

ORAL ARGUMENT NOT YET SCHEDULED

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT
No. 13-1069 (consolidated with 13-1071)**

NATIONAL ASSOCIATION OF MANUFACTURERS, et al.,

Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, et al.

Respondents.

**ON PETITIONS FOR REVIEW OF FINAL RULE OF THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

INITIAL BRIEF FOR RESPONDENTS

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DATED: November 8, 2013

**RESPONDENTS' CERTIFICATE AS TO
PARTIES, RULINGS, AND RELATED CASES**

Pursuant to D.C. Circuit R. 28(a)(1), Respondents United States Environmental Protection Agency and Gina McCarthy, Administrator of the United States Environmental Protection Agency (collectively "EPA") submit this certificate as to parties, rulings and related cases.

(A) Parties: The parties to this action are those set forth in the certificate filed with the Joint Opening Brief of Petitioners.

(B) Ruling under review: This case is a set of consolidated petitions for review of EPA's Final Rule entitled "National Ambient Air Quality Standards for Particulate Matter," 78 Fed. Reg. 3086 (Jan. 15, 2013).

(C) Related cases: There are no related cases.

DATED: November 8, 2013

/s/ Eric G. Hostetler
Counsel for Respondents

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GLOSSARY

API	American Petroleum Institute
CAA	Clean Air Act
CASAC	Clean Air Scientific Advisory Committee
EPA	Environmental Protection Agency
NAAQS	National Ambient Air Quality Standards
NAM	National Association of Manufacturers
NO ₂	Nitrogen Dioxide
NRDC	Natural Resources Defense Council
PM	Particulate Matter
PM _{2.5}	Fine Particles
PSD	Prevention of Significant Deterioration
RTC	Response to Comments
SEC	Securities and Exchange Commission
UARG	Utility Air Regulatory Group
ug/m ³	Micrograms per Cubic Meter of Air

JURISDICTION

Jurisdiction exists under 42 U.S.C. § 7607(b)(1).

STATUTES AND REGULATIONS

Respondents' addendum contains relevant provisions.

PRELIMINARY STATEMENT

The Clean Air Act ("CAA" or "the Act") directs the United States Environmental Protection Agency ("EPA") to establish, and to periodically revise as appropriate, national ambient air quality standards ("NAAQS") for particulate matter. Petitioners challenge EPA's 2013 revisions to the "primary" (*i.e.* public health-based) NAAQS for fine particles ("PM_{2.5}"), which cause significant respiratory, cardiovascular, and other public health problems. 78 Fed. Reg. 3086 (Jan. 15, 2013). Based on an extensive scientific record, including many new studies completed since the last revision to the PM_{2.5} NAAQS, EPA revised the primary NAAQS to be more protective. The Petitioners are a coalition of industry parties concerned about the possible costs to them of emission controls that might be required as a result of the revised NAAQS. *See* Pet. Br. 15-18.

STATEMENT OF ISSUES

1. Whether EPA's decision to adopt a more protective annual PM_{2.5} standard was arbitrary and capricious, notwithstanding that an abundance of evidence shows that the former annual standard would not be requisite to protect public health with an adequate margin of safety and that EPA's decision comported with the recommendation of a panel of outside scientific experts.
2. Whether, notwithstanding EPA's express solicitation of comments on "all issues" and EPA's comprehensive response to all comments received, EPA nonetheless deprived Petitioners of a sufficient opportunity for comment or failed to respond adequately to those comments.
3. Whether EPA reasonably revised the form of the annual standard to eliminate "spatial averaging" of monitoring results to assure that populations who are more likely to live near the highest monitored PM_{2.5} concentrations receive the same protection intended to be afforded to all populations.
4. Whether EPA reasonably amended ambient air quality monitoring regulations to require states to locate at least some monitors in ambient air near heavily-trafficked roads where record evidence indicates that PM_{2.5} concentrations are elevated.

5. Whether EPA was prohibited from establishing protective NAAQS until it first took separate discretionary actions to facilitate the permitting and construction of certain pollution sources and provided certain discretionary guidance to states concerning NAAQS implementation.

STATEMENT OF THE CASE

I. STATUTORY BACKGROUND

A. NAAQS Establishment

The Act sets up a comprehensive program for control of air pollution through a system of shared federal and state responsibility. As part of this program, EPA must establish NAAQS limiting concentrations of certain pollutants in the “ambient,” or outside, air. 42 U.S.C. §§ 7408(a)(1), 7409(a), (b).

The NAAQS process begins with the development of “air quality criteria,” which must reflect the latest scientific knowledge on “all identifiable effects on public health or welfare” that may result from a pollutant’s presence in the ambient air. 42 U.S.C. § 7408(a)(2). Based on the criteria, EPA promulgates NAAQS to protect against a pollutant’s effects on public health and welfare. *Id.* § 7409(a)(1)(A), (b).

“Primary” NAAQS are air quality standards “which in the judgment of the Administrator . . . are requisite to protect the public health,” with “an adequate

margin of safety.” 42 U.S.C. § 7409(b)(1).¹ EPA must set primary NAAQS based solely on public health considerations, without reference to the cost or feasibility of achieving the standards. *Whitman v. Am. Trucking Ass’ns* (“*Whitman*”), 531 U.S. 457, 471 (2001). The “public health” that EPA must protect includes not only the health of average individuals, but also that of sensitive populations (such as children or the elderly) who may be particularly vulnerable to air pollution. *Am. Lung Ass’n v. EPA*, 134 F.3d 388, 389 (D.C. Cir. 1998).

The four elements of a NAAQS are: (1) the “indicator,” which defines the pollutant to be measured; (2) the “level,” which defines the allowable concentration of the indicator in the ambient air; (3) the “averaging time,” which defines the time period over which ambient measurements are averaged; and (4) the “form,” which defines the air quality statistic used to identify the concentration to be compared to the level (*e.g.*, the highest value in a year). *Am. Farm Bureau Fed’n v. EPA* (“*American Farm*”), 559 F.3d 512, 516 (D.C. Cir. 2009).

¹ “Secondary” NAAQS “protect the public welfare.” 42 U.S.C. § 7409(b)(2). Because secondary NAAQS are not at issue here, the term “NAAQS” herein refers solely to primary NAAQS.

B. NAAQS Revision

To ensure that the NAAQS keep pace with scientific advances, Congress required EPA and an independent scientific review committee, the Clean Air Scientific Advisory Committee (“CASAC”), to review air quality criteria and NAAQS at least once every five years. 42 U.S.C. § 7409(d). CASAC is directed to make recommendations to EPA, and after considering those recommendations, the Administrator must retain or revise the air quality criteria and the NAAQS in accordance with Section 7409(b). In revising or retaining the NAAQS, the Administrator must explain any significant departures from CASAC’s recommendations. *Id.* §§ 7409(d)(2), 7607(d)(3)(C). But the final decision on whether and how to revise the NAAQS is a judgment made by the Administrator. *Id.* § 7409(d).

EPA’s thorough process for reviewing the air quality criteria for a pollutant includes the preparation of multiple peer-reviewed assessments, including: (1) an “Integrated Science Assessment” (“Science Assessment”), which is a rigorous review and synthesis of the most policy-relevant science; (2) a “Risk Assessment,” which draws upon the information in the Science Assessment to develop quantitative characterizations of exposures and associated risks; and (3) a “Policy Assessment,” which is an analysis bridging the gap between the Agency’s

scientific review and the public health policy judgments the Administrator must make.

C. Air Quality Monitoring Networks

When EPA revises a NAAQS, it often amends separate CAA regulations governing monitors utilized to measure ambient air concentrations of a pollutant. These measurements are used for multiple purposes, including supporting NAAQS compliance (*e.g.*, for designations and developing attainment plans), air pollution-research, and providing air pollution data to the public. *See* 40 C.F.R. Pt. 58, App. D, § 1.1. Monitoring networks are designed and operated by states and approved by EPA, pursuant to criteria established in 40 C.F.R. Part 58. *See* 42 U.S.C. §§ 7619, 7410(a)(2)(B). The Part 58 monitoring network rules generally set minimum requirements, but states can choose to operate more monitors than required.

D. NAAQS Implementation

1. State Implementation Plans

Under the Act, areas violating the NAAQS, or contributing to nearby violations, are defined to be in “nonattainment.” 42 U.S.C. § 7407(d)(1)(A). Once EPA establishes the NAAQS, attaining the standards is primarily the responsibility of states. *See* 42 U.S.C. § 7407(a). Section 7410 requires states to have “state implementation plans” that contain specified elements and provide for

implementation, maintenance and enforcement of the NAAQS. These plans must and be adopted by states after reasonable public notice, and thereafter must be submitted to EPA for approval. *Id.* § 7410(a)(1) and (2); § 7410(l). In response to these submissions, EPA undertakes notice-and-comment rulemaking to approve or disapprove them. *Id.* § 7410(k). Following a disapproval, states must correct identified deficiencies. If a state does not make a required submission, or if EPA disapproves a required submission and the state fails to correct the deficiency, EPA must promulgate a federal implementation plan. *Id.* § 7410(c).

Following promulgation of a new or revised NAAQS, each state must make a submission to EPA within three years (or such shorter time as EPA prescribes) that demonstrates that its state implementation plan meets basic structural requirements; this submission is commonly referred to as an “infrastructure” plan. *Id.* § 7410(a)(1) and (2). States must later make an “attainment” plan submission to address the specific requirements for any areas designated nonattainment by EPA, which must provide for expeditious attainment of the NAAQS.

2. Designations

Within one year after promulgation of a new or revised NAAQS (or sooner if reasonably required by EPA), each state is directed to submit to EPA a list of all areas that the state recommends be designated by EPA as attainment,

nonattainment, or unclassifiable for the new or revised NAAQS. 42 U.S.C. § 7407(d)(1)(A). Within two years of promulgation (or in some cases three years), the Act requires EPA to promulgate designations. *Id.* § 7407(d)(1)(B)(i). EPA must promulgate designations for any area for which no designations recommendation is provided by a state. *Id.* § 7407(d)(1)(B)(ii).

3. PSD Permits

The Prevention of Significant Deterioration (“PSD”) program establishes preconstruction permitting requirements for certain pollution sources in areas that either are in attainment or that cannot be classified. *See id.* §§ 7410(a)(2)(C), 7475. The PSD program operates predominantly through EPA-approved state programs. *See* 42 U.S.C. §§ 7410(a)(2)(C), 7471; 40 C.F.R. § 51.166. To obtain a permit, a facility owner or operator must demonstrate, among other things, that “emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any . . . [NAAQS] in any air quality control region.” *Id.* § 7475(a)(3); *see also* 40 C.F.R. §§ 51.166(k)(1)(i), 52.21(k)(1)(i).

II. PARTICULATE MATTER POLLUTION

The term “particulate matter” embraces a broad class of discrete, but chemically and physically diverse, particles that are in the ambient air. Fine particles, which are at issue here, derive from combustion by-products that

volatilize and quickly condense or from gases that react and transform in the atmosphere. PM_{2.5} generally refers to fine particles with aerodynamic diameters of 2.5 micrometers or less. PM_{2.5} exposures are associated with a range of adverse health effects, including premature mortality and increased hospitalization associated with cardiovascular and respiratory illness. 78 Fed. Reg. at 3103-04.

III. PAST PM_{2.5} STANDARDS

A. The 1997 Standards

In 1997 EPA established separate standards for fine and coarse particles. 62 Fed. Reg. 38,652 (July 18, 1997). EPA established PM_{2.5} as the indicator for fine particles and established two new PM_{2.5} standards: an annual standard at a level of 15.0 micrograms per cubic meter (“ $\mu\text{g}/\text{m}^3$ ”), based on the three-year average of annual arithmetic mean concentrations, and a 24-hour standard of 65 $\mu\text{g}/\text{m}^3$, based on the three-year average of the 98th percentile of 24-hour concentrations. 62 Fed. Reg. at 38,655-79. If certain criteria were met, measurements from multiple monitoring sites within an area could be averaged and compared to the annual standard. This is called spatial averaging because it involves averaging data from different geographic locations within a single area. *Id.* at 38,671-72.

In setting these standards, EPA focused on associations between ambient concentrations of PM_{2.5} and adverse health effects reported in short- and long-term

epidemiological studies. 62 Fed. Reg. at 38,655-57.² EPA had the most confidence in reported associations between PM_{2.5} and adverse health effects at concentrations around the long-term mean in certain key studies. 78 Fed Reg. at 3098/2, 3158/3.³ Accordingly, to protect against these health effects, EPA reasonably focused on alternative standard levels somewhat below the lowest long-term mean from each of these key studies. *Id.*

EPA set the annual standard as the principal standard intended to lower both long-term and short-term PM_{2.5} concentrations, with the 24-hour standard established to provide supplemental protection against high peaks. *Id.* at 3098/3.

² Epidemiological studies examine the statistical relationship between concentrations of pollutants in ambient air as measured at monitoring stations and mortality or morbidity events such as emergency room visits or hospital admissions. Taking into account additional evidence, these studies allow scientists to draw inferences about the harms from exposure without directly measuring such responses through carefully calibrated laboratory experiments. *See Mississippi v. EPA (“Mississippi”),* 723 F.3d 246, 263 (D.C. Cir. 2013). Short-term exposure studies generally assess how daily changes in PM_{2.5} concentrations are associated with daily changes in health events. Long-term exposure studies generally follow study participants over time and assess how long-term PM_{2.5} concentrations are associated with health events across study areas.

³ The strongest evidence of PM_{2.5} related associations occurs where the bulk of data exist, which is over a range of concentrations around the long-term mean. The overall long-term mean concentration in a multi-area study is derived by averaging ambient concentrations across monitors within each area included in the study, and then averaging these concentrations across study areas to calculate an overall long-term mean.

The 1997 standards were upheld by this Court following a remand from the United States Supreme Court. *See Am. Trucking Ass'ns v. EPA ("ATA III")*, 283 F.3d 355 (D.C. Cir. 2002).

B. The 2006 Standards

Following review, EPA in 2006 retained the level of the annual PM_{2.5} standard at 15.0 µg/m³, while revising the level of the 24-hour PM_{2.5} standard to 35 µg/m³. 71 Fed. Reg. 61,144 (Oct. 17, 2006). EPA also revised the form of the annual standard by further constraining the use of spatial averaging. *Id.* at 61,165-66. Unlike in 1997, the Administrator did not consider short-term exposure studies in setting the level of the annual standard. 78 Fed. Reg. at 3098/3-99/1.

Upon judicial review, this Court remanded the annual standard. *Am. Farm*, 559 F.3d at 519-26. The Court concluded that the Administrator failed to explain adequately his decision not to consider short-term exposure studies in evaluating the annual standard and failed to explain adequately how a level of 15.0 µg/m³ would adequately protect sensitive populations. *Id.*

Following issuance of the 2006 rule, CASAC independently expressed serious concern about the Administrator's decision, stating:

It is the CASAC's consensus scientific opinion that the decision to retain without change the annual PM_{2.5} standard does not provide an 'adequate margin of safety

* * * requisite to protect the public health' (as required by the [Act]), leaving parts of the population of this country at significant risk of adverse health effects from exposure to fine PM.

EPA-HQ-OAR-2007-0492-0051 at 2 (JA XX).

IV. THE RULE

A. Staff and CASAC Review

The present review began in 2007 with EPA seeking new scientific information related to particulate matter. 72 Fed. Reg. 35,462 (June 28, 2007). In 2008 and 2009, EPA developed the Science Assessment, submitting two drafts for CASAC review and public comment. 74 Fed. Reg. 7688 (Feb. 19, 2009); 74 Fed. Reg. 38,185 (July 31, 2009). In the final assessment, EPA considered thousands of new epidemiological, animal toxicology, controlled human exposure and other studies. *See* Science Assessment Integrative Overview (JA XX-XX) and Annexes D, E and F (References) (JA XX-XX, XX-XX, XX-XX).⁴

The new scientific evidence substantially strengthened the Agency's understanding of the link between short- and long-term exposures to fine particles and serious health effects. 78 Fed. Reg. at 3103/1. For example, important new

⁴ Animal toxicological and human exposure studies assess biological responses to controlled air pollutant exposures.

multi-city epidemiological studies reported consistent increases in morbidity or premature mortality related to ambient PM_{2.5} concentrations. *Id.* Significant new toxicological and controlled human exposure studies also provided insight into the biological mechanisms by which fine particles could cause health effects observed in epidemiological studies. *Id.* New evidence also provided stronger support for concluding that specific populations at increased risk include children, the elderly, individuals with pre-existing heart and lung disease, and persons with lower socioeconomic status. 78 Fed. Reg. at 3104/1.

The Agency concluded that the totality of the scientific evidence is sufficient to infer a “causal relationship” between PM_{2.5} exposures (both long- and short-term) and premature mortality, and an array of cardiovascular effects including heart attacks, congestive heart failure, stroke, and cardiovascular-related mortality. 78 Fed. Reg. at 3103; Science Assessment Tables 2-1 and 2-2 (JA XX, XX). A “causal relationship” finding is the strongest causality finding that can be made in a Science Assessment. Science Assessment Table 1-3 (JA XX). The Agency additionally concluded that the totality of the scientific evidence is sufficient to infer a “likely to be” causal relationship between PM_{2.5} exposures (again, both long- and short-term) and respiratory-related premature mortality and disease. 78 Fed. Reg. at 3103; Science Assessment Tables 2-1 and 2-2 (JA XX, XX). A

“likely to be causal” relationship is the second-strongest causality finding. Science Assessment Table 1-3 (JA XX). The Agency further concluded that the totality of the scientific evidence is “suggestive of a causal relationship” between long-term PM_{2.5} exposures and other health effects, including developmental and reproductive effects, and carcinogenic, mutagenic, and genotoxic effects. 78 Fed. Reg. at 3103/1-2; Science Assessment Table 2-2 (JA XX).

The short-term and long-term PM_{2.5} exposure studies addressed in the Science Assessment, coupled with greater certainty as to causation, provided compelling evidence that the 2006 primary NAAQS were not sufficiently protective. 78 Fed. Reg. at 3107/2, 3108/1. Numerous key multi-city epidemiological studies, for example, indicated that exposure to ambient PM_{2.5} at concentrations that would meet the existing NAAQS could result in adverse health effects. 78 Fed. Reg. at 3106-08 and 3135 Fig. 4 (identifying over a dozen multi-city studies with long-term mean PM_{2.5} concentrations ranging from 12.8 to 14.8 µg/m³ reporting statistically significant associations with mortality and other health outcomes classified as having a causal or likely causal relationship with PM_{2.5}).

Building upon the information presented in the Science Assessment, EPA prepared a Risk Assessment to quantitatively evaluate the potential magnitude of

premature mortality and other selected health effects associated with various ambient PM_{2.5} concentrations. 78 Fed. Reg. at 3104-06; Risk Assessment Chapters 4 and 5 (JA XX-XX). The Risk Assessment also indicated that the 2006 NAAQS were insufficiently protective. 78 Fed. Reg. at 3105/3. It projected, among other things, that long-term exposure to PM_{2.5} at concentrations just meeting the 2006 NAAQS would likely cause thousands of premature heart disease-related deaths per year in 15 urban study areas. *Id.* at 3108/3.

From 2009 to 2011, EPA staff prepared a Policy Assessment to provide advice to the Administrator with regard to interpreting the revised air quality criteria. 78 Fed. Reg. at 3094/2, 3099-3103; Policy Assessment Executive Summary and Chapter 2 (JA XX-XX, XX-XX). Two drafts of the Policy Assessment were submitted for CASAC review and public comment. 75 Fed. Reg. 32,763 (June 9, 2010); 76 Fed. Reg. 22,665 (Apr. 22, 2011). EPA staff concluded in the final Policy Assessment that it was appropriate to consider revising the annual PM_{2.5} NAAQS to a level within the range of 11 to 13 µg/m³. Policy Assessment at ES-1 (JA XX).

CASAC also provided advice to EPA. 78 Fed. Reg. at 3109/1.⁵ CASAC advised that the current standards were “not protective.” EPA-HQ-OAR-2007-0492-0256 at 1 (JA XX). CASAC further advised that an annual standard level within a range of 11 to 13 $\mu\text{g}/\text{m}^3$ is “supported by the epidemiological and toxicological evidence, as well as by the risk and air quality information compiled.” *Id.* at i-ii (JA XX-XX). CASAC additionally advised that “[a]lthough there is increasing uncertainty at lower levels, there is no evidence of a threshold” level below which there is no risk for adverse effects. *Id.* at ii (JA XX).

B. The Proposal

Based on the various assessments, CASAC’s advice and public comments, EPA issued a proposal. 77 Fed. Reg. 38,890 (June 29, 2012). The Administrator provisionally concluded that the 2006 $\text{PM}_{2.5}$ primary standards were not requisite to protect public health with an adequate margin of safety. *Id.* at 38,917-20. The Administrator proposed to revise the level of the annual standard to a level within a range of 12.0 to 13.0 $\mu\text{g}/\text{m}^3$ and to retain the level of the 24-hour standard at 35 $\mu\text{g}/\text{m}^3$. *Id.* at 38,925-44. The Administrator additionally proposed to revise the

⁵ For purposes of this review, the 7-member CASAC was augmented by 15 additional experts with relevant subject-matter expertise. 78 Fed. Reg. at 3090/2 n.3.

form of the annual standard to eliminate spatial averaging. *Id.* at 38,924-25. EPA further proposed to update aspects of monitoring network regulations. *Id.* at 39,009-11. EPA solicited comments on all aspects of its proposal. *Id.* at 38,893, 39,011.

C. The Final Rule

EPA published its final rule on January 15, 2013. 78 Fed. Reg. 3086. After considering public comments, the Administrator concluded that, “[b]ased on her increased confidence in the association between exposure to PM_{2.5} and serious public health effects, combined with evidence of such association in areas that would meet the current standards,” the existing NAAQS were not requisite to protect public health with an adequate margin of safety. *Id.* at 3120/3. The Administrator then separately considered potential alternative standards. *Id.* at 3128-64.

Consistent with CASAC and EPA staff conclusions, the Administrator concluded that it was appropriate to consider potential annual and 24-hour standards together in determining their collective protection from effects associated with long- and short-term exposures, with the annual standard generally controlling, and with the 24-hour standard providing supplemental protection from peak concentrations. *Id.* at 3157/3. This methodological approach was consistent

with the Agency's approach in promulgating the upheld 1997 standards. *Id.* at 3157/3 and 3158/1.

In evaluating potential standard levels, the Administrator noted that the available evidence does not identify any demonstrated threshold (*i.e.*, a PM_{2.5} concentration below which adverse effects will not occur). *Id.* at 3140/1, 3160/3, 3162/2. The Administrator therefore focused on the relative degree of confidence that the Agency had in the magnitude and significance of health effect associations observed at different PM_{2.5} concentrations. *Id.* at 3158. The Agency had greatest confidence in associations for concentrations at or around the long-term means reported in key multi-city epidemiological studies. *Id.* Accordingly, the Administrator weighed most heavily the long-term mean concentrations reported in these studies. *Id.* The Administrator also took into account, consistent with CASAC's advice, additional population-level information from a subset of studies beyond the long-term mean concentrations, to identify a broader range of PM_{2.5} concentrations to consider in judging the need for public health protection.⁶ *Id.* at 3159/3-60/1, 3162/2.

⁶ This information characterized the distribution of health events in the studies and the corresponding long-term mean PM_{2.5} concentrations.

The Administrator concluded that the level of the annual PM_{2.5} standard should be set at 12.0 µg/m.³ *Id.* at 3164/1. The Administrator explained that an annual standard level of 12.0 µg/m³ is somewhat below the reported long-term mean concentrations in each of the key multi-city short- and long-term epidemiological studies reporting statistically significant associations between PM_{2.5} and causal or likely causal health effects, while also taking into account additional population-level information from a subset of studies. *Id.* at 3158-59.

The Administrator also revised the form of the annual standard to eliminate spatial averaging. *Id.* at 3124-28. The Administrator concluded that spatial averaging could result in greater exposures for sensitive populations living in locations monitoring the highest PM_{2.5} concentrations. She concluded that these populations would not be protected with an adequate margin of safety if disproportionately higher exposure concentrations where at-risk populations live were averaged together with lower concentrations measured elsewhere. *Id.* at 3126-27.

EPA's final rule also amended monitoring network provisions to require a limited number of monitors near heavily-trafficked roads in urban areas with a population of over one million. *Id.* at 3238-41.

STANDARD OF REVIEW

The final rule is subject to judicial review under CAA § 307(d)(9), which provides that the Court may reverse any action found to be “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” 42 U.S.C.

§ 7607(d)(9)(A). The “arbitrary or capricious” standard presumes the validity of agency action, and a reviewing court is to uphold the action if it satisfies minimum standards of rationality. *American Farm*, 559 F.3d at 519; *Mississippi*, 723 F.3d at 254.

These principles are particularly applicable in review of NAAQS, since such decisions present “complex questions of science, law, and social policy,” which necessarily involve judgments “at the very ‘frontiers of scientific knowledge.’” *Lead Indus. Ass’n v. EPA*, 647 F.2d 1130, 1146-47 (D.C. Cir. 1980). Courts must be at their most deferential when reviewing aspects of an agency decision that rest on an evaluation of complex scientific data within the agency’s technical expertise. *Baltimore Gas and Elec. Co. v. NRDC*, 462 U.S. 87, 103 (1983).

EPA is not required to follow any particular paradigm of decisionmaking. *Lead Indus. Ass’n*, 647 F.2d at 1161-62. Recognizing that the final choice of a standard is a “quintessential policy judgment within the discretion of EPA,” a court may not reverse if a careful review of the record shows that “the

Administrator has provided an explanation of why [she] chose one method rather than another, and this explanation and [her] choice are not irrational.” *Id.* at 1162 (citation omitted).

In reviewing alleged procedural errors, the court may invalidate the rule only if the errors were so serious and related to matters of such central relevance to the rule that there is a substantial likelihood that the rule would have been significantly changed if such errors had not been made. 42 U.S.C. § 7607(d)(8).

Questions of statutory interpretation are governed by *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837, 842-45 (1984). If Congressional intent is clear from the statutory language, that intent must be given effect. *Id.* at 842-43. If the statute is ambiguous, a permissible construction by an agency administering the statute must be upheld. *Id.* at 843.

SUMMARY OF ARGUMENT

Since EPA’s 2006 review, a significant body of additional scientific information has become available regarding the harmful effects of short-term and long-term PM_{2.5} exposure. This evidence includes most prominently a number of important new multi-city epidemiological studies. The evidence indicates that PM_{2.5} in ambient air is associated with a range of serious adverse health effects, including in areas with air quality achieving the 2006 suite of PM_{2.5} standards.

Based on this evidence, the EPA Administrator reasonably concluded that the 2006 PM_{2.5} standards were insufficient to protect public health from the harmful effects of ambient PM_{2.5} exposure with an adequate margin of safety.

Consistent with an approach upheld by this Court in prior NAAQS reviews, the Administrator reasonably revised the standard to a level somewhat below the long-term mean concentrations in key multi-city studies reporting associations between PM_{2.5} and serious health effects. The Administrator further reasonably revised the form of the standard to eliminate spatial averaging of monitoring results so that sensitive populations living near the highest monitored PM_{2.5} concentrations will receive the same protection intended to be afforded to all populations. These revisions were consistent with the recommendations of CASAC and the conclusions of agency scientific staff.

Petitioners' procedural and substantive attacks on revisions to the NAAQS all lack merit. EPA provided the public with an opportunity to comment on all aspects of the rule and responded to significant comments. EPA reasonably weighed the evidence and articulated a rational connection between the facts found and the choices made.

EPA additionally reasonably revised its separate monitoring network rules to require states to locate a modest number of monitors near heavily-trafficked roads

in major urban areas. This revision will assure that the monitoring network addresses locations near major roads where PM_{2.5} concentrations are expected to be elevated and where large populations live, work, recreate or attend school.

Petitioners misapply the plain statutory text in contending that EPA is prohibited from promulgating standards that will provide requisite protection to public health and welfare unless EPA first revises certain modeling protocols that might be used by applicants for pre-construction permits and issues certain discretionary implementation guidance to states. Section 7409(b) precludes EPA from considering such cost and logistical concerns in establishing NAAQS. Moreover, Petitioners' speculative concerns regarding potential decisions on applications for permits may only be advanced in challenges to permitting decisions. Petitioners also fail to identify any concrete injury they have incurred related to the existence of discretionary implementation guidance to states.

ARGUMENT

- I. THE ADMINISTRATOR'S DECISION TO REVISE THE ANNUAL PRIMARY PM_{2.5} NAAQS IS SUPPORTED BY THE RECORD.**
 - A. The Administrator Reasonably Revised the Annual Standard Level.**

The Administrator's conclusion that the 2006 PM_{2.5} NAAQS standards are not requisite to protect public health with an adequate margin of safety, and her

decision to revise the level of the annual standard to $12.0 \mu\text{g}/\text{m}^3$, easily satisfy the “minimal standards of rationality” to which this Court holds the agency.

Mississippi, 723 F.3d at 254.

In exercising judgment to revise the annual standard level, the Administrator was able to draw upon a broad array of scientific information and recommendations, including the recommendations of CASAC and the peer-reviewed scientific and policy assessments prepared by EPA staff, as well as public comments. The collective body of scientific evidence and air quality data and analyses was greatly expanded from previous reviews. 78 Fed. Reg. at 3099/3. The robust administrative record provides ample support for the Administrator’s exercise of public health policy judgment.

The Administrator provided a well-reasoned explanation of the considerations informing her exercise of judgment. *See* 78 Fed. Reg. at 3106-21 (explaining conclusions on adequacy of 2006 standards); *id.* at 3121-64 (explaining conclusions on appropriate revisions to 2006 standards). The Administrator reasonably explained that the 2006 standards must be revised to provide increased protection, because the most recent scientific evidence both increases confidence in associations between $\text{PM}_{2.5}$ exposure and serious public health effects *and* supports such associations at lower concentrations than previously reported, including in

areas that would meet the 2006 standards. *Id.* at 3120/3; *see also Mississippi*, 723 F.3d at 256-57 (EPA may reasonably consider increased certainty in risks); *ATA III*, 283 F.3d at 370 (EPA justified in revising NAAQS when health effect associations are observed at levels allowed by the NAAQS).

With respect to potential alternative standard levels, the Administrator reasonably concluded that the annual standard level should be set somewhat below the lowest long-term mean concentration reported in each of a set of key short- and long-term multi-city epidemiologic studies. 78 Fed. Reg. at 3158/3-59/1, 3161/2. The Administrator judged these to be key studies because they are multi-city studies with strong statistical power observing health effects for which the evidence supported a causal or likely causal association. *Id.* at 3134 n.81.

She observed that a standard level of 13 $\mu\text{g}/\text{m}^3$ would be *above* the long-term mean concentrations reported in two well-conducted, multi-city exposure studies reporting positive and statistically significant associations. *Id.* at 3162/1. Taking this into account as well as considering other information, including the analysis of population-level distribution statistics in certain key studies, the

Administrator reasonably concluded that a level of 12.0 $\mu\text{g}/\text{m}^3$ is needed to provide requisite public health protection.⁷

The Administrator's decision to set a standard's level somewhat below long-term mean $\text{PM}_{2.5}$ concentrations reported in key epidemiological studies reflects a rational policy judgment. The Agency and CASAC had the most confidence in associations between $\text{PM}_{2.5}$ and health effects at concentrations around the long-term mean reported in these studies. *Id.* at 3158/2-3. Moreover, this Court has already upheld this same approach in reviewing both the 1997 and 2006 $\text{PM}_{2.5}$ NAAQS. *See ATA III*, 283 F.3d at 372 (finding reasonable the Administrator's decision to set the 1997 $\text{PM}_{2.5}$ standard at a level below the range of long-term mean annual $\text{PM}_{2.5}$ concentrations observed in epidemiological studies showing a statistically significant association between $\text{PM}_{2.5}$ and health effects); *Am. Farm*, 559 F.3d at 526-27 (finding reasonable EPA's decision to address long-term exposure with an annual standard somewhat below the

⁷ The Administrator also explained her rejection of a level of 11.0 $\mu\text{g}/\text{m}^3$. 78 Fed. Reg. 3152-55, 3162/3.

long-term mean concentrations in key epidemiological studies).⁸

The Administrator's decision to revise the standard level to 12.0 $\mu\text{g}/\text{m}^3$ is also fully in accord with the unanimous and explicit recommendations of the independent expert scientific review panel. CASAC advised that the "currently available information clearly calls into question" the adequacy of the 2006 standards and those standards cannot be deemed "protective." EPA-HQ-OAR-2007-0492-0256 at i-ii, 1 (JA XX-XX, XX). CASAC further advised that an annual standard within a range of 11 to 13 $\mu\text{g}/\text{m}^3$ is supported by the scientific evidence. *Id.* at i-ii (JA XX-XX). As this Court recently emphasized, the Administrator "surely . . . may rely on an explicit recommendation by the unanimous CASAC panel." *Mississippi*, 723 F.3d at 257.

The Administrator's decision is additionally consistent with the conclusions of her own scientific staff. *See American Farm*, 559 F.3d at 522-23 ("the staff's analysis is something we consider when determining whether the EPA has . . . reasonably reached its conclusions" in setting NAAQS). EPA staff concluded that

⁸ In *American Farm*, the Court remanded the 2006 annual standard on separate grounds, including EPA's failure to reasonably explain why that standard provided an appropriate degree of protection from health effects associated with *short-term* PM_{2.5} exposures, where EPA concededly had not considered short-term exposure studies in setting the annual standard. In contrast, here the Administrator *did* take into consideration both short- and long-term exposure studies.

it was appropriate for the Administrator to consider revising the level to within the range of 11 to 13 $\mu\text{g}/\text{m}^3$, with the evidence most strongly supporting a level of 11 to 12 $\mu\text{g}/\text{m}^3$. Policy Assessment at ES-1 (JA XX).

B. EPA Reasonably Weighed the Scientific Evidence and Responded to Significant Comments.

Petitioners advance scattershot and unfounded attacks on the Administrator's reasonable exercise of judgment, which are largely cast as procedural claims. We address these arguments below.

1. EPA Provided Ample Opportunity for Public Comment on NAAQS Revision.

Petitioners' lead argument contends that EPA erred procedurally by "prejudging" the outcome of the rulemaking process without soliciting public comments on the need to revise the current standard. Pet. Br. 18-22. This argument is frivolous. EPA, in its notice of proposed rulemaking, stated explicitly that it was soliciting comments on "*all* issues," including "proposed decisions on the current PM standards." 77 Fed. Reg. at 38,899/2 (emphasis added).

"All issues," of course, means just that – *all* issues, including whether the existing standard should be revised. Petitioners themselves certainly were not confused; in response to the proposal, Petitioners submitted comments advocating retention of the 2006 NAAQS. *See, e.g.*, Comments of Utility Air Regulatory

Group at 7-18 (JA XX-XX) (“UARG Comments”). EPA carefully considered all comments on this issue and provided a detailed explanation as to why it ultimately decided to revise the standards. *See* 78 Fed. Reg. at 3106-21, 3143-55, RTC at II-1 to II-44 (JA XX-XX).

Petitioners thus had full opportunity to persuade the agency to modify its proposal and retain the 2006 standards.⁹ Petitioners may be dissatisfied that the Administrator ultimately disagreed with them and offered principled explanations for doing so, but their dissatisfaction with the substance of the Administrator’s final decision does not demonstrate a procedural error.¹⁰

2. EPA Reasonably Weighed the Scientific Evidence.

Petitioners next allege that the Administrator, the independent scientific review committee, and agency staff, coordinated over a period of years to “cherry-pick” (Pet. Br. 22) studies and data and to present scientific and policy assessments

⁹ Prior to the actual rulemaking proposal, Petitioners were also provided with opportunities to submit comments on multiple drafts of the Science, Risk and Policy Assessments. 78 Fed. Reg. at 3094. Petitioners took advantage of these opportunities. *See, e.g.*, EPA-HQ-ORD-2007-0517-0028 (JA XX); EPA-HQ-ORD-2007-0517-0077 (JA XX); EPA-HQ-OAR-2007-0492-0061 (JA XX); EPA-HQ-OAR-2007-0492-0092 (JA XX); EPA-HQ-OAR-2007-0492-0210 (JA XX).

¹⁰ Petitioners’ discussion of *American Farm* (*see* Pet. Br. 19) does nothing to improve their procedural argument. EPA agrees that *American Farm* did not dictate a particular outcome on remand.

that would support some policy judgment “predetermined” (Pet. Br. 34) by the Administrator, while ignoring “key studies” (Pet Br. 23) submitted by Petitioners. There was no such bias in EPA’s scientific review, and Petitioners’ mischaracterizations grossly distort the actual review process.

In reality, the Agency conducted an objective, thorough, and transparent review of the most policy-relevant science, including consideration of thousands of peer-reviewed studies. Multiple drafts of each of the Agency’s key assessments were subject to public comment and were peer-reviewed by CASAC. EPA clearly explained the criteria that it utilized for identifying the most policy-relevant studies, what scientific evidence it gave the most weight to and why, and how staff translated available scientific evidence into the basis for reaching conclusions for the Administrator’s consideration (*see* Science Assessment Chapters 1 and 2 (JA XX-XX), Policy Assessment Chapter 2 (JA XX-XX)). CASAC concurred with EPA’s approach to reviewing the evidence and reached its own independent judgment that EPA should revise the NAAQS. EPA-HQ-OAR-2007-0492-0256 at i-ii (JA XX-XX).

To the extent that EPA gave more weight to certain studies and certain types of evidence, EPA explained its basis for doing so, and its explanations are reasonable. The fact that Petitioners do not agree with the conclusions the

Administrator ultimately reached following robust scientific review does not reflect any predetermination of a particular outcome. Petitioners' argument amounts to a request that this Court re-weigh the scientific evidence; but it is not the role of this Court to second-guess the Agency's scientific judgments.

Mississippi, 723 F.3d at 260; *NRDC v. EPA*, 902 F.2d 962, 971 (D.C. Cir. 1990).

We address each of Petitioners' specific contentions concerning the Agency's scientific assessment below.

a. EPA Reasonably Focused on the Scientific Evidence Considered in the Science Assessment.

First, we address Petitioners' allegation that EPA "appl[ied] unequal peer-review requirements to different studies depending on the conclusions these studies reached." Pet. Br. 25. EPA did no such thing. The criteria for inclusion of studies in the Science Assessment and for judging the relative importance of studies was explained by the Agency in detail. *See* Science Assessment at 1-8 to 1-12 (JA XX-XX). As EPA made clear, the studies considered were those that: (1) had meaningful and reliable data on particulate matter; (2) had undergone scientific peer review; (3) allowed for meaningful comparisons between study or exposure groups; and (4) had properly performed and interpreted statistical results. *Id.* at 1-9 (JA XX). Applying these criteria, EPA identified and considered thousands of

peer-reviewed epidemiological, toxicological, controlled human exposure, and other studies. *See supra* at 12.

Consistent with the Agency's practice in *every* previous NAAQS review to date, the Administrator then reasonably focused on the studies that were addressed within the Science Assessment. 78 Fed. Reg. at 3095/2-3. Contrary to Petitioners' position, the Administrator was not obligated to give equal weight to studies that were published *after* conclusion of the Science Assessment. *See* Pet. Br. 29. The scientific evidence addressed in that assessment had been rigorously assessed in an integrative manner by EPA scientific staff and CASAC and had been subject to public review and comment. 78 Fed Reg. at 3095/3-96/1. Accordingly, the science vetted within the Science Assessment, and then further addressed in the Risk and Policy Assessments, was reasonably deemed by the Administrator to be the most reliable science for purposes of decisionmaking.

While EPA reasonably focused on the science evaluated within the assessments, EPA did not ignore scientific evidence published since the mid-2009 cutoff date for inclusion in the Science Assessment. As EPA explained, the Agency conducted a provisional assessment of significant new studies published after conclusion of the Science Assessment, and this provisional assessment found that the results reported in the newest studies did not materially change any of the

broad scientific conclusions reported in the Science Assessment. 78 Fed. Reg. at 3095-96, 3155/2; Provisional Assessment (JA XX).¹¹ EPA intends to address recently-published studies within the Science Assessment prepared for the next NAAQS review. 78 Fed. Reg. at 3155/2.

In trying to discredit the Administrator's reasonable decision to focus on studies addressed in the Science Assessment, Petitioners point to three specific new "studies" and characterize these "studies" as providing perhaps the "most probative" "data regarding the health impacts of PM_{2.5} exposure." *See* Pet. Br. at 25-26 (citing to Cox (2012) (JA XX), Fraas (2011) (JA XX) and Fraas and Lutter (2012) (JA XX)). This characterization is nonsensical. The three documents cited do not provide data regarding the health impacts of PM_{2.5} exposure and are not otherwise scientific studies bearing upon the "air quality criteria" upon which NAAQS must be premised. *See* 42 U.S.C. §§ 7408(a)(2), 7409(b)(1). The documents cited are instead papers addressing the Agency's methodology for assessing the *monetary* costs and benefits from revised NAAQS.¹² Although the Agency assessed the monetary costs and benefits of revised NAAQS in a

¹¹ The principal purpose of the Provisional Assessment was to determine whether this review should be delayed, not to inform decisionmaking in this review.

¹² Fraas and Lutter are economists. EPA-HQ-OAR-2007-0492-9572 (JA XX).

Regulatory Impact Analysis for informational purposes, that analysis did not and could not inform the Administrator's judgment in revising NAAQS, because costs cannot be considered in setting NAAQS. *See Whitman*, 531 U.S. at 471; 78 Fed. Reg. at 3089/3.

Nor did EPA "apply a different standard" in considering a statistical analysis of population-level data prepared after conclusion of the Science Assessment. *See* Pet. Br. 27. As part of peer-reviewing the Policy Assessment, CASAC expressly recommended that EPA prepare this statistical analysis to help inform selection of the standard level. 78 Fed. Reg. at 3130, 3139/1-2, 3149-50. Contrary to Petitioners' suggestion, this analysis did not lack peer review.¹³ Petitioners do not challenge any aspect of those analyses.

b. EPA Did Not Arbitrarily Weigh Studies.

Petitioners further claim that EPA "arbitrarily weighted" studies based solely on the outcome of such studies. *See* Pet. Br. 28-31. This argument also lacks merit.

¹³ The distributional statistical analysis evolved directly from prior analyses which CASAC had reviewed. 78 Fed. Reg. at 3130 n.77. CASAC had an opportunity to comment on the final analysis, which incorporated CASAC's recommendations, but chose not to provide any additional comments. 78 Fed. Reg. at 3150/1.

Petitioners maintain that in evaluating causality, EPA must accord equal weight to studies finding a statistically significant association and studies reporting no association. Pet. Br. 29. But Petitioners' argument blurs the distinction between EPA's initial causality findings and EPA's subsequent consideration of reported long-term mean concentrations for purposes of evaluating alternative standard levels. In reaching its causality findings, EPA considered the *collective* evidence before it bearing upon whether there is an association between exposure to PM_{2.5} and adverse health effects, including consideration of studies reporting no associations, or where the results were not statistically significant. 78 Fed. Reg. at 3112-14; RTC at II-9 to II-12 (JA XX-XX). In doing so, EPA focused on the "pattern of results across epidemiological studies, and whether the effects observed were coherent across the scientific disciplines for drawing conclusions on the relationship between PM_{2.5} and different health outcomes." 78 Fed. Reg. at 3113/1. The great body of epidemiological, toxicological, and controlled human exposure studies strongly supported a causal relationship between PM_{2.5} and serious health effects. *Id.* at 3112-13; RTC at II-13 (JA XX). EPA's causality determinations comport with CASAC's unanimous recommendations. *See* 78 Fed. Reg. at 3114/1; EPA-HQ-ORD-2007-0517-0121 at 2-3 (JA XX-XX); *Mississippi*,

723 F.3d at 256-57 (“appropriate” for EPA to evaluate evidence as a whole using this kind of weight of evidence approach).

In view of the well-supported causality determinations, the Administrator then reasonably concluded that to protect public health with an adequate margin of safety, the level of the standard should be set somewhat below the lowest long-term mean concentration reported in key multi-city studies reporting statistically significant associations for those effects judged to have a “causal” or “likely causal” relationship to PM_{2.5}. 78 Fed. Reg. at 3158-59, 3161/2. The Administrator reasonably focused on these mean concentrations because the Agency and CASAC had the most confidence in the associations at PM_{2.5} concentrations around the long-term means in these studies. *Id.* There was nothing arbitrary about the Administrator’s approach in this regard. As discussed above, this Court has upheld this same approach twice in PM_{2.5} review cases. *See* discussion, *supra*, at 26.¹⁴ Furthermore, as this Court recently reiterated, “[s]tatistical quality affords a

¹⁴ Petitioners contend that EPA should not have considered reported long-term mean concentrations reported in Zeger et al. (2008), in view of a subsequent analysis of the same data by Greven (2011). Pet. Br. 30. EPA, however, provided a robust explanation as to why it did not give more weight to Greven’s analysis, 78 Fed. Reg. at 3116-17, and the study authors repudiated Petitioners’ interpretations of their study. RTC at II-20 n.7 (JA XX). In any event, many studies considered by the Administrator reported statistically significant positive associations at *lower* long-term mean concentrations than reported in Zeger. 78 Fed. Reg. at 3135, Figure 4.

perfectly rational basis for assigning different weights to different pieces of scientific data,” and EPA is not required to premise the level of a NAAQS on studies that do not report statistically significant associations. *Mississippi*, 723 F.3d at 263.

c. EPA Responded to Comments Concerning the Potential Existence of an Exposure Threshold.

Petitioners further argue that EPA did not adequately respond to Petitioners’ comments concerning the possibility of an exposure threshold. *See* Pet. Br. 12, 23, 32. This argument also fails. In response to comments, the Agency explained why, in its scientific review, it could not identify any discernible population-level threshold below which there is no risk for adverse effects from exposure to PM_{2.5}. 78 Fed. Reg. at 3119/1; RTC at II-40 to II-41 (JA XX-XX). EPA observed:

[B]oth long- and short-term exposure studies have employed a variety of statistical approaches to examine . . . whether a threshold exists. While the EPA recognizes that there likely are individual biological thresholds for specific health responses, the [Science Assessment] concluded the overall evidence from existing epidemiological studies does not support the existence of thresholds at the population level

78 Fed. Reg. at 3119/1. EPA further acknowledged that some scientific uncertainties remain and that it is possible that such thresholds exist towards the *lower* end of the range of air quality concentrations evaluated in studies or *below*

these ranges, even though no particular threshold is identifiable based on the scientific evidence. *Id.* at 3119 n.61. CASAC agreed with EPA's conclusions, stating: "Although there is increasing uncertainty at lower levels, there is no evidence of a threshold." *Id.* at 3119/1. Likewise, Petitioners themselves do not purport to identify any particular threshold that they believe EPA could have discerned based on the evidence. EPA's detailed response to comments on the question of whether the scientific evidence supports the identification of a discernible threshold satisfied its obligation to respond to significant comments.

Contrary to Petitioners' argument, EPA was not obligated to more specifically address each and every study purportedly bearing on the issue of identification of a threshold that was briefly referenced in public comments. Although American Petroleum Institute ("API") and National Association of Manufacturers ("NAM") very briefly referenced a number of "studies" in their comments purportedly bearing on the issue, they did not offer discussion or analyses of those studies that merited a more detailed discussion in response to comments. *See* API Comments at 19-20 (JA XX-XX), NAM Comments at 24 (JA XX). Commenters, for example, did not explain how any of cited studies actually addressed the issue of a threshold using any sort of formal statistical analysis, nor did they attempt to explain how any particular population-level threshold could be

discerned from the studies. EPA had also already explained its basis in the 2006 review for not relying on a number of the older studies cited. *See* 2006 RTC at 47, 49-55, 202-03 (JA XX, XX-XX, XX-XX) (discussing Clyde (2000), Moolgavkar (2005) and Koop and Tole (2004)).¹⁵

As this Court has stressed, an agency's response to comments "cannot be expected to make silk purse responses to sow's ear arguments." *See ParkView Med. Assoc., L.P. v. Shalala*, 158 F.3d 146, 149 (D.C. Cir. 1998). Here, EPA adequately addressed Petitioners' comments by providing a detailed explanation as to why the overall body of evidence does not support the identification of thresholds at the population level – a conclusion supported by CASAC. EPA was not further obligated to present extended discussion of each and every study very briefly referenced in comments.

Even if, for sake of argument, EPA had been required to provide responsive commentary on every study briefly cited in comments purportedly relating to the

¹⁵ As discussed above (*supra* at 33), the three newer papers cited by Petitioners relate to cost-benefit analyses and not the air quality criteria. Other studies cited by Petitioners in their brief as bearing on the existence of a threshold were characterized by API in its comments as "review papers." *See* API Comments at 19 (JA XX). Review papers are not often included in a Science Assessment because, rather than bringing forward new information in the form of original research or new analyses, they typically just present summaries or interpretations of existing evidence.

existence of a threshold, any resulting procedural error would be harmless. *See* 42 U.S.C. § 7607(d)(8); *Am. Petroleum Inst. v. Costle*, 665 F.2d 1176, 1184 (D.C. Cir. 1981) (“Reversals for procedural defaults under the Act will be rare because the court must first find that the Administrator was arbitrary or capricious . . . and that the errors were so significant that the challenged rule would likely have been different without the error.”). As EPA explained, both the Agency and CASAC had a high degree of confidence in the reported associations in epidemiological studies between PM_{2.5} and serious adverse health effects at PM_{2.5} concentrations around reported long-term means (just as in prior PM_{2.5} reviews), and based on this high degree of confidence, it was reasonable for the Administrator to set a standard level somewhat below reported long-term mean concentrations in key multi-city studies. Petitioners make no case that EPA’s exercise of judgment was arbitrary or that any of the referenced studies would lead to a different conclusion.

d. EPA Fully Responded to Comments Regarding the Association Between PM_{2.5} Exposure and Mortality.

EPA likewise adequately responded to Petitioners’ comments (*see* Pet. Br. 23-24, 32) concerning the evidence bearing upon the association between PM_{2.5} and mortality. *See* 78 Fed. Reg. at 3112-14, 3120; RTC at II-9 to II-12 (JA XX-XX). As EPA explained, EPA focused on the evidence from hundreds of

epidemiological studies and overall, across these studies, there was evidence of positive associations between both long-term and short-term exposures to PM_{2.5} and premature mortality. 78 Fed. Reg. at 3103. This evidence was supported by toxicological studies providing biological plausibility for effects observed in the epidemiological studies. *Id.* The evidence amply supports the Agency's "causal relationship" finding, a finding that CASAC expressly endorsed. *Id.* at 3114/1.

Having addressed the bases for its causality determinations at length in response to comments, EPA was not further obligated to specifically address each specific study purportedly bearing on the issue that was referenced in passing in comments. *See* discussion *supra* at 38-39.¹⁶ Regardless, any procedural error arising from a failure to do so would be harmless, in view of the overwhelming evidence across hundreds of peer-reviewed studies supporting the Agency's causality determinations for mortality. 78 Fed. Reg. at 3113/2.

EPA also responded sufficiently to comments (*see* Pet. Br. 24-25, 32) contending that associations reported in epidemiological studies should be

¹⁶ Clyde (2000) and Moolgavkar (2000), which are cited by Petitioners (Pet. Br. 24) were addressed by EPA in the 2006 review. 2004 Air Quality Criteria Document at 8-27, 8-28 (JA XX, XX); 2006 RTC at 35, 47 (JA XX, XX). Clyde reported a *positive* association for mortality. Witmaack (2007) and Lipfert (2008), which are cited by Petitioners (Pet. Br. 24), addressed black smoke and traffic density, respectively -- not PM_{2.5}. UARG Comments at 18-19 (JA XX-XX).

disregarded on grounds that studies did not adequately control for “confounding factors” such as other environmental pollutants and history of smoking. *See* 78 Fed. Reg. at 3115/2-17/3; RTC at II-14 to II-20, II-34 to II-36, II- 67 to II-71 (JA XX-XX, XX-XX, XX-XX). In response, EPA explained how it had carefully evaluated the potential for confounding effects. *Id.* Likewise, EPA explained in response to comments (*see* Pet. Br. 33) how it had reasonably considered uncertainties in long-term exposure studies associated with characterizing the exposure that elicited the observed effects, recognizing the relatively high PM_{2.5} exposures study participants may have received many years ago. 78 Fed. Reg. at 3147-49.

C. EPA Reasonably Revised the Form of the Standard.

EPA reasonably amended the form of the standard (the air quality statistic that is to be compared to the standard’s level) to avoid inequities in the degree of protection provided, and to avoid potential disproportionate impacts on sensitive populations. 78 Fed. Reg. at 3124-27. *See* Pet. Br. 41-48.

As revised, the annual arithmetic mean, averaged over three years, from each PM_{2.5} monitoring site must be less than or equal to the standard level. In contrast, under the 2006 NAAQS, measurements from multiple PM_{2.5} monitoring sites across a sizable area (*e.g.* an entire metropolitan area) could be averaged prior

to comparison to the level, if specific criteria were met. Such “spatial averaging” of multiple PM_{2.5} monitoring sites was unique to the annual PM_{2.5} NAAQS; spatial averaging has not been used as part of the form of any other particulate matter standards or of any other NAAQS. 78 Fed. Reg. at 3124/3 n.66.

EPA provided a reasoned and detailed justification for eliminating spatial averaging. 78 Fed. Reg. at 3124-27; RTC at II-47 to II-52 (JA XX-XX). Spatial averaging may result in inequities in the degree of protection provided, inasmuch as people who have the misfortune of living in locations monitoring the highest PM_{2.5} concentrations may be exposed to concentrations above the standard level and not be identified as such, just because other monitors in the area record lower concentrations. 78 Fed. Reg. at 3125/1. EPA reasonably explained that it had determined after further review and analysis that continuing to allow such potential inequities to any degree would be insufficiently protective of public health with an adequate margin of safety, especially in view of evidence that the highest PM_{2.5} concentrations tend to be measured at locations where sensitive populations, including persons with lower socioeconomic status, are *more* likely to live.¹⁷

¹⁷ Persons with lower socioeconomic status have been generally found to have a higher prevalence of pre-existing diseases, limited access to medical treatment, and increased nutritional deficiencies, all of which increases this population’s risk to PM_{2.5} related effects. Policy Assessment at 2-30 (JA XX).

78 Fed. Reg. at 3125/2, 3126-27; RTC at II-47 to II-52 (JA XX-XX).

EPA's decision to eliminate spatial averaging comported with CASAC's unanimous recommendation. CASAC advised: "Given mounting evidence showing that persons with lower [socioeconomic] levels are a susceptible group for PM-related health risks, CASAC recommends that the provisions that allow for spatial averaging across monitors be eliminated" EPA-HQ-OAR-2007-0492-0113 at 13 (JA XX).

EPA's decision to accept CASAC's recommendation and eliminate spatial averaging was eminently reasonable. *See* Pet. Br. 41-48. NAAQS must protect public health with an adequate margin of safety, and NAAQS must protect not only average individuals, but also sensitive populations. *Am. Lung Ass'n*, 134 F.3d at 389. EPA reasonably ensured that the level of the annual standard is met in all locations where people are exposed, including locations where sensitive populations are *more* likely to live.¹⁸ *Coal. of Battery Recyclers v. EPA*, 604 F.3d 613, 617-18 (D.C. Cir. 2010). Put another way, it is reasonable that sensitive populations living in areas monitoring the highest PM_{2.5} concentrations receive the same requisite protection as other populations.

¹⁸ Likewise, the annual standard is reasonably compared to the highest monitor to avoid unequal protection. 78 Fed. Reg. at 3145/2-3; RTC at II-50 (JA XX).

Petitioners do not dispute that record evidence supports a conclusion that sensitive populations are more likely to live in locations monitoring the highest PM_{2.5} concentrations. Petitioners, however, contend that EPA did not adequately explain why it had not maintained spatial averaging with the conditions imposed in 2006. Pet. Br. 42. This argument fails.

As EPA explained, it conducted a robust new analysis that was specifically focused on determining whether spatial averaging should be retained. EPA-HQ-OAR-2007-0492-0340 (JA XX). This analysis conclusively demonstrated, based on a more extensive set of air quality data than previously available, that persons with a lower socioeconomic level are more likely than the general population to live in locations monitoring the highest PM_{2.5} concentrations. EPA further explained that important new epidemiological studies provided stronger evidence than previously available that persons with a lower socioeconomic status are a sensitive population. 78 Fed. Reg. at 3125/1. EPA additionally explained that all elements of the NAAQS work together and must be considered collectively in revising the NAAQS, and therefore EPA had taken into account the body of new evidence generally supporting revision of the NAAQS to provide greater protection (e.g., all of the new evidence indicating that PM_{2.5} is associated with

adverse health effects at lower concentrations than previously established). 78
Fed. Reg. at 3168/3.

Notwithstanding this evidence, Petitioners erroneously suggest that EPA was required to maintain spatial averaging unless the Agency specifically performed an empirical analysis that in some fashion quantitatively disproved the protectiveness of spatial averaging with the 2006 constraints. *See* Pet. Br. 42, 48. Not so. EPA need not leave the prior form of the standard in place until each and every aspect of it is undermined through Petitioners' preferred form of empirical analysis. In reviewing NAAQS the Court "ask[s] only whether EPA's proposed NAAQS is 'requisite,'" the Court does "not ask why the prior NAAQS once was 'requisite' but is no longer up to the task." *Mississippi*, 723 F.3d at 255. Otherwise, EPA would be bound "to potential deficiencies in past reviews because discrepancies between past and current judgments as easily reflect problems in the past as in the present." *Id.* Thus, a prior NAAQS does not have "presumptive validity" until "every aspect of it is undermined," and the Court defers to EPA's policy judgment as long as EPA reasonably explains its actions. *Id.* EPA did so here and no more is required.

Further, the portion of Petitioners' argument contending that EPA must perform an empirical "analysis that applie[s] the 2006 spatial averaging

constraints” (Pet. Br. 47-48) has been waived. No one submitted comments requesting that EPA perform an empirical analysis specifically applying the 2006 PM_{2.5} spatial monitoring provisions in some fashion. *See* 42 U.S.C. § 7607(d)(7)(B).

In short, EPA’s revision to the form of the standard was supported by a detailed and well-reasoned justification and should be upheld.

II. EPA Reasonably Required Some Ambient Air Monitors Near Heavily-Trafficked Roads.

EPA reasonably amended its ambient air monitoring network rules to require that monitoring networks administered by states include a modest number of PM_{2.5} monitors near major roads in large urban areas. 78 Fed. Reg. at 3238-41; RTC at V-16 to V-41 (JA XX-XX).¹⁹ Record evidence indicates that PM_{2.5} concentrations near heavily-travelled roads are elevated by traffic-related exhaust, and millions of people in large urban areas live or spend time in proximity to major roads. *Id.*

EPA has the responsibility under the Act to ensure that the NAAQS are providing the intended protection of public health, including for the significant fraction of the population who live or otherwise spend time in proximity to major roads. 78 Fed.

¹⁹ Approximately 52 monitors would be required across the entire country. 78 Fed. Reg. at 3238/3.

Reg. at 3240/3. NAAQS apply to “ambient air” throughout the United States, not just to that ambient air that is at some distance from major roads.²⁰

A. Near-Road Monitors Measure Ambient Air in Locations Which May Contain High PM_{2.5} Concentrations to Which Populations May Be Exposed.

Petitioners’ substantive attacks on near-road monitoring requirements are baseless. First, as EPA explained and as Petitioners concede (Pet. Br. 37), available scientific evidence indicates that concentrations of PM_{2.5} may be higher near heavily traveled roads. 78 Fed. Reg. at 3238.²¹ An important purpose of the required monitoring network generally is to locate monitors in areas where pollution may be relatively high and which therefore risk exceeding the NAAQS. *Id.* at 3237-38; RTC at V-21 (JA XX). As EPA explained, “seeking the highest concentration of a pollutant has been a long-standing goal in the [monitoring]

²⁰ Contrary to Petitioners’ position, near-road PM_{2.5} monitoring represents PM_{2.5} concentrations in the “ambient air.” “Ambient air” is defined by EPA to include that “portion of the atmosphere, external to buildings, to which the general public has access.” 40 C.F.R. § 50.1(e). The general public has access to ambient air near major roads. *See* Pet. Br. 36 (conceding plausibility of population exposure near roads and EPA’s authority to monitor NO₂ near roads).

²¹ Petitioners’ assertion (Pet. Br. 37) that PM_{2.5} concentrations drop rapidly moving away from the immediate side of the road does not reflect any scientific consensus set forth in the record. As EPA explained, while EPA believes the scientific evidence establishes there is a gradient, the degree to which concentrations drop is uncertain. RTC at V-36 to V-37 (JA XX-XX)

network design of every criteria pollutant . . . to provide the greatest degree of protection for public health and welfare without requiring an overly burdensome monitoring network.” RTC at V-36 (JA XX).

Furthermore, EPA carefully crafted the minimum monitoring network design requirements so that near-road monitors will be representative of ambient PM_{2.5} concentrations in areas of potential public exposure. First, the near-road monitoring requirements apply only within urban areas with a population of greater than one million. 78 Fed. Reg. at 3284-85. Second, EPA required that PM_{2.5} monitors be sited in locations that are “representative of area-wide air quality” to be compared to the annual PM_{2.5} NAAQS. 78 Fed. Reg. at 3236/3; 40 C.F.R. Pt. 58, App. D § 4.7.1(b) (78 Fed. Reg. at 3284/2); 40 C.F.R. § 58.30 (78 Fed. Reg. at 3283).²²

As the term “area-wide air quality” has been defined, this means that near-road monitors must be placed in ambient air locations that are representative of *many* near-road locations within the same urban area to qualify for comparison to the annual PM_{2.5} NAAQS. 78 Fed. Reg. at 3236/3, 40 C.F.R. § 58.1 (78 Fed. Reg.

²² This is consistent with the NAAQS. See 40 C.F.R. § 50.18(b), 40 C.F.R. Pt. 50, App. N, §§ 4.1(a) and 1.0(c) (“eligible site”).

at 3281-82).²³ EPA's Rule provides for a case-by-case determination of whether monitors represent "area-wide" air quality and can be compared to the annual NAAQS. RTC at V-12 (JA XX); 40 C.F.R. § 58.30 (78 Fed. Reg. at 3283). EPA anticipates that near-road monitors will generally be sited to represent area-wide conditions. 78 Fed. Reg. at 3241/1. If states, however, locate near-road monitoring stations in locations that are not representative of "area-wide" air quality, those monitors will not be comparable to the annual PM_{2.5} NAAQS. *Id.* Monitoring results from such unique location monitors could be compared only to the 24-hour PM_{2.5} NAAQS. Comparison with the 24-hour standard is consistent with EPA's longstanding treatment of unique location monitors and provides protection from high short-term exposures. RTC at V-13 (JA XX).

Petitioners focus on the fact that required near-road fine particle monitors must be co-located with NO₂ monitors, and suggest that this co-location aspect of the rules is arbitrary. *See* Pet. Br. 35. It is not. First, the factors that are relevant for identifying high NO₂ and PM_{2.5} concentrations are similarly influenced by the same factors near roads, including fleet mix, total traffic count, congestion

²³ The definition of "area-wide" also includes monitors representative of a neighborhood scale or larger, but that is unlikely to apply to near-road monitors.

patterns, roadway design and meteorology. 78 Fed. Reg. at 3240/3. Moreover, co-locating monitors not only maximizes efficiency and reduces burdens upon monitoring agencies, but also enhances the value of the data for later use in health studies. 77 Fed. Reg. at 39,009/2; 39,010/2. States also have flexibility under EPA's monitoring network rules to identify optimal locations for co-located NO₂ and PM_{2.5} monitors, and EPA has encouraged air agencies to site monitors in locations that will be representative of population exposure. 78 Fed. Reg. at 3239/1. As stated by EPA:

Ideally, near-road sites would be located at the elevation and distance from the road where maximum PM_{2.5} levels occur in this environment, representing locations where populations are exposed; for example, in apartments and other housing; schools located along major roadways; industrial parks where workers [are] exposed; and in recreational areas such as greenways, bikeways, and other park facilities that are often developed along roads.

Id. Finally, EPA has also made clear that air agencies have flexibility to recommend siting near-road PM_{2.5} monitors in a different location from NO₂ monitors, and that EPA intends to use existing authority to approve such recommendations in appropriate cases. 78 Fed. Reg. at 3240/2.

Petitioners' argument that monitoring near roads is arbitrary because people cannot be expected to spend a full year of time near roads is misplaced. *See* Pet.

Br. 36. First, Petitioners overlook that the annual standard is intended to provide primary protection against *both* short-term and long-term exposures to PM_{2.5} by lowering the broad distribution of air quality across an area over time. 78 Fed. Reg. at 3158/1.²⁴ But even if the annual standard had been intended to provide protection against solely long-term exposure, the fact that people may be expected to move periodically from one location to another does not mean that EPA lacks the ability to monitor any of the locations in which people spend time for purposes of comparison to an annual standard designed to control air quality over the entire area.

Also lacking merit is Petitioners' contention that the existing PM_{2.5} monitoring network is adequate because traffic from major roads contributes somewhat to PM_{2.5} concentrations that are already being monitored in other locations. As Petitioners concede, PM_{2.5} concentrations near roads may be higher than at other locations because of traffic. *See* Pet. Br. 38. It is reasonable and

²⁴ Petitioners' claim (Pet. Br. 36) that people will not be in the vicinity of near-road monitoring sites for more than a single hour is unsupported. Petitioners rely on a 2004 document expressing the views of the State of Connecticut on a particular attainment designation. *See* Pet. Br. 36-37. This document, which is not in the record, expresses the views of Connecticut on locality-specific issues and does not demonstrate that near-road monitors are generally inappropriate.

consistent with the protective purpose of the Act to place monitors in locations where pollutant concentrations can be predicted to be relatively high.

Petitioners also mischaracterize CASAC's recommendations. *See* Pet. Br. 38. Contrary to Petitioners' implication, CASAC recommended near-road monitoring of the pollutants subject to NAAQS. *See* EPA-HQ-OAR-2007-0492-0368 at i (emphasizing the "importance for public health of better characterizing near-road pollutant concentrations") (JA XX). Petitioners point to CASAC's observation that one specific testing method is ill-suited for measuring PM_{2.5} near roads, but Petitioners leave out the full CASAC recommendation and omit important context. CASAC expressed concern about this particular testing method because that method may "*under predict* the risk associated" with exposure to near-road PM_{2.5}. *Id.* at xix (JA XX). Accordingly, this recommendation in its entirety just underscores the importance of monitoring near-road locations in the first place. EPA also addressed CASAC's concern regarding use of the specific test method by encouraging air pollution agencies to consider available alternative testing methods. 78 Fed. Reg. at 3238/2.

In short, EPA reasonably addressed a gap in the PM_{2.5} monitoring network to require monitors in near-road areas where PM_{2.5} concentrations may be elevated and where significant public exposure can occur. Monitoring ambient air in

representative locations near major roads is a reasonable way to assure that the millions of people who may be exposed to PM_{2.5} in such areas receive the degree of protection the NAAQS are intended to provide.

B. EPA Provided an Opportunity to Comment on Near-Road Monitoring Requirements.

Petitioners' procedural argument related to near-road monitors also fails; EPA provided an opportunity for public comment on its monitoring network requirements. In proposing to add near-road monitors to the network, EPA explained that a number of key objectives would be supported, including "collection of NAAQS comparable data." 77 Fed. Reg. at 39,009/2. EPA further explained that "there are gradients in near-roadway PM_{2.5} that are most likely to be associated with heavily travelled roads . . . with the largest numbers of impacted populations in the largest [urban areas] in the country" *Id.*

In response to the proposal, Petitioners submitted comments opposing near-road monitoring requirements. *See, e.g.* UARG Comments at 54-55 (JA XX-XX). EPA considered all of the comments and explained why it decided to finalize the proposal. *See, e.g.*, 78 Fed. Reg. at 3239-41; RTC at V-16 to V-47 (JA XX-XX).

Petitioners contend (*see* Pet. Br. 39-40) that EPA should have reopened the comment period to allow an opportunity for additional comment on a publicly-

available Census Bureau study which identified 45 million people living within 300 feet of a major roadway, and which was cited by environmental and public health groups in comments. *See* 78 Fed. Reg. at 3239, n.228. As Petitioners point out (*see* Pet. Br. 40, n.11), they have filed a petition for reconsideration raising their concerns with the Census Bureau data. The CAA provides that “[o]nly an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment . . . may be raised during judicial review.” 42 U.S.C. § 7607(d)(7)(B). To the extent Petitioners claim that it was impracticable to raise their Census Bureau data-related objections during the comment period, Section 7607(d) requires them to raise their criticisms to EPA in a petition for administrative reconsideration – as they have done – before bringing them to the Court. *Id.*; *see Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1065 (D.C. Cir. 2001); *NRDC v. Thomas*, 805 F.2d 410, 437-38 (D.C. Cir. 1986). Thus, in the absence of a decision by EPA denying reconsideration, judicial review of any procedural arguments concerning the Census Bureau data that were not raised during the public comment period is premature.

Should the Court decide to reach Petitioners’ procedural argument, EPA was not required to reopen the public comment period to entertain comments on the Census Bureau data. Although EPA briefly referenced the data in a footnote in its

final rule, 78 Fed. Reg. at 3239/3, n.228, the Census Bureau data merely corroborated EPA's conclusion at proposal that there are "large[] numbers of impacted populations" in the largest urban areas in the country who may be exposed to fine particles near heavily traveled roads. 77 Fed. Reg. at 39,009. Further notice and comment is not required when additional fact gathering is merely corroborative of the Agency's conclusions at proposal. *See, e.g., Chamber of Commerce v. SEC*, 443 F.3d 890, 900 (D.C. Cir. 2006); *see also Personal Watercraft Indus. Ass'n v. Dep't of Commerce*, 48 F.3d 540, 543 (D.C. Cir. 1995) ("Rulemaking proceedings would never end if the agency's response to comments must always be made the subject of additional comments"). Petitioners had an opportunity to comment on EPA's factual conclusions at proposal regarding the significance of the populations potentially exposed to elevated PM_{2.5} near major roads in urban areas, a conclusion which did not change as a result of the passing reference to the Census Bureau data in the final action.

Furthermore, any arguable procedural error is harmless. *See* 42 U.S.C. § 7607(d)(8). The question of precisely how many people live near roadways was not critical to the Agency's decision, which rested on multiple grounds. These included the objective of locating monitors in areas of expected maximum

pollutant concentration, so as to assess national air quality with the least burdensome network. *See* 78 Fed. Reg. at 3238-41; RTC at V-36 (JA XX).

III. EPA Properly Did Not Consider Factors Beyond the Statutory Criteria in Setting NAAQS.

Petitioners contend that EPA was prohibited from promulgating NAAQS that will be protective of public health and welfare because EPA did not include in the rule any amendment of separate rules or guidance related to pre-construction permitting of new or modified pollutant sources and related to NAAQS implementation. Pet. Br. 48-62. Petitioners claim that by revising NAAQS without promulgating such separate regulation or guidance, EPA ignored purported Congressional intent to “assure[] economic growth.” Pet. Br. 60.

Petitioners’ arguments are erroneous because they ignore the plain statutory text. The statute is clear: EPA must make a decision as to whether and how to revise the NAAQS in accordance with Section 7409(b), which requires standards that provide requisite public health and welfare protection. Nothing in Section 7409(b) authorizes, much less requires, the Agency to withhold requisite public health and welfare protection based on the sort of economic or logistical concerns raised by Petitioners. As the Supreme Court and this Court have made clear, Section 7409(b) means what it says: EPA may not consider costs in setting

NAAQS. *See Whitman*, 531 U.S. at 465 (text of Section 7409(b)(1) “does not permit the EPA to consider costs in setting the standards”); *Lead Indus.*, 647 F.2d at 1148-49 (“Section [7409(b)] speaks only of protecting the public health and welfare. . . .”).

Petitioners point to the phrase “as may be appropriate” in Section 7409(d)(1) as a basis for EPA not to revise the NAAQS, but the criteria of Section 7409(b) are the sole determinants of what revisions are “appropriate.” *Am. Trucking Ass’n v. EPA*, 175 F.3d 1027, 1034, 1040-41 (D.C. Cir. 1999). Refusing to revise an inadequate NAAQS or delaying the effective date of needed revisions, based on concerns such as those cited by Petitioners, would not be in accordance with Section 7409(b). While EPA solicited comments on certain implementation matters in its proposal, EPA stated unequivocally that “these issues are not relevant to the establishment of the NAAQS.” 77 Fed. Reg. at 39,017/1. Petitioners cite to no provision of the Act that compels EPA to provide implementation rules or guidance before EPA may revise a NAAQS.

Although the plain text of the statute readily resolves all of Petitioners’ arguments relating to implementation, we address below additional defects associated with each of their specific arguments.

A. Modeling Guidelines

Petitioners contend that EPA was prohibited from establishing protective NAAQS because pollutant sources lack suitable models and guidelines to make the showing required to obtain pre-construction permits. *See* 42 U.S.C. § 7475(a)(3), § 7475(e)(3)(B), 40 C.F.R. § 52.21(k)(1)(i).

Contrary to Petitioner's characterizations, they are not helpless and unable to make the showing necessary to obtain a PSD permit. EPA has provided an array of tools and resources that may be applied by experts in this specialized field to demonstrate that the proposed construction of a stationary source will not cause or contribute to a violation of the PM_{2.5} NAAQS. *See* http://www.epa.gov/ttn/scram/guidance_permit.htm. Among these, EPA has published an extensive Guideline on Air Quality Models that occupies over 50 pages in the Code of Federal Regulations. 40 C.F.R. Pt. 51, App. W. Appendix W includes a list of preferred models approved by EPA for use in regulatory applications like PSD permitting. *Id.* at App. A to App. W. Furthermore, permit applicants are not restricted to using only the preferred models approved by EPA. 40 C.F.R. Pt. 51, App. W, § 3.2. EPA's modeling guidelines provide flexibility to

show that an alternative model is more appropriate on a case-by-case basis. *Id.* at § 3.2.2.a.²⁵

EPA also explained that it issued guidance in 2010 “[t]o assist sources and permitting authorities in carrying out the required air quality analysis for PM_{2.5} under the existing standards.” 78 Fed. Reg. at 3259. EPA then explained its intention to issue additional guidance that “will address all or most of the remaining issues related to PM_{2.5}” demonstrations under the PSD program until improvement of existing regulatory models. Consistent with this intention, EPA did release in April 2013 a new 60-page plus Draft Guidance for PM_{2.5} Permit Modeling (JA XX). EPA solicited comments on this draft guidance and intends to release a final guidance document in the near future.

Moreover, Petitioners fail to identify any injury related to PSD permitting that is ripe for judicial review. Petitioners’ professed injury turns on speculation that PSD permit applications might be unreasonably denied based on lack of

²⁵ Contrary to Petitioners’ contention that EPA has no approved model for PM_{2.5} (Pet. Br. 51), the AERMOD model listed in Appendix A to Appendix W may be used for primary PM_{2.5}. *Id.* at §§ 4.2.2.b and A.4.e. Petitioners criticize this model with respect to impacts of precursor emissions on PM_{2.5}, but overlook EPA guidelines that recommend considering a combination of models and selecting an alternative model on a case-by-case basis in consultation with EPA. 40 C.F.R. Pt. 51, App. W, §§ 5.1.e, 5.2.2.1.a, 5.2.2.1.c.

sufficient modeling tools. But the instant case is a challenge to the NAAQS, not a challenge to any final agency action related to PSD permitting. If any final action is taken denying a PSD permit application, the affected applicant can challenge that decision. Such challenges are the vehicle for litigating PSD permitting decisions. *See Am. Petroleum Inst. v. EPA*, 684 F.3d 1342 (D.C. Cir. 2012), *cert. denied*, 133 S. Ct. 1724 (2013) (rejecting argument that EPA must allow PSD applicants to demonstrate compliance with the pre-existing NAAQS until methods for modeling compliance with new NAAQS are developed, because NAAQS revision not a final permitting decision).

Furthermore, to the extent Petitioners attempt to challenge the adequacy of EPA's earlier promulgated Appendix W Modeling Guidelines, this Court has no jurisdiction. The instant NAAQS rule did not amend or address those Guidelines, and a challenge to those Guidelines now would be untimely.

B. Test Methods

Petitioners next contend that EPA was prohibited from establishing protective NAAQS until it separately revised certain recommended test methods for measuring PM_{2.5} emissions set forth at 40 C.F.R. Pt. 51, App. M. Pet. Br. 53-54. EPA completed a rulemaking in 2010 that finalized various amendments to the Appendix M test methods to improve the measurement of PM_{2.5} emissions,

including revisions to reduce the potential for overestimating condensable PM_{2.5}, 75 Fed. Reg. 80,118 (Dec. 21, 2010).

Petitioners again fail to identify any injury related to PSD permitting that is ripe for judicial review. Petitioners' professed injury turns on unsupported speculation that particular PSD permit applications might be unreasonably denied based on defects in test methods. Petitioners do not demonstrate that limitations in test methods arising in particular circumstances creates a universal impediment to issuance of PSD permits. In any event, PSD permit decisions are fact-specific, and Petitioners' arguments must be raised in a challenge to a final PSD permitting action.

To the extent Petitioners contest more generally the sufficiency of the Appendix M recommended test methods last amended in 2010, this Court has no jurisdiction. The instant rule did not amend Appendix M.²⁶

²⁶ EPA disputes Petitioners' characterizations of test methods as unreliable. Pet. Br. 53-54. Petitioners condemn the application of these test methods in all circumstances based on cherry-picking select conditions in which EPA has recognized limitations in the methods. This ignores EPA's overall judgment that these methods are suitable for widespread application. *See* 75 Fed. Reg. at 80,121-22.

C. Designations

Petitioners next contend that EPA was prohibited from establishing protective NAAQS until EPA first provided states with guidance pertaining to designations for the revised standards.²⁷ This argument also fails on multiple fronts, beyond having nothing to do with application of the Section 7409(b) criteria.

First, nothing in the Act makes the obligations of states concerning designations contingent upon EPA issuing any such guidance. 42 U.S.C. § 7407(d)(1)(A). Second, EPA has no obligation under the Act to provide states with guidance concerning designations, and Petitioners point to nothing in the Act that could impose any such obligation. Third, EPA did provide states with designations guidance in April 2013, shortly after concluding the NAAQS review. Apr. 2013 Guidance (JA XX). Fourth, EPA did not “cut[] short” (Pet. Br. 55) the time that the CAA affords states for designation recommendations. EPA provided states with a period of one year, which is the *maximum* allowable, to make initial recommendations. 78 Fed. Reg. at 3250/3; 42 U.S.C. § 7407(d)(1)(A). States

²⁷ In its comments, Petitioner NAM took the opposite position and stated that “such guidance would be unnecessary and legally inappropriate.” NAM Comments at 12-13 (JA XX-XX).

were not required to wait for EPA's non-binding guidance to proceed. Finally, Petitioners identify no injury they have incurred relating to time states have to make initial recommendations. Final action regarding designations occurs when EPA itself promulgates designations under 42 U.S.C. § 7407(d)(1)(B). EPA has two years (and under certain circumstances three) from revision of the NAAQS to do so even if states elect not to make recommendations. EPA has not yet promulgated designations for the revised NAAQS.

D. Infrastructure and Attainment Plans

Petitioners' contention (Pet. Br. 65-67) that EPA was prohibited from establishing protective NAAQS until EPA first promulgated rules or guidance relating to infrastructure and attainment state implementation plan submissions likewise fails for multiple reasons, beyond having nothing to do with application of the Section 7409(b) criteria.²⁸

²⁸ In its comments, Petitioner NAM took the opposite position and stated that EPA guidance was "inappropriate" and "unnecessary." NAM Comments at 31-32 (JA XX-XX).

1. Infrastructure Plans

Petitioners identify no non-speculative injury they have incurred relating to the amount of time states have to submit infrastructure plans or relating to the provision of guidance to states. Nothing in the Act makes the obligation of states to submit infrastructure state implementation plans contingent upon EPA issuing applicable guidance or rules. 42 U.S.C. § 7410(a)(1) and (2). Nor does EPA have any statutory duty to provide states with guidance relating to these submissions. Notwithstanding any such duty, EPA recently did provide such guidance to the states. Sept. 13, 2013 Guidance (JA XX). Contrary to Petitioners' argument, EPA has not truncated the amount of time states have to make infrastructure plan submissions; EPA has provided states with the three-year *maximum* period allowed. 78 Fed. Reg. at 3251.²⁹

²⁹ Petitioners' reliance (Pet. Br. 60-61) on *NRDC v. EPA*, 22 F.3d 1125 (D.C. Cir. 1994), and *NRDC v. Thomas*, 805 F.2d 410 (D.C. Cir. 1986), is misplaced. In the former case, EPA had a statutory duty to issue guidance by a date-certain prior to submission of certain state plans that were statutorily required to comply with the guidance, and EPA had missed that deadline. As a result, states had already missed statutory deadlines for submitting plans, and the rule under review established the remaining time states would have to prepare plans. None of those circumstances is present here. In *Thomas*, NAAQS implementation plans were not at issue, and EPA had failed to provide manufacturers with the statutorily-required four years of lead time to comply with engine standards. No such statutory violation is present here.

2. Attainment Plans

Petitioners likewise identify no non-speculative injury they have incurred relating to the amount of time states have to submit attainment plans or relating to the provision of attainment guidance to states. Pet. Br. 56-57. Nothing in the Act makes the obligation of states to submit attainment plans contingent upon EPA issuing guidance. States have eighteen months to submit plans to bring nonattainment areas into attainment *after* any promulgation of a nonattainment designation. 42 U.S.C. § 7513a(b)(2)(B). EPA has not promulgated any designations, and thus, this clock has not started. Although EPA intends to promulgate new implementation regulations around the time future designations are effective, EPA has no statutory duty do so.³⁰

Finally, although this Court's decision in *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7 (D.C. Cir. 2012), *cert. granted*, 81 U.S.L.W. 3567 (No. 12-1182) (U.S. June 24, 2013) ("*Homer*"), is both immaterial and on appeal, the Court's decision there does not support Petitioners' proposition that EPA is obliged to provide guidance to states prior to their implementation of NAAQS. *See* Pet.

³⁰ Petitioners' assertion that "no state has previously been required to develop an [attainment plan] under Subpart 4" is erroneous. Pet. Br. 56-57. Many states and EPA have been implementing the PM₁₀ NAAQS under Subpart 4. 57 Fed. Reg. 13,498 (Apr. 16, 1992); 59 Fed. Reg. 41,998 (Aug. 16, 1994).

Br. 59, 60. *Homer* involved review of EPA's rule to implement Section 7410(a)(2)(D)(i)(I), which addresses interstate air pollution. In rejecting EPA's rule in that case, this Court expressly distinguished implementation of Section 7410(a)(2)(D) from EPA's revision of NAAQS. The Court stated that because a NAAQS "is a clear numerical target," "[e]very State knows precisely what numerical goal its [state implementation plan] must achieve." *Id.* at 32. Thus, after promulgation of a NAAQS, "[i]f a State misses that clear numerical target it has only itself to blame." *Id.* Accordingly, while EPA disagrees with the Court's decision in *Homer*, even if taken on its own terms, nothing in *Homer* supports Petitioners' proposition that the states require EPA guidance before they can comply with their statutory obligation to meet numerical NAAQS. In fact, this Court's opinion in *Homer* supports precisely the opposite proposition.

Regardless, EPA did not err by setting NAAQS that are protective of human health in accordance with the criteria set forth in Section 7409(b).

CONCLUSION

For the foregoing reasons, the petitions for review should be denied.

Respectfully submitted,

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**RESPONDENT'S CERTIFICATE OF COMPLIANCE WITH WORD
LIMITATION AND TYPEFACE REQUIREMENTS**

Respondent United States Environmental Protection Agency hereby certifies that this brief complies with the type-volume limitation of Fed. R. App. P. 32(a)(7)(B) because it contains 13,990 words, as counted by Microsoft Word, excluding the signature block and the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii), and that it complies with the typeface and type style requirements of Fed. R. App. P. 32(a)(5) and 32(a)(6) because it has been prepared in a proportionally spaced typeface using Microsoft Word in Times New Roman 14-point type.

DATED: November 8, 2013

/s/ Eric Hostetler
Counsel for Respondent

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Initial Brief for Respondents has been served through the Court's CM/ECF system on all registered counsel this 8th day of November, 2013.

DATED: November 8, 2013

/s/ Eric Hostetler
Counsel for Respondent

**STATUTORY AND REGULATORY
ADDENDUM**

STATUTORY ADDENDUM

42 U.S.C. § 7407	ADD1
42 U.S.C. § 7408	ADD9
42 U.S.C. § 7409	ADD14
42 U.S.C. § 7410	ADD16
42 U.S.C. § 7471	ADD30
42 U.S.C. § 7475	ADD31
42 U.S.C. § 7513	ADD36
42 U.S.C. § 7607	ADD39
42 U.S.C. § 7619	ADD47
40 C.F.R. § 50.1	ADD51
40 C.F.R. § 50.18	ADD53
40 C.F.R. Pt. 50, App. N	ADD54
40 C.F.R. § 58.1	ADD63
40 C.F.R. § 58.30	ADD68
40 C.F.R. Pt. 58, App. D	ADD69



Effective: January 23, 2004

United States Code Annotated [Currentness](#)

Title 42. The Public Health and Welfare

Chapter 85. Air Pollution Prevention and Control ([Refs & Annos](#))

▣ [Subchapter I. Programs and Activities](#)

▣ [Part A. Air Quality and Emissions Limitations \(Refs & Annos\)](#)

→→ **§ 7407. Air quality control regions**

(a) Responsibility of each State for air quality; submission of implementation plan

Each State shall have the primary responsibility for assuring air quality within the entire geographic area comprising such State by submitting an implementation plan for such State which will specify the manner in which national primary and secondary ambient air quality standards will be achieved and maintained within each air quality control region in such State.

(b) Designated regions

For purposes of developing and carrying out implementation plans under [section 7410](#) of this title--

(1) an air quality control region designated under this section before December 31, 1970, or a region designated after such date under subsection (c) of this section, shall be an air quality control region; and

(2) the portion of such State which is not part of any such designated region shall be an air quality control region, but such portion may be subdivided by the State into two or more air quality control regions with the approval of the Administrator.

(c) Authority of Administrator to designate regions; notification of Governors of affected States

The Administrator shall, within 90 days after December 31, 1970, after consultation with appropriate State and local authorities, designate as an air quality control region any interstate area or major intrastate area which he deems necessary or appropriate for the attainment and maintenance of ambient air quality standards. The Administrator shall immediately notify the Governors of the affected States of any designation made under this subsection.

(d) Designations

(1) Designations generally

(A) Submission by Governors of initial designations following promulgation of new or revised standards

By such date as the Administrator may reasonably require, but not later than 1 year after promulgation of a new or revised national ambient air quality standard for any pollutant under [section 7409](#) of this title, the Governor of each State shall (and at any other time the Governor of a State deems appropriate the Governor may) submit to the Administrator a list of all areas (or portions thereof) in the State, designating as--

- (i) nonattainment, any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant,
- (ii) attainment, any area (other than an area identified in clause (i)) that meets the national primary or secondary ambient air quality standard for the pollutant, or
- (iii) unclassifiable, any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

The Administrator may not require the Governor to submit the required list sooner than 120 days after promulgating a new or revised national ambient air quality standard.

(B) Promulgation by EPA of designations

(i) Upon promulgation or revision of a national ambient air quality standard, the Administrator shall promulgate the designations of all areas (or portions thereof) submitted under subparagraph (A) as expeditiously as practicable, but in no case later than 2 years from the date of promulgation of the new or revised national ambient air quality standard. Such period may be extended for up to one year in the event the Administrator has insufficient information to promulgate the designations.

(ii) In making the promulgations required under clause (i), the Administrator may make such modifications as the Administrator deems necessary to the designations of the areas (or portions thereof) submitted under subparagraph (A) (including to the boundaries of such areas or portions thereof). Whenever the Administrator intends to make a modification, the Administrator shall notify the State and provide such State with an opportunity to demonstrate why any proposed modification is inappropriate. The Administrator shall give such notification no later than 120 days before the date the Administrator promulgates the designation, including any modification thereto. If the Governor fails to submit the list in whole or in part, as required under subparagraph (A), the Administrator shall promulgate the designation that the Administrator deems appropriate for any area (or portion thereof) not designated by the State.

(iii) If the Governor of any State, on the Governor's own motion, under subparagraph (A), submits a list of

areas (or portions thereof) in the State designated as nonattainment, attainment, or unclassifiable, the Administrator shall act on such designations in accordance with the procedures under paragraph (3) (relating to redesignation).

(iv) A designation for an area (or portion thereof) made pursuant to this subsection shall remain in effect until the area (or portion thereof) is redesignated pursuant to paragraph (3) or (4).

(C) Designations by operation of law

(i) Any area designated with respect to any air pollutant under the provisions of paragraph (1)(A), (B), or (C) of this subsection (as in effect immediately before November 15, 1990) is designated, by operation of law, as a nonattainment area for such pollutant within the meaning of subparagraph (A)(i).

(ii) Any area designated with respect to any air pollutant under the provisions of paragraph (1)(E) (as in effect immediately before November 15, 1990) is designated by operation of law, as an attainment area for such pollutant within the meaning of subparagraph (A)(ii).

(iii) Any area designated with respect to any air pollutant under the provisions of paragraph (1)(D) (as in effect immediately before November 15, 1990) is designated, by operation of law, as an unclassifiable area for such pollutant within the meaning of subparagraph (A)(iii).

(2) Publication of designations and redesignations

(A) The Administrator shall publish a notice in the Federal Register promulgating any designation under paragraph (1) or (5), or announcing any designation under paragraph (4), or promulgating any redesignation under paragraph (3).

(B) Promulgation or announcement of a designation under paragraph (1), (4) or (5) shall not be subject to the provisions of [sections 553 through 557 of Title 5](#) (relating to notice and comment), except nothing herein shall be construed as precluding such public notice and comment whenever possible.

(3) Redesignation

(A) Subject to the requirements of subparagraph (E), and on the basis of air quality data, planning and control considerations, or any other air quality-related considerations the Administrator deems appropriate, the Administrator may at any time notify the Governor of any State that available information indicates that the designation of any area or portion of an area within the State or interstate area should be revised. In issuing such notification, which shall be public, to the Governor, the Administrator shall provide such information as the Administrator may have available explaining the basis for the notice.

(B) No later than 120 days after receiving a notification under subparagraph (A), the Governor shall submit to the Administrator such redesignation, if any, of the appropriate area (or areas) or portion thereof within the State or interstate area, as the Governor considers appropriate.

(C) No later than 120 days after the date described in subparagraph (B) (or paragraph (1)(B)(iii)), the Administrator shall promulgate the redesignation, if any, of the area or portion thereof, submitted by the Governor in accordance with subparagraph (B), making such modifications as the Administrator may deem necessary, in the same manner and under the same procedure as is applicable under clause (ii) of paragraph (1)(B), except that the phrase “60 days” shall be substituted for the phrase “120 days” in that clause. If the Governor does not submit, in accordance with subparagraph (B), a redesignation for an area (or portion thereof) identified by the Administrator under subparagraph (A), the Administrator shall promulgate such redesignation, if any, that the Administrator deems appropriate.

(D) The Governor of any State may, on the Governor's own motion, submit to the Administrator a revised designation of any area or portion thereof within the State. Within 18 months of receipt of a complete State redesignation submittal, the Administrator shall approve or deny such redesignation. The submission of a redesignation by a Governor shall not affect the effectiveness or enforceability of the applicable implementation plan for the State.

(E) The Administrator may not promulgate a redesignation of a nonattainment area (or portion thereof) to attainment unless--

(i) the Administrator determines that the area has attained the national ambient air quality standard;

(ii) the Administrator has fully approved the applicable implementation plan for the area under [section 7410\(k\)](#) of this title;

(iii) the Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and applicable Federal air pollutant control regulations and other permanent and enforceable reductions;

(iv) the Administrator has fully approved a maintenance plan for the area as meeting the requirements of [section 7505a](#) of this title; and

(v) the State containing such area has met all requirements applicable to the area under [section 7410](#) of this title and part D of this subchapter.

(F) The Administrator shall not promulgate any redesignation of any area (or portion thereof) from nonattainment to unclassifiable.

(4) Nonattainment designations for ozone, carbon monoxide and particulate matter (PM-10)

(A) Ozone and carbon monoxide

(i) Within 120 days after November 15, 1990, each Governor of each State shall submit to the Administrator a list that designates, affirms or reaffirms the designation of, or redesignates (as the case may be), all areas (or portions thereof) of the Governor's State as attainment, nonattainment, or unclassifiable with respect to the national ambient air quality standards for ozone and carbon monoxide.

(ii) No later than 120 days after the date the Governor is required to submit the list of areas (or portions thereof) required under clause (i) of this subparagraph, the Administrator shall promulgate such designations, making such modifications as the Administrator may deem necessary, in the same manner, and under the same procedure, as is applicable under clause (ii) of paragraph (1)(B), except that the phrase "60 days" shall be substituted for the phrase "120 days" in that clause. If the Governor does not submit, in accordance with clause (i) of this subparagraph, a designation for an area (or portion thereof), the Administrator shall promulgate the designation that the Administrator deems appropriate.

(iii) No nonattainment area may be redesignated as an attainment area under this subparagraph.

(iv) Notwithstanding paragraph (1)(C)(ii) of this subsection, if an ozone or carbon monoxide nonattainment area located within a metropolitan statistical area or consolidated metropolitan statistical area (as established by the Bureau of the Census) is classified under part D of this subchapter as a Serious, Severe, or Extreme Area, the boundaries of such area are hereby revised (on the date 45 days after such classification) by operation of law to include the entire metropolitan statistical area or consolidated metropolitan statistical area, as the case may be, unless within such 45-day period the Governor (in consultation with State and local air pollution control agencies) notifies the Administrator that additional time is necessary to evaluate the application of clause (v). Whenever a Governor has submitted such a notice to the Administrator, such boundary revision shall occur on the later of the date 8 months after such classification or 14 months after November 15, 1990, unless the Governor makes the finding referred to in clause (v), and the Administrator concurs in such finding, within such period. Except as otherwise provided in this paragraph, a boundary revision under this clause or clause (v) shall apply for purposes of any State implementation plan revision required to be submitted after November 15, 1990.

(v) Whenever the Governor of a State has submitted a notice under clause (iv), the Governor, in consultation with State and local air pollution control agencies, shall undertake a study to evaluate whether the entire metropolitan statistical area or consolidated metropolitan statistical area should be included within the nonattainment area. Whenever a Governor finds and demonstrates to the satisfaction of the Administrator, and the Administrator concurs in such finding, that with respect to a portion of a metropolitan statistical area or consolidated metropolitan statistical area, sources in the portion do not contribute significantly to violation of the national ambient air quality standard, the Administrator shall approve the Governor's request to exclude such portion from the nonattainment area. In making such finding, the Governor and the Administrator shall consider factors such as population density, traffic congestion, commercial development, industrial

development, meteorological conditions, and pollution transport.

(B) PM-10 designations

By operation of law, until redesignation by the Administrator pursuant to paragraph (3)--

(i) each area identified in [52 Federal Register 29383 \(Aug. 7, 1987\)](#) as a Group I area (except to the extent that such identification was modified by the Administrator before November 15, 1990) is designated non-attainment for PM-10;

(ii) any area containing a site for which air quality monitoring data show a violation of the national ambient air quality standard for PM-10 before January 1, 1989 (as determined under [part 50, appendix K of title 40 of the Code of Federal Regulations](#)) is hereby designated nonattainment for PM-10; and

(iii) each area not described in clause (i) or (ii) is hereby designated unclassifiable for PM-10.

Any designation for particulate matter (measured in terms of total suspended particulates) that the Administrator promulgated pursuant to this subsection (as in effect immediately before November 15, 1990) shall remain in effect for purposes of implementing the maximum allowable increases in concentrations of particulate matter (measured in terms of total suspended particulates) pursuant to [section 7473\(b\)](#) of this title, until the Administrator determines that such designation is no longer necessary for that purpose.

(5) Designations for lead

The Administrator may, in the Administrator's discretion at any time the Administrator deems appropriate, require a State to designate areas (or portions thereof) with respect to the national ambient air quality standard for lead in effect as of November 15, 1990, in accordance with the procedures under subparagraphs (A) and (B) of paragraph (1), except that in applying subparagraph (B)(i) of paragraph (1) the phrase "2 years from the date of promulgation of the new or revised national ambient air quality standard" shall be replaced by the phrase "1 year from the date the Administrator notifies the State of the requirement to designate areas with respect to the standard for lead".

(6) Designations

(A) Submission

Notwithstanding any other provision of law, not later than February 15, 2004, the Governor of each State shall submit designations referred to in paragraph (1) for the July 1997 PM_{2.5} national ambient air quality

standards for each area within the State, based on air quality monitoring data collected in accordance with any applicable Federal reference methods for the relevant areas.

(B) Promulgation

Notwithstanding any other provision of law, not later than December 31, 2004, the Administrator shall, consistent with paragraph (1), promulgate the designations referred to in subparagraph (A) for each area of each State for the July 1997 PM_{2.5} national ambient air quality standards.

(7) Implementation plan for regional haze

(A) In general

Notwithstanding any other provision of law, not later than 3 years after the date on which the Administrator promulgates the designations referred to in paragraph (6)(B) for a State, the State shall submit, for the entire State, the State implementation plan revisions to meet the requirements promulgated by the Administrator under [section 7492\(e\)\(1\)](#) of this title (referred to in this paragraph as “regional haze requirements”).

(B) No preclusion of other provisions

Nothing in this paragraph precludes the implementation of the agreements and recommendations stemming from the Grand Canyon Visibility Transport Commission Report dated June 1996, including the submission of State implementation plan revisions by the States of Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, or Wyoming by December 31, 2003, for implementation of regional haze requirements applicable to those States.

(e) Redesignation of air quality control regions

(1) Except as otherwise provided in paragraph (2), the Governor of each State is authorized, with the approval of the Administrator, to redesignate from time to time the air quality control regions within such State for purposes of efficient and effective air quality management. Upon such redesignation, the list under subsection (d) of this section shall be modified accordingly.

(2) In the case of an air quality control region in a State, or part of such region, which the Administrator finds may significantly affect air pollution concentrations in another State, the Governor of the State in which such region, or part of a region, is located may redesignate from time to time the boundaries of so much of such air quality control region as is located within such State only with the approval of the Administrator and with the consent of all Governors of all States which the Administrator determines may be significantly affected.

(3) No compliance date extension granted under [section 7413\(d\)\(5\)](#) of this title (relating to coal conversion) shall cease to be effective by reason of the regional limitation provided in [section 7413\(d\)\(5\)](#) of this title if the violation of such limitation is due solely to a redesignation of a region under this subsection.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 107, as added Dec. 31, 1970, Pub.L. 91-604, § 4(a), 84 Stat. 1678; amended Aug. 7, 1977, [Pub.L. 95-95, Title I, § 103](#), 91 Stat. 687; Nov. 15, 1990, [Pub.L. 101-549, Title I, § 101\(a\)](#), 104 Stat. 2399; Jan. 23, 2004, [Pub.L. 108-199](#), Div. G, Title IV, § 425(a), 118 Stat. 417.)

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C**Effective: November 10, 1998**United States Code Annotated [Currentness](#)

Title 42. The Public Health and Welfare

Chapter 85. Air Pollution Prevention and Control ([Refs & Annos](#))▣ [Subchapter I. Programs and Activities](#)▣ [Part A. Air Quality and Emissions Limitations \(Refs & Annos\)](#)→→ **§ 7408. Air quality criteria and control techniques**

(a) Air pollutant list; publication and revision by Administrator; issuance of air quality criteria for air pollutants

(1) For the purpose of establishing national primary and secondary ambient air quality standards, the Administrator shall within 30 days after December 31, 1970, publish, and shall from time to time thereafter revise, a list which includes each air pollutant--

(A) emissions of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare;

(B) the presence of which in the ambient air results from numerous or diverse mobile or stationary sources; and

(C) for which air quality criteria had not been issued before December 31, 1970 but for which he plans to issue air quality criteria under this section.

(2) The Administrator shall issue air quality criteria for an air pollutant within 12 months after he has included such pollutant in a list under paragraph (1). Air quality criteria for an air pollutant shall accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities. The criteria for an air pollutant, to the extent practicable, shall include information on--

(A) those variable factors (including atmospheric conditions) which of themselves or in combination with other factors may alter the effects on public health or welfare of such air pollutant;

(B) the types of air pollutants which, when present in the atmosphere, may interact with such pollutant to produce an adverse effect on public health or welfare; and

(C) any known or anticipated adverse effects on welfare.

(b) Issuance by Administrator of information on air pollution control techniques; standing consulting committees for air pollutants; establishment; membership

(1) Simultaneously with the issuance of criteria under subsection (a) of this section, the Administrator shall, after consultation with appropriate advisory committees and Federal departments and agencies, issue to the States and appropriate air pollution control agencies information on air pollution control techniques, which information shall include data relating to the cost of installation and operation, energy requirements, emission reduction benefits, and environmental impact of the emission control technology. Such information shall include such data as are available on available technology and alternative methods of prevention and control of air pollution. Such information shall also include data on alternative fuels, processes, and operating methods which will result in elimination or significant reduction of emissions.

(2) In order to assist in the development of information on pollution control techniques, the Administrator may establish a standing consulting committee for each air pollutant included in a list published pursuant to subsection (a)(1) of this section, which shall be comprised of technically qualified individuals representative of State and local governments, industry, and the academic community. Each such committee shall submit, as appropriate, to the Administrator information related to that required by paragraph (1).

(c) Review, modification, and reissuance of criteria or information

The Administrator shall from time to time review, and, as appropriate, modify, and reissue any criteria or information on control techniques issued pursuant to this section. Not later than six months after August 7, 1977, the Administrator shall revise and reissue criteria relating to concentrations of NO₂ over such period (not more than three hours) as he deems appropriate. Such criteria shall include a discussion of nitric and nitrous acids, nitrites, nitrates, nitrosamines, and other carcinogenic and potentially carcinogenic derivatives of oxides of nitrogen.

(d) Publication in Federal Register; availability of copies for general public

The issuance of air quality criteria and information on air pollution control techniques shall be announced in the Federal Register and copies shall be made available to the general public.

(e) Transportation planning and guidelines

The Administrator shall, after consultation with the Secretary of Transportation, and after providing public notice and opportunity for comment, and with State and local officials, within nine months after November 15, 1990, and periodically thereafter as necessary to maintain a continuous transportation-air quality planning process, update the June 1978 Transportation-Air Quality Planning Guidelines and publish guidance on the development and implementation of transportation and other measures necessary to demonstrate and maintain attainment of national ambient air quality standards. Such guidelines shall include information on--

- (1) methods to identify and evaluate alternative planning and control activities;
 - (2) methods of reviewing plans on a regular basis as conditions change or new information is presented;
 - (3) identification of funds and other resources necessary to implement the plan, including interagency agreements on providing such funds and resources;
 - (4) methods to assure participation by the public in all phases of the planning process; and
 - (5) such other methods as the Administrator determines necessary to carry out a continuous planning process.
- (f) Information regarding processes, procedures, and methods to reduce or control pollutants in transportation; reduction of mobile source related pollutants; reduction of impact on public health
- (1) The Administrator shall publish and make available to appropriate Federal, State, and local environmental and transportation agencies not later than one year after November 15, 1990, and from time to time thereafter--
- (A) information prepared, as appropriate, in consultation with the Secretary of Transportation, and after providing public notice and opportunity for comment, regarding the formulation and emission reduction potential of transportation control measures related to criteria pollutants and their precursors, including, but not limited to--
 - (i) programs for improved public transit;
 - (ii) restriction of certain roads or lanes to, or construction of such roads or lanes for use by, passenger buses or high occupancy vehicles;
 - (iii) employer-based transportation management plans, including incentives;
 - (iv) trip-reduction ordinances;
 - (v) traffic flow improvement programs that achieve emission reductions;
 - (vi) fringe and transportation corridor parking facilities serving multiple occupancy vehicle programs or transit service;
 - (vii) programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration particularly during periods of peak use;

(viii) programs for the provision of all forms of high-occupancy, shared-ride services;

(ix) programs to limit portions of road surfaces or certain sections of the metropolitan area to the use of non-motorized vehicles or pedestrian use, both as to time and place;

(x) programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists, in both public and private areas;

(xi) programs to control extended idling of vehicles;

(xii) programs to reduce motor vehicle emissions, consistent with subchapter II of this chapter, which are caused by extreme cold start conditions;

(xiii) employer-sponsored programs to permit flexible work schedules;

(xiv) programs and ordinances to facilitate non-automobile travel, provision and utilization of mass transit, and to generally reduce the need for single-occupant vehicle travel, as part of transportation planning and development efforts of a locality, including programs and ordinances applicable to new shopping centers, special events, and other centers of vehicle activity;

(xv) programs for new construction and major reconstructions of paths, tracks or areas solely for the use by pedestrian or other non-motorized means of transportation when economically feasible and in the public interest. For purposes of this clause, the Administrator shall also consult with the Secretary of the Interior; and

(xvi) program to encourage the voluntary removal from use and the marketplace of pre-1980 model year light duty vehicles and pre-1980 model light duty trucks.

(B) information on additional methods or strategies that will contribute to the reduction of mobile source related pollutants during periods in which any primary ambient air quality standard will be exceeded and during episodes for which an air pollution alert, warning, or emergency has been declared;

(C) information on other measures which may be employed to reduce the impact on public health or protect the health of sensitive or susceptible individuals or groups; and

(D) information on the extent to which any process, procedure, or method to reduce or control such air pollutant may cause an increase in the emissions or formation of any other pollutant.

(2) In publishing such information the Administrator shall also include an assessment of--

(A) the relative effectiveness of such processes, procedures, and methods;

(B) the potential effect of such processes, procedures, and methods on transportation systems and the provision of transportation services; and

(C) the environmental, energy, and economic impact of such processes, procedures, and methods.

(g) Assessment of risks to ecosystems

The Administrator may assess the risks to ecosystems from exposure to criteria air pollutants (as identified by the Administrator in the Administrator's sole discretion).

(h) RACT/BACT/LAER clearinghouse

The Administrator shall make information regarding emission control technology available to the States and to the general public through a central database. Such information shall include all control technology information received pursuant to State plan provisions requiring permits for sources, including operating permits for existing sources.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 108, as added Dec. 31, 1970, Pub.L. 91-604, § 4(a), 84 Stat. 1678; amended Aug. 7, 1977, Pub.L. 95-95, Title I, §§ 104, 105, Title IV, § 401(a), 91 Stat. 689, 790; Nov. 15, 1990, Pub.L. 101-549, Title I, §§ 108(a) to (c), (o), 111, 104 Stat. 2465, 2466, 2469, 2470; Nov. 10, 1998, Pub.L. 105-362, Title XV, § 1501(b), 112 Stat. 3294.)

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Title 42. The Public Health and Welfare

Chapter 85. Air Pollution Prevention and Control ([Refs & Annos](#))

▣ [Subchapter I. Programs and Activities](#)

▣ [Part A. Air Quality and Emissions Limitations \(Refs & Annos\)](#)

→→ **§ 7409. National primary and secondary ambient air quality standards**

(a) Promulgation

(1) The Administrator--

(A) within 30 days after December 31, 1970, shall publish proposed regulations prescribing a national primary ambient air quality standard and a national secondary ambient air quality standard for each air pollutant for which air quality criteria have been issued prior to such date; and

(B) after a reasonable time for interested persons to submit written comments thereon (but no later than 90 days after the initial publication of such proposed standards) shall by regulation promulgate such proposed national primary and secondary ambient air quality standards with such modifications as he deems appropriate.

(2) With respect to any air pollutant for which air quality criteria are issued after December 31, 1970, the Administrator shall publish, simultaneously with the issuance of such criteria and information, proposed national primary and secondary ambient air quality standards for any such pollutant. The procedure provided for in paragraph (1)(B) of this subsection shall apply to the promulgation of such standards.

(b) Protection of public health and welfare

(1) National primary ambient air quality standards, prescribed under subsection (a) of this section shall be ambient air quality standards the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health. Such primary standards may be revised in the same manner as promulgated.

(2) Any national secondary ambient air quality standard prescribed under subsection (a) of this section shall specify a level of air quality the attainment and maintenance of which in the judgment of the Administrator, based on such criteria, is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air. Such secondary standards may be revised in the

same manner as promulgated.

(c) National primary ambient air quality standard for nitrogen dioxide

The Administrator shall, not later than one year after August 7, 1977, promulgate a national primary ambient air quality standard for NO₂ concentrations over a period of not more than 3 hours unless, based on the criteria issued under [section 7408\(c\)](#) of this title, he finds that there is no significant evidence that such a standard for such a period is requisite to protect public health.

(d) Review and revision of criteria and standards; independent scientific review committee; appointment; advisory functions

(1) Not later than December 31, 1980, and at five-year intervals thereafter, the Administrator shall complete a thorough review of the criteria published under [section 7408](#) of this title and the national ambient air quality standards promulgated under this section and shall make such revisions in such criteria and standards and promulgate such new standards as may be appropriate in accordance with [section 7408](#) of this title and subsection (b) of this section. The Administrator may review and revise criteria or promulgate new standards earlier or more frequently than required under this paragraph.

(2)(A) The Administrator shall appoint an independent scientific review committee composed of seven members including at least one member of the National Academy of Sciences, one physician, and one person representing State air pollution control agencies.

(B) Not later than January 1, 1980, and at five-year intervals thereafter, the committee referred to in subparagraph (A) shall complete a review of the criteria published under [section 7408](#) of this title and the national primary and secondary ambient air quality standards promulgated under this section and shall recommend to the Administrator any new national ambient air quality standards and revisions of existing criteria and standards as may be appropriate under [section 7408](#) of this title and subsection (b) of this section.

(C) Such committee shall also (i) advise the Administrator of areas in which additional knowledge is required to appraise the adequacy and basis of existing, new, or revised national ambient air quality standards, (ii) describe the research efforts necessary to provide the required information, (iii) advise the Administrator on the relative contribution to air pollution concentrations of natural as well as anthropogenic activity, and (iv) advise the Administrator of any adverse public health, welfare, social, economic, or energy effects which may result from various strategies for attainment and maintenance of such national ambient air quality standards.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 109, as added Dec. 31, 1970, Pub.L. 91-604, § 4(a), 84 Stat. 1679; amended Aug. 7, 1977, Pub.L. 95-95, Title I, § 106, 91 Stat. 691.)

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Title 42. The Public Health and Welfare

Chapter 85. Air Pollution Prevention and Control ([Refs & Annos](#))▣ [Subchapter I. Programs and Activities](#)▣ [Part A. Air Quality and Emissions Limitations \(Refs & Annos\)](#)**→→ § 7410. State implementation plans for national primary and secondary ambient air quality standards**

(a) Adoption of plan by State; submission to Administrator; content of plan; revision; new sources; indirect source review program; supplemental or intermittent control systems

(1) Each State shall, after reasonable notice and public hearings, adopt and submit to the Administrator, within 3 years (or such shorter period as the Administrator may prescribe) after the promulgation of a national primary ambient air quality standard (or any revision thereof) under [section 7409](#) of this title for any air pollutant, a plan which provides for implementation, maintenance, and enforcement of such primary standard in each air quality control region (or portion thereof) within such State. In addition, such State shall adopt and submit to the Administrator (either as a part of a plan submitted under the preceding sentence or separately) within 3 years (or such shorter period as the Administrator may prescribe) after the promulgation of a national ambient air quality secondary standard (or revision thereof), a plan which provides for implementation, maintenance, and enforcement of such secondary standard in each air quality control region (or portion thereof) within such State. Unless a separate public hearing is provided, each State shall consider its plan implementing such secondary standard at the hearing required by the first sentence of this paragraph.

(2) Each implementation plan submitted by a State under this chapter shall be adopted by the State after reasonable notice and public hearing. Each such plan shall--

(A) include enforceable emission limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of this chapter;

(B) provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to--

(i) monitor, compile, and analyze data on ambient air quality, and

(ii) upon request, make such data available to the Administrator;

(C) include a program to provide for the enforcement of the measures described in subparagraph (A), and regulation of the modification and construction of any stationary source within the areas covered by the plan as necessary to assure that national ambient air quality standards are achieved, including a permit program as required in parts C and D of this subchapter;

(D) contain adequate provisions--

(i) prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will--

(I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or

(II) interfere with measures required to be included in the applicable implementation plan for any other State under part C of this subchapter to prevent significant deterioration of air quality or to protect visibility,

(ii) insuring compliance with the applicable requirements of [sections 7426](#) and [7415](#) of this title (relating to interstate and international pollution abatement);

(E) provide (i) necessary assurances that the State (or, except where the Administrator deems inappropriate, the general purpose local government or governments, or a regional agency designated by the State or general purpose local governments for such purpose) will have adequate personnel, funding, and authority under State (and, as appropriate, local) law to carry out such implementation plan (and is not prohibited by any provision of Federal or State law from carrying out such implementation plan or portion thereof), (ii) requirements that the State comply with the requirements respecting State boards under [section 7428](#) of this title, and (iii) necessary assurances that, where the State has relied on a local or regional government, agency, or instrumentality for the implementation of any plan provision, the State has responsibility for ensuring adequate implementation of such plan provision;

(F) require, as may be prescribed by the Administrator--

(i) the installation, maintenance, and replacement of equipment, and the implementation of other necessary steps, by owners or operators of stationary sources to monitor emissions from such sources,

(ii) periodic reports on the nature and amounts of emissions and emissions-related data from such sources, and

(iii) correlation of such reports by the State agency with any emission limitations or standards established pursuant to this chapter, which reports shall be available at reasonable times for public inspection;

(G) provide for authority comparable to that in [section 7603](#) of this title and adequate contingency plans to implement such authority;

(H) provide for revision of such plan--

(i) from time to time as may be necessary to take account of revisions of such national primary or secondary ambient air quality standard or the availability of improved or more expeditious methods of attaining such standard, and

(ii) except as provided in paragraph (3)(C), whenever the Administrator finds on the basis of information available to the Administrator that the plan is substantially inadequate to attain the national ambient air quality standard which it implements or to otherwise comply with any additional requirements established under this chapter;

(I) in the case of a plan or plan revision for an area designated as a nonattainment area, meet the applicable requirements of part D of this subchapter (relating to nonattainment areas);

(J) meet the applicable requirements of [section 7421](#) of this title (relating to consultation), [section 7427](#) of this title (relating to public notification), and part C of this subchapter (relating to prevention of significant deterioration of air quality and visibility protection);

(K) provide for--

(i) the performance of such air quality modeling as the Administrator may prescribe for the purpose of predicting the effect on ambient air quality of any emissions of any air pollutant for which the Administrator has established a national ambient air quality standard, and

(ii) the submission, upon request, of data related to such air quality modeling to the Administrator;

(L) require the owner or operator of each major stationary source to pay to the permitting authority, as a condition of any permit required under this chapter, a fee sufficient to cover--

(i) the reasonable costs of reviewing and acting upon any application for such a permit, and

(ii) if the owner or operator receives a permit for such source, the reasonable costs of implementing and enforcing the terms and conditions of any such permit (not including any court costs or other costs associated

with any enforcement action),

until such fee requirement is superseded with respect to such sources by the Administrator's approval of a fee program under subchapter V of this chapter; and

(M) provide for consultation and participation by local political subdivisions affected by the plan.

(3)(A) Repealed. Pub.L. 101-549, Title I, § 101(d)(1), Nov. 15, 1990, 104 Stat. 2409

(B) As soon as practicable, the Administrator shall, consistent with the purposes of this chapter and the Energy Supply and Environmental Coordination Act of 1974 [15 U.S.C.A. § 791 et seq.], review each State's applicable implementation plans and report to the State on whether such plans can be revised in relation to fuel burning stationary sources (or persons supplying fuel to such sources) without interfering with the attainment and maintenance of any national ambient air quality standard within the period permitted in this section. If the Administrator determines that any such plan can be revised, he shall notify the State that a plan revision may be submitted by the State. Any plan revision which is submitted by the State shall, after public notice and opportunity for public hearing, be approved by the Administrator if the revision relates only to fuel burning stationary sources (or persons supplying fuel to such sources), and the plan as revised complies with paragraph (2) of this subsection. The Administrator shall approve or disapprove any revision no later than three months after its submission.

(C) Neither the State, in the case of a plan (or portion thereof) approved under this subsection, nor the Administrator, in the case of a plan (or portion thereof) promulgated under subsection (c) of this section, shall be required to revise an applicable implementation plan because one or more exemptions under section 7418 of this title (relating to Federal facilities), enforcement orders under section 7413(d) of this title, suspensions under subsection (f) or (g) of this section (relating to temporary energy or economic authority), orders under section 7419 of this title (relating to primary nonferrous smelters), or extensions of compliance in decrees entered under section 7413(e) of this title (relating to iron- and steel-producing operations) have been granted, if such plan would have met the requirements of this section if no such exemptions, orders, or extensions had been granted.

(4) Repealed. Pub.L. 101-549, Title I, § 101(d)(2), Nov. 15, 1990, 104 Stat. 2409

(5)(A)(i) Any State may include in a State implementation plan, but the Administrator may not require as a condition of approval of such plan under this section, any indirect source review program. The Administrator may approve and enforce, as part of an applicable implementation plan, an indirect source review program which the State chooses to adopt and submit as part of its plan.

(ii) Except as provided in subparagraph (B), no plan promulgated by the Administrator shall include any indirect source review program for any air quality control region, or portion thereof.

(iii) Any State may revise an applicable implementation plan approved under this subsection to suspend or re-

voke any such program included in such plan, provided that such plan meets the requirements of this section.

(B) The Administrator shall have the authority to promulgate, implement and enforce regulations under subsection (c) of this section respecting indirect source review programs which apply only to federally assisted highways, airports, and other major federally assisted indirect sources and federally owned or operated indirect sources.

(C) For purposes of this paragraph, the term “indirect source” means a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution. Such term includes parking lots, parking garages, and other facilities subject to any measure for management of parking supply (within the meaning of subsection (c)(2)(D)(ii) of this section), including regulation of existing off-street parking but such term does not include new or existing on-street parking. Direct emissions sources or facilities at, within, or associated with, any indirect source shall not be deemed indirect sources for the purpose of this paragraph.

(D) For purposes of this paragraph the term “indirect source review program” means the facility-by-facility review of indirect sources of air pollution, including such measures as are necessary to assure, or assist in assuring, that a new or modified indirect source will not attract mobile sources of air pollution, the emissions from which would cause or contribute to air pollution concentrations--

(i) exceeding any national primary ambient air quality standard for a mobile source-related air pollutant after the primary standard attainment date, or

(ii) preventing maintenance of any such standard after such date.

(E) For purposes of this paragraph and paragraph (2)(B), the term “transportation control measure” does not include any measure which is an “indirect source review program”.

(6) No State plan shall be treated as meeting the requirements of this section unless such plan provides that in the case of any source which uses a supplemental, or intermittent control system for purposes of meeting the requirements of an order under [section 7413\(d\)](#) of this title or [section 7419](#) of this title (relating to primary nonferrous smelter orders), the owner or operator of such source may not temporarily reduce the pay of any employee by reason of the use of such supplemental or intermittent or other dispersion dependent control system.

(b) Extension of period for submission of plans

The Administrator may, wherever he determines necessary, extend the period for submission of any plan or portion thereof which implements a national secondary ambient air quality standard for a period not to exceed 18 months from the date otherwise required for submission of such plan.

(c) Preparation and publication by Administrator of proposed regulations setting forth implementation plan; transportation regulations study and report; parking surcharge; suspension authority; plan implementation

(1) The Administrator shall promulgate a Federal implementation plan at any time within 2 years after the Administrator--

(A) finds that a State has failed to make a required submission or finds that the plan or plan revision submitted by the State does not satisfy the minimum criteria established under subsection (k)(1)(A) of this section, or

(B) disapproves a State implementation plan submission in whole or in part,

unless the State corrects the deficiency, and the Administrator approves the plan or plan revision, before the Administrator promulgates such Federal implementation plan.

(2)(A) Repealed. Pub.L. 101-549, Title I, § 101(d)(3)(A), Nov. 15, 1990, 104 Stat. 2409

(B) No parking surcharge regulation may be required by the Administrator under paragraph (1) of this subsection as a part of an applicable implementation plan. All parking surcharge regulations previously required by the Administrator shall be void upon June 22, 1974. This subparagraph shall not prevent the Administrator from approving parking surcharges if they are adopted and submitted by a State as part of an applicable implementation plan. The Administrator may not condition approval of any implementation plan submitted by a State on such plan's including a parking surcharge regulation.

(C) Repealed. Pub.L. 101-549, Title I, § 101(d)(3)(B), Nov. 15, 1990, 104 Stat. 2409

(D) For purposes of this paragraph--

(i) The term "parking surcharge regulation" means a regulation imposing or requiring the imposition of any tax, surcharge, fee, or other charge on parking spaces, or any other area used for the temporary storage of motor vehicles.

(ii) The term "management of parking supply" shall include any requirement providing that any new facility containing a given number of parking spaces shall receive a permit or other prior approval, issuance of which is to be conditioned on air quality considerations.

(iii) The term "preferential bus/carpool lane" shall include any requirement for the setting aside of one or more lanes of a street or highway on a permanent or temporary basis for the exclusive use of buses or carpools, or both.

(E) No standard, plan, or requirement, relating to management of parking supply or preferential bus/carpool lanes shall be promulgated after June 22, 1974, by the Administrator pursuant to this section, unless such promulgation has been subjected to at least one public hearing which has been held in the area affected and for which reasonable notice has been given in such area. If substantial changes are made following public hearings, one or more additional hearings shall be held in such area after such notice.

(3) Upon application of the chief executive officer of any general purpose unit of local government, if the Administrator determines that such unit has adequate authority under State or local law, the Administrator may delegate to such unit the authority to implement and enforce within the jurisdiction of such unit any part of a plan promulgated under this subsection. Nothing in this paragraph shall prevent the Administrator from implementing or enforcing any applicable provision of a plan promulgated under this subsection.

(4) Repealed. Pub.L. 101-549, Title I, § 101(d)(3)(C), Nov. 15, 1990, 104 Stat. 2409

(5)(A) Any measure in an applicable implementation plan which requires a toll or other charge for the use of a bridge located entirely within one city shall be eliminated from such plan by the Administrator upon application by the Governor of the State, which application shall include a certification by the Governor that he will revise such plan in accordance with subparagraph (B).

(B) In the case of any applicable implementation plan with respect to which a measure has been eliminated under subparagraph (A), such plan shall, not later than one year after August 7, 1977, be revised to include comprehensive measures to:

(i) establish, expand, or improve public transportation measures to meet basic transportation needs, as expeditiously as is practicable; and

(ii) implement transportation control measures necessary to attain and maintain national ambient air quality standards,

and such revised plan shall, for the purpose of implementing such comprehensive public transportation measures, include requirements to use (insofar as is necessary) Federal grants, State or local funds, or any combination of such grants and funds as may be consistent with the terms of the legislation providing such grants and funds. Such measures shall, as a substitute for the tolls or charges eliminated under subparagraph (A), provide for emissions reductions equivalent to the reductions which may reasonably be expected to be achieved through the use of the tolls or charges eliminated.

(C) Any revision of an implementation plan for purposes of meeting the requirements of subparagraph (B) shall be submitted in coordination with any plan revision required under part D of this subchapter.

(d), (e) Repealed. Pub.L. 101-549, Title I, § 101(d)(4), (5), Nov. 15, 1990, 104 Stat. 2409

(f) National or regional energy emergencies; determination by President

(1) Upon application by the owner or operator of a fuel burning stationary source, and after notice and opportunity for public hearing, the Governor of the State in which such source is located may petition the President to determine that a national or regional energy emergency exists of such severity that--

(A) a temporary suspension of any part of the applicable implementation plan or of any requirement under [section 7651j](#) of this title (concerning excess emissions penalties or offsets) may be necessary, and

(B) other means of responding to the energy emergency may be inadequate.

Such determination shall not be delegable by the President to any other person. If the President determines that a national or regional energy emergency of such severity exists, a temporary emergency suspension of any part of an applicable implementation plan or of any requirement under [section 7651j](#) of this title (concerning excess emissions penalties or offsets) adopted by the State may be issued by the Governor of any State covered by the President's determination under the condition specified in paragraph (2) and may take effect immediately.

(2) A temporary emergency suspension under this subsection shall be issued to a source only if the Governor of such State finds that--

(A) there exists in the vicinity of such source a temporary energy emergency involving high levels of unemployment or loss of necessary energy supplies for residential dwellings; and

(B) such unemployment or loss can be totally or partially alleviated by such emergency suspension.

Not more than one such suspension may be issued for any source on the basis of the same set of circumstances or on the basis of the same emergency.

(3) A temporary emergency suspension issued by a Governor under this subsection shall remain in effect for a maximum of four months or such lesser period as may be specified in a disapproval order of the Administrator, if any. The Administrator may disapprove such suspension if he determines that it does not meet the requirements of paragraph (2).

(4) This subsection shall not apply in the case of a plan provision or requirement promulgated by the Administrator under subsection (c) of this section, but in any such case the President may grant a temporary emergency suspension for a four month period of any such provision or requirement if he makes the determinations and findings specified in paragraphs (1) and (2).

(5) The Governor may include in any temporary emergency suspension issued under this subsection a provision

delaying for a period identical to the period of such suspension any compliance schedule (or increment of progress) to which such source is subject under [section 1857c-10](#) of this title, as in effect before August 7, 1977, or [section 7413\(d\)](#) of this title, upon a finding that such source is unable to comply with such schedule (or increment) solely because of the conditions on the basis of which a suspension was issued under this subsection.

(g) Governor's authority to issue temporary emergency suspensions

(1) In the case of any State which has adopted and submitted to the Administrator a proposed plan revision which the State determines--

(A) meets the requirements of this section, and

(B) is necessary (i) to prevent the closing for one year or more of any source of air pollution, and (ii) to prevent substantial increases in unemployment which would result from such closing, and

which the Administrator has not approved or disapproved under this section within 12 months of submission of the proposed plan revision, the Governor may issue a temporary emergency suspension of the part of the applicable implementation plan for such State which is proposed to be revised with respect to such source. The determination under subparagraph (B) may not be made with respect to a source which would close without regard to whether or not the proposed plan revision is approved.

(2) A temporary emergency suspension issued by a Governor under this subsection shall remain in effect for a maximum of four months or such lesser period as may be specified in a disapproval order of the Administrator. The Administrator may disapprove such suspension if he determines that it does not meet the requirements of this subsection.

(3) The Governor may include in any temporary emergency suspension issued under this subsection a provision delaying for a period identical to the period of such suspension any compliance schedule (or increment of progress) to which such source is subject under [section 1857c-10](#) of this title as in effect before August 7, 1977, or under [section 7413\(d\)](#) of this title upon a finding that such source is unable to comply with such schedule (or increment) solely because of the conditions on the basis of which a suspension was issued under this subsection.

(h) Publication of comprehensive document for each State setting forth requirements of applicable implementation plan

(1) Not later than 5 years after November 15, 1990, and every 3 years thereafter, the Administrator shall assemble and publish a comprehensive document for each State setting forth all requirements of the applicable implementation plan for such State and shall publish notice in the Federal Register of the availability of such documents.

(2) The Administrator may promulgate such regulations as may be reasonably necessary to carry out the purpose of this subsection.

(i) Modification of requirements prohibited

Except for a primary nonferrous smelter order under [section 7419](#) of this title, a suspension under subsection (f) or (g) of this section (relating to emergency suspensions), an exemption under [section 7418](#) of this title (relating to certain Federal facilities), an order under [section 7413\(d\)](#) of this title (relating to compliance orders), a plan promulgation under subsection (c) of this section, or a plan revision under subsection (a)(3) of this section, no order, suspension, plan revision, or other action modifying any requirement of an applicable implementation plan may be taken with respect to any stationary source by the State or by the Administrator.

(j) Technological systems of continuous emission reduction on new or modified stationary sources; compliance with performance standards

As a condition for issuance of any permit required under this subchapter, the owner or operator of each new or modified stationary source which is required to obtain such a permit must show to the satisfaction of the permitting authority that the technological system of continuous emission reduction which is to be used at such source will enable it to comply with the standards of performance which are to apply to such source and that the construction or modification and operation of such source will be in compliance with all other requirements of this chapter.

(k) Environmental Protection Agency action on plan submissions

(1) Completeness of plan submissions

(A) Completeness criteria

Within 9 months after November 15, 1990, the Administrator shall promulgate minimum criteria that any plan submission must meet before the Administrator is required to act on such submission under this subsection. The criteria shall be limited to the information necessary to enable the Administrator to determine whether the plan submission complies with the provisions of this chapter.

(B) Completeness finding

Within 60 days of the Administrator's receipt of a plan or plan revision, but no later than 6 months after the date, if any, by which a State is required to submit the plan or revision, the Administrator shall determine whether the minimum criteria established pursuant to subparagraph (A) have been met. Any plan or plan revision that a State submits to the Administrator, and that has not been determined by the Administrator (by the date 6 months after receipt of the submission) to have failed to meet the minimum criteria established

pursuant to subparagraph (A), shall on that date be deemed by operation of law to meet such minimum criteria.

(C) Effect of finding of incompleteness

Where the Administrator determines that a plan submission (or part thereof) does not meet the minimum criteria established pursuant to subparagraph (A), the State shall be treated as not having made the submission (or, in the Administrator's discretion, part thereof).

(2) Deadline for action

Within 12 months of a determination by the Administrator (or a determination deemed by operation of law) under paragraph (1) that a State has submitted a plan or plan revision (or, in the Administrator's discretion, part thereof) that meets the minimum criteria established pursuant to paragraph (1), if applicable (or, if those criteria are not applicable, within 12 months of submission of the plan or revision), the Administrator shall act on the submission in accordance with paragraph (3).

(3) Full and partial approval and disapproval

In the case of any submittal on which the Administrator is required to act under paragraph (2), the Administrator shall approve such submittal as a whole if it meets all of the applicable requirements of this chapter. If a portion of the plan revision meets all the applicable requirements of this chapter, the Administrator may approve the plan revision in part and disapprove the plan revision in part. The plan revision shall not be treated as meeting the requirements of this chapter until the Administrator approves the entire plan revision as complying with the applicable requirements of this chapter.

(4) Conditional approval

The Administrator may approve a plan revision based on a commitment of the State to adopt specific enforceable measures by a date certain, but not later than 1 year after the date of approval of the plan revision. Any such conditional approval shall be treated as a disapproval if the State fails to comply with such commitment.

(5) Calls for plan revisions

Whenever the Administrator finds that the applicable implementation plan for any area is substantially inadequate to attain or maintain the relevant national ambient air quality standard, to mitigate adequately the interstate pollutant transport described in [section 7506a](#) of this title or [section 7511c](#) of this title, or to otherwise comply with any requirement of this chapter, the Administrator shall require the State to revise the plan as necessary to correct such inadequacies. The Administrator shall notify the State of the inadequacies, and may establish reasonable deadlines (not to exceed 18 months after the date of such notice) for the submission of such

plan revisions. Such findings and notice shall be public. Any finding under this paragraph shall, to the extent the Administrator deems appropriate, subject the State to the requirements of this chapter to which the State was subject when it developed and submitted the plan for which such finding was made, except that the Administrator may adjust any dates applicable under such requirements as appropriate (except that the Administrator may not adjust any attainment date prescribed under part D of this subchapter, unless such date has elapsed).

(6) Corrections

Whenever the Administrator determines that the Administrator's action approving, disapproving, or promulgating any plan or plan revision (or part thereof), area designation, redesignation, classification, or reclassification was in error, the Administrator may in the same manner as the approval, disapproval, or promulgation revise such action as appropriate without requiring any further submission from the State. Such determination and the basis thereof shall be provided to the State and public.

(l) Plan revisions

Each revision to an implementation plan submitted by a State under this chapter shall be adopted by such State after reasonable notice and public hearing. The Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in [section 7501](#) of this title), or any other applicable requirement of this chapter.

(m) Sanctions

The Administrator may apply any of the sanctions listed in [section 7509\(b\)](#) of this title at any time (or at any time after) the Administrator makes a finding, disapproval, or determination under paragraphs (1) through (4), respectively, of [section 7509\(a\)](#) of this title in relation to any plan or plan item (as that term is defined by the Administrator) required under this chapter, with respect to any portion of the State the Administrator determines reasonable and appropriate, for the purpose of ensuring that the requirements of this chapter relating to such plan or plan item are met. The Administrator shall, by rule, establish criteria for exercising his authority under the previous sentence with respect to any deficiency referred to in [section 7509\(a\)](#) of this title to ensure that, during the 24-month period following the finding, disapproval, or determination referred to in [section 7509\(a\)](#) of this title, such sanctions are not applied on a statewide basis where one or more political subdivisions covered by the applicable implementation plan are principally responsible for such deficiency.

(n) Savings clauses

(1) Existing plan provisions

Any provision of any applicable implementation plan that was approved or promulgated by the Administrator

pursuant to this section as in effect before November 15, 1990, shall remain in effect as part of such applicable implementation plan, except to the extent that a revision to such provision is approved or promulgated by the Administrator pursuant to this chapter.

(2) Attainment dates

For any area not designated nonattainment, any plan or plan revision submitted or required to be submitted by a State--

(A) in response to the promulgation or revision of a national primary ambient air quality standard in effect on November 15, 1990, or

(B) in response to a finding of substantial inadequacy under subsection (a)(2) of this section (as in effect immediately before November 15, 1990),

shall provide for attainment of the national primary ambient air quality standards within 3 years of November 15, 1990, or within 5 years of issuance of such finding of substantial inadequacy, whichever is later.

(3) Retention of construction moratorium in certain areas

In the case of an area to which, immediately before November 15, 1990, the prohibition on construction or modification of major stationary sources prescribed in subsection (a)(2)(I) of this section (as in effect immediately before November 15, 1990) applied by virtue of a finding of the Administrator that the State containing such area had not submitted an implementation plan meeting the requirements of [section 7502\(b\)\(6\)](#) of this title (relating to establishment of a permit program) (as in effect immediately before November 15, 1990) or [7502\(a\)\(1\)](#) of this title (to the extent such requirements relate to provision for attainment of the primary national ambient air quality standard for sulfur oxides by December 31, 1982) as in effect immediately before November 15, 1990, no major stationary source of the relevant air pollutant or pollutants shall be constructed or modified in such area until the Administrator finds that the plan for such area meets the applicable requirements of [section 7502\(c\)\(5\)](#) of this title (relating to permit programs) or subpart 5 of part D of this subchapter (relating to attainment of the primary national ambient air quality standard for sulfur dioxide), respectively.

(o) Indian tribes

If an Indian tribe submits an implementation plan to the Administrator pursuant to [section 7601\(d\)](#) of this title, the plan shall be reviewed in accordance with the provisions for review set forth in this section for State plans, except as otherwise provided by regulation promulgated pursuant to [section 7601\(d\)\(2\)](#) of this title. When such plan becomes effective in accordance with the regulations promulgated under [section 7601\(d\)](#) of this title, the plan shall become applicable to all areas (except as expressly provided otherwise in the plan) located within the exterior boundaries of the reservation, notwithstanding the issuance of any patent and including rights-of-way

running through the reservation.

(p) Reports

Any State shall submit, according to such schedule as the Administrator may prescribe, such reports as the Administrator may require relating to emission reductions, vehicle miles traveled, congestion levels, and any other information the Administrator may deem necessary to assess the development effectiveness, need for revision, or implementation of any plan or plan revision required under this chapter.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 110, as added Dec. 31, 1970, Pub.L. 91-604, § 4(a), 84 Stat. 1680; amended June 22, 1974, Pub.L. 93-319, § 4, 88 Stat. 256; S.Res. 4, Feb. 4, 1977; Aug. 7, 1977, Pub.L. 95-95, Title I, §§ 107, 108, 91 Stat. 691, 693; Nov. 16, 1977, Pub.L. 95-190, § 14(a)(1)-(6), 91 Stat. 1399; July 17, 1981, Pub.L. 97-23, § 3, 95 Stat. 142; Nov. 15, 1990, Pub.L. 101-549, Title I, §§ 101(b)-(d), 102(h), 107(c), 108(d), Title IV, § 412, 104 Stat. 2404-2408, 2422, 2464, 2466, 2634.)

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Title 42. The Public Health and Welfare

Chapter 85. Air Pollution Prevention and Control ([Refs & Annos](#))

Subchapter I. Programs and Activities

▣ [Part C. Prevention of Significant Deterioration of Air Quality](#)

▣ [Subpart I. Clean Air \(\[Refs & Annos\]\(#\)\)](#)

→→ **§ 7471. Plan requirements**

In accordance with the policy of [section 7401\(b\)\(1\)](#) of this title, each applicable implementation plan shall contain emission limitations and such other measures as may be necessary, as determined under regulations promulgated under this part, to prevent significant deterioration of air quality in each region (or portion thereof) designated pursuant to [section 7407](#) of this title as attainment or unclassifiable.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 161, as added Aug. 7, 1977, [Pub.L. 95-95, Title I, § 127\(a\)](#), 91 Stat. 731; amended Nov. 15, 1990, [Pub.L. 101-549, Title I, § 110\(1\)](#), 104 Stat. 2470.)

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Title 42. The Public Health and Welfare

Chapter 85. Air Pollution Prevention and Control ([Refs & Annos](#))

Subchapter I. Programs and Activities

▢ [Part C](#). Prevention of Significant Deterioration of Air Quality

▢ [Subpart I](#). Clean Air ([Refs & Annos](#))

→→ **§ 7475. Preconstruction requirements**

(a) Major emitting facilities on which construction is commenced

No major emitting facility on which construction is commenced after August 7, 1977, may be constructed in any area to which this part applies unless--

- (1) a permit has been issued for such proposed facility in accordance with this part setting forth emission limitations for such facility which conform to the requirements of this part;
- (2) the proposed permit has been subject to a review in accordance with this section, the required analysis has been conducted in accordance with regulations promulgated by the Administrator, and a public hearing has been held with opportunity for interested persons including representatives of the Administrator to appear and submit written or oral presentations on the air quality impact of such source, alternatives thereto, control technology requirements, and other appropriate considerations;
- (3) the owner or operator of such facility demonstrates, as required pursuant to [section 7410\(j\)](#) of this title, that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any (A) maximum allowable increase or maximum allowable concentration for any pollutant in any area to which this part applies more than one time per year, (B) national ambient air quality standard in any air quality control region, or (C) any other applicable emission standard or standard of performance under this chapter;
- (4) the proposed facility is subject to the best available control technology for each pollutant subject to regulation under this chapter emitted from, or which results from, such facility;
- (5) the provisions of subsection (d) of this section with respect to protection of class I areas have been complied with for such facility;
- (6) there has been an analysis of any air quality impacts projected for the area as a result of growth associated with such facility;
- (7) the person who owns or operates, or proposes to own or operate, a major emitting facility for which a permit is required under this part agrees to conduct such monitoring as may be necessary to determine the effect which emissions

from any such facility may have, or is having, on air quality in any area which may be affected by emissions from such source; and

(8) in the case of a source which proposes to construct in a class III area, emissions from which would cause or contribute to exceeding the maximum allowable increments applicable in a class II area and where no standard under [section 7411](#) of this title has been promulgated subsequent to August 7, 1977, for such source category, the Administrator has approved the determination of best available technology as set forth in the permit.

(b) Exception

The demonstration pertaining to maximum allowable increases required under subsection (a)(3) of this section shall not apply to maximum allowable increases for class II areas in the case of an expansion or modification of a major emitting facility which is in existence on August 7, 1977, whose allowable emissions of air pollutants, after compliance with subsection (a)(4) of this section, will be less than fifty tons per year and for which the owner or operator of such facility demonstrates that emissions of particulate matter and sulfur oxides will not cause or contribute to ambient air quality levels in excess of the national secondary ambient air quality standard for either of such pollutants.

(c) Permit applications

Any completed permit application under [section 7410](#) of this title for a major emitting facility in any area to which this part applies shall be granted or denied not later than one year after the date of filing of such completed application.

(d) Action taken on permit applications; notice; adverse impact on air quality related values; variance; emission limitations

(1) Each State shall transmit to the Administrator a copy of each permit application relating to a major emitting facility received by such State and provide notice to the Administrator of every action related to the consideration of such permit.

(2)(A) The Administrator shall provide notice of the permit application to the Federal Land Manager and the Federal official charged with direct responsibility for management of any lands within a class I area which may be affected by emissions from the proposed facility.

(B) The Federal Land Manager and the Federal official charged with direct responsibility for management of such lands shall have an affirmative responsibility to protect the air quality related values (including visibility) of any such lands within a class I area and to consider, in consultation with the Administrator, whether a proposed major emitting facility will have an adverse impact on such values.

(C)(i) In any case where the Federal official charged with direct responsibility for management of any lands within a class I area or the Federal Land Manager of such lands, or the Administrator, or the Governor of an adjacent State containing such a class I area files a notice alleging that emissions from a proposed major emitting facility may cause or contribute to a change in the air quality in such area and identifying the potential adverse impact of such change, a permit shall not be issued unless the owner or operator of such facility demonstrates that emissions of particulate matter and sulfur dioxide will not cause or contribute to concentrations which exceed the maximum allowable increases for a class I area.

(ii) In any case where the Federal Land Manager demonstrates to the satisfaction of the State that the emissions from such facility will have an adverse impact on the air quality-related values (including visibility) of such lands, notwithstanding the fact that the change in air quality resulting from emissions from such facility will not cause or contribute to concentrations which exceed the maximum allowable increases for a class I area, a permit shall not be issued.

(iii) In any case where the owner or operator of such facility demonstrates to the satisfaction of the Federal Land Manager, and the Federal Land Manager so certifies, that the emissions from such facility will have no adverse impact on the air quality-related values of such lands (including visibility), notwithstanding the fact that the change in air quality resulting from emissions from such facility will cause or contribute to concentrations which exceed the maximum allowable increases for class I areas, the State may issue a permit.

(iv) In the case of a permit issued pursuant to clause (iii), such facility shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur oxides and particulates from such facility will not cause or contribute to concentrations of such pollutant which exceed the following maximum allowable increases over the baseline concentration for such pollutants:

	Maximum allowable increase (in micrograms per cubic meter)
Particulate matter:	
Annual geometric mean	19
Twenty-four-hour maximum	37
Sulfur dioxide:	
Annual arithmetic mean	20
Twenty-four-hour maximum	91
Three-hour maximum	32

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(D)(i) In any case where the owner or operator of a proposed major emitting facility who has been denied a certification under subparagraph (C)(iii) demonstrates to the satisfaction of the Governor, after notice and public hearing, and the Governor finds, that the facility cannot be constructed by reason of any maximum allowable increase for sulfur dioxide for periods of twenty-four hours or less applicable to any class I area and, in the case of Federal mandatory class I areas, that a variance under this clause will not adversely affect the air quality related values of the area (including visibility), the Governor, after consideration of the Federal Land Manager's recommendation (if any) and subject to his concurrence, may grant a variance from such maximum allowable increase. If such variance is granted, a permit may be issued to such source pursuant to the requirements of this subparagraph.

(ii) In any case in which the Governor recommends a variance under this subparagraph in which the Federal Land Manager does not concur, the recommendations of the Governor and the Federal Land Manager shall be transmitted to the President. The President may approve the Governor's recommendation if he finds that such variance is in the national interest. No Presidential finding shall be reviewable in any court. The variance shall take effect if the President approves the Governor's recommendations. The President shall approve or disapprove such recommendation within ninety days after his receipt of the recommendations of the Governor and the Federal Land Manager.

(iii) In the case of a permit issued pursuant to this subparagraph, such facility shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur oxides from such facility will not (during any day on which the otherwise applicable maximum allowable increases are exceeded) cause or contribute to concentrations which exceed the following maximum allowable increases for such areas over the baseline concentration for such pollutant and to assure that such emissions will not cause or contribute to concentrations which exceed the otherwise applicable maximum allowable increases for periods of exposure of 24 hours or less on more than 18 days during any annual period:

MAXIMUM ALLOWABLE INCREASE		
[In micrograms per cubic meter]		
	Low terrain areas	High terrain areas
Period of exposure		
24-hr maximum	36	62
3-hr maximum	13	221
	0	

(iv) For purposes of clause (iii), the term “high terrain area” means with respect to any facility, any area having an elevation of 900 feet or more above the base of the stack of such facility, and the term “low terrain area” means any area other than a high terrain area.

(e) Analysis; continuous air quality monitoring data; regulations; model adjustments

(1) The review provided for in subsection (a) of this section shall be preceded by an analysis in accordance with regulations of the Administrator, promulgated under this subsection, which may be conducted by the State (or any general purpose unit of local government) or by the major emitting facility applying for such permit, of the ambient air quality at the proposed site and in areas which may be affected by emissions from such facility for each pollutant subject to regulation under this chapter which will be emitted from such facility.

(2) Effective one year after August 7, 1977, the analysis required by this subsection shall include continuous air quality monitoring data gathered for purposes of determining whether emissions from such facility will exceed the maximum allowable increases or the maximum allowable concentration permitted under this part. Such data shall be gathered over a period of one calendar year preceding the date of application for a permit under this part unless the State, in accordance with regulations promulgated by the Administrator, determines that a complete and adequate analysis for such purposes may be accomplished in a shorter period. The results of such analysis shall be available at the time of the public hearing on the application for such permit.

(3) The Administrator shall within six months after August 7, 1977, promulgate regulations respecting the analysis required under this subsection which regulations--

(A) shall not require the use of any automatic or uniform buffer zone or zones,

(B) shall require an analysis of the ambient air quality, climate and meteorology, terrain, soils and vegetation, and visibility at the site of the proposed major emitting facility and in the area potentially affected by the emissions from such facility for each pollutant regulated under this chapter which will be emitted from, or which results from the construction or operation of, such facility, the size and nature of the proposed facility, the degree of continuous emission reduction which could be achieved by such facility, and such other factors as may be relevant in determining the effect of emissions from a proposed facility on any air quality control region,

(C) shall require the results of such analysis shall be available at the time of the public hearing on the application for such permit, and

(D) shall specify with reasonable particularity each air quality model or models to be used under specified sets of conditions for purposes of this part.

Any model or models designated under such regulations may be adjusted upon a determination, after notice and opportunity for public hearing, by the Administrator that such adjustment is necessary to take into account unique terrain or meteorological characteristics of an area potentially affected by emissions from a source applying for a permit required under this part.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 165, as added Aug. 7, 1977, Pub.L. 95-95, Title I, § 127(a), 91 Stat. 735; amended Nov. 16, 1977, Pub.L. 95-190, § 14(a)(44)-(51), 91 Stat. 1402.)

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Title 42. The Public Health and Welfare

Chapter 85. Air Pollution Prevention and Control ([Refs & Annos](#))

Subchapter I. Programs and Activities

▣ [Part D](#). Plan Requirements for Nonattainment Areas

▣ [Subpart 4](#). Additional Provisions for Particulate Matter Nonattainment Areas

→ → **§ 7513. Classifications and attainment dates**

(a) Initial classifications

Every area designated nonattainment for PM-10 pursuant to [section 7407\(d\)](#) of this title shall be classified at the time of such designation, by operation of law, as a moderate PM-10 nonattainment area (also referred to in this subpart as a “Moderate Area”) at the time of such designation. At the time of publication of the notice under [section 7407\(d\)\(4\)](#) of this title (relating to area designations) for each PM-10 nonattainment area, the Administrator shall publish a notice announcing the classification of such area. The provisions of [section 7502\(a\)\(1\)\(B\)](#) of this title (relating to lack of notice-and-comment and judicial review) shall apply with respect to such classification.

(b) Reclassification as Serious

(1) Reclassification before attainment date

The Administrator may reclassify as a Serious PM-10 nonattainment area (identified in this subpart also as a “Serious Area”) any area that the Administrator determines cannot practicably attain the national ambient air quality standard for PM-10 by the attainment date (as prescribed in subsection (c) of this section) for Moderate Areas. The Administrator shall reclassify appropriate areas as Serious by the following dates:

(A) For areas designated nonattainment for PM-10 under [section 7407\(d\)\(4\)](#) of this title, the Administrator shall propose to reclassify appropriate areas by June 30, 1991, and take final action by December 31, 1991.

(B) For areas subsequently designated nonattainment, the Administrator shall reclassify appropriate areas within 18 months after the required date for the State's submission of a SIP for the Moderate Area.

(2) Reclassification upon failure to attain

Within 6 months following the applicable attainment date for a PM-10 nonattainment area, the Administrator

shall determine whether the area attained the standard by that date. If the Administrator finds that any Moderate Area is not in attainment after the applicable attainment date--

(A) the area shall be reclassified by operation of law as a Serious Area; and

(B) the Administrator shall publish a notice in the Federal Register no later than 6 months following the attainment date, identifying the area as having failed to attain and identifying the reclassification described under subparagraph (A).

(c) Attainment dates

Except as provided under subsection (d) of this section, the attainment dates for PM-10 nonattainment areas shall be as follows:

(1) Moderate Areas

For a Moderate Area, the attainment date shall be as expeditiously as practicable but no later than the end of the sixth calendar year after the area's designation as nonattainment, except that, for areas designated nonattainment for PM-10 under [section 7407\(d\)\(4\)](#) of this title, the attainment date shall not extend beyond December 31, 1994.

(2) Serious Areas

For a Serious Area, the attainment date shall be as expeditiously as practicable but no later than the end of the tenth calendar year beginning after the area's designation as nonattainment, except that, for areas designated nonattainment for PM-10 under [section 7407\(d\)\(4\)](#) of this title, the date shall not extend beyond December 31, 2001.

(d) Extension of attainment date for Moderate Areas

Upon application by any State, the Administrator may extend for 1 additional year (hereinafter referred to as the "Extension Year") the date specified in paragraph [\[FN1\]](#) (c)(1) if--

(1) the State has complied with all requirements and commitments pertaining to the area in the applicable implementation plan; and

(2) no more than one exceedance of the 24-hour national ambient air quality standard level for PM-10 has occurred in the area in the year preceding the Extension Year, and the annual mean concentration of PM-10 in the area for such year is less than or equal to the standard level.

No more than 2 one-year extensions may be issued under the subsection for a single nonattainment area.

(e) Extension of attainment date for Serious Areas

Upon application by any State, the Administrator may extend the attainment date for a Serious Area beyond the date specified under subsection (c) of this section, if attainment by the date established under subsection (c) of this section would be impracticable, the State has complied with all requirements and commitments pertaining to that area in the implementation plan, and the State demonstrates to the satisfaction of the Administrator that the plan for that area includes the most stringent measures that are included in the implementation plan of any State or are achieved in practice in any State, and can feasibly be implemented in the area. At the time of such application, the State must submit a revision to the implementation plan that includes a demonstration of attainment by the most expeditious alternative date practicable. In determining whether to grant an extension, and the appropriate length of time for any such extension, the Administrator may consider the nature and extent of nonattainment, the types and numbers of sources or other emitting activities in the area (including the influence of uncontrollable natural sources and transboundary emissions from foreign countries), the population exposed to concentrations in excess of the standard, the presence and concentration of potentially toxic substances in the mix of particulate emissions in the area, and the technological and economic feasibility of various control measures. The Administrator may not approve an extension until the State submits an attainment demonstration for the area. The Administrator may grant at most one such extension for an area, of no more than 5 years.

(f) Waivers for certain areas

The Administrator may, on a case-by-case basis, waive any requirement applicable to any Serious Area under this subpart where the Administrator determines that anthropogenic sources of PM-10 do not contribute significantly to the violation of the PM-10 standard in the area. The Administrator may also waive a specific date for attainment of the standard where the Administrator determines that nonanthropogenic sources of PM-10 contribute significantly to the violation of the PM-10 standard in the area.

CREDIT(S)

(July 14, 1955, c. 360, Title I, § 188, as added Nov. 15, 1990, [Pub.L. 101-549](#), Title I, § 105(a), 104 Stat. 2458.)

[FN1] So in original. Probably should be “subsection”.

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Title 42. The Public Health and Welfare

 ▣ [Chapter 85. Air Pollution Prevention and Control \(Refs & Annos\)](#) ▣ [Subchapter III. General Provisions](#) →→ **§ 7607. Administrative proceedings and judicial review**

(a) Administrative subpoenas; confidentiality; witnesses

In connection with any determination under [section 7410\(f\)](#) of this title, or for purposes of obtaining information under [section 7521\(b\)\(4\)](#) or [7545\(c\)\(3\)](#) of this title, any investigation, monitoring, reporting requirement, entry, compliance inspection, or administrative enforcement proceeding under the [\[FN1\]](#) chapter (including but not limited to [section 7413](#), [section 7414](#), [section 7420](#), [section 7429](#), [section 7477](#), [section 7524](#), [section 7525](#), [section 7542](#), [section 7603](#), or [section 7606](#) of this title), [\[FN2\]](#) the Administrator may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and he may administer oaths. Except for emission data, upon a showing satisfactory to the Administrator by such owner or operator that such papers, books, documents, or information or particular part thereof, if made public, would divulge trade secrets or secret processes of such owner or operator, the Administrator shall consider such record, report, or information or particular portion thereof confidential in accordance with the purposes of [section 1905 of Title 18](#), except that such paper, book, document, or information may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this chapter, to persons carrying out the National Academy of Sciences' study and investigation provided for in [section 7521\(c\)](#) of this title, or when relevant in any proceeding under this chapter. Witnesses summoned shall be paid the same fees and mileage that are paid witnesses in the courts of the United States. In case of contumacy or refusal to obey a subpoena served upon any person under this subparagraph, the district court of the United States for any district in which such person is found or resides or transacts business, upon application by the United States and after notice to such person, shall have jurisdiction to issue an order requiring such person to appear and give testimony before the Administrator to appear and produce papers, books, and documents before the Administrator, or both, and any failure to obey such order of the court may be punished by such court as a contempt thereof.

(b) Judicial review

(1) A petition for review of action of the Administrator in promulgating any national primary or secondary ambient air quality standard, any emission standard or requirement under [section 7412](#) of this title, any standard of performance or requirement under [section 7411](#) of this title, [\[FN2\]](#) any standard under [section 7521](#) of this title (other than a standard required to be prescribed under [section 7521\(b\)\(1\)](#) of this title), any determination under [section 7521\(b\)\(5\)](#) of this title, any control or prohibition under [section 7545](#) of this title, any standard under [section 7571](#) of this title, any rule issued under [section 7413](#), [7419](#), or under [section 7420](#) of this title, or any

other nationally applicable regulations promulgated, or final action taken, by the Administrator under this chapter may be filed only in the United States Court of Appeals for the District of Columbia. A petition for review of the Administrator's action in approving or promulgating any implementation plan under [section 7410](#) of this title or [section 7411\(d\)](#) of this title, any order under [section 7411\(j\)](#) of this title, under [section 7412](#) of this title, under [section 7419](#) of this title, or under [section 7420](#) of this title, or his action under [section 1857c-10\(c\)\(2\)\(A\), \(B\), or \(C\)](#) of this title (as in effect before August 7, 1977) or under regulations thereunder, or revising regulations for enhanced monitoring and compliance certification programs under [section 7414\(a\)\(3\)](#) of this title, or any other final action of the Administrator under this chapter (including any denial or disapproval by the Administrator under subchapter I of this chapter) which is locally or regionally applicable may be filed only in the United States Court of Appeals for the appropriate circuit. Notwithstanding the preceding sentence a petition for review of any action referred to in such sentence may be filed only in the United States Court of Appeals for the District of Columbia if such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination. Any petition for review under this subsection shall be filed within sixty days from the date notice of such promulgation, approval, or action appears in the Federal Register, except that if such petition is based solely on grounds arising after such sixtieth day, then any petition for review under this subsection shall be filed within sixty days after such grounds arise. The filing of a petition for reconsideration by the Administrator of any otherwise final rule or action shall not affect the finality of such rule or action for purposes of judicial review nor extend the time within which a petition for judicial review of such rule or action under this section may be filed, and shall not postpone the effectiveness of such rule or action.

(2) Action of the Administrator with respect to which review could have been obtained under paragraph (1) shall not be subject to judicial review in civil or criminal proceedings for enforcement. Where a final decision by the Administrator defers performance of any nondiscretionary statutory action to a later time, any person may challenge the deferral pursuant to paragraph (1).

(c) Additional evidence

In any judicial proceeding in which review is sought of a determination under this chapter required to be made on the record after notice and opportunity for hearing, if any party applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, in such manner and upon such terms and conditions as to [\[FN3\]](#) the court may deem proper. The Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken and he shall file such modified or new findings, and his recommendation, if any, for the modification or setting aside of his original determination, with the return of such additional evidence.

(d) Rulemaking

(1) This subsection applies to--

(A) the promulgation or revision of any national ambient air quality standard under [section 7409](#) of this title,

(B) the promulgation or revision of an implementation plan by the Administrator under [section 7410\(c\)](#) of this title,

(C) the promulgation or revision of any standard of performance under [section 7411](#) of this title, or emission standard or limitation under [section 7412\(d\)](#) of this title, any standard under [section 7412\(f\)](#) of this title, or any regulation under [section 7412\(g\)\(1\)\(D\) and \(F\)](#) of this title, or any regulation under [section 7412\(m\)](#) or [\(n\)](#) of this title,

(D) the promulgation of any requirement for solid waste combustion under [section 7429](#) of this title,

(E) the promulgation or revision of any regulation pertaining to any fuel or fuel additive under [section 7545](#) of this title,

(F) the promulgation or revision of any aircraft emission standard under [section 7571](#) of this title,

(G) the promulgation or revision of any regulation under subchapter IV-A of this chapter (relating to control of acid deposition),

(H) promulgation or revision of regulations pertaining to primary nonferrous smelter orders under [section 7419](#) of this title (but not including the granting or denying of any such order),

(I) promulgation or revision of regulations under subchapter VI of this chapter (relating to stratosphere and ozone protection),

(J) promulgation or revision of regulations under part C of subchapter I of this chapter (relating to prevention of significant deterioration of air quality and protection of visibility),

(K) promulgation or revision of regulations under [section 7521](#) of this title and test procedures for new motor vehicles or engines under [section 7525](#) of this title, and the revision of a standard under [section 7521\(a\)\(3\)](#) of this title,

(L) promulgation or revision of regulations for noncompliance penalties under [section 7420](#) of this title,

(M) promulgation or revision of any regulations promulgated under [section 7541](#) of this title (relating to warranties and compliance by vehicles in actual use),

(N) action of the Administrator under [section 7426](#) of this title (relating to interstate pollution abatement),

(O) the promulgation or revision of any regulation pertaining to consumer and commercial products under [section 7511b\(e\)](#) of this title,

(P) the promulgation or revision of any regulation pertaining to field citations under [section 7413\(d\)\(3\)](#) of this title,

(Q) the promulgation or revision of any regulation pertaining to urban buses or the clean-fuel vehicle, clean-fuel fleet, and clean fuel programs under part C of subchapter II of this chapter,

(R) the promulgation or revision of any regulation pertaining to nonroad engines or nonroad vehicles under [section 7547](#) of this title,

(S) the promulgation or revision of any regulation relating to motor vehicle compliance program fees under [section 7552](#) of this title,

(T) the promulgation or revision of any regulation under subchapter IV-A of this chapter (relating to acid deposition),

(U) the promulgation or revision of any regulation under [section 7511b\(f\)](#) of this title pertaining to marine vessels, and

(V) such other actions as the Administrator may determine.

The provisions of [section 553](#) through [557](#) and [section 706 of Title 5](#) shall not, except as expressly provided in this subsection, apply to actions to which this subsection applies. This subsection shall not apply in the case of any rule or circumstance referred to in subparagraphs (A) or (B) of subsection 553(b) of Title 5.

(2) Not later than the date of proposal of any action to which this subsection applies, the Administrator shall establish a rulemaking docket for such action (hereinafter in this subsection referred to as a “rule”). Whenever a rule applies only within a particular State, a second (identical) docket shall be simultaneously established in the appropriate regional office of the Environmental Protection Agency.

(3) In the case of any rule to which this subsection applies, notice of proposed rulemaking shall be published in the Federal Register, as provided under [section 553\(b\) of Title 5](#), shall be accompanied by a statement of its basis and purpose and shall specify the period available for public comment (hereinafter referred to as the “comment period”). The notice of proposed rulemaking shall also state the docket number, the location or locations of the docket, and the times it will be open to public inspection. The statement of basis and purpose shall

include a summary of--

- (A) the factual data on which the proposed rule is based;
- (B) the methodology used in obtaining the data and in analyzing the data; and
- (C) the major legal interpretations and policy considerations underlying the proposed rule.

The statement shall also set forth or summarize and provide a reference to any pertinent findings, recommendations, and comments by the Scientific Review Committee established under [section 7409\(d\)](#) of this title and the National Academy of Sciences, and, if the proposal differs in any important respect from any of these recommendations, an explanation of the reasons for such differences. All data, information, and documents referred to in this paragraph on which the proposed rule relies shall be included in the docket on the date of publication of the proposed rule.

(4)(A) The rulemaking docket required under paragraph (2) shall be open for inspection by the public at reasonable times specified in the notice of proposed rulemaking. Any person may copy documents contained in the docket. The Administrator shall provide copying facilities which may be used at the expense of the person seeking copies, but the Administrator may waive or reduce such expenses in such instances as the public interest requires. Any person may request copies by mail if the person pays the expenses, including personnel costs to do the copying.

(B)(i) Promptly upon receipt by the agency, all written comments and documentary information on the proposed rule received from any person for inclusion in the docket during the comment period shall be placed in the docket. The transcript of public hearings, if any, on the proposed rule shall also be included in the docket promptly upon receipt from the person who transcribed such hearings. All documents which become available after the proposed rule has been published and which the Administrator determines are of central relevance to the rulemaking shall be placed in the docket as soon as possible after their availability.

(ii) The drafts of proposed rules submitted by the Administrator to the Office of Management and Budget for any interagency review process prior to proposal of any such rule, all documents accompanying such drafts, and all written comments thereon by other agencies and all written responses to such written comments by the Administrator shall be placed in the docket no later than the date of proposal of the rule. The drafts of the final rule submitted for such review process prior to promulgation and all such written comments thereon, all documents accompanying such drafts, and written responses thereto shall be placed in the docket no later than the date of promulgation.

(5) In promulgating a rule to which this subsection applies (i) the Administrator shall allow any person to submit written comments, data, or documentary information; (ii) the Administrator shall give interested persons an opportunity for the oral presentation of data, views, or arguments, in addition to an opportunity to make written submissions; (iii) a transcript shall be kept of any oral presentation; and (iv) the Administrator shall keep the re-

cord of such proceeding open for thirty days after completion of the proceeding to provide an opportunity for submission of rebuttal and supplementary information.

(6)(A) The promulgated rule shall be accompanied by (i) a statement of basis and purpose like that referred to in paragraph (3) with respect to a proposed rule and (ii) an explanation of the reasons for any major changes in the promulgated rule from the proposed rule.

(B) The promulgated rule shall also be accompanied by a response to each of the significant comments, criticisms, and new data submitted in written or oral presentations during the comment period.

(C) The promulgated rule may not be based (in part or whole) on any information or data which has not been placed in the docket as of the date of such promulgation.

(7)(A) The record for judicial review shall consist exclusively of the material referred to in paragraph (3), clause (i) of paragraph (4)(B), and subparagraphs (A) and (B) of paragraph (6).

(B) Only an objection to a rule or procedure which was raised with reasonable specificity during the period for public comment (including any public hearing) may be raised during judicial review. If the person raising an objection can demonstrate to the Administrator that it was impracticable to raise such objection within such time or if the grounds for such objection arose after the period for public comment (but within the time specified for judicial review) and if such objection is of central relevance to the outcome of the rule, the Administrator shall convene a proceeding for reconsideration of the rule and provide the same procedural rights as would have been afforded had the information been available at the time the rule was proposed. If the Administrator refuses to convene such a proceeding, such person may seek review of such refusal in the United States court of appeals for the appropriate circuit (as provided in subsection (b) of this section). Such reconsideration shall not postpone the effectiveness of the rule. The effectiveness of the rule may be stayed during such reconsideration, however, by the Administrator or the court for a period not to exceed three months.

(8) The sole forum for challenging procedural determinations made by the Administrator under this subsection shall be in the United States court of appeals for the appropriate circuit (as provided in subsection (b) of this section) at the time of the substantive review of the rule. No interlocutory appeals shall be permitted with respect to such procedural determinations. In reviewing alleged procedural errors, the court may invalidate the rule only if the errors were so serious and related to matters of such central relevance to the rule that there is a substantial likelihood that the rule would have been significantly changed if such errors had not been made.

(9) In the case of review of any action of the Administrator to which this subsection applies, the court may reverse any such action found to be--

(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;

(B) contrary to constitutional right, power, privilege, or immunity;

(C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right; or

(D) without observance of procedure required by law, if (i) such failure to observe such procedure is arbitrary or capricious, (ii) the requirement of paragraph (7)(B) has been met, and (iii) the condition of the last sentence of paragraph (8) is met.

(10) Each statutory deadline for promulgation of rules to which this subsection applies which requires promulgation less than six months after date of proposal may be extended to not more than six months after date of proposal by the Administrator upon a determination that such extension is necessary to afford the public, and the agency, adequate opportunity to carry out the purposes of this subsection.

(11) The requirements of this subsection shall take effect with respect to any rule the proposal of which occurs after ninety days after August 7, 1977.

(e) Other methods of judicial review not authorized

Nothing in this chapter shall be construed to authorize judicial review of regulations or orders of the Administrator under this chapter, except as provided in this section.

(f) Costs

In any judicial proceeding under this section, the court may award costs of litigation (including reasonable attorney and expert witness fees) whenever it determines that such award is appropriate.

(g) Stay, injunction, or similar relief in proceedings relating to noncompliance penalties

In any action respecting the promulgation of regulations under [section 7420](#) of this title or the administration or enforcement of [section 7420](#) of this title no court shall grant any stay, injunctive, or similar relief before final judgment by such court in such action.

(h) Public participation

It is the intent of Congress that, consistent with the policy of subchapter II of chapter 5 of Title 5, the Administrator in promulgating any regulation under this chapter, including a regulation subject to a deadline, shall ensure a reasonable period for public participation of at least 30 days, except as otherwise expressly provided in section [\[FN4\] 7407\(d\)](#), [7502\(a\)](#), [7511\(a\)](#) and (b), and [7512\(a\)](#) and (b) of this title.

CREDIT(S)

(July 14, 1955, c. 360, Title III, § 307, as added Dec. 31, 1970, Pub.L. 91-604, § 12(a), 84 Stat. 1707; amended Nov. 18, 1971, Pub.L. 92-157, Title III, § 302(a), 85 Stat. 464; June 22, 1974, Pub.L. 93-319, § 6(c), 88 Stat. 259; Aug. 7, 1977, Pub.L. 95-95, Title III, §§ 303(d), 305(a), (c), (f)-(h), 91 Stat. 772, 776, 777; Nov. 16, 1977, Pub.L. 95-190, § 14(a)(79), (80), 91 Stat. 1404; Nov. 15, 1990, Pub.L. 101-549, Title I, §§ 108(p), 110(5), Title III, § 302(g), (h), Title VII, §§ 702(c), 703, 706, 707(h), 710(b), 104 Stat. 2469, 2470, 2574, 2681-2684.)

[FN1] So in original. Probably should be “this”.

[FN2] So in original.

[FN3] So in original. The word “to” probably should not appear.

[FN4] So in original. Probably should be “sections”.

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C**Effective: August 10, 2005**United States Code Annotated [Currentness](#)

Title 42. The Public Health and Welfare

 ▣ [Chapter 85. Air Pollution Prevention and Control \(Refs & Annos\)](#) ▣ [Subchapter III. General Provisions](#) →→ **§ 7619. Air quality monitoring**

(a) In general

After notice and opportunity for public hearing, the Administrator shall promulgate regulations establishing an air quality monitoring system throughout the United States which--

- (1) utilizes uniform air quality monitoring criteria and methodology and measures such air quality according to a uniform air quality index,
- (2) provides for air quality monitoring stations in major urban areas and other appropriate areas throughout the United States to provide monitoring such as will supplement (but not duplicate) air quality monitoring carried out by the States required under any applicable implementation plan,
- (3) provides for daily analysis and reporting of air quality based upon such uniform air quality index, and
- (4) provides for recordkeeping with respect to such monitoring data and for periodic analysis and reporting to the general public by the Administrator with respect to air quality based upon such data.

The operation of such air quality monitoring system may be carried out by the Administrator or by such other departments, agencies, or entities of the Federal Government (including the National Weather Service) as the President may deem appropriate. Any air quality monitoring system required under any applicable implementation plan under [section 7410](#) of this title shall, as soon as practicable following promulgation of regulations under this section, utilize the standard criteria and methodology, and measure air quality according to the standard index, established under such regulations.

(b) Air quality monitoring data influenced by exceptional events

- (1) Definition of exceptional event

In this section:

(A) In general

The term “exceptional event” means an event that--

- (i) affects air quality;
- (ii) is not reasonably controllable or preventable;
- (iii) is an event caused by human activity that is unlikely to recur at a particular location or a natural event; and
- (iv) is determined by the Administrator through the process established in the regulations promulgated under paragraph (2) to be an exceptional event.

(B) Exclusions

In this subsection, the term “exceptional event” does not include--

- (i) stagnation of air masses or meteorological inversions;
- (ii) a meteorological event involving high temperatures or lack of precipitation; or
- (iii) air pollution relating to source noncompliance.

(2) Regulations

(A) Proposed regulations

Not later than March 1, 2006, after consultation with Federal land managers and State air pollution control agencies, the Administrator shall publish in the Federal Register proposed regulations governing the review and handling of air quality monitoring data influenced by exceptional events.

(B) Final regulations

Not later than 1 year after the date on which the Administrator publishes proposed regulations under sub-

paragraph (A), and after providing an opportunity for interested persons to make oral presentations of views, data, and arguments regarding the proposed regulations, the Administrator shall promulgate final regulations governing the review and handling of air quality monitoring data influenced by an exceptional event that are consistent with paragraph (3).

(3) Principles and requirements

(A) Principles

In promulgating regulations under this section, the Administrator shall follow--

- (i) the principle that protection of public health is the highest priority;
- (ii) the principle that timely information should be provided to the public in any case in which the air quality is unhealthy;
- (iii) the principle that all ambient air quality data should be included in a timely manner, in an appropriate Federal air quality database that is accessible to the public;
- (iv) the principle that each State must take necessary measures to safeguard public health regardless of the source of the air pollution; and
- (v) the principle that air quality data should be carefully screened to ensure that events not likely to recur are represented accurately in all monitoring data and analyses.

(B) Requirements

Regulations promulgated under this section shall, at a minimum, provide that--

- (i) the occurrence of an exceptional event must be demonstrated by reliable, accurate data that is promptly produced and provided by Federal, State, or local government agencies;
- (ii) a clear causal relationship must exist between the measured exceedances of a national ambient air quality standard and the exceptional event to demonstrate that the exceptional event caused a specific air pollution concentration at a particular air quality monitoring location;
- (iii) there is a public process for determining whether an event is exceptional; and

(iv) there are criteria and procedures for the Governor of a State to petition the Administrator to exclude air quality monitoring data that is directly due to exceptional events from use in determinations by the Administrator with respect to exceedances or violations of the national ambient air quality standards.

(4) Interim provision

Until the effective date of a regulation promulgated under paragraph (2), the following guidance issued by the Administrator shall continue to apply:

(A) Guidance on the identification and use of air quality data affected by exceptional events (July 1986).

(B) Areas affected by PM-10 natural events, May 30, 1996.

(C) Appendices I, K, and N to part 50 of title 40, Code of Federal Regulations.

CREDIT(S)

(July 14, 1955, c. 360, Title III, § 319, as added Aug. 7, 1977, Pub.L. 95-95, Title III, § 309, 91 Stat. 781; amended Aug. 10, 2005, Pub.L. 109-59, Title VI, § 6013(a), 119 Stat. 1882.)

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Title 40. Protection of Environment

Chapter I. Environmental Protection Agency
(Refs & Annos)

▣ [Subchapter C. Air Programs](#)

▣ [Part 50. National Primary and Secondary Ambient Air Quality Standards \(Refs & Annos\)](#)

→ **§ 50.1 Definitions.**

(a) As used in this part, all terms not defined herein shall have the meaning given them by the Act.

(b) Act means the Clean Air Act, as amended ([42 U.S.C. 1857](#) –18571, as amended by Pub.L. 91–604).

(c) Agency means the Environmental Protection Agency.

(d) Administrator means the Administrator of the Environmental Protection Agency.

(e) Ambient air means that portion of the atmosphere, external to buildings, to which the general public has access.

(f) Reference method means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to this part, or a method that has been designated as a reference method in accordance with Part 53 of this chapter; it does not include a method for which a reference method designation has been cancelled in accordance with [§ 53.11](#) or [§ 53.16](#) of this chapter.

(g) Equivalent method means a method of sampling and analyzing the ambient air for an air pollutant that has been designated as an equivalent method in accordance with Part 53 of this chapter; it does not include a method for which an equivalent method designation has been cancelled in accordance with [§ 53.11](#) or [§ 53.16](#) of this chapter.

(h) Traceable means that a local standard has been compared and certified either directly or via not more than one intermediate standard, to a primary standard such as a National Bureau of Standards Standard Reference Material (NBS SRM), or a USEPA/NBS-approved Certified Reference Material (CRM).

(i) Indian country is as defined in [18 U.S.C. 1151](#).

(j) Exceptional event means an event that affects air quality, is not reasonably controllable or preventable, is an event caused by human activity that is unlikely to recur at a particular location or a natural event, and is determined by the Administrator in accordance with [40 CFR 50.14](#) to be an exceptional event. It does not include stagnation of air masses or meteorological inversions, a meteorological event involving high temperatures or lack of precipitation, or air pollution relating to source noncompliance.

(k) Natural event means an event in which human activity plays little or no direct causal role.

(l) Exceedance with respect to a national ambient air quality standard means one occurrence of a measured or modeled concentration that exceeds the specified concentration level of such standard for the averaging period specified by the standard.

[[36 FR 22384](#), Nov. 25, 1971, as amended at [41 FR](#)

11253, March 17, 1976; 48 FR 2529, Jan. 20, 1983;
63 FR 7274, Feb. 12, 1998; 72 FR 13580, March
22, 2007]

SOURCE: 36 FR 22384, Nov. 25, 1971; 50 FR
25544, June 19, 1985; 63 FR 7274, Feb. 12, 1998
unless otherwise noted., unless otherwise noted.

AUTHORITY: 42 U.S.C. 7401, et seq.

40 C. F. R. § 50.1, 40 CFR § 50.1

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Code of Federal Regulations [Currentness](#)
 Title 40. Protection of Environment
 Chapter I. Environmental Protection Agency
 (Refs & Annos)
 ▯ [Subchapter C](#). Air Programs
 ▯ [Part 50](#). National Primary and Secondary Ambient Air Quality Standards (Refs & Annos)
 → **§ 50.18 National primary ambient air quality standards for PM_{2.5}.**

(a) The national primary ambient air quality standards for PM_{2.5} are 12.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) annual arithmetic mean concentration and 35 $\mu\text{g}/\text{m}^3$ 24-hour average concentration measured in the ambient air as PM_{2.5} (particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers) by either:

- (1) A reference method based on appendix L to this part and designated in accordance with part 53 of this chapter; or
- (2) An equivalent method designated in accordance with part 53 of this chapter.

(b) The primary annual PM_{2.5} standard is met when the annual arithmetic mean concentration, as determined in accordance with appendix N of this part, is less than or equal to 12.0 $\mu\text{g}/\text{m}^3$.

(c) The primary 24-hour PM_{2.5} standard is met when the 98th percentile 24-hour concentration, as determined in accordance with appendix N of this part, is less than or equal to 35 $\mu\text{g}/\text{m}^3$.

[78 FR 3277, Jan. 15, 2013]

SOURCE: 36 FR 22384, Nov. 25, 1971; 50 FR 25544, June 19, 1985; 63 FR 7274, Feb. 12, 1998 unless otherwise noted., unless otherwise noted.

AUTHORITY: 42 U.S.C. 7401, et seq.

40 C. F. R. § 50.18, 40 CFR § 50.18

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Title 40. Protection of Environment

Chapter I. Environmental Protection Agency (Refs & Annos)

▣ Subchapter C. Air Programs

▣ Part 50. National Primary and Secondary Ambient Air Quality Standards (Refs & Annos)

→ **Appendix N to Part 50--Interpretation of the National Ambient Air Quality Standards for PM_{2.5}**

1.0 General

(a) This appendix explains the data handling conventions and computations necessary for determining when the national ambient air quality standards (NAAQS) for PM_{2.5} are met, specifically the primary and secondary annual and 24-hour PM_{2.5} NAAQS specified in § 50.7, 50.13, and 50.18. PM_{2.5} is defined, in general terms, as particles with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers. PM_{2.5} mass concentrations are measured in the ambient air by a Federal Reference Method (FRM) based on appendix L of this part, as applicable, and designated in accordance with part 53 of this chapter; or by a Federal Equivalent Method (FEM) designated in accordance with part 53 of this chapter; or by an Approved Regional Method (ARM) designated in accordance with part 58 of this chapter. Only those FRM, FEM, and ARM measurements that are derived in accordance with part 58 of this chapter (i.e., that are deemed “suitable”) shall be used in comparisons with the PM_{2.5} NAAQS. The data handling and computation procedures to be used to construct annual and 24-hour NAAQS metrics from reported PM_{2.5} mass concentrations, and the associated instructions for comparing these calculated metrics to the levels of the PM_{2.5} NAAQS, are specified in sections 2.0, 3.0, and 4.0 of this appendix.

(b) Decisions to exclude, retain, or make adjustments to the data affected by exceptional events, including natural events, are made according to the requirements and process deadlines specified in §§ 50.1, 50.14 and 51.930 of this chapter.

(c) The terms used in this appendix are defined as follows:

Annual mean refers to a weighted arithmetic mean, based on quarterly means, as defined in section 4.4 of this appendix.

The Air Quality System (AQS) is EPA's official repository of ambient air data.

Collocated monitors refers to two or more air measurement instruments for the same parameter (e.g., PM_{2.5} mass) operated at the same site location, and whose placement is consistent with § 53.1 of this chapter. For purposes of considering a combined site record in this appendix, when two or more monitors are operated at the same site, one monitor is designated as the “primary” monitor with any additional monitors designated as “collocated.” It is implicit in these appendix procedures that the primary monitor and collocated monitor(s) are all deemed suitable for the applicable NAAQS comparison; however, it is not a requirement that the primary and monitors utilize the same specific sampling and analysis method.

Combined site data record is the data set used for performing calculations in appendix N. It represents data for the primary monitors augmented with data from collocated monitors according to the procedure specified in section 3.0(d) of this appendix.

Creditable samples are daily values in the combined site record that are given credit for data completeness. The number of creditable samples (cn) for a given year also governs which value in the sorted series of daily values represents the 98th percentile for that year. Creditable samples include daily values collected on scheduled sampling days and valid make-up samples taken for missed or invalidated samples on scheduled sampling

days.

Daily values refer to the 24-hour average concentrations of PM_{2.5} mass measured (or averaged from hourly measurements in AQS) from midnight to midnight (local standard time) from suitable monitors.

Data substitution tests are diagnostic evaluations performed on an annual PM_{2.5} NAAQS design value (DV) or a 24-hour PM_{2.5} NAAQS DV to determine if those metrics, which are judged to be based on incomplete data in accordance with 4.1(b) or 4.2(b) of this appendix shall nevertheless be deemed valid for NAAQS comparisons, or alternatively, shall still be considered incomplete and not valid for NAAQS comparisons. There are two data substitution tests, the “minimum quarterly value” test and the “maximum quarterly value” test. Design values (DVs) are the 3-year average NAAQS metrics that are compared to the NAAQS levels to determine when a monitoring site meets or does not meet the NAAQS, calculated as shown in [section 4](#). There are two separate DVs specified in this appendix:

(1) The 3-year average of PM_{2.5} annual mean mass concentrations for each eligible monitoring site is referred to as the “annual PM_{2.5} NAAQS DV”.

(2) The 3-year average of annual 98th percentile 24-hour average PM_{2.5} mass concentration values recorded at each eligible monitoring site is referred to as the “24-hour (or daily) PM_{2.5} NAAQS DV”.

Eligible sites are monitoring stations that meet the criteria specified in [§ 58.11](#) and [§ 58.30](#) of this chapter, and thus are approved for comparison to the annual PM_{2.5} NAAQS. For the 24-hour PM_{2.5} NAAQS, all site locations that meet the criteria specified in [§ 58.11](#) are approved (i.e., eligible) for NAAQS comparisons.

Extra samples are non-creditable samples. They are daily values that do not occur on scheduled sampling days and that cannot be used as make-up samples for missed or invalidated scheduled samples. Extra samples are used in mean calculations and are included in the series of all daily values subject to selection as a 98th percentile value, but are not used to determine which

value in the sorted list represents the 98th percentile.

Make-up samples are samples collected to take the place of missed or invalidated required scheduled samples. Make-up samples can be made by either the primary or the collocated monitor. Make-up samples are either taken before the next required sampling day or exactly one week after the missed (or voided) sampling day.

The maximum quarterly value data substitution test substitutes actual “high” reported daily PM_{2.5} values from the same site (specifically, the highest reported non-excluded quarterly value(s) (year non-specific) contained in the combined site record for the evaluated 3-year period) for missing daily values.

The minimum quarterly value data substitution test substitutes actual “low” reported daily PM_{2.5} values from the same site (specifically, the lowest reported quarterly value(s) (year non-specific) contained in the combined site record for the evaluated 3-year period) for missing daily values.

98th percentile is the smallest daily value out of a year of PM_{2.5} mass monitoring data below which no more than 98 percent of all daily values fall using the ranking and selection method specified in [section 4.5\(a\)](#) of this appendix.

Primary monitors are suitable monitors designated by a state or local agency in their annual network plan (and in AQS) as the default data source for creating a combined site record for purposes of NAAQS comparisons. If there is only one suitable monitor at a particular site location, then it is presumed to be a primary monitor.

Quarter refers to a calendar quarter (e.g., January through March).

Quarterly data capture rate is the percentage of scheduled samples in a calendar quarter that have corresponding valid reported sample values. Quarterly data capture rates are specifically calculated as the number of creditable samples for the quarter divided by the number of scheduled samples for the quarter, the result then multiplied by 100 and rounded to the nearest integer.

Scheduled PM_{2.5} samples refers to those reported daily values which are consistent with the required sampling frequency (per § 58.12 of this chapter) for the primary monitor, or those that meet the special exception noted in section 3.0(e) of this appendix.

Seasonal sampling is the practice of collecting data at a reduced frequency during a season of expected low concentrations.

Suitable monitors are instruments that use sampling and analysis methods approved for NAAQS comparisons. For the annual and 24-hour PM_{2.5} NAAQS, suitable monitors include all FRMs, and all FEMs/ARMs except those specific continuous FEMs/ARMs disqualified by a particular monitoring agency network in accordance with § 58.10(b)(13) and approved by the EPA Regional Administrator per § 58.11(e) of this chapter.

Test design values (TDV) are numerical values that used in the data substitution tests described in sections 4.1(c)(i), 4.1(c)(ii) and 4.2(c)(i) of this appendix to determine if the PM_{2.5} NAAQS DV with incomplete data are judged to be valid for NAAQS comparisons. There are two TDVs: TDV_{min} to determine if the NAAQS is not met and is used in the “minimum quarterly value” data substitution test and TDV_{max} to determine if the NAAQS is met and is used in the “maximum quarterly value” data substitution test. These TDV's are derived by substituting historically low or historically high daily concentration values for missing data in an incomplete year(s).

Year refers to a calendar year.

2.0 Monitoring Considerations

(a) Section 58.30 of this chapter provides special considerations for data comparisons to the annual PM_{2.5} NAAQS.

(b) Monitors meeting the network technical requirements detailed in § 58.11 of this chapter are suitable for comparison with the NAAQS for PM_{2.5}.

(c) Section 58.12 of this chapter specifies the required minimum frequency of sampling for PM_{2.5}. Exceptions

to the specified sampling frequencies, such as seasonal sampling, are subject to the approval of the EPA Regional Administrator and must be documented in the state or local agency Annual Monitoring Network Plan as required in § 58.10 of this chapter and also in AQS.

3.0 Requirements for Data Use and Data Reporting for Comparisons With the NAAQS for PM_{2.5}

(a) Except as otherwise provided in this appendix, all valid FRM/FEM/ARM PM_{2.5} mass concentration data produced by suitable monitors that are required to be submitted to AQS, or otherwise available to EPA, meeting the requirements of part 58 of this chapter including appendices A, C, and E shall be used in the DV calculations. Generally, EPA will only use such data if they have been certified by the reporting organization (as prescribed by § 58.15 of this chapter); however, data not certified by the reporting organization can nevertheless be used, if the deadline for certification has passed and EPA judges the data to be complete and accurate.

(b) PM_{2.5} mass concentration data (typically collected hourly for continuous instruments and daily for filter-based instruments) shall be reported to AQS in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to at least one decimal place. If concentrations are reported to one decimal place, additional digits to the right of the tenths decimal place shall be truncated. If concentrations are reported to AQS with more than one decimal place, AQS will truncate the value to one decimal place for NAAQS usage (i.e., for implementing the procedures in this appendix). In situations where suitable PM_{2.5} data are available to EPA but not reported to AQS, the same truncation protocol shall be applied to that data. In situations where PM_{2.5} mass data are submitted to AQS, or are otherwise available, with less precision than specified above, these data shall nevertheless still be deemed appropriate for NAAQS usage.

(c) Twenty-four-hour average concentrations will be computed in AQS from submitted hourly PM_{2.5} concentration data for each corresponding day of the year and the result will be stored in the first, or start, hour (i.e., midnight, hour ‘0’) of the 24-hour period. A 24-hour average concentration shall be considered valid

if at least 75 percent of the hourly averages (i.e., 18 hourly values) for the 24-hour period are available. In the event that less than all 24 hourly average concentrations are available (i.e., less than 24, but at least 18), the 24-hour average concentration shall be computed on the basis of the hours available using the number of available hours within the 24-hour period as the divisor (e.g., 19, if 19 hourly values are available). Twenty-four-hour periods with seven or more missing hours shall also be considered valid if, after substituting zero for all missing hourly concentrations, the resulting 24-hour average daily value is greater than the level of the 24-hour $PM_{2.5}$ NAAQS (i.e., greater than or equal to $35.5 \mu\text{g}/\text{m}^3$). Twenty-four hour average $PM_{2.5}$ mass concentrations that are averaged in AQS from hourly values will be truncated to one decimal place, consistent with the data handling procedure for the reported hourly (and also 24-hour filter-based) data.

(d) All calculations shown in this appendix shall be implemented on a site-level basis. Site level concentration data shall be processed as follows:

(1) The default dataset for $PM_{2.5}$ mass concentrations for a site shall consist of the measured concentrations recorded from the designated primary monitor(s). All daily values produced by the primary monitor are considered part of the site record; this includes all creditable samples and all extra samples.

(2) Data for the primary monitors shall be augmented as much as possible with data from collocated monitors. If a valid daily value is not produced by the primary monitor for a particular day (scheduled or otherwise), but a value is available from a collocated monitor, then that collocated value shall be considered part of the combined site data record. If more than one collocated daily value is available, the average of those valid collocated values shall be used as the daily value. The data record resulting from this procedure is referred to as the "combined site data record."

(e) All daily values in a combined site data record are used in the calculations specified in this appendix; however, not all daily values are given credit towards data completeness requirements. Only creditable

samples are given credit for data completeness. Creditable samples include daily values in the combined site record that are collected on scheduled sampling days and valid make-up samples taken for missed or invalidated samples on scheduled sampling days. Days are considered scheduled according to the required sampling frequency of the designated primary monitor with one exception. The exception is, if a collocated continuous FEM/ARM monitor has a more intensive sampling frequency than the primary FRM monitor, then samples contributed to the combined site record from that continuous FEM/ARM monitor are always considered scheduled and, hence, also creditable. Daily values in the combined site data record that are reported for nonscheduled days, but that are not valid make-up samples are referred to as extra samples.

4.0 Comparisons With the Annual and 24-Hour $PM_{2.5}$ NAAQS

4.1 Annual $PM_{2.5}$ NAAQS

(a) The primary annual $PM_{2.5}$ NAAQS is met when the annual $PM_{2.5}$ NAAQS DV is less than or equal to $12.0 \mu\text{g}/\text{m}^3$ at each eligible monitoring site. The secondary annual $PM_{2.5}$ NAAQS is met when the annual $PM_{2.5}$ NAAQS DV is less than or equal to $15.0 \mu\text{g}/\text{m}^3$ at each eligible monitoring site.

(b) Three years of valid annual means are required to produce a valid annual $PM_{2.5}$ NAAQS DV. A year meets data completeness requirements when quarterly data capture rates for all four quarters are at least 75 percent. However, years with at least 11 creditable samples in each quarter shall also be considered valid if the resulting annual mean or resulting annual $PM_{2.5}$ NAAQS DV (rounded according to the conventions of section 4.3 of this appendix) is greater than the level of the applicable primary or secondary annual $PM_{2.5}$ NAAQS. Furthermore, where the explicit 75 percent data capture and/or 11 sample minimum requirements are not met, the 3-year annual $PM_{2.5}$ NAAQS DV shall still be considered valid if it passes at least one of the two data substitution tests stipulated below.

(c) In the case of one, two, or three years that do not

meet the completeness requirements of section 4.1(b) of this appendix and thus would normally not be useable for the calculation of a valid annual $PM_{2.5}$ NAAQS DV, the annual $PM_{2.5}$ NAAQS DV shall nevertheless be considered valid if one of the test conditions specified in sections 4.1(c)(i) and 4.1(c)(ii) of this appendix is met.

(i) An annual $PM_{2.5}$ NAAQS DV that is above the level of the NAAQS can be validated if it passes the minimum quarterly value data substitution test. This type of data substitution is permitted only if there are at least 30 days across the three quarters of the three years under consideration (e.g., collectively, quarter 1 of year 1, quarter 1 of year 2 and quarter 1 of year 3) from which to select the quarter-specific low value. Data substitution will be performed in all quarter periods that have less than 11 creditable samples.

Procedure: Identify for each deficient quarter (i.e., those with less than 11 creditable samples) the lowest reported daily value for that quarter, looking across those three months of all three years under consideration. If after substituting the lowest reported daily value for a quarter for (11- *cn*) daily values in the matching deficient quarter(s) (i.e., to bring the creditable number for those quarters up to 11), the procedure yields a recalculated annual $PM_{2.5}$ NAAQS test DV (TDV_{min}) that is greater than the level of the standard, then the annual $PM_{2.5}$ NAAQS DV is deemed to have passed the diagnostic test and is valid, and the annual $PM_{2.5}$ NAAQS is deemed to have been violated in that 3-year period.

(ii) An annual $PM_{2.5}$ NAAQS DV that is equal to or below the level of the NAAQS can be validated if it passes the maximum quarterly value data substitution test. This type of data substitution is permitted only if there is at least 50 percent data capture in each quarter that is deficient of 75 percent data capture in each of the three years under consideration. Data substitution will be performed in all quarter periods that have less than 75 percent data capture but at least 50 percent data capture. If any quarter has less than 50 percent data capture then this substitution test cannot be used.

Procedure: Identify for each deficient quarter (i.e., those

with less than 75 percent but at least 50 percent data capture) the highest reported daily value for that quarter, excluding state-flagged data affected by exceptional events which have been approved for exclusion by the Administrator, looking across those three quarters of all three years under consideration. If after substituting the highest reported daily $PM_{2.5}$ value for a quarter for all missing daily data in the matching deficient quarter(s) (i.e., to make those quarters 100 percent complete), the procedure yields a recalculated annual $PM_{2.5}$ NAAQS test DV (TDV_{max}) that is less than or equal to the level of the standard, then the annual $PM_{2.5}$ NAAQS DV is deemed to have passed the diagnostic test and is valid, and the annual $PM_{2.5}$ NAAQS is deemed to have been met in that 3-year period.

(d) An annual $PM_{2.5}$ NAAQS DV based on data that do not meet the completeness criteria stated in 4(b) and also do not satisfy the test conditions specified in section 4(c), may also be considered valid with the approval of, or at the initiative of, the EPA Administrator, who may consider factors such as monitoring site closures/moves, monitoring diligence, the consistency and levels of the daily values that are available, and nearby concentrations in determining whether to use such data.

(e) The equations for calculating the annual $PM_{2.5}$ NAAQS DVs are given in section 4.4 of this appendix.

4.2 Twenty-four-hour $PM_{2.5}$ NAAQS

(a) The primary and secondary 24-hour $PM_{2.5}$ NAAQS are met when the 24-hour $PM_{2.5}$ NAAQS DV at each eligible monitoring site is less than or equal to $35 \mu\text{g}/\text{m}^3$.

(b) Three years of valid annual $PM_{2.5}$ 98th percentile mass concentrations are required to produce a valid 24-hour $PM_{2.5}$ NAAQS DV. A year meets data completeness requirements when quarterly data capture rates for all four quarters are at least 75 percent. However, years shall be considered valid, notwithstanding quarters with less than complete data (even quarters with less than 11 creditable samples, but at least one creditable sample must be present for the year), if the resulting annual 98th percentile value or resulting

24-hour NAAQS DV (rounded according to the conventions of section 4.3 of this appendix) is greater than the level of the standard. Furthermore, where the explicit 75 percent quarterly data capture requirement is not met, the 24-hour PM_{2.5} NAAQS DV shall still be considered valid if it passes the maximum quarterly value data substitution test.

(c) In the case of one, two, or three years that do not meet the completeness requirements of section 4.2(b) of this appendix and thus would normally not be useable for the calculation of a valid 24-hour PM_{2.5} NAAQS DV, the 24-hour PM_{2.5} NAAQS DV shall nevertheless be considered valid if the test conditions specified in section 4.2(c)(i) of this appendix are met.

(i) A PM_{2.5} 24-hour mass NAAQS DV that is equal to or below the level of the NAAQS can be validated if it passes the maximum quarterly value data substitution test. This type of data substitution is permitted only if there is at least 50 percent data capture in each quarter that is deficient of 75 percent data capture in each of the three years under consideration. Data substitution will be performed in all quarters that have less than 75 percent data capture but at least 50 percent data capture. If any quarter has less than 50 percent data capture then this substitution test cannot be used.

Procedure: Identify for each deficient quarter (i.e., those with less than 75 percent but at least 50 percent data capture) the highest reported daily PM_{2.5} value for that quarter, excluding state-flagged data affected by exceptional events which have been approved for exclusion by the Regional Administrator, looking across those three quarters of all three years under consideration. If, after substituting the highest reported daily maximum PM_{2.5} value for a quarter for all missing daily data in the matching deficient quarter(s) (i.e., to make those quarters 100 percent complete), the procedure yields a recalculated 3-year 24-hour NAAQS test DV (TDV_{max}) less than or equal to the level of the standard, then the 24-hour PM_{2.5} NAAQS DV is deemed to have passed the diagnostic test and is valid, and the 24-hour PM_{2.5} NAAQS is deemed to have been met in that

3-year period.

(d) A 24-hour PM_{2.5} NAAQS DV based on data that do not meet the completeness criteria stated in section 4(b) of this appendix and also do not satisfy the test conditions specified in section 4(c) of this appendix, may also be considered valid with the approval of, or at the initiative of, the EPA Administrator, who may consider factors such as monitoring site closures/moves, monitoring diligence, the consistency and levels of the daily values that are available, and nearby concentrations in determining whether to use such data.

(e) The procedures and equations for calculating the 24-hour PM_{2.5} NAAQS DVs are given in section 4.5 of this appendix.

4.3 Rounding Conventions. For the purposes of comparing calculated PM_{2.5} NAAQS DVs to the applicable level of the standard, it is necessary to round the final results of the calculations described in sections 4.4 and 4.5 of this appendix. Results for all intermediate calculations shall not be rounded.

(a) Annual PM_{2.5} NAAQS DVs shall be rounded to the nearest tenth of a $\mu\text{g}/\text{m}^3$ (decimals x.x5 and greater are rounded up to the next tenth, and any decimal lower than x.x5 is rounded down to the nearest tenth).

(b) Twenty-four-hour PM_{2.5} NAAQS DVs shall be rounded to the nearest 1 $\mu\text{g}/\text{m}^3$ (decimals 0.5 and greater are rounded up to the nearest whole number, and any decimal lower than 0.5 is rounded down to the nearest whole number).

4.4 Equations for the Annual PM_{2.5} NAAQS.

(a) An annual mean value for PM_{2.5} is determined by first averaging the daily values of a calendar quarter using equation 1 of this appendix:

Equation 1

$$\bar{X}_{q,y} = \frac{1}{n_q} \sum_{i=1}^{n_q} X_{i,q,y}$$

Where:

$\bar{X}_{q,y}$ = the mean for quarter q of the year y;

n_q = the number of daily values in the quarter; and

$x_{i,q,y}$ = the ith value in quarter q for year y.

(b) Equation 2 of this appendix is then used to calculate the site annual mean:

Equation 2

$$\bar{X}_y = \frac{1}{4} \sum_{q=1}^4 \bar{X}_{q,y}$$

Where:

\bar{X}_y = the annual mean concentration for year y (y = 1, 2, or 3); and

$\bar{X}_{q,y}$ = the mean for quarter q of year y (result of equation 1).

(c) The annual $PM_{2.5}$ NAAQS DV is calculated using equation 3 of this appendix:

Equation 3

$$\bar{X} = \frac{1}{3} \sum_{y=1}^3 \bar{X}_y$$

Where:

\bar{X} = the annual $PM_{2.5}$ NAAQS DV; and

\bar{X}_y = the annual mean for year y (result of equation 2)

(d) The annual $PM_{2.5}$ NAAQS DV is rounded according to the conventions in section 4.3 of this appendix before comparisons with the levels of the primary and secondary annual $PM_{2.5}$ NAAQS are made.

4.5 Procedures and Equations for the 24-Hour $PM_{2.5}$ NAAQS

(a) When the data for a particular site and year meet the data completeness requirements in section 4.2 of this appendix, calculation of the 98th percentile is accomplished by the steps provided in this subsection. Table 1 of this appendix shall be used to identify annual 98th percentile values.

Identification of annual 98th percentile values using the Table 1 procedure will be based on the creditable number of samples (as described below), rather than on the actual number of samples. Credit will not be granted for extra (non-creditable) samples. Extra samples, however, are candidates for selection as the annual 98th percentile. [The creditable number of samples will determine how deep to go into the data distribution, but all samples (creditable and extra) will be considered when making the percentile assignment.] The annual creditable number of samples is the sum of the four quarterly creditable number of samples.

Procedure: Sort all the daily values from a particular

site and year by descending value. (For example: (x[1], x[2], x[3], * * *, x[n]). In this case, x[1] is the largest number and x[n] is the smallest value.) The 98th percentile value is determined from this sorted series of daily values which is ordered from the highest to the lowest number. Using the left column of Table 1, determine the appropriate range for the annual creditable number of samples for year y (cn_y) (e.g., for 120 creditable samples per year, the appropriate range would be 101 to 150). The corresponding “n” value in the right column identifies the rank of the annual 98th percentile value in the descending sorted list of site specific daily values for year y (e.g., for the range of 101 to 150, n would be 3). Thus, P_{0.98, y} = the nth largest value (e.g., for the range of 101 to 150, the 98th percentile value would be the third highest value in the sorted series of daily values.

Table 1

Annual number of creditable samples for year y (cn _y)	The 98th percentile for year y (P _{0.98,y}), is the nth maximum 24-hour average value for the year where n is the listed number
1 to 50	1
51 to 100	2
101 to 150	3
151 to 200	4
201 to 250	5
251 to 300	6
301 to 350	7
351 to 366	8

(b) The 24-hour PM_{2.5} NAAQS DV is then calculated by averaging the annual 98th percentiles using equation 4 of this appendix: P_{0.98,y}

Equation 4

$$\bar{P}_{0.98} = \frac{1}{3} \sum_{y=1}^3 P_{0.98,y}$$

Where:

$PAE_{0.98}$ = the 24-hour $PM_{2.5}$ NAAQS DV; and

$P_{0.98,y}$ = the annual 98th percentile for year y

(c) The 24-hour $PM_{2.5}$ NAAQS DV is rounded according to the conventions in section 4.3 of this appendix before a comparison with the level of the primary and secondary 24-hour NAAQS are made.

[62 FR 38755, July 18, 1997; 69 FR 45595, July 30, 2004; 71 FR 61227, Oct. 17, 2006; 73 FR 1502, Jan. 9, 2008; 78 FR 3277, Jan. 15, 2013]

SOURCE: 36 FR 22384, Nov. 25, 1971; 50 FR 25544, June 19, 1985; 63 FR 7274, Feb. 12, 1998 unless otherwise noted., unless otherwise noted.

AUTHORITY: 42 U.S.C. 7401, et seq.

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Title 40. Protection of Environment

Chapter I. Environmental Protection Agency
([Refs & Annos](#))

Subchapter C. Air Programs

▣ [Part 58. Ambient Air Quality Surveillance](#) ([Refs & Annos](#))▣ [Subpart A. General Provisions](#) ([Refs & Annos](#))→ **§ 58.1 Definitions.**

As used in this part, all terms not defined herein have the meaning given them in the Act.

AADT means the annual average daily traffic.

Act means the Clean Air Act as amended ([42 U.S.C. 7401, et seq.](#))

Additive and multiplicative bias means the linear regression intercept and slope of a linear plot fitted to corresponding candidate and reference method mean measurement data pairs.

Administrator means the Administrator of the Environmental Protection Agency (EPA) or his or her authorized representative.

Air Quality System (AQS) means EPA's computerized system for storing and reporting of information relating to ambient air quality data.

Approved regional method (ARM) means a continuous PM_{2.5} method that has been approved specifically within a State or local air monitoring network for purposes of comparison to the NAAQS and to meet other monitoring objectives.

AQCR means air quality control region.

Area-wide means all monitors sited at neighborhood, urban, and regional scales, as well as those monitors sited at either micro- or middle-scale that are representative of many such locations in the same CBSA.

CO means carbon monoxide.

Combined statistical area (CSA) is defined by the U.S. Office of Management and Budget as a geographical area consisting of two or more adjacent Core Based Statistical Areas (CBSA) with employment interchange of at least 15 percent. Combination is automatic if the employment interchange is 25 percent and determined by local opinion if more than 15 but less than 25 percent (<http://www.census.gov/population/estimates/metro-city/List6.txt>).

Core-based statistical area (CBSA) is defined by the U.S. Office of Management and Budget, as a statistical geographic entity consisting of the county or counties associated with at least one urbanized area/urban cluster of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration. Metropolitan Statistical Areas (MSAs) and micropolitan statistical areas are the two categories of CBSA (metropolitan areas have populations greater than 50,000; and micropolitan areas have populations between 10,000 and 50,000). In the case of very large cities where two or more CBSAs are combined, these larger areas are referred to as combined statistical areas (CSAs) (<http://www.census.gov/population/estimates/metro-city/List1.txt>).

Corrected concentration pertains to the result of an accuracy or precision assessment test of an open path analyzer in which a high-concentration test or audit standard gas contained in a short test cell is inserted into the optical measurement beam of the instrument. When the pollutant concentration measured by the analyzer in such a test includes both the

pollutant concentration in the test cell and the concentration in the atmosphere, the atmospheric pollutant concentration must be subtracted from the test measurement to obtain the corrected concentration test result. The corrected concentration is equal to the measured concentration minus the average of the atmospheric pollutant concentrations measured (without the test cell) immediately before and immediately after the test.

Design value means the calculated concentration according to the applicable appendix of part 50 of this chapter for the highest site in an attainment or nonattainment area.

EDO means environmental data operations.

Effective concentration pertains to testing an open path analyzer with a high-concentration calibration or audit standard gas contained in a short test cell inserted into the optical measurement beam of the instrument. Effective concentration is the equivalent ambient-level concentration that would produce the same spectral absorbance over the actual atmospheric monitoring path length as produced by the high-concentration gas in the short test cell. Quantitatively, effective concentration is equal to the actual concentration of the gas standard in the test cell multiplied by the ratio of the path length of the test cell to the actual atmospheric monitoring path length.

Federal equivalent method (FEM) means a method for measuring the concentration of an air pollutant in the ambient air that has been designated as an equivalent method in accordance with part 53 of this chapter; it does not include a method for which an equivalent method designation has been canceled in accordance with § 53.11 or § 53.16 of this chapter.

Federal reference method (FRM) means a method of sampling and analyzing the ambient air for an air pollutant that is specified as a reference method in an appendix to part 50 of this chapter, or a method that has been designated as a reference method in

accordance with this part; it does not include a method for which a reference method designation has been canceled in accordance with § 53.11 or § 53.16 of this chapter.

HNO₃ means nitric acid.

Local agency means any local government agency, other than the State agency, which is charged by a State with the responsibility for carrying out a portion of the plan.

Meteorological measurements means measurements of wind speed, wind direction, barometric pressure, temperature, relative humidity, solar radiation, ultraviolet radiation, and/or precipitation.

Metropolitan Statistical Area (MSA) means a CBSA associated with at least one urbanized area of 50,000 population or greater. The central county plus adjacent counties with a high degree of integration comprise the area.

Monitor means an instrument, sampler, analyzer, or other device that measures or assists in the measurement of atmospheric air pollutants and which is acceptable for use in ambient air surveillance under the applicable provisions of appendix C to this part.

Monitoring agency means a State or local agency responsible for meeting the requirements of this part.

Monitoring organization means a State, local, or other monitoring organization responsible for operating a monitoring site for which the quality assurance regulations apply.

Monitoring path for an open path analyzer means the actual path in space between two geographical locations over which the pollutant concentration is measured and averaged.

Monitoring path length of an open path analyzer means the length of the monitoring path in the atmosphere over which the average pollutant concentration measurement (path-averaged concentration)

is determined. See also, optical measurement path length.

Monitoring planning area (MPA) means a contiguous geographic area with established, well defined boundaries, such as a CBSA, county or State, having a common area that is used for planning monitoring locations for $PM_{2.5}$. An MPA may cross State boundaries, such as the Philadelphia PA–NJ MSA, and be further subdivided into community monitoring zones. MPAs are generally oriented toward CBSAs or CSAs with populations greater than 200,000, but for convenience, those portions of a State that are not associated with CBSAs can be considered as a single MPA.

NATTS means the national air toxics trends stations. This network provides hazardous air pollution ambient data.

NCore means the National Core multipollutant monitoring stations. Monitors at these sites are required to measure particles ($PM_{2.5}$, speciated $PM_{2.5}$, $PM_{10-2.5}$), O_3 , SO_2 , CO , nitrogen oxides ($NO/NO_2/NO_y$), Pb , and basic meteorology.

Near-road NO_2 Monitor means any NO_2 monitor meeting the specifications in 4.3.2 of Appendix D and paragraphs 2, 4(d), 6.1, and 6.4 of Appendix E of this part.

Network means all stations of a given type or types.

NH_3 means ammonia.

NO_2 means nitrogen dioxide. NO means nitrogen oxide. NO_X means oxides of nitrogen and is defined as the sum of the concentrations of NO_2 and NO .

NO_y means the sum of all total reactive nitrogen oxides, including NO , NO_2 , and other nitrogen oxides referred to as NO_Z .

O_3 means ozone.

Open path analyzer means an automated analytical

method that measures the average atmospheric pollutant concentration in situ along one or more monitoring paths having a monitoring path length of 5 meters or more and that has been designated as a reference or equivalent method under the provisions of part 53 of this chapter.

Optical measurement path length means the actual length of the optical beam over which measurement of the pollutant is determined. The path-integrated pollutant concentration measured by the analyzer is divided by the optical measurement path length to determine the path-averaged concentration. Generally, the optical measurement path length is:

(1) Equal to the monitoring path length for a (bistatic) system having a transmitter and a receiver at opposite ends of the monitoring path;

(2) Equal to twice the monitoring path length for a (monostatic) system having a transmitter and receiver at one end of the monitoring path and a mirror or retroreflector at the other end; or

(3) Equal to some multiple of the monitoring path length for more complex systems having multiple passes of the measurement beam through the monitoring path.

PAMS means photochemical assessment monitoring stations.

Pb means lead.

Plan means an implementation plan approved or promulgated pursuant to section 110 of the Act.

PM means PM_{10} , PM_{10C} , $PM_{2.5}$, $PM_{10-2.5}$, or particulate matter of unspecified size range.

$PM_{2.5}$ means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by a reference method based on appendix L of part 50 of this chapter and designated in accordance with part 53 of this chapter, by an equivalent method designated in accordance with part 53 of this chapter, or by an ap-

proved regional method designated in accordance with appendix C to this part.

PM₁₀ means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on appendix J of part 50 of this chapter and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53 of this chapter.

PM_{10C} means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on appendix O of part 50 of this chapter and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53 of this chapter.

PM_{10-2.5} means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers and greater than a nominal 2.5 micrometers as measured by a reference method based on appendix O to part 50 of this chapter and designated in accordance with part 53 of this chapter or by an equivalent method designated in accordance with part 53 of this chapter.

Point analyzer means an automated analytical method that measures pollutant concentration in an ambient air sample extracted from the atmosphere at a specific inlet probe point and that has been designated as a reference or equivalent method in accordance with part 53 of this chapter.

Population-oriented monitoring (or sites) means residential areas, commercial areas, recreational areas, industrial areas where workers from more than one company are located, and other areas where a substantial number of people may spend a significant fraction of their day.

Primary quality assurance organization means a monitoring organization or other organization that is responsible for a set of stations that monitor the same pollutant and for which data quality assess-

ments can be pooled. Each criteria pollutant sampler/monitor at a monitoring station in the SLAMS and SPM networks must be associated with one, and only one, primary quality assurance organization.

Probe means the actual inlet where an air sample is extracted from the atmosphere for delivery to a sampler or point analyzer for pollutant analysis.

PSD station means any station operated for the purpose of establishing the effect on air quality of the emissions from a proposed source for purposes of prevention of significant deterioration as required by § 51.24(n) of this chapter.

Regional Administrator means the Administrator of one of the ten EPA Regional Offices or his or her authorized representative.

Reporting organization means an entity, such as a State, local, or Tribal monitoring agency, that collects and reports air quality data to EPA.

Site means a geographic location. One or more stations may be at the same site.

SLAMS means State or local air monitoring stations. The SLAMS make up the ambient air quality monitoring sites that are primarily needed for NAAQS comparisons, but may serve other data purposes. SLAMS exclude special purpose monitor (SPM) stations and include NCore, PAMS, and all other State or locally operated stations that have not been designated as SPM stations.

SO₂ means sulfur dioxide.

Special purpose monitor (SPM) station means a monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor station in its monitoring network plan and in the Air Quality System, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types.

State agency means the air pollution control agency primarily responsible for development and implementation of a plan under the Act.

State speciation site means a supplemental PM_{2.5} speciation station that is not part of the speciation trends network.

Station means a single monitor, or a group of monitors with a shared objective, located at a particular site.

STN station means a PM_{2.5} speciation station designated to be part of the speciation trends network. This network provides chemical species data of fine particulate.

Traceable means that a local standard has been compared and certified, either directly or via not more than one intermediate standard, to a National Institute of Standards and Technology (NIST)-certified primary standard such as a NIST-traceable Reference Material (NTRM) or a NIST-certified Gas Manufacturer's Internal Standard (GMIS).

TSP (total suspended particulates) means particulate matter as measured by the method described in appendix B of part 50 of this chapter.

Urbanized area means an area with a minimum residential population of at least 50,000 people and which generally includes core census block groups or blocks that have a population density of at least 1,000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile. The Census Bureau notes that under certain conditions, less densely settled territory may be part of each Urbanized Area.

VOC means volatile organic compounds.

[75 FR 6534, Feb. 9, 2010; 78 FR 3281, Jan. 15, 2013]

SOURCE: 44 FR 27571, May 10, 1979; 58 FR 8467, Feb. 12, 1993; 59 FR 41628, Aug. 12, 1994; 62 FR 6729, Feb. 13, 1997; 71 FR 61296, Oct. 17, 2006; 75 FR 81137, Dec. 27, 2010, unless otherwise noted.

AUTHORITY: 42 U.S.C. 7403, 7405, 7410, 7414, 7601, 7611, 7614, and 7619.

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Title 40. Protection of Environment

Chapter I. Environmental Protection Agency
(Refs & Annos)

Subchapter C. Air Programs

▣ Part 58. Ambient Air Quality Surveillance (Refs & Annos)

▣ Subpart D. Comparability of Ambient Data to the Naaqs (Refs & Annos)

→ § 58.30 Special considerations for data comparisons to the NAAQS.

(a) Comparability of PM_{2.5} data. The primary and secondary annual and 24-hour PM_{2.5} NAAQS are described in part 50 of this chapter. Monitors that follow the network technical requirements specified in § 58.11 are eligible for comparison to the NAAQS subject to the additional requirements of this section. PM_{2.5} measurement data from all eligible monitors are comparable to the 24-hour PM_{2.5} NAAQS. PM_{2.5} measurement data from all eligible monitors that are representative of area-wide air quality are comparable to the annual PM_{2.5} NAAQS. Consistent with appendix D to this part, section 4.7.1, when micro- or middle-scale PM_{2.5} monitoring sites collectively identify a larger region of localized high ambient PM_{2.5} concentrations, such sites would be considered representative of an area-wide location and, therefore, eligible for comparison to the annual PM_{2.5} NAAQS. PM_{2.5} measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, or localized hot spot, or unique middle-scale impact sites are not eligible for comparison to the annual PM_{2.5} NAAQS. PM_{2.5} measurement data from these monitors are eligible for comparison to the 24-hour PM_{2.5} NAAQS. For example, if a micro- or middle-scale PM_{2.5} monitoring site is adjacent to a unique dominating local PM

2.5 source, then the PM_{2.5} measurement data from such a site would only be eligible for comparison to the 24-hour PM_{2.5} NAAQS. Approval of sites that are suitable and sites that are not suitable for comparison with the annual PM_{2.5} NAAQS is provided for as part of the annual monitoring network plan described in § 58.10.

(b) [Reserved]

[78 FR 3283, Jan. 15, 2013]

SOURCE: 44 FR 27571, May 10, 1979; 58 FR 8467, Feb. 12, 1993; 59 FR 41628, Aug. 12, 1994; 62 FR 6729, Feb. 13, 1997; 71 FR 61296, Oct. 17, 2006; 71 FR 61302, Oct. 17, 2006; 75 FR 81137, Dec. 27, 2010; 78 FR 3283, Jan. 15, 2013, unless otherwise noted.

AUTHORITY: 42 U.S.C. 7403, 7405, 7410, 7414, 7601, 7611, 7614, and 7619.

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 Title 40. Protection of Environment
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 ▯ [Part 58. Ambient Air Quality Surveillance \(Refs & Annos\)](#)
 → **APPENDIX D TO PART 58--NETWORK DESIGN CRITERIA FOR AMBIENT AIR QUALITY MONITORING**

1. Monitoring Objectives and Spatial Scales
2. General Monitoring Requirements
3. Design Criteria for NCore Sites
4. Pollutant-Specific Design Criteria for SLAMS Sites
5. Design Criteria for Photochemical Assessment Monitoring Stations (PAMS)
6. References

1. Monitoring Objectives and Spatial Scales

The purpose of this appendix is to describe monitoring objectives and general criteria to be applied in establishing the required SLAMS ambient air quality monitoring stations and for choosing general locations for additional monitoring sites. This appendix also describes specific requirements for the number and location of FRM, FEM, and ARM sites for specific pollutants, NCore multipollutant sites, PM₁₀ mass sites, PM_{2.5} mass sites, chemically-specified PM_{2.5} sites, and O₃ precursor measurements sites (PAMS). These criteria will be used by EPA in evaluating the adequacy of the air pollutant monitoring networks.

1.1 Monitoring Objectives. The ambient air monitoring networks must be designed to meet three basic monitoring objectives. These basic objectives are listed below. The appearance of any one objective in the order of this list is not based upon a prioritized scheme. Each objective is important and must be considered individually.

(a) Provide air pollution data to the general public in a timely manner. Data can be presented to the public in a number of attractive ways including through air quality maps, newspapers, Internet sites, and as part of weather forecasts and public advisories.

(b) Support compliance with ambient air quality standards and emissions strategy development. Data from FRM, FEM, and ARM monitors for NAAQS pollutants will be used for comparing an area's air pollution levels against the NAAQS. Data from monitors of various types can be used in the development of attainment and maintenance plans. SLAMS, and especially NCore station data, will be used to evaluate the regional air quality models used in developing emission strategies, and to track trends in air pollution abatement control measures' impact on improving air quality. In monitoring locations near major air pollution sources, source-oriented monitoring data can provide insight into how well industrial sources are controlling their pollutant emissions.

(c) Support for air pollution research studies. Air pollution data from the NCore network can be used to supplement data collected by researchers working on health effects assessments and atmospheric processes, or for monitoring methods development work.

1.1.1 In order to support the air quality management work indicated in the three basic air monitoring objectives, a network must be designed with a variety of types of monitoring sites. Monitoring sites must be capable of informing managers about many things including the peak air pollution levels, typical levels in populated areas, air pollution transported into and outside of a city or region, and air pollution levels near specific sources. To summarize some of these sites, here is a listing of

six general site types:

- (a) Sites located to determine the highest concentrations expected to occur in the area covered by the network.
- (b) Sites located to measure typical concentrations in areas of high population density.
- (c) Sites located to determine the impact of significant sources or source categories on air quality.
- (d) Sites located to determine general background concentration levels.
- (e) Sites located to determine the extent of regional pollutant transport among populated areas; and in support of secondary standards.
- (f) Sites located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts.

1.1.2 This appendix contains criteria for the basic air monitoring requirements. The total number of monitoring sites that will serve the variety of data needs will be substantially higher than these minimum requirements provide. The optimum size of a particular network involves trade-offs among data needs and available resources. This regulation intends to provide for national air monitoring needs, and to lend support for the flexibility necessary to meet data collection needs of area air quality managers. The EPA, State, and local agencies will periodically collaborate on network design issues through the network assessment process outlined in § 58.10.

1.1.3 This appendix focuses on the relationship between monitoring objectives, site types, and the geographic location of monitoring sites. Included are a rationale and set of general criteria for identifying candidate site locations in terms of physical characteristics which most closely match a specific monitoring objective. The criteria for more specifically locating the monitoring site, including spacing from roadways and vertical and horizontal probe and path placement, are described in appendix E to this part.

1.2 Spatial Scales. (a) To clarify the nature of the link between general monitoring objectives, site types, and the physical location of a particular monitor, the concept of spatial scale of representativeness is defined. The goal in locating monitors is to correctly match the spatial scale represented by the sample of monitored air with the spatial scale most appropriate for the monitoring site type, air pollutant to be measured, and the monitoring objective.

(b) Thus, spatial scale of representativeness is described in terms of the physical dimensions of the air parcel nearest to a monitoring site throughout which actual pollutant concentrations are reasonably similar. The scales of representativeness of most interest for the monitoring site types described above are as follows:

- (1) Microscale--Defines the concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- (2) Middle scale--Defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometer.
- (3) Neighborhood scale--Defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range. The neighborhood and urban scales listed below have the potential to overlap in applications that concern secondarily formed or homogeneously distributed air pollutants.
- (4) Urban scale--Defines concentrations within an area of city-like dimensions, on the order of 4 to 50 kilometers. Within a city, the geographic placement of sources may result in there being no single site that can be said to represent air quality on an urban scale.
- (5) Regional scale--Defines usually a rural area of reasonably homogeneous geography without large sources, and extends from tens to hundreds of kilometers.
- (6) National and global scales--These measurement scales represent concentrations characterizing the nation and the globe as a whole.

(c) Proper siting of a monitor requires specification of the monitoring objective, the types of sites necessary to meet the objective, and then the desired spatial scale of representativeness. For example, consider the case where the objective is to determine NAAQS compliance by understanding the maximum ozone concentrations for an area. Such areas would most likely be located downwind of a metropolitan area, quite likely in a suburban residential area where children and other susceptible individuals are likely to be outdoors. Sites located in these areas are most likely to represent an urban scale of measurement. In this example, physical location was determined by considering ozone precursor emission patterns, public activity, and meteorological characteristics affecting ozone formation and dispersion. Thus, spatial scale of representativeness was not used in the selection process but was a result of site location.

(d) In some cases, the physical location of a site is determined from joint consideration of both the basic monitoring objective and the type of monitoring site desired, or required by this appendix. For example, to determine $PM_{2.5}$ concentrations which are typical over a geographic area having relatively high $PM_{2.5}$ concen-

trations, a neighborhood scale site is more appropriate. Such a site would likely be located in a residential or commercial area having a high overall $PM_{2.5}$ emission density but not in the immediate vicinity of any single dominant source. Note that in this example, the desired scale of representativeness was an important factor in determining the physical location of the monitoring site.

(e) In either case, classification of the monitor by its type and spatial scale of representativeness is necessary and will aid in interpretation of the monitoring data for a particular monitoring objective (e.g., public reporting, NAAQS compliance, or research support).

(f) Table D-1 of this appendix illustrates the relationship between the various site types that can be used to support the three basic monitoring objectives, and the scales of representativeness that are generally most appropriate for that type of site.

TABLE D-1 OF APPENDIX D TO PART 58.

Site type	Appropriate siting scales
1. Highest concentration	Micro, middle, neighborhood (sometimes urban or regional for secondarily formed pollutants).
2. Population oriented	Neighborhood, urban.
3. Source impact	Micro, middle, neighborhood.
4. General/background & regional transport	Urban, regional.
5. Welfare-related impacts	Urban, regional.

2. General Monitoring Requirements

(a) The National ambient air monitoring system includes several types of monitoring stations, each targeting a key data collection need and each varying in technical sophistication.

(b) Research grade sites are platforms for scientific studies, either involved with health or welfare impacts, measurement methods development, or other atmospheric studies. These sites may be collaborative efforts

between regulatory agencies and researchers with specific scientific objectives for each. Data from these sites might be collected with both traditional and experimental techniques, and data collection might involve specific laboratory analyses not common in routine measurement programs. The research grade sites are not required by regulation; however, they are included here due to their important role in supporting the air quality management program.

(c) The NCore multipollutant sites are sites that meas-

ure multiple pollutants in order to provide support to integrated air quality management data needs. NCore sites include both neighborhood and urban scale measurements in general, in a selection of metropolitan areas and a limited number of more rural locations. Continuous monitoring methods are to be used at the NCore sites when available for a pollutant to be measured, as it is important to have data collected over common time periods for integrated analyses. NCore multipollutant sites are intended to be long-term sites useful for a variety of applications including air quality trends analyses, model evaluation, and tracking metropolitan area statistics. As such, the NCore sites should be placed away from direct emission sources that could substantially impact the ability to detect area-wide concentrations. The Administrator must approve the NCore sites.

(d) Monitoring sites designated as SLAMS sites, but not as NCore sites, are intended to address specific air quality management interests, and as such, are frequently single-pollutant measurement sites. The EPA Regional Administrator must approve the SLAMS sites.

(e) This appendix uses the statistical-based definitions for metropolitan areas provided by the Office of Management and Budget and the Census Bureau. These areas are referred to as metropolitan statistical areas (MSA), micropolitan statistical areas, core-based statistical areas (CBSA), and combined statistical areas (CSA). A CBSA associated with at least one urbanized area of 50,000 population or greater is termed a Metropolitan Statistical Area (MSA). A CBSA associated with at least one urbanized cluster of at least 10,000 population or greater is termed a Micropolitan Statistical Area. CSA consist of two or more adjacent CBSA. In this appendix, the term MSA is used to refer to a Metropolitan Statistical Area. By definition, both MSA and CSA have a high degree of integration; however, many such areas cross State or other political boundaries. MSA and CSA may also cross more than one air shed. The EPA recognizes that State or local agencies must consider MSA/CSA boundaries and their own political boundaries and geographical characteristics in designing their air monitoring networks. The EPA recognizes that there may be situations where the EPA Regional

Administrator and the affected State or local agencies may need to augment or to divide the overall MSA/CSA monitoring responsibilities and requirements among these various agencies to achieve an effective network design. Full monitoring requirements apply separately to each affected State or local agency in the absence of an agreement between the affected agencies and the EPA Regional Administrator.

3. Design Criteria for NCore Sites

(a) Each State (i.e. the fifty States, District of Columbia, Puerto Rico, and the Virgin Islands) is required to operate at least one NCore site. States may delegate this requirement to a local agency. States with many MSAs often also have multiple air sheds with unique characteristics and, often, elevated air pollution. These States include, at a minimum, California, Florida, Illinois, Michigan, New York, North Carolina, Ohio, Pennsylvania, and Texas. These States are required to identify one to two additional NCore sites in order to account for their unique situations. These additional sites shall be located to avoid proximity to large emission sources. Any State or local agency can propose additional candidate NCore sites or modifications to these requirements for approval by the Administrator. The NCore locations should be leveraged with other multipollutant air monitoring sites including PAMS sites, National Air Toxics Trends Stations (NATTS) sites, CASTNET sites, and STN sites. Site leveraging includes using the same monitoring platform and equipment to meet the objectives of the variety of programs where possible and advantageous.

(b) The NCore sites must measure, at a minimum, PM_{2.5} particle mass using continuous and integrated/filter-based samplers, speciated PM_{2.5}, PM_{10-2.5} particle mass, speciated PM_{10-2.5}, O₃, SO₂, CO, NO/NO_y, wind speed, wind direction, relative humidity, and ambient temperature. NCore sites in CBSA with a population of 500,000 people (as determined in the latest Census) or greater shall also measure Pb either as Pb-TSP or Pb-PM₁₀. The EPA Regional Administrator may approve an alternative location for the Pb measurement where the alternative location would be more appropriate for logistical reasons and the measurement

would provide data on typical Pb concentrations in the CBSA.

(1) Although the measurement of NO_y is required in support of a number of monitoring objectives, available commercial instruments may indicate little difference in their measurement of NO_y compared to the conventional measurement of NO_x, particularly in areas with relatively fresh sources of nitrogen emissions. Therefore, in areas with negligible expected difference between NO_y and NO_x measured concentrations, the Administrator may allow for waivers that permit NO_x monitoring to be substituted for the required NO_y monitoring at applicable NCore sites.

(2) EPA recognizes that, in some cases, the physical location of the NCore site may not be suitable for representative meteorological measurements due to the site's physical surroundings. It is also possible that nearby meteorological measurements may be able to fulfill this data need. In these cases, the requirement for meteorological monitoring can be waived by the Administrator.

(c) [Reserved by 75 FR 81137]

(d) Siting criteria are provided for urban and rural locations. Sites with significant historical records that do not meet siting criteria may be approved as NCore by the Administrator. Sites with the suite of NCore measurements that are explicitly designed for other monitoring objectives are exempt from these siting criteria (e.g., a near-roadway site).

(1) Urban NCore stations are to be generally located at urban or neighborhood scale to provide representative concentrations of exposure expected throughout the

metropolitan area; however, a middle-scale site may be acceptable in cases where the site can represent many such locations throughout a metropolitan area.

(2) Rural NCore stations are to be located to the maximum extent practicable at a regional or larger scale away from any large local emission source, so that they represent ambient concentrations over an extensive area.

4. Pollutant-Specific Design Criteria for SLAMS Sites

4.1 Ozone (O₃) Design Criteria. (a) State, and where appropriate, local agencies must operate O₃ sites for various locations depending upon area size (in terms of population and geographic characteristics) and typical peak concentrations (expressed in percentages below, or near the O₃ NAAQS). Specific SLAMS O₃ site minimum requirements are included in Table D-2 of this appendix. The NCore sites are expected to complement the O₃ data collection that takes place at single-pollutant SLAMS sites, and both types of sites can be used to meet the network minimum requirements. The total number of O₃ sites needed to support the basic monitoring objectives of public data reporting, air quality mapping, compliance, and understanding O₃-related atmospheric processes will include more sites than these minimum numbers required in Table D-2 of this appendix. The EPA Regional Administrator and the responsible State or local air monitoring agency must work together to design and/or maintain the most appropriate O₃ network to service the variety of data needs in an area.

TABLE D-2 OF APPENDIX D TO PART 58.--SLAMS MINIMUM O

MSA population ^[FN1] , ^[FN2]	Most recent 3-year design value concentrations \geq 85% of any O ₃ NAAQS ^[FN3]	Most recent 3-year design value concentrations $<$ 85% of any O ₃ NAAQS ^[FN3] , ^[FN4]
>10 million	4	2
4-10 million	3	1
350,000- $<$ 4 million	2	1

50,000–<350,000 [FN5]

1

0

[FN1] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

[FN2] Population based on latest available census figures.

[FN3] The ozone (O₃) National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

[FN4] These minimum monitoring requirements apply in the absence of a design value.

[FN5] Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

(b) Within an O₃ network, at least one O₃ site for each MSA, or CSA if multiple MSAs are involved, must be designed to record the maximum concentration for that particular metropolitan area. More than one maximum concentration site may be necessary in some areas. Table D–2 of this appendix does not account for the full breadth of additional factors that would be considered in designing a complete O₃ monitoring program for an area. Some of these additional factors include geographic size, population density, complexity of terrain and meteorology, adjacent O₃ monitoring programs, air pollution transport from neighboring areas, and measured air quality in comparison to all forms of the O₃ NAAQS (i.e., 8–hour and 1–hour forms). Networks must be designed to account for all of these area characteristics. Network designs must be re-examined in periodic network assessments. Deviations from the above O₃ requirements are allowed if approved by the EPA Regional Administrator.

(c) The appropriate spatial scales for O₃ sites are neighborhood, urban, and regional. Since O₃ requires appreciable formation time, the mixing of reactants and products occurs over large volumes of air, and this reduces the importance of monitoring small scale spatial variability.

(1) Neighborhood scale--Measurements in this category represent conditions throughout some reasonably homogeneous urban sub-region, with dimensions of a few kilometers. Homogeneity refers to pollutant concentrations. Neighborhood scale data will provide valuable information for developing, testing, and revising concepts and models that describe urban/regional concentration

patterns. These data will be useful to the understanding and definition of processes that take periods of hours to occur and hence involve considerable mixing and transport. Under stagnation conditions, a site located in the neighborhood scale may also experience peak concentration levels within a metropolitan area.

(2) Urban scale--Measurement in this scale will be used to estimate concentrations over large portions of an urban area with dimensions of several kilometers to 50 or more kilometers. Such measurements will be used for determining trends, and designing area-wide control strategies. The urban scale sites would also be used to measure high concentrations downwind of the area having the highest precursor emissions.

(3) Regional scale--This scale of measurement will be used to typify concentrations over large portions of a metropolitan area and even larger areas with dimensions of as much as hundreds of kilometers. Such measurements will be useful for assessing the O₃ that is transported to and from a metropolitan area, as well as background concentrations. In some situations, particularly when considering very large metropolitan areas with complex source mixtures, regional scale sites can be the maximum concentration location.

(d) EPA's technical guidance documents on O₃ monitoring network design should be used to evaluate the adequacy of each existing O₃ monitor, to relocate an existing site, or to locate any new O₃ sites.

(e) For locating a neighborhood scale site to measure typical city concentrations, a reasonably homogeneous

geographical area near the center of the region should be selected which is also removed from the influence of major NO_X sources. For an urban scale site to measure the high concentration areas, the emission inventories should be used to define the extent of the area of important nonmethane hydrocarbons and NO_X emissions. The meteorological conditions that occur during periods of maximum photochemical activity should be determined. These periods can be identified by examining the meteorological conditions that occur on the highest O_3 air quality days. Trajectory analyses, an evaluation of wind and emission patterns on high O_3 days, can also be useful in evaluating an O_3 monitoring network. In areas without any previous O_3 air quality measurements, meteorological and O_3 precursor emissions information would be useful.

(f) Once the meteorological and air quality data are reviewed, the prospective maximum concentration monitor site should be selected in a direction from the city that is most likely to observe the highest O_3 concentrations, more specifically, downwind during periods of photochemical activity. In many cases, these maximum concentration O_3 sites will be located 10 to 30 miles or more downwind from the urban area where maximum O_3 precursor emissions originate. The downwind direction and appropriate distance should be determined from historical meteorological data collected on days which show the potential for producing high O_3 levels. Monitoring agencies are to consult with their EPA Regional Office when considering siting a maximum O_3 concentration site.

(g) In locating a neighborhood scale site which is to

measure high concentrations, the same procedures used for the urban scale are followed except that the site should be located closer to the areas bordering on the center city or slightly further downwind in an area of high density population.

(h) For regional scale background monitoring sites, similar meteorological analysis as for the maximum concentration sites may also inform the decisions for locating regional scale sites. Regional scale sites may be located to provide data on O_3 transport between cities, as background sites, or for other data collection purposes. Consideration of both area characteristics, such as meteorology, and the data collection objectives, such as transport, must be jointly considered for a regional scale site to be useful.

(i) Since O_3 levels decrease significantly in the colder parts of the year in many areas, O_3 is required to be monitored at SLAMS monitoring sites only during the "ozone season" as designated in the AQS files on a State-by-State basis and described below in Table D-3 of this appendix. Deviations from the O_3 monitoring season must be approved by the EPA Regional Administrator, documented within the annual monitoring network plan, and updated in AQS. Information on how to analyze O_3 data to support a change to the O_3 season in support of the 8-hour standard for a specific State can be found in reference 8 to this appendix.

TABLE D-3 TO APPENDIX D OF PART 58.

State	Begin month	End month
Alabama	March	October
Alaska	April	October
Arizona	January	December
Arkansas	March	November
California	January	December
Colorado	March	September
Connecticut	April	September

Delaware	April	October
District of Columbia	April	October
Florida	March	October
Georgia	March	October
Hawaii	January	December
Idaho	May	September
Illinois	April	October
Indiana	April	September
Iowa	April	October
Kansas	April	October
Kentucky	March	October
Louisiana AQCR 019,022	March	October
Louisiana AQCR 106	January	December
Maine	April	September
Maryland	April	October
Massachusetts	April	September
Michigan	April	September
Minnesota	April	October
Mississippi	March	October
Missouri	April	October
Montana	June	September
Nebraska	April	October
Nevada	January	December
New Hampshire	April	September
New Jersey	April	October
New Mexico	January	December
New York	April	October
North Carolina	April	October
North Dakota	May	September
Ohio	April	October
Oklahoma	March	November
Oregon	May	September
Pennsylvania	April	October
Puerto Rico	January	December
Rhode Island	April	September
South Carolina	April	October
South Dakota	June	September

Tennessee	March	October
Texas AQCR 106,153, 213, 214, 216	January	December
Texas AQCR 022, 210, 211, 212, 215, 217, 218	March	October
Utah	May	September
Vermont	April	September
Virginia	April	October
Washington	May	September
West Virginia	April	October
Wisconsin	April 15	October 15
Wyoming	April	October
American Samoa	January	December
Guam	January	December
Virgin Islands	January	December

4.2 Carbon Monoxide (CO) Design Criteria

4.2.1 General Requirements. (a) Except as provided in subsection (b), one CO monitor is required to operate collocated with one required near-road NO₂ monitor, as required in Section 4.3.2 of this part, in CBSAs having a population of 1,000,000 or more persons. If a CBSA has more than one required near-road NO₂ monitor, only one CO monitor is required to be collocated with a near-road NO₂ monitor within that CBSA.

(b) If a state provides quantitative evidence demonstrating that peak ambient CO concentrations would occur in a near-road location which meets microscale siting criteria in Appendix E of this part but is not a near-road NO₂ monitoring site, then the EPA Regional Administrator may approve a request by a state to use such an alternate near-road location for a CO monitor in place of collocating a monitor at near-road NO₂ monitoring site.

4.2.2 Regional Administrator Required Monitoring. (a) The Regional Administrators, in collaboration with states, may require additional CO monitors above the minimum number of monitors required in 4.2.1 of this part, where the minimum monitoring requirements are not sufficient to meet monitoring objectives. The Regional Administrator may require, at his/her discretion,

additional monitors in situations where data or other information suggest that CO concentrations may be approaching or exceeding the NAAQS. Such situations include, but are not limited to, (1) characterizing impacts on ground-level concentrations due to stationary CO sources, (2) characterizing CO concentrations in downtown areas or urban street canyons, and (3) characterizing CO concentrations in areas that are subject to high ground level CO concentrations particularly due to or enhanced by topographical and meteorological impacts. The Regional Administrator and the responsible State or local air monitoring agency shall work together to design and maintain the most appropriate CO network to address the data needs for an area, and include all monitors under this provision in the annual monitoring network plan.

4.2.3 CO Monitoring Spatial Scales. (a) Microscale and middle scale measurements are the most useful site classifications for CO monitoring sites since most people have the potential for exposure on these scales. Carbon monoxide maxima occur primarily in areas near major roadways and intersections with high traffic density and often in areas with poor atmospheric ventilation.

(1) Microscale--Microscale measurements typically represent areas in close proximity to major roadways, within street canyons, over sidewalks, and in some cases,

point and area sources. Emissions on roadways result in high ground level CO concentrations at the microscale, where concentration gradients generally exhibit a marked decrease with increasing downwind distance from major roads, or within downtown areas including urban street canyons. Emissions from stationary point and area sources, and non-road sources may, under certain plume conditions, result in high ground level concentrations at the microscale.

(2) Middle scale--Middle scale measurements are intended to represent areas with dimensions from 100 meters to 0.5 kilometer. In certain cases, middle scale measurements may apply to areas that have a total length of several kilometers, such as "line" emission source areas. This type of emission sources areas would include air quality along a commercially developed street or shopping plaza, freeway corridors, parking lots and feeder streets.

(3) Neighborhood scale--Neighborhood scale measurements are intended to represent areas with dimensions from 0.5 kilometers to 4 kilometers. Measurements of CO in this category would represent conditions throughout some reasonably urban sub-regions. In some cases, neighborhood scale data may represent not only the immediate neighborhood spatial area, but also other similar such areas across the larger urban area. Neighborhood scale measurements provide relative area-wide concentration data which are useful for providing relative urban background concentrations, supporting health and scientific research, and for use in modeling.

4.3 Nitrogen Dioxide (NO₂) Design Criteria

4.3.1 General Requirements

(a) State and, where appropriate, local agencies must operate a minimum number of required NO₂ monitoring sites as described below.

4.3.2 Requirement for Near-road NO₂ Monitors

(a) Within the NO₂ network, there must be one micro-scale near-road NO₂ monitoring station in each CBSA with a population of 500,000 or more persons to monitor a location of expected maximum hourly concentra-

tions sited near a major road with high AADT counts as specified in paragraph 4.3.2(a)(1) of this appendix. An additional near-road NO₂ monitoring station is required for any CBSA with a population of 2,500,000 persons or more, or in any CBSA with a population of 500,000 or more persons that has one or more roadway segments with 250,000 or greater AADT counts to monitor a second location of expected maximum hourly concentrations. CBSA populations shall be based on the latest available census figures.

(1) The near-road NO₂ monitoring stations shall be selected by ranking all road segments within a CBSA by AADT and then identifying a location or locations adjacent to those highest ranked road segments, considering fleet mix, roadway design, congestion patterns, terrain, and meteorology, where maximum hourly NO₂ concentrations are expected to occur and siting criteria can be met in accordance with appendix E of this part. Where a State or local air monitoring agency identifies multiple acceptable candidate sites where maximum hourly NO₂ concentrations are expected to occur, the monitoring agency shall consider the potential for population exposure in the criteria utilized to select the final site location. Where one CBSA is required to have two near-road NO₂ monitoring stations, the sites shall be differentiated from each other by one or more of the following factors: fleet mix; congestion patterns; terrain; geographic area within the CBSA; or different route, interstate, or freeway designation.

(b) Measurements at required near-road NO₂ monitor sites utilizing chemiluminescence FRMs must include at a minimum: NO, NO₂, and NO_X.

4.3.3 Requirement for Area-wide NO₂ Monitoring

(a) Within the NO₂ network, there must be one monitoring station in each CBSA with a population of 1,000,000 or more persons to monitor a location of expected highest NO₂ concentrations representing the neighborhood or larger spatial scales. PAMS sites collecting NO₂ data that are situated in an area of expected high NO₂ concentrations at the neighborhood or larger spatial scale may be used to satisfy this minimum monitoring requirement when the NO₂ monitor is operated

year round. Emission inventories and meteorological analysis should be used to identify the appropriate locations within a CBSA for locating required area-wide NO₂ monitoring stations. CBSA populations shall be based on the latest available census figures.

4.3.4 Regional Administrator Required Monitoring

(a) The Regional Administrators, in collaboration with States, must require a minimum of forty additional NO₂ monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. The Regional Administrators, working with States, may also consider additional factors described in paragraph (b) below to require monitors beyond the minimum network requirement.

(b) The Regional Administrators may require monitors to be sited inside or outside of CBSAs in which:

(i) The required near-road monitors do not represent all locations of expected maximum hourly NO₂ concentrations in an area and NO₂ concentrations may be approaching or exceeding the NAAQS in that area;

(ii) Areas that are not required to have a monitor in accordance with the monitoring requirements and NO₂ concentrations may be approaching or exceeding the NAAQS; or

(iii) The minimum monitoring requirements for area-wide monitors are not sufficient to meet monitoring objectives.

(c) The Regional Administrator and the responsible State or local air monitoring agency should work together to design and/or maintain the most appropriate NO₂ network to address the data needs for an area, and include all monitors under this provision in the annual monitoring network plan.

4.3.5 NO₂ Monitoring Spatial Scales

(a) The most important spatial scale for near-road NO₂ monitoring stations to effectively characterize the max-

imum expected hourly NO₂ concentration due to mobile source emissions on major roadways is the microscale. The most important spatial scales for other monitoring stations characterizing maximum expected hourly NO₂ concentrations are the microscale and middle scale. The most important spatial scale for area-wide monitoring of high NO₂ concentrations is the neighborhood scale.

(1) Microscale--This scale represents areas in close proximity to major roadways or point and area sources. Emissions from roadways result in high ground level NO₂ concentrations at the microscale, where concentration gradients generally exhibit a marked decrease with increasing downwind distance from major roads. As noted in appendix E of this part, near-road NO₂ monitoring stations are required to be within 50 meters of target road segments in order to measure expected peak concentrations. Emissions from stationary point and area sources, and non-road sources may, under certain plume conditions, result in high ground level concentrations at the microscale. The microscale typically represents an area impacted by the plume with dimensions extending up to approximately 100 meters.

(2) Middle scale--This scale generally represents air quality levels in areas up to several city blocks in size with dimensions on the order of approximately 100 meters to 500 meters. The middle scale may include locations of expected maximum hourly concentrations due to proximity to major NO₂ point, area, and/or non-road sources.

(3) Neighborhood scale--The neighborhood scale represents air quality conditions throughout some relatively uniform land use areas with dimensions in the 0.5 to 4.0 kilometer range. Emissions from stationary point and area sources may, under certain plume conditions, result in high NO₂ concentrations at the neighborhood scale. Where a neighborhood site is located away from immediate NO₂ sources, the site may be useful in representing typical air quality values for a larger residential area, and therefore suitable for population exposure and trends analyses.

(4) Urban scale--Measurements in this scale would be used to estimate concentrations over large portions of

an urban area with dimensions from 4 to 50 kilometers. Such measurements would be useful for assessing trends in area-wide air quality, and hence, the effectiveness of large scale air pollution control strategies. Urban scale sites may also support other monitoring objectives of the NO₂ monitoring network identified in paragraph 4.3.4 above.

4.3.6 NO_y Monitoring

(a) NO/NO_y measurements are included within the NCore multi-pollutant site requirements and the PAMS program. These NO/NO_y measurements will produce conservative estimates for NO₂ that can be used to ensure tracking continued compliance with the NO₂ NAAQS. NO/NO_y monitors are used at these sites because it is important to collect data on total reactive nitrogen species for understanding O₃ photochemistry.

4.4 Sulfur Dioxide (SO₂) Design Criteria.

4.4.1 General Requirements. (a) State and, where appropriate, local agencies must operate a minimum number of required SO₂ monitoring sites as described below.

4.4.2 Requirement for Monitoring by the Population Weighted Emissions Index. (a) The population weighted emissions index (PWEI) shall be calculated by States for each core based statistical area (CBSA) they contain or share with another State or States for use in the implementation of or adjustment to the SO₂ monitoring network. The PWEI shall be calculated by multiplying the population of each CBSA, using the most current census data or estimates, and the total amount of SO₂ in tons per year emitted within the CBSA area, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in each CBSA. The resulting product shall be divided by one million, providing a PWEI value, the units of which are million persons-tons per year. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO₂ monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO₂ monitors are required within that CBSA. For any CBSA with a

calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO₂ monitor is required within that CBSA.

(1) The SO₂ monitoring site(s) required as a result of the calculated PWEI in each CBSA shall satisfy minimum monitoring requirements if the monitor is sited within the boundaries of the parent CBSA and is one of the following site types (as defined in section 1.1.1 of this appendix): population exposure, highest concentration, source impacts, general background, or regional transport. SO₂ monitors at NCore stations may satisfy minimum monitoring requirements if that monitor is located within a CBSA with minimally required monitors under this part. Any monitor that is sited outside of a CBSA with minimum monitoring requirements to assess the highest concentration resulting from the impact of significant sources or source categories existing within that CBSA shall be allowed to count towards minimum monitoring requirements for that CBSA.

4.4.3 Regional Administrator Required Monitoring. (a) The Regional Administrator may require additional SO₂ monitoring stations above the minimum number of monitors required in 4.4.2 of this part, where the minimum monitoring requirements are not sufficient to meet monitoring objectives. The Regional Administrator may require, at his/her discretion, additional monitors in situations where an area has the potential to have concentrations that may violate or contribute to the violation of the NAAQS, in areas impacted by sources which are not conducive to modeling, or in locations with susceptible and vulnerable populations, which are not monitored under the minimum monitoring provisions described above. The Regional Administrator and the responsible State or local air monitoring agency shall work together to design and/or maintain the most appropriate SO₂ network to provide sufficient data to meet monitoring objectives.

4.4.4 SO₂ Monitoring Spatial Scales. (a) The appropriate spatial scales for SO₂ SLAMS monitors are the microscale, middle, neighborhood, and urban scales. Monitors sited at the microscale, middle, and neighborhood scales are suitable for determining maximum hourly concentrations for SO₂. Monitors sited at urban scales

are useful for identifying SO₂ transport, trends, and, if sited upwind of local sources, background concentrations.

(1) Microscale--This scale would typify areas in close proximity to SO₂ point and area sources. Emissions from stationary point and area sources, and non-road sources may, under certain plume conditions, result in high ground level concentrations at the microscale. The microscale typically represents an area impacted by the plume with dimensions extending up to approximately 100 meters.

(2) Middle scale--This scale generally represents air quality levels in areas up to several city blocks in size with dimensions on the order of approximately 100 meters to 500 meters. The middle scale may include locations of expected maximum short-term concentrations due to proximity to major SO₂ point, area, and/or non-road sources.

(3) Neighborhood scale--The neighborhood scale would characterize air quality conditions throughout some relatively uniform land use areas with dimensions in the 0.5 to 4.0 kilometer range. Emissions from stationary point and area sources may, under certain plume conditions, result in high SO₂ concentrations at the neighborhood scale. Where a neighborhood site is located away from immediate SO₂ sources, the site may be useful in representing typical air quality values for a larger residential area, and therefore suitable for population exposure and trends analyses.

(4) Urban scale--Measurements in this scale would be used to estimate concentrations over large portions of an urban area with dimensions from 4 to 50 kilometers. Such measurements would be useful for assessing trends in area-wide air quality, and hence, the effectiveness of large scale air pollution control strategies. Urban scale sites may also support other monitoring objectives of the SO₂ monitoring network such as identifying trends, and when monitors are sited upwind of local sources, background concentrations.

4.4.5 NCore Monitoring. (a) SO₂ measurements are included within the NCore multipollutant site require-

ments as described in paragraph (3)(b) of this appendix. NCore-based SO₂ measurements are primarily used to characterize SO₂ trends and assist in understanding SO₂ transport across representative areas in urban or rural locations and are also used for comparison with the SO₂ NAAQS. SO₂ monitors at NCore sites that exist in CBSAs with minimum monitoring requirements per section 4.4.2 above shall be allowed to count towards those minimum monitoring requirements.

4.5 Lead (Pb) Design Criteria. (a) State and, where appropriate, local agencies are required to conduct ambient air Pb monitoring near Pb sources which are expected to or have been shown to contribute to a maximum Pb concentration in ambient air in excess of the NAAQS, taking into account the logistics and potential for population exposure. At a minimum, there must be one source-oriented SLAMS site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year based on either the most recent National Emission Inventory (<http://www.epa.gov/ttn/chief/eiinformation.html>) or other scientifically justifiable methods and data (such as improved emissions factors or site-specific data) taking into account logistics and the potential for population exposure.

(i) One monitor may be used to meet the requirement in paragraph 4.5(a) for all sources involved when the location of the maximum Pb concentration due to one Pb source is expected to also be impacted by Pb emissions from a nearby source (or multiple sources). This monitor must be sited, taking into account logistics and the potential for population exposure, where the Pb concentration from all sources combined is expected to be at its maximum.

(ii) The Regional Administrator may waive the requirement in paragraph 4.5(a) for monitoring near Pb sources if the State or, where appropriate, local agency can demonstrate the Pb source will not contribute to a maximum Pb concentration in ambient air in excess of 50 percent of the NAAQS (based on historical monitoring data, modeling, or other means). The waiver must be re-

newed once every 5 years as part of the network assessment required under § 58.10(d).

(iii) State and, where appropriate, local agencies are required to conduct ambient air Pb monitoring near each of the airports listed in Table D–3A for a period of 12 consecutive months commencing no later than December 27, 2011. Monitors shall be sited to measure the maximum Pb concentration in ambient air, taking into account logistics and the potential for population exposure, and shall use an approved Pb–TSP Federal Reference Method or Federal Equivalent Method. Any monitor that exceeds 50 percent of the Pb NAAQS on a

rolling 3–month average (as determined according to 40 CFR part 50, Appendix R) shall become a required monitor under paragraph 4.5(c) of this Appendix, and shall continue to monitor for Pb unless a waiver is granted allowing it to stop operating as allowed by the provisions in paragraph 4.5(a)(ii) of this appendix. Data collected shall be submitted to the Air Quality System database according to the requirements of 40 CFR part 58.16.

Table D-3A Airports To Be Monitored for Lead

Airport	County	State
Merrill Field	Anchorage	AK
Pryor Field Regional	Limestone	AL
Palo Alto Airport of Santa Clara County	Santa Clara	CA
McClellan-Palomar	San Diego	CA
Reid-Hillview	Santa Clara	CA
Gillespie Field	San Diego	CA
San Carlos	San Mateo	CA
Nantucket Memorial	Nantucket	MA
Oakland County International	Oakland	MI
Republic	Suffolk	NY
Brookhaven	Suffolk	NY
Stinson Municipal	Bexar	TX
Northwest Regional	Denton	TX
Harvey Field	Snohomish	WA
Auburn Municipal	King	WA

(b) State and, where appropriate, local agencies are required to conduct non-source-oriented Pb monitoring at each NCore site required under paragraph 3 of this appendix in a CBSA with a population of 500,000 or more.

(c) The EPA Regional Administrator may require additional monitoring beyond the minimum monitoring requirements contained in paragraphs 4.5(a) and 4.5(b) where the likelihood of Pb air quality violations is sig-

nificant or where the emissions density, topography, or population locations are complex and varied. EPA Regional Administrators may require additional monitoring at locations including, but not limited to, those near existing additional industrial sources of Pb, recently closed industrial sources of Pb, airports where piston-engine aircraft emit Pb, and other sources of re-entrained Pb dust.

(d) The most important spatial scales for source-ori-

ented sites to effectively characterize the emissions from point sources are microscale and middle scale. The most important spatial scale for non-source-oriented sites to characterize typical lead concentrations in urban areas is the neighborhood scale. Monitor siting should be conducted in accordance with 4.5(a)(i) with respect to source-oriented sites.

(1) Microscale--This scale would typify areas in close proximity to lead point sources. Emissions from point sources such as primary and secondary lead smelters, and primary copper smelters may under fumigation conditions likewise result in high ground level concentrations at the microscale. In the latter case, the microscale would represent an area impacted by the plume with dimensions extending up to approximately 100 meters. Pb monitors in areas where the public has access, and particularly children have access, are desirable because of the higher sensitivity of children to exposures of elevated Pb concentrations.

(2) Middle scale--This scale generally represents Pb air quality levels in areas up to several city blocks in size with dimensions on the order of approximately 100 meters to 500 meters. The middle scale may for example, include schools and playgrounds in center city areas which are close to major Pb point sources. Pb monitors in such areas are desirable because of the higher sensitivity of children to exposures of elevated Pb concentrations (reference 3 of this appendix). Emissions from point sources frequently impact on areas at which single sites may be located to measure concentrations representing middle spatial scales.

(3) Neighborhood scale--The neighborhood scale would characterize air quality conditions throughout some relatively uniform land use areas with dimensions in the

0.5 to 4.0 kilometer range. Sites of this scale would provide monitoring data in areas representing conditions where children live and play. Monitoring in such areas is important since this segment of the population is more susceptible to the effects of Pb. Where a neighborhood site is located away from immediate Pb sources, the site may be very useful in representing typical air quality values for a larger residential area, and therefore suitable for population exposure and trends analyses.

(d) Technical guidance is found in references 4 and 5 of this appendix. These documents provide additional guidance on locating sites to meet specific urban area monitoring objectives and should be used in locating new sites or evaluating the adequacy of existing sites.

4.6 Particulate Matter (PM₁₀) Design Criteria.

(a) Table D-4 indicates the approximate number of permanent stations required in MSAs to characterize national and regional PM₁₀ air quality trends and geographical patterns. The number of PM₁₀ stations in areas where MSA populations exceed 1,000,000 must be in the range from 2 to 10 stations, while in low population urban areas, no more than two stations are required. A range of monitoring stations is specified in Table D-4 because sources of pollutants and local control efforts can vary from one part of the country to another and therefore, some flexibility is allowed in selecting the actual number of stations in any one locale. Modifications from these PM₁₀ monitoring requirements must be approved by the Regional Administrator.

TABLE D-4 OF APPENDIX D TO PART 58.

Population category	High concentration ^[FN2]	Medium concentration ^[FN3]	Low concentration ^[FN4] , ^[FN5]
>1,000,000	6-10	4-8	2-4
500,000-1,000,000	4-8	2-4	1-2
250,000-500,000	3-4	1-2	0-1
100,000-250,000	1-2	0-1	0

[FN1] Selection of urban areas and actual numbers of stations per area will be jointly determined by EPA and the State agency.

[FN2] High concentration areas are those for which ambient PM₁₀ data show ambient concentrations exceeding the PM₁₀ NAAQS by 20 percent or more.

[FN3] Medium concentration areas are those for which ambient PM₁₀ data show ambient concentrations exceeding 80 percent of the PM₁₀ NAAQS.

[FN4] Low concentration areas are those for which ambient PM₁₀ data show ambient concentrations less than 80 percent of the PM₁₀ NAAQS.

[FN5] These minimum monitoring requirements apply in the absence of a design value.

(b) Although microscale monitoring may be appropriate in some circumstances, the most important spatial scales to effectively characterize the emissions of PM₁₀ from both mobile and stationary sources are the middle scales and neighborhood scales.

(1) Microscale--This scale would typify areas such as downtown street canyons, traffic corridors, and fence line stationary source monitoring locations where the general public could be exposed to maximum PM₁₀ concentrations. Microscale particulate matter sites should be located near inhabited buildings or locations where the general public can be expected to be exposed to the concentration measured. Emissions from stationary sources such as primary and secondary smelters, power plants, and other large industrial processes may, under certain plume conditions, likewise result in high ground level concentrations at the microscale. In the latter case, the microscale would represent an area impacted by the plume with dimensions extending up to approximately 100 meters. Data collected at microscale sites provide information for evaluating and developing hot spot control measures.

(2) Middle scale--Much of the short-term public exposure to coarse fraction particles (PM₁₀) is on this scale and on the neighborhood scale. People moving through downtown areas or living near major roadways or stationary sources, may encounter particulate pollution that would be adequately characterized by measurements of this spatial scale. Middle scale PM₁₀ measurements can be appropriate for the evaluation of possible short-term

exposure public health effects. In many situations, monitoring sites that are representative of micro-scale or middle-scale impacts are not unique and are representative of many similar situations. This can occur along traffic corridors or other locations in a residential district. In this case, one location is representative of a neighborhood of small scale sites and is appropriate for evaluation of long-term or chronic effects. This scale also includes the characteristic concentrations for other areas with dimensions of a few hundred meters such as the parking lot and feeder streets associated with shopping centers, stadia, and office buildings. In the case of PM₁₀, unpaved or seldomly swept parking lots associated with these sources could be an important source in addition to the vehicular emissions themselves.

(3) Neighborhood scale--Measurements in this category represent conditions throughout some reasonably homogeneous urban sub-region with dimensions of a few kilometers and of generally more regular shape than the middle scale. Homogeneity refers to the particulate matter concentrations, as well as the land use and land surface characteristics. In some cases, a location carefully chosen to provide neighborhood scale data would represent not only the immediate neighborhood but also neighborhoods of the same type in other parts of the city. Neighborhood scale PM₁₀ sites provide information about trends and compliance with standards because they often represent conditions in areas where people commonly live and work for extended periods. Neighborhood scale data could provide valuable information for developing, testing, and revising models

that describe the larger-scale concentration patterns, especially those models relying on spatially smoothed emission fields for inputs. The neighborhood scale measurements could also be used for neighborhood comparisons within or between cities.

4.7 Fine Particulate Matter (PM_{2.5}) Design Criteria.

4.7.1 General Requirements. (a) State, and where applicable local, agencies must operate the minimum number of required PM_{2.5} SLAMS sites listed in Table

D-5 of this appendix. The NCore sites are expected to complement the PM_{2.5} data collection that takes place at non-NCore SLAMS sites, and both types of sites can be used to meet the minimum PM_{2.5} network requirements. Deviations from these PM_{2.5} monitoring requirements must be approved by the EPA Regional Administrator.

TABLE D-5 OF APPENDIX D TO PART 58.

MSA population [FN1], [FN2]	Most recent 3-year design value \geq 85% of any PM _{2.5} NAAQS [FN3]	Most recent 3-year design value $<$ 85% of any PM _{2.5} NAAQS [FN3], [FN4]
>1,000,000	3	2
500,000–1,000,000	2	1
50,000–<500,000 [FN5]	1	0

[FN1] Minimum monitoring requirements apply to the Metropolitan statistical area (MSA).

[FN2] Population based on latest available census figures.

[FN3] The PM_{2.5} National Ambient Air Quality Standards (NAAQS) levels and forms are defined in 40 CFR part 50.

[FN4] These minimum monitoring requirements apply in the absence of a design value.

[FN5] Metropolitan statistical areas (MSA) must contain an urbanized area of 50,000 or more population.

(b) Specific Design Criteria for PM_{2.5}. The required monitoring stations or sites must be sited to represent area-wide air quality. These sites can include sites collocated at PAMS. These monitoring stations will typically be at neighborhood or urban-scale; however, micro- or middle-scale PM_{2.5} monitoring sites that represent many such locations throughout a metropolitan area are considered to represent area-wide air quality.

(1) At least one monitoring station is to be sited at neighborhood or larger scale in an area of expected maximum concentration.

(2) For CBSAs with a population of 1,000,000 or more persons, at least one PM_{2.5} monitor is to be collocated

at a near-road NO₂ station required in section 4.3.2(a) of this appendix.

(3) For areas with additional required SLAMS, a monitoring station is to be sited in an area of poor air quality.

(4) Additional technical guidance for siting PM_{2.5} monitors is provided in references 6 and 7 of this appendix.

(c) The most important spatial scale to effectively characterize the emissions of particulate matter from both mobile and stationary sources is the neighborhood scale for PM_{2.5}. For purposes of establishing monitoring sites to represent large homogenous areas other than the above scales of representativeness and to characterize regional transport, urban or regional scale sites would

also be needed. Most PM_{2.5} monitoring in urban areas should be representative of a neighborhood scale.

(1) Micro-scale. This scale would typify areas such as downtown street canyons and traffic corridors where the general public would be exposed to maximum concentrations from mobile sources. In some circumstances, the micro-scale is appropriate for particulate sites. SLAMS sites measured at the micro-scale level should, however, be limited to urban sites that are representative of long-term human exposure and of many such microenvironments in the area. In general, micro-scale particulate matter sites should be located near inhabited buildings or locations where the general public can be expected to be exposed to the concentration measured. Emissions from stationary sources such as primary and secondary smelters, power plants, and other large industrial processes may, under certain plume conditions, likewise result in high ground level concentrations at the micro-scale. In the latter case, the micro-scale would represent an area impacted by the plume with dimensions extending up to approximately 100 meters. Data collected at micro-scale sites provide information for evaluating and developing hot spot control measures.

(2) Middle scale--People moving through downtown areas, or living near major roadways, encounter particle concentrations that would be adequately characterized by this spatial scale. Thus, measurements of this type would be appropriate for the evaluation of possible short-term exposure public health effects of particulate matter pollution. In many situations, monitoring sites that are representative of microscale or middle-scale impacts are not unique and are representative of many similar situations. This can occur along traffic corridors or other locations in a residential district. In this case, one location is representative of a number of small scale sites and is appropriate for evaluation of long-term or chronic effects. This scale also includes the characteristic concentrations for other areas with dimensions of a few hundred meters such as the parking lot and feeder streets associated with shopping centers, stadia, and office buildings.

(3) Neighborhood scale--Measurements in this category

would represent conditions throughout some reasonably homogeneous urban sub-region with dimensions of a few kilometers and of generally more regular shape than the middle scale. Homogeneity refers to the particulate matter concentrations, as well as the land use and land surface characteristics. Much of the PM_{2.5} exposures are expected to be associated with this scale of measurement. In some cases, a location carefully chosen to provide neighborhood scale data would represent the immediate neighborhood as well as neighborhoods of the same type in other parts of the city. PM_{2.5} sites of this kind provide good information about trends and compliance with standards because they often represent conditions in areas where people commonly live and work for periods comparable to those specified in the NAAQS. In general, most PM_{2.5} monitoring in urban areas should have this scale.

(4) Urban scale--This class of measurement would be used to characterize the particulate matter concentration over an entire metropolitan or rural area ranging in size from 4 to 50 kilometers. Such measurements would be useful for assessing trends in area-wide air quality, and hence, the effectiveness of large scale air pollution control strategies. Community-oriented PM_{2.5} sites may have this scale.

(5) Regional scale--These measurements would characterize conditions over areas with dimensions of as much as hundreds of kilometers. As noted earlier, using representative conditions for an area implies some degree of homogeneity in that area. For this reason, regional scale measurements would be most applicable to sparsely populated areas. Data characteristics of this scale would provide information about larger scale processes of particulate matter emissions, losses and transport. PM_{2.5} transport contributes to elevated particulate concentrations and may affect multiple urban and State entities with large populations such as in the eastern United States. Development of effective pollution control strategies requires an understanding at regional geographical scales of the emission sources and atmospheric processes that are responsible for elevated PM_{2.5} levels and may also be associated with elevated O₃ and regional haze.

4.7.2 Requirement for Continuous $PM_{2.5}$ Monitoring. The State, or where appropriate, local agencies must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) the minimum required sites listed in Table D-5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies. State and local air monitoring agencies must use methodologies and quality assurance/quality control (QA/QC) procedures approved by the EPA Regional Administrator for these required continuous analyzers.

4.7.3 Requirement for $PM_{2.5}$ Background and Transport Sites. Each State shall install and operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor regional transport. These monitoring sites may be at community-oriented sites and this requirement may be satisfied by a corresponding monitor in an area having similar air quality in another State. State and local air monitoring agencies must use methodologies and QA/QC procedures approved by the EPA Regional Administrator for these sites. Methods used at these sites may include non-federal reference method samplers such as IMPROVE or continuous $PM_{2.5}$ monitors.

4.7.4 $PM_{2.5}$ Chemical Speciation Site Requirements. Each State shall continue to conduct chemical speciation monitoring and analyses at sites designated to be part of the $PM_{2.5}$ Speciation Trends Network (STN). The selection and modification of these STN sites must be approved by the Administrator. The $PM_{2.5}$ chemical speciation urban trends sites shall include analysis for elements, selected anions and cations, and carbon. Samples must be collected using the monitoring methods and the sampling schedules approved by the Administrator. Chemical speciation is encouraged at additional sites where the chemically resolved data would be useful in developing State implementation plans and supporting atmospheric or health effects related studies.

4.8 Coarse Particulate Matter ($PM_{10-2.5}$) Design Criteria.

4.8.1 General Monitoring Requirements. (a) The only required monitors for $PM_{10-2.5}$ are those required at NCore Stations.

(b) Although microscale monitoring may be appropriate in some circumstances, middle and neighborhood scale measurements are the most important station classifications for $PM_{10-2.5}$ to assess the variation in coarse particle concentrations that would be expected across populated areas that are in proximity to large emissions sources.

(1) Microscale--This scale would typify relatively small areas immediately adjacent to: Industrial sources; locations experiencing ongoing construction, redevelopment, and soil disturbance; and heavily traveled roadways. Data collected at microscale stations would characterize exposure over areas of limited spatial extent and population exposure, and may provide information useful for evaluating and developing source-oriented control measures.

(2) Middle scale--People living or working near major roadways or industrial districts encounter particle concentrations that would be adequately characterized by this spatial scale. Thus, measurements of this type would be appropriate for the evaluation of public health effects of coarse particle exposure. Monitors located in populated areas that are nearly adjacent to large industrial point sources of coarse particles provide suitable locations for assessing maximum population exposure levels and identifying areas of potentially poor air quality. Similarly, monitors located in populated areas that border dense networks of heavily-traveled traffic are appropriate for assessing the impacts of resuspended road dust. This scale also includes the characteristic concentrations for other areas with dimensions of a few hundred meters such as school grounds and parks that are nearly adjacent to major roadways and industrial point sources, locations exhibiting mixed residential and commercial development, and downtown areas featuring office buildings, shopping centers, and stadiums.

(3) Neighborhood scale--Measurements in this category would represent conditions throughout some reasonably homogeneous urban sub-region with dimensions of a

few kilometers and of generally more regular shape than the middle scale. Homogeneity refers to the particulate matter concentrations, as well as the land use and land surface characteristics. This category includes suburban neighborhoods dominated by residences that are somewhat distant from major roadways and industrial districts but still impacted by urban sources, and areas of diverse land use where residences are interspersed with commercial and industrial neighborhoods. In some cases, a location carefully chosen to provide neighborhood scale data would represent the immediate neighborhood as well as neighborhoods of the same type in other parts of the city. The comparison of data from middle scale and neighborhood scale sites would provide valuable information for determining the variation of $PM_{10-2.5}$ levels across urban areas and assessing the spatial extent of elevated concentrations caused by major industrial point sources and heavily traveled roadways. Neighborhood scale sites would provide concentration data that are relevant to informing a large segment of the population of their exposure levels on a given day.

4.8.2 [Reserved]

5. Network Design for Photochemical Assessment Monitoring Stations (PAMS)

The PAMS program provides more comprehensive data on O_3 air pollution in areas classified as serious, severe, or extreme nonattainment for O_3 than would otherwise be achieved through the NCore and SLAMS sites. More specifically, the PAMS program includes measurements for O_3 , oxides of nitrogen, VOC, and meteorology.

5.1 PAMS Monitoring Objectives. PAMS design criteria are site specific. Concurrent measurements of O_3 , oxides of nitrogen, speciated VOC, CO, and meteorology are obtained at PAMS sites. Design criteria for the PAMS network are based on locations relative to O_3 precursor source areas and predominant wind directions associated with high O_3 events. Specific monitoring objectives are associated with each location. The overall design should enable characterization of precursor emission sources within the area, transport of O_3 and its precursors, and the photochemical processes related to O_3

nonattainment. Specific objectives that must be addressed include assessing ambient trends in O_3 , oxides of nitrogen, VOC species, and determining spatial and diurnal variability of O_3 , oxides of nitrogen, and VOC species. Specific monitoring objectives associated with each of these sites may result in four distinct site types. Detailed guidance for the locating of these sites may be found in reference 9 of this appendix.

(a) Type 1 sites are established to characterize upwind background and transported O_3 and its precursor concentrations entering the area and will identify those areas which are subjected to transport.

(b) Type 2 sites are established to monitor the magnitude and type of precursor emissions in the area where maximum precursor emissions are expected to impact and are suited for the monitoring of urban air toxic pollutants.

(c) Type 3 sites are intended to monitor maximum O_3 concentrations occurring downwind from the area of maximum precursor emissions.

(d) Type 4 sites are established to characterize the downwind transported O_3 and its precursor concentrations exiting the area and will identify those areas which are potentially contributing to overwhelming transport in other areas.

5.2 Monitoring Period. PAMS precursor monitoring must be conducted annually throughout the months of June, July and August (as a minimum) when peak O_3 values are expected in each area. Alternate precursor monitoring periods may be submitted for approval to the Administrator as a part of the annual monitoring network plan required by § 58.10.

5.3 Minimum Monitoring Network Requirements. A Type 2 site is required for each area. Overall, only two sites are required for each area, providing all chemical measurements are made. For example, if a design includes two Type 2 sites, then a third site will be necessary to capture the NO_y measurement. The minimum required number and type of monitoring sites and sampling requirements are listed in Table D-6 of this

appendix. Any alternative plans may be put in place in lieu of these requirements, if approved by the Administrator.

TABLE D-6 OF APPENDIX D TO PART 58.

Measurement	Where required	Sampling frequency (all daily except for upper air meteorology) ^[FN1]
Speciated VOC ^[FN2]	Two sites per area, one of which must be a Type 2 site	During the PAMS monitoring period: (1) Hourly auto GC, or (2) Eight 3-hour canisters, or (3) 1 morning and 1 afternoon canister with a 3-hour or less averaging time plus Continuous Total Non-methane Hydrocarbon measurement.
Carbonyl sampling	Type 2 site in areas classified as serious or above for the 8-hour ozone standard	3-hour samples every day during the PAMS monitoring period.
NO _X	All Type 2 sites	Hourly during the ozone monitoring season. ^[FN3]
NO _y	One site per area at the Type 3 or Type 1 site	Hourly during the ozone monitoring season.
CO (ppb level)	One site per area at a Type 2 site	Hourly during the ozone monitoring season.
Ozone	All sites	Hourly during the ozone monitoring season.
Surface met	All sites	Hourly during the ozone monitoring season.
Upper air meteorology	One representative location within PAMS area	Sampling frequency must be approved as part of the annual monitoring network plan required in 40 CFR 58.10.

[FN1] Daily or with an approved alternative plan.

[FN2] Speciated VOC is defined in the "Technical Assistance Document for Sampling and Analysis of Ozone Precursors", EPA/600-R-98/161, September 1998.

[FN3] Approved ozone monitoring season as stipulated in Table D-3 of this appendix.

5.4 Transition Period. A transition period is allowed for phasing in the operation of newly required PAMS programs (due generally to reclassification of an area into serious, severe, or extreme nonattainment for ozone). Following the date of redesignation or reclassification

of any existing O₃ nonattainment area to serious, severe, or extreme, or the designation of a new area and classification to serious, severe, or extreme O₃ nonattainment, a State is allowed 1 year to develop plans for its PAMS implementation strategy. Subsequently, a

minimum of one Type 2 site must be operating by the first month of the following approved PAMS season. Operation of the remaining site(s) must, at a minimum, be phased in at the rate of one site per year during subsequent years as outlined in the approved PAMS network description provided by the State.

6. References

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2. Ludwig, F.F., J.H.S. Kealoha, and E. Shelar. Selecting Sites for Carbon Monoxide Monitoring. Stanford Research Institute, Menlo Park, CA. Prepared for U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA Publication No. EPA-450/3-75-077, September 1975.

3. Air Quality Criteria for Lead. Office of Research and Development, U.S. Environmental Protection Agency, Washington D.C. EPA Publication No. 600/8-89-049F. August 1990. (NTIS document numbers PB87-142378 and PB91-138420.)

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5. Guidance for Conducting Ambient Air Monitoring for Lead Around Point Sources. Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA-454/R-92-009. May 1997.

6. Koch, R.C. and H.E. Rector. Optimum Network Design and Site Exposure Criteria for Particulate Matter. GEOMET Technologies, Inc., Rockville, MD. Prepared for U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA Contract No. 68-02-3584. EPA 450/4-87-009. May 1987.

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