estimated "headroom" (based on 2020-2022 design values) for a proposed annual average PM2.5 NAAQS of 9.0 $\mu g/m^3$. Green indicates attainment areas with sufficient headroom to permit a typical project; pink indicates attainment areas but with insufficient headroom for most projects; red indicates expected nonattainment areas, (subject to proposed and final designations).



- There are dozens of recent PSD permits issued under the current annual standard that demonstrate the headroom challenge and likelihood of permitting gridlock when the standard is lowered, regardless of the level (including 11.0 $\mu g/m^3$), but more severely the lower the standard is set. The following Table 1 summarizes the air quality modeling analyses for three dozen recent permits. Many of these projects are improving efficiency and modernizing facilities so they can improve "emission footprints" by reducing the amount of emissions per ton of production and remain competitive. Among other interesting findings, three key observations can be made:

  (1) The "typical" modeled concentration attributable to a project (whether a new greenfield source or a major modification to an existing major source) is between 1-3 $\mu g/m^3$, often higher, rarely less. These are projects subject to PSD permitting including application of best available control technology (BACT); in other words, these sources are well controlled for PM2.5 emissions. Reducing the standard-- for example, from 12.0 to 9.0 $\mu g/m^3$ i.e., by 3.0 $\mu g/m^3$ -- is 25% below the current standard, but is 100% below the average concentration attributable to a typical, well-controlled project. In other words, reducing the standard to so close to background levels eliminates the necessary headroom for permitting economic development in much or most of the country, based on current background concentrations.

  (2) Among these 36 projects, the "typical" cumulative impact – that is, the total annual concentration attributable to the project plus the background that must attain the standard – is 9.9 $\mu g/m^3$. Fifty percent of these projects (18) would not be permitted if

the revised standard is set at 10.0 $\mu g/m^3$. Seventy-eight percent of these projects (28) would not be permitted if the revised standard is set at 9.0 $\mu g/m^3$.[9]

(3) This sample of projects spans US manufacturing sectors and geography. These projects represent billions of dollars of capital investment and thousands of jobs for construction and operation in key sectors of the US supply chain and economy, including several projects that are on the White House' Investing in America website[10].

One need only examine permits recently issued under the current standard as summarized in Table 1 to understand why permitting gridlock is already occurring and will continue if a stringent revised standard becomes immediately effective. Well-controlled projects cannot likely be done, technically or economically; time is necessary to implement workable and reasonable policies to ensure these projects can be permitted in compliance with new standards. Setting the effective date 3 years after publication of any revised standard would enable these policies to be established in alignment with the implementation milestone of infrastructure SIP submittals.

[9] Even at 11.0 $\mu g/m^3$, 11 projects (36%) would not demonstrate attainment.

[10] https://www.whitehouse.gov/invest/

Table 1. Summary of recent PSD air quality cumulative analyses demonstrating attainment relative to the current annual average PM2.5 NAAQS (12.0 μg/m³).

Facility	State	Annual Average $PM_{2.5}$ (micrograms per cubic meter)		
		Modeled (MDC)	Background	Total
Steel	Arkansas	2.5	9.4	11.9
Steel	Arkansas	4.3	7.6	11.9
Steel	Arkansas	4.4	7.3	11.7
Recycled Paper Mill	Oklahoma	3.4	8.3	11.7
Pulp & Paper Mill	Florida	5.7	5.9	11.6
Brick	Iowa	3.5	8.0	11.5
Steel	Illinois	3.7	7.8	11.5
Greenfield Recycled Paper Mill	Texas	2.8	8.5	11.3
Greenfield Paper Mill	Arkansas	3.1	8.2	11.3
Cement	Pennsylvania	2.2	9.0	11.2
Power	Wisconsin	3.9	7.3	11.2
Paper	Louisiana	3.7	7.4	11.1
Power	Pennsylvania	3.0	8.1	11.1
EV Batteries	Georgia	1.8	8.9	10.7
Cement	Georgia	2.3	8.3	10.6
Wood Products Panels	South Carolina	3.1	7.1	10.2
Steel	North Carolina	1.2	8.9	10.1
Lumber	Washington	6.0	4.0	10.0
Automotive EV & Battery	Georgia	2.5	7.3	9.8
Manufacturing	Washington	3.3	6.5	9.8
Aluminum	Kentucky	1.5	8.1	9.6
Steel	Kentucky	1.7	7.8	9.5
Paper	Texas	0.9	8.5	9.4
Gas-fired EGU	Georgia	0.9	8.4	9.3
Paper	Michigan	4.6	4.7	9.3
Steel	Kentucky	1.9	7.4	9.3
Feed & Grain	Idaho	4.3	4.9	9.2
Pharmaceutical	New York	0.4	8.7	9.1
Power	Wisconsin	1.3	7.6	8.9
Gas-fired EGU	Georgia	0.9	7.9	8.8
Gas-fired EGU	New York	1.8	6.5	8.3
Steel	Kentucky	0.1	7.7	7.8
Paper	Maine	3.5	4.0	7.5
Steel	Florida	0.9	6.5	7.4
Wood Products Panels	Michigan	1.4	5.6	7.0
LNG Storage	Massachusetts	1.6	5.1	6.7
Count		**36**	**36**	**36**
90th Percentile		**4.4**	**8.8**	**11.6**
75th Percentile		**3.6**	**8.3**	**11.2**
Average		**2.6**	**7.3**	**9.9**
Median		**2.5**	**7.7**	**9.9**
25th Percentile		**1.5**	**6.5**	**9.2**
10th Percentile		**0.9**	**5.0**	**7.7**

"MDC" denotes the **modeled design concentration** computed by AERMOD (i.e., the maximum 5-year average annual mean concentration) simulating cumulative impacts from applicant facility and nearby sources. Includes secondary $PM_{2.5}$ screening concentration from precursor emissions of NO_X and SO_2 estimated using EPA's MERPs and related guidance.

"Background" denotes the background concentration accounting for all sources not explicitly simulated in AERMOD, typically quantified as the design value (3-year average) from a representative (usually nearest) Federal Reference Method or Federal Equivalent Method ambient monitor. Color coding denotes relatively higher (hotter) and lower (cooler) background concentrations among sampled analyses.

"Total" denotes the sum of the MDC and background, which is compared to the level of the NAAQS to demonstrate that the total ambient $PM_{2.5}$ concentration simulated in the cumulative impact analysis would not exceed the standard. Color coding dinstguishes total modeled annual average $PM_{2.5}$ concentrations from 11-12 (red), 10-11 (orange), 9-10 (yellow), 8-9 (blue), and less than 8 (green).

How can we lower background concentrations to provide more headroom for growth?

Background concentrations have trended down since the turn of the 21st century as multiple emissions control programs continue to be implemented and energy and manufacturing sectors develop projects that improve efficiency and reduce emissions while increasing productivity[11]. But there are two immediate steps urgently needed before the revised NAAQS is made effective.

1. A preponderance of the PM2.5 background concentrations measured across the country are biased. EPA[12], state regulatory agencies[13], and manufacturers who rely on background concentrations for permitting are aware that a particular instrument designated as a federal *equivalent* method (FEM) – as an alternative to more accurate federal *reference* methods (FRM) – that is widely deployed because of its ability to continuously measure and nearly instantaneously report PM2.5 concentrations, measures up to 2 $\mu g/m^3$ too high on an annual average basis. This is due to an apparent systematic bias when instantaneously measuring relatively high ambient concentrations, as summarized in Figure 3. Again, while 2 $\mu g/m^3$ may sound like a small number, it is 10X the regulatory significant impact level and is on the order of the simulated concentration a new project that models between 1 to 3 $\mu g/m^3$. EPA anticipates that the instrumentation and measurement issues will be resolved in the next two years in time for states and EPA to make sound attainment designations based on data from the 2023-2025 timeframe. But permit applicants today must utilize historical data reflecting this bias to prepare air quality modeling analyses for permitting that demonstrates attainment of the revised standard at whatever level it is set, within the available headroom based on the best estimates of background concentration. EPA has not yet established policies or guidance for correcting these data to make sound decisions for permitting. It is critical that the effective date of the revised NAAQS for permitting allow time to establish these procedures to ensure sound

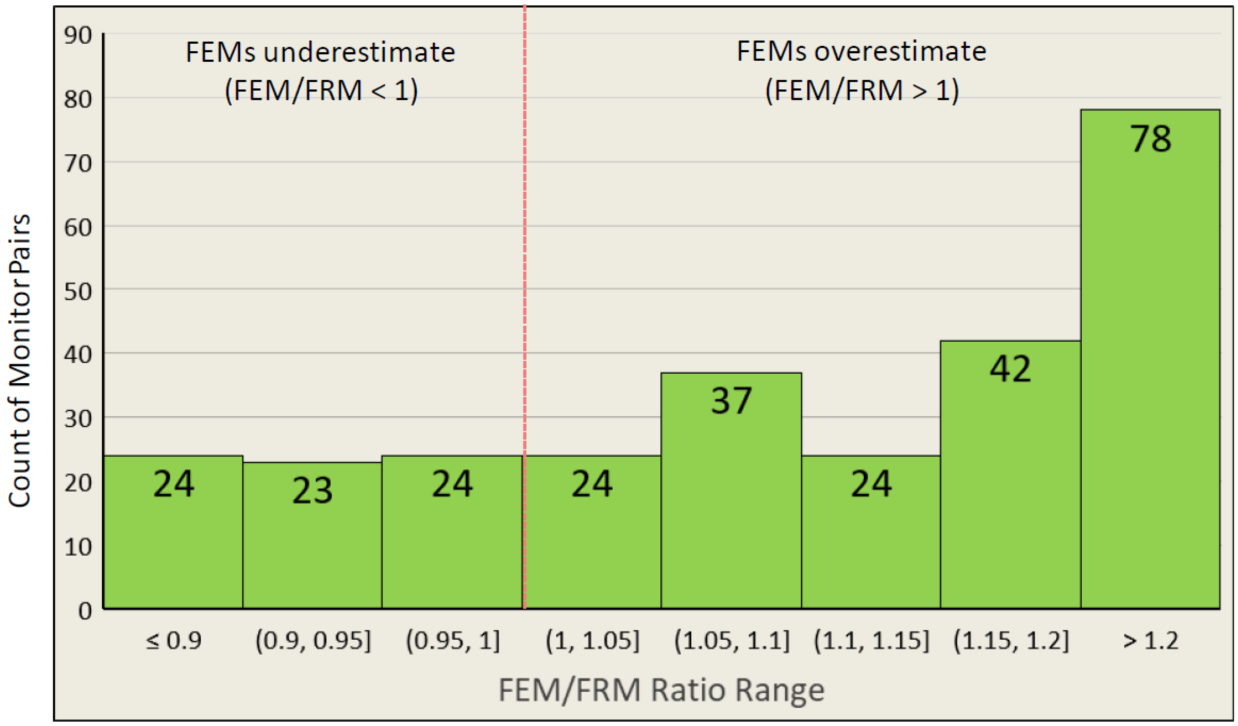
[11] Emissions from wildfires in 2023 are expected to reverse this trend and increase design values for the 2021-2023 period that states will use for non-attainment designations and influence background air quality for PSD permitting.

[12] EPA, "Sensor Evaluations: The Impact of PM2.5 Monitor Type," August 24, 2022. https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=355533&Lab=CEMM.

[13] American Association of Air Pollution Control Agencies (AAPCA), "Addressing particulate matter monitoring method comparability," November 23, 2022. https://cleanairact.org/wp-content/uploads/2022/11/AAPCA-Letter-Particulate-Matter-Monitoring-FINAL-11-23-2022.pdf.

decision-making that does not artificially stifle economic development. Deployment of biased ambient monitors used for regulatory purposes is yet another example of "technical difficulties" that have not yet been overcome; EPA cannot reasonably claim that "technical difficulties" are resolved -- and state regulatory agencies cannot submit infrastructure SIPs demonstrating measures are in place for ambient monitoring, modeling, and permitting -- when the primary tool is known to be deficient, and the bias is not yet resolved.

Figure 3. Frequency and magnitude of ratio of FEM/FRM design values for collocated monitors across the US (NCASI, 2023).



2. All air quality stakeholders are keenly aware of increasing challenges to PM2.5 air quality due to exceptional events – predominantly fires, both wildfires and prescribed burns, of both domestic and foreign origin – that are not addressed by EPA's NAAQS or other conventional regulatory programs. EPA needs to ensure policies[14] are in place – and state permitting agencies are encouraged and empowered to utilize them – to adjust background concentrations used for permitting (as they are for attainment designations) and that representative headroom is available for economic development.

Are background concentrations the only thing keeping permit applications and economic development from being gridlocked?

No, there are multiple dimensions of the permitting process that need improvement to make permitting more efficient and less conservative while continuing to protect public health and welfare and promoting

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[14] EPA, "Additional Methods, Determinations, and Analyses to Modify Air Quality Data Beyond Exceptional Events., April 4, 2019. https://www.epa.gov/sites/default/files/2019-04/documents/clarification_memo_on_data_modification_methods.pdf.

economic development. When PM2.5 permitting was first implemented between 2008 and 2011 – a 3-year period between proposal and implementation – EPA justified their policies and rulemaking at the time despite "the lack of necessary tools to calculate the emissions of PM2.5 and related precursors, the lack of adequate modeling techniques to project ambient impacts, and the lack of PM2.5 monitoring sites … With this final action and technical developments in the interim, these difficulties have largely been resolved."[15] While this statement may have been true relative to the state of the practice for emissions and ambient measurements and modeling between 1997 and 2008, fifteen years later, there remain grave deficiencies that contribute to challenges facing manufacturing permit applicants and their regulatory partners today, and these deficiencies will be amplified when the NAAQS is lowered.

1. Emissions measurement techniques remain deficient for some source types to precisely distinguish fine particulate matter (PM2.5) from coarse particulate matter (PM10) and larger particulate matter (as total suspended particulate). Emissions measurement techniques remain unavailable for "wet stacks," that is, exhaust with high moisture content – often resulting from prevalent emissions control techniques using water as a scrubbing medium, for example. For these sources, EPA acknowledges that there are no alternatives but to make conservative assumptions about the PM2.5 emissions that mispresent and overestimate actual conditions.[16] Overestimating PM2.5 emissions leads directly to overestimating PM2.5 ambient concentrations simulated in regulatory dispersion models for permit decision making.

2. Emissions measurement techniques remain deficient for all source types to quantify condensable PM – a critical component of total PM2.5 mass. Despite claiming that "technical difficulties" including source measurement techniques had been resolved when the PM2.5 NAAQS was implemented for permitting in 2011, EPA issued subsequent guidance in 2014 to address a stack test measurement issue raised by industry stakeholders that EPA acknowledged "could inappropriately affect applicability determinations for both PSD and nonattainment NSR permits" and otherwise affect the emissions calculations and air quality modeling analyses required of permit applications and artificially constrain manufacturing operations. This interim guidance addressed one specific aspect of the test method and laboratory analysis; EPA stated generally that it "has been investigating these issues independently and plans in the future to

[15] "Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5) (Final Rule)," *Federal Register* Vol. 73/No. 96, May 16, 2008. "The 1997 guidance stated that sources should continue to use implementation of a PM10 program as a surrogate for meeting PM2.5 NSR requirements until certain difficulties were resolved, primarily the lack of necessary tools to calculate the emissions of PM2.5 and related precursors, the lack of adequate modeling techniques to project ambient impacts, and the lack of PM2.5 monitoring sites. With this final action and technical developments in the interim, these difficulties have largely been resolved." https://www.govinfo.gov/content/pkg/FR-2008-05-16/pdf/E8-10768.pdf.

[16] EPA, "Methods for Measurement of Filterable PM10 and PM2.5 and Measurement of Condensable PM Emissions from Stationary Sources (Final Rule)," Federal Register Vol. 75/No. 244, December 21, 2010. "You cannot use this method to measure emissions where water droplets are present because the size separation of the water droplets may not be representative of the dry particle size released into the air. Stacks with entrained moisture droplets may have water droplets larger than the cut sizes for the cyclones. These water droplets normally contain particles and dissolved solids that become PM10 and PM2.5 following evaporation of the water." "To measure filterable PM10 and PM2.5 in emissions where water droplets are known to exist, we recommend that you use Method 5." "EPA Method 5 measures total PM mass emissions from stationary sources. Method 5 does not specifically isolate PM10 or PM2.5." "Monitoring the emission of PM10 or PM2.5 from a wet gas stream is a challenging problem that has not been addressed successfully despite considerable effort. A consensus method to provide this information has not emerged. EPA has determined that particulate from wet stacks is expected to be primarily PM10 under most conditions typical of good wet scrubber design and operation." https://www.govinfo.gov/content/pkg/FR-2010-12-21/pdf/2010-30847.pdf.

issue a best practices document for Method 202 and to revise Method 202, as necessary." [17] However, more than nine years later, no additional improvements have been made nor guidance issued by EPA.

3. Regulatory dispersion models for PM2.5 and other pollutants subject to PSD permitting and SIP regulation have improved substantially in the last 15 years, but ample opportunity remains to improve the regulatory models themselves and EPA's policy for how to apply them for permitting and decision making in ways that would make them more representative and therefore more useful to demonstrate attainment of more stringent standards, yet still be protective of public health. EPA's final guidance on PM2.5 permit modeling[18] was just issued in 2022, eleven years after the standard was initially implemented in 2011, and effectively makes PM2.5 permitting more stringent because it triggers requirements to model PM2.5 for projects that significantly increase precursor emissions of NOx and/or SO2 <u>even if there is an insignificant (or zero) increase of direct PM2.5 emissions</u>. As but one example of improvements to be made, proven statistical methods have been developed to account for variability in source conditions, transport, and exposure[19], but are not used for permitting. As another example, emissions and modeling techniques for fugitive emissions sources – especially haul roads – are vexing because modeled concentrations are disproportionately high relative to emissions due to simulation of poor dispersion from ground level sources near ambient air receptors.[20] Manufacturers are committed to working with EPA to demonstrate how such techniques could be successfully implemented to reduce conservatism in permitting and enable economic development while continuing to protect public health and welfare. It is also worth noting that modeling is usually done for receptors that are located at fencelines, streams, roads or railroads where no one permanently lives or works -- so projected impacts are overstated and any public health concerns hypothetical. Industry stakeholders were active participants at the recent regulatory conference on the *Guideline on Air Quality Models* to advocate such improvements over the next 2-3 years before the next modeling conference and guideline revision. Establishing a 3-year effective date for the revised NAAQS will provide time for these developments and mitigate adverse effects and unintended consequences on economic development in the interim.

Should it really take 3 years to implement the revised NAAQS for permitting?

Although the technical difficulties with current techniques for ambient PM2.5 measurement (i.e., FEM bias) and source PM2.5 measurement (i.e., wet stacks and condensable PM) have been well characterized and acknowledged by EPA, there are no publicly announced, firm timelines to resolve these issues. Regulatory modeling of PM2.5 was discussed at the 13th Conference on Air Quality Models hosted by EPA in November 2023, but no substantive changes affecting PM2.5 modeling are anticipated,

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[17] EPA, "Interim Guidance on the Treatment of Condensable Particulate Matter Test Results in the Prevention of Significant Deterioration and Nonattainment New Source Review Permitting Programs," April 8, 2014. https://www.epa.gov/sites/default/files/2015-07/documents/cpm14.pdf.

[18] EPA, "Guidance for Ozone and Fine Particulate Matter Permit Modeling," July 29, 2022. https://www.epa.gov/system/files/documents/2022-07/Guidance_for_O3_PM25_Permit_Modeling.pdf.

[19] EPA, "Guiding Principles for Monte Carlo Analysis." https://www.epa.gov/risk/guiding-principles-monte-carlo-analysis.

[20] EPA, "Haul Road Workgroup Final Report Submission to EPA-OAQPS," March 2, 2012. "The challenge of modeling the emissions and associated air quality impacts of haul roads has been a particularly vexing problem for the dispersion modeling community. There is a large degree of uncertainty in the magnitude of these fugitive dust emissions and subsequently in the modeled estimates at near-source receptor locations." https://www.epa.gov/sites/default/files/2020-10/documents/haul_road_workgroup-final_report_package-20120302.pdf.

and the next regulatory modeling conference will not be held until 2026. Thus, EPA should issue a supplemental proposal as soon as possible with additional modeling improvements so meaningful changes to regulatory modeling guidelines could be implemented more quickly and not wait until 2026. EPA cannot reasonably continue to claim that "technical difficulties" are sufficiently resolved to implement the new standard when such difficulties are known to persist and are certain to exacerbate permitting challenges when the NAAQS is revised and becomes effective.

The milestone for state regulatory agencies to submit Section 110(a)(2) infrastructure SIPs is set 3 years after the NAAQS is finalized. This milestone follows initial milestones of state regulatory agencies proposing nonattainment designations 1 year after the NAAQS is finalized and EPA finalizing those designations a year later, or 2 years after the NAAQS is finalized. The infrastructure SIP is essential to implementation of each state regulatory agency's air quality management program because it establishes minimum requirements to effectively manage air quality to attain and maintain the NAAQS, including the critical components of ambient air quality monitoring (Element B), preconstruction review permitting (Element C), stationary source monitoring (Element F), and modeling (Element K).[21] It is implausible that a state regulatory agency could claim to administer such a program in its SIP – and that EPA could approve it – until the measurement and modeling techniques essential to permitting stationary sources of PM2.5 are no longer deficient and are widely available and proven effective at the level of the revised NAAQS. Aligning the revised NAAQS effective date with the infrastructure SIP milestone 3 years after the NAAQS is finalized will focus the entire stakeholder community, including EPA, state/local/tribal regulatory partners, and the regulated industries subject to permitting requirements, toward that goal. Industry stakeholders from key sectors of the US manufacturing base are highly motivated and prepared to continue collaborating with EPA to demonstrate why these issues must be resolved and provide data and resources to help achieve the necessary improvements. But these efforts will take time, at least 3 years, which is why it is imperative to align the effective date of the revised standard for permitting with the infrastructure SIP milestone that relies on the very methods that demand urgent attention. And in the meantime, permit applicants will continue to develop new projects that create jobs and modernize and sustain domestic manufacturing at facilities that minimize emissions using best available control technology determined on a case-by-case basis, maximum achievable control technology for industrial boilers[22] and sector-specific process units[23], and new source performance standards that are already in place for particulate matter emissions and precursors.

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[21] EPA, "Guidance on Infrastructure State Implementation Plan (SIP) Elements under Clean Air Act Sections 110(a)(1) and 110(a)(2)," September 13, 2013. https://www.epa.gov/sites/default/files/2015-12/documents/guidance_on_infrastructure_sip_elements_multipollutant_final_sept_2013.pdf.

[22] 40 CFR Part 63, Subpart DDDDD, "National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters." Particulate matter emissions standards for all major source boilers (new and existing) are established based on best-performing (i.e., lowest emitting) units. Industrial boilers combusting non-gaseous fuels utilizes fabric filters, scrubbers (dry or wet), and electrostatic precipitators (dry or wet) to meet stringent emissions limitations and closely monitor and keep records of operating performance.

[23] For example, 40 CFR Part 63, Subpart MM, "National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills" establishes particulate matter emissions standards for new and existing pulp & paper process units based on best performing (i.e., lowest emitting) recovery furnaces, smelt dissolving tanks, and lime kilns that can bet through use of fabric filters, wet scrubbers, and electrostatic precipitators to meet stringent emissions limitations and closely monitor and keep records of operating performance.