United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued April 6, 2009 Decided July 7, 2009

No. 05-1064

CATAWBA COUNTY, NORTH CAROLINA, ET AL.,
PETITIONERS

v.

ENVIRONMENTAL PROTECTION AGENCY,
RESPONDENT

SIERRA CLUB,
INTERVENOR

Consolidated with 05-1065, 05-1067, 05-1068, 05-1069, 05-1071, 05-1072, 05-1073, 05-1075, 05-1076, 05-1077, 05-1078, 05-1184, 05-1190, 05-1196, 05-1200, 05-1202, 06-1049, 06-1052, 06-1083, 06-1088, 06-1102, 06-1172, 07-1412, 07-1417, 07-1418, 07-1428, 07-1465, 07-1467, 07-1530

On Petitions for Review of Final Actions
of the Environmental Protection Agency

Marc D. Machlin argued the cause and filed the briefs for petitioner Oakland County, Michigan.

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Louis E. Tosi argued the cause for Industry Petitioners. With him on the briefs were *Paul E. Gutermann*, *Charles L. Franklin*, *Douglas A. McWilliams*, *Allen A. Kacenjar*, *Michael E. Born*, *Cheri Ann Budzynski*, *Gale Lea Rubrecht*, *Kathy G. Beckett*, *David M. Flannery*, and *Edward L. Kropp*.

Andrew M. Cuomo, Attorney General, Attorney General's Office of the State of New York, *Michael J. Myers* and *Jacob Hollinger*, Assistant Attorney Generals, *Mark Rudolph*, Senior Counsel, Office of Legal Services, West Virginia, *Steve Carter*, Attorney General, Attorney General's Office of the State of Indiana, *Steve D. Griffin* and *Valerie Tachtiris*, Deputy Attorneys General, and *Thomas M. Fisher*, Special Counsel, were on the briefs of State Petitioners.

Karma Barsam Brown, *Phillip L. Conner*, *Ronald E. Cardwell*, *Ethan R. Ware*, *George William House*, *S. Kyle Woosley*, and *Lewis S. Wiener* were on the briefs for County Petitioners.

Laurel A. Bedig and *Monica Derbes Gibson*, Attorneys, and *Jon M. Lipshultz*, Senior Counsel, U.S. Department of Justice, argued the cause for respondent. With them on the brief were *John C. Cruden*, Deputy Assistant Attorney General, *Jessica O'Donnell*, Attorney, and Geoffrey L. Wilcox, Counsel, U.S. Environmental Protection Agency. *Kenneth C. Amaditz*, Attorney, U.S. Department of Justice, entered an appearance.

David S. Baron and *Jennifer C. Chavez* were on the brief for intervenor. *Howard I. Fox* entered an appearance.

Before: TATEL, GARLAND, and GRIFFITH, *Circuit Judges*.

Opinion for the Court filed PER CURIAM.

PER CURIAM: In these consolidated petitions, several states, counties, and industrial entities challenge the Environmental Protection Agency's promulgation of area designations for the annual national ambient air quality standard applicable to fine particulate matter, a category of air pollutants consisting of miniscule airborne particles known to present adverse health risks. Insisting that EPA's methodology for designating areas as "nonattainment" for the fine particulate matter standard violates section 107(d) of the Clean Air Act, which governs such designations, and that this methodology and the individual designations it produced are otherwise arbitrary and capricious, petitioners ask us to vacate the nonattainment designations and to send EPA back to the drawing board. With one minor exception, we deny the petitions for review. Faced with the complex task of identifying those geographic areas that contribute to fine particulate matter pollution, EPA both complied with the statute and, for all but one of the 225 counties or partial counties it designated as nonattainment, satisfied—indeed, quite often surpassed—its basic obligation of reasoned decisionmaking.

I.

Title I of the Clean Air Act charges EPA with formulating national ambient air quality standards (NAAQS) for air pollutants that may reasonably be anticipated to endanger public health and welfare. 42 U.S.C. §§ 7408–09. NAAQS set maximum ambient air concentrations for those pollutants. *Id.* While each state has "primary responsibility for assuring air quality" within its borders and, in particular, for developing a state implementation plan (SIP) for achieving and maintaining the NAAQS for each air pollutant, 42 U.S.C. § 7407(a), the Act triggers more or less stringent requirements depending on the quality of an area's ambient air. Thus, before a state can design an appropriate SIP, it

must know which areas within its boundaries comply with the NAAQS and which do not.

This is where CAA section 107(d) comes in. It requires EPA to designate areas as "attainment," "nonattainment," or "unclassifiable" depending on their compliance with the relevant NAAQS. "Attainment" areas are those that meet the relevant standard; "nonattainment" areas are those that exceed the standard or that "contribute[] to ambient air quality in a nearby area" that exceeds the standard; "unclassifiable" areas are those that permit no determination given existing data. § 7407(d)(1)(A)(i)–(iii). In nonattainment areas, the Act requires stricter pollution controls. For instance, states must implement controls that will achieve attainment "as expeditiously as practicable" in nonattainment areas, *id.* § 7502(a), (c)(1), whereas states need only implement measures that will prevent "significant deterioration of air quality" for attainment and unclassifiable areas, *id.* § 7471.

In addition to setting the criteria for attainment and nonattainment, section 107(d)(1) prescribes the designation process. Upon promulgation of new or revised NAAQS, states must submit to EPA their own "initial designations" of all areas within their borders. § 7407(d)(1)(A). EPA must then promulgate the submitted designations or modify them as it deems necessary. § 7407(d)(1)(B). Specifically, CAA section 107(d)(1)(B)(ii) provides that:

> In making the promulgations required . . . , the Administrator may make such modifications as the Administrator deems necessary to the designations of the areas (or portions thereof) submitted [by the states] 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.

§ 7407(d)(1)(B)(ii).

This case involves the NAAQS for fine particulate matter. Known as $PM_{2.5}$, fine particulate matter consists of airborne particles that are 2.5 micrometers in diameter or smaller—i.e., less than one-thirtieth the thickness of a human hair. *Air Quality Designations and Classifications for the Fine Particles (PM2.5) National Ambient Air Quality Standards* ("*$PM_{2.5}$ Designations Rule*"), 70 Fed. Reg. 944, 945 (Jan. 5, 2005) (codified at 40 C.F.R. pt. 81). A "significant association" links elevated levels of $PM_{2.5}$ with adverse human health consequences such as premature death, lung and cardiovascular disease, and asthma. *Id.* And significantly for the primary issue before us—EPA's method for identifying the geographic origins of elevated ambient $PM_{2.5}$ concentrations—$PM_{2.5}$ can travel hundreds or thousands of miles.

In 1997, EPA abandoned its practice of regulating all particulate matter, both coarse and fine, under a unified standard. Instead it established specific $PM_{2.5}$ NAAQS for the first time. *National Ambient Air Quality Standards for Particulate Matter*, 62 Fed. Reg. 38,652 (July 18, 1997). EPA promulgated annual and 24-hour $PM_{2.5}$ NAAQS, setting the annual standard—the one at issue here—at 15 micrograms

per cubic meter. *Id.* at 38,677; *see also* 40 C.F.R. § 50.7. Although section 107(d) required EPA to promulgate area designations for the new standard "as expeditiously as possible," § 7407(d)(1)(B)(i), litigation here and in the Supreme Court waylaid the designation process until we finally upheld the standard five years later. *See Am. Trucking Ass'ns v. EPA*, 283 F.3d 355 (D.C. Cir. 2002), *on remand from Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457 (2001), *aff'g in part and rev'g in part Am. Trucking Ass'ns v. EPA*, 175 F.3d 1027 (D.C. Cir. 1999). In the meantime, Congress had passed legislation requiring the deployment of a nationwide $PM_{2.5}$ monitoring network and extending the deadline for the designations until three years of monitoring data had been collected. *See* Transportation Equity Act for the 21st Century ("TEA-21"), Pub. L. No. 105-178, §§ 6101–02, 112 Stat. 107, 463–65 (1998). Then, following our decision upholding the $PM_{2.5}$ NAAQS and EPA's initiation of the designation process, Congress amended the Clean Air Act to add section 107(d)(6), which set a firm deadline for the $PM_{2.5}$ area designations. *See* Pub. L. No. 108-199, § 425(a), 118 Stat. 3, 417 (2004) (codified at § 7407(d)(6)). Thus, amended section 107(d)(6)(A) now provides:

> Notwithstanding any other provision of law, not later than February 15, 2004, the Governor of each State shall submit designations referred 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 area.

§ 7407(d)(6)(A). And section 107(d)(6)(B) provides:

> Notwithstanding any other provision of law, not later than December 31, 2005, 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.

§ 7407(d)(6)(B).

In April 2003, EPA issued a guidance document initiating the $PM_{2.5}$ designation process. Known as the Holmstead Memo, the document explains the timeline for state submissions and, more importantly, the criteria EPA would employ in reviewing those submissions. Memorandum from Jeffrey R. Holmstead, Assistant Administrator, to Regional Administrators, Regions I–X (Apr. 1, 2003) ("Holmstead Memo"). Noting "recent evidence that violations of the $PM_{2.5}$ air quality standards generally include a significant urban-scale contribution," the Holmstead Memo explains EPA's "inten[t] to apply a presumption that the boundaries for urban nonattainment areas should be based on Metropolitan Area boundaries." *Id.* at 2. In other words, the Memo announces EPA's view that if any area within a metropolitan area exceeds the annual $PM_{2.5}$ NAAQS, then *all* areas within the metropolitan area presumptively "contribute" to that violation within the meaning of section 107(d)(1)(A) and therefore warrant "nonattainment" designations. The Holmstead Memo further explains that EPA would define metropolitan boundaries by reference to Office of Management and Budget definitions of metropolitan statistical areas (MSAs) and consolidated metropolitan statistical areas (CMSAs) (interchangeably, "C/MSAs"). *Id.* Thus, under this approach, a violation of the $PM_{2.5}$ NAAQS in the District of Columbia, for instance, would trigger the presumption that seventeen

counties in northern Virginia and five counties in Maryland—all inside the applicable MSA, though only some are contiguous with the District—contribute to elevated $PM_{2.5}$ levels in the city and warrant "nonattainment" designations.

An attachment to the Holmstead Memo elaborates on EPA's basis for adopting the presumption, as well as the circumstances that would warrant a departure. As to the rationale for the presumption, the Holmstead Memo explains that after "examin[ing] the geographic distribution of total $PM_{2.5}$ concentrations in and near many metropolitan areas," the agency had "found an association of higher $PM_{2.5}$ concentrations with greater levels of urban activity" such as "motor vehicle use and home heating[,] as well as industrial activities." Holmstead Memo, Attach. 2, Guidance on Nonattainment Area Designations for $PM_{2.5}$, at 4–5 ("Holmstead Memo Guidance"). Thus, "[the] presumption reflects EPA's view that, in the absence of evidence to the contrary, violations of the $PM_{2.5}$ NAAQS in urban areas may be presumed attributable at least in part to contributions from sources distributed throughout the Metropolitan Area." *Id.* at 5. That said, the Holmstead Memo also recognizes that appropriate boundaries of urban nonattainment areas may well be smaller or larger than the applicable C/MSA. EPA would therefore "consider requests for urban nonattainment area definitions that deviate from OMB's metropolitan area definitions on a case-by-case basis." *Id.* at 6. The Holmstead Memo lists nine factors to guide that case-by-case analysis: (1) emissions in the potentially contributing areas; (2) air quality in those areas; (3) population density and degree of urbanization in those areas; (4) traffic and commuting patterns; (5) expected growth; (6) meteorology; (7) geography and topography; (8) jurisdictional boundaries; and (9) level of control of emissions sources. *Id.* at 7. The Memo encourages states submitting designations that depart from the

metropolitan presumption to justify such designations by reference to all nine factors. *Id.*

With that, the designation process was underway. The states submitted their initial designations; EPA responded with its proposed modifications, as well as explanations of its analysis under the nine-factor test; the states then submitted any responses; and EPA promulgated the final area designations in December 2004. *See* $PM_{2.5}$ *Designations Rule*, 70 Fed. Reg. at 946. In a technical support document accompanying the Rule, EPA explained the basis for the designations and the analytical tools that it had developed and applied to assess the nine factors. *See* EPA, Office of Air Quality Planning and Standards, *Technical Support Document for State and Tribal Air Quality Fine Particle (PM2.5) Designations* (2004) ("*Technical Support Document*"). Recognizing that 2004 monitoring data would soon become available, EPA also invited states to submit any new data that might support an amended designation. $PM_{2.5}$ *Designations Rule*, 70 Fed. Reg. at 948. Based on the new data, EPA then revised designations for eight areas from nonattainment to attainment and four areas from unclassifiable to attainment. *See Air Quality Designations for the Fine Particles (PM2.5) National Ambient Air Quality Standards—Supplemental Amendments*, 70 Fed. Reg. 19,844, 19,844 (Apr. 14, 2005) (codified at 40 C.F.R. pt. 81).

In the end, EPA applied the C/MSA presumption so that nonattainment boundaries were coextensive with metropolitan boundaries (and unchanged by the nine-factor analysis) in only seven of thirty-nine metropolitan areas. *See* EPA Br. 54 (citing relevant portions of the Technical Support Document). In every other metropolitan area, applying the nine-factor analysis and finding that the presumption misjudged the nature of the $PM_{2.5}$ problem, EPA designated the urban

nonattainment area as either an area larger than the OMB-defined metropolitan area (for instance, in Chattanooga, Tennessee) or smaller (for instance, in Washington, DC).

Several states, local governments, and industrial entities petitioned EPA for reconsideration of the designations; others filed petitions for review directly in this court. We stayed proceedings in this court while EPA considered the petitions for reconsideration. Once EPA resolved the petitions for reconsideration, we consolidated all petitions for review.

Petitioners' challenges fall into four broad categories. First, they raise procedural challenges to the Holmstead Memo and to the Designations Rule, arguing that EPA illegally bypassed notice and comment for each. Second, they raise various objections to EPA's statutory authority to adopt and implement the C/MSA presumption and the nine-factor test. Third, they argue that even if section 107(d) permits EPA to adopt the C/MSA presumption and the nine-factor test, EPA's analysis nonetheless suffers from such serious methodological deficiencies and inconsistencies as to render the entire Designations Rule arbitrary and capricious. Finally, as a last resort, petitioners request that we vacate certain area designations that affect them, claiming that EPA at least acted arbitrarily and capriciously in making these particular nonattainment and unclassifiable designations. We review petitioners' challenges under section 307(d)(9) of the Clean Air Act, which requires the court to set aside EPA's final actions when they are in excess of the agency's statutory authority or otherwise arbitrary and capricious. 42 U.S.C. § 7607(d)(9)(a).

II.

Before addressing petitioners' arguments, however, we think it helpful to review some technical background.

Fine particulate matter includes both "primary" particles (e.g., carbonaceous particles and so-called "crustal" particles like dust) that pollution sources emit directly into the atmosphere, as well as "secondary" particles (e.g., sulfate and nitrate particles) that form in the atmosphere as a result of chemical reactions between $PM_{2.5}$ precursors that sources emit. *$PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 945. Power plants, diesel and gasoline powered engines in mobile sources like cars and trucks, and other industrial sources produce most carbonaceous particles; agriculture, mining, and other activities that cause soil or metals to be suspended in the atmosphere account for the crustal component. *See Technical Support Document* § 3.1; EPA, Office of Air Quality and Planning Standards, *The Particle Pollution Report* 6 (2004), *available at* http://www.epa.gov/air/airtrends/aqtrnd04/pm.html. The chemical precursors to secondary $PM_{2.5}$ include sulfur dioxide (SO_2), emitted in substantial part by power plants; nitrogen oxides (NO_x), emitted in substantial part by mobile sources, power plants, and other industrial sources; and ammonia, emitted from agricultural sources, mobile sources, and power plants. *See $PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 945; *Technical Support Document* § 3.1. Atmospheric chemical reactions between these gases yield secondary $PM_{2.5}$ in the form of sulfate and nitrate particles. *$PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 945. The $PM_{2.5}$ NAAQS set a 15µg/m^3 annual limit for all fine particulate matter without distinguishing among the various kinds (or "species") of $PM_{2.5}$. Even so, "speciation data" that breaks the total $PM_{2.5}$ concentration into its constituent components is quite useful for the area designation process. Because such data reveals the kinds of particles (carbon, sulfate, nitrate, crustal particles, etc.) that most account for an area's $PM_{2.5}$ problem, it suggests, by extrapolation, the kinds of sources most responsible for the problem as well.

While the Holmstead Memo announced EPA's methodology for determining whether an area with passable $PM_{2.5}$ concentrations nonetheless deserves a "nonattainment" designation, EPA regulations set forth the technical procedures for measuring ambient $PM_{2.5}$ concentrations in the first place. Exhaustive technical specifications regulate the states' operation of a network of air monitors that collect air quality data for any given area. *See* 40 C.F.R. pt. 50, Apps. L, N. These monitors measure ambient $PM_{2.5}$ concentration, what's called the "design value," on any given day. The annual design value—which determines whether an area complies with the $PM_{2.5}$ standard—is then computed by averaging every quarter's worth of daily design value samples (typically collected every third or sixth day), averaging those quarterly numbers to obtain an annual average, and then averaging three years of annual numbers to yield the final annual design value. *See* 40 C.F.R. pt. 50, App. N. Samples from these monitors can be further analyzed to yield the speciation data described above.

The majority of the $PM_{2.5}$ designations at issue here drew on monitoring data collected from 2001 to 2003. Based on a judgment that no petitioner challenges, EPA decided that "the county boundary . . . [would] determin[e] the extent of the area reflected by [a violating] PM2.5 monitor." *$PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 946; *see also id.* at 946–47 ("[I]f a PM2.5 monitor was violating the standard based on the 2001–2003 data, at a minimum we designated the county where that monitor is located as nonattainment. We made exceptions . . . in a few very large western counties where a significant geographic feature such as a mountain range divided a county. . . ."). Thus, for instance, if a monitor in an industrial area of downtown Detroit registered a violation, all of Wayne County would be designated as nonattainment—including even its more idyllic corners like the town of

Grosse Pointe. *Cf. id.* at 980 (designating Wayne County nonattainment). To be clear, this reflects quite a separate judgment from that underlying the C/MSA presumption. EPA's selection of the county as the unit of analysis resolved a problem inherent in the monitoring process, namely, that a monitor only measures air quality in its immediate vicinity. Because of this, EPA had to determine how much compass to give any monitored measurement, which it did by choosing the county as the unit of analysis. The C/MSA presumption, by contrast, addresses a different problem, namely, how to identify those areas that, although deemed to be meeting the standard themselves, are contributing to nearby violations.

We've already described the nine factors that EPA evaluated to determine whether to depart from the C/MSA presumption, *see supra* at 8, and in the hundreds of pages that comprise the Technical Support Document, EPA explained its findings for each metropolitan area on each of the nine factors. EPA assessed these factors with the help of several analytical tools and models it had developed. *See Technical Support Document* §§ 3.0–5.9 (explaining analytical tools). We describe the most important ones here in general fashion, reserving additional elaboration for those portions of the opinion that require it.

To start, given the hundreds of miles that $PM_{2.5}$ can travel in the atmosphere, EPA thought it important to isolate the portion of urban $PM_{2.5}$ that originates from a metropolitan area's local sources as opposed to regional sources much farther away. Thus, under its "urban excess" analysis, EPA paired an urban monitoring site with an upwind rural monitoring site—i.e., a rural site where prevailing winds move in the direction of the metropolitan area—and "subtract[ed] the rural concentration from the measured urban concentration." *Id.* § 3.1. True to name, this simple

arithmetic allowed EPA to estimate the portion of urban $PM_{2.5}$ levels that arises from urban activities by cancelling out the "rural background" that would exist regardless of those activities. *Id.* EPA calculated the urban excess for each $PM_{2.5}$ species and then summed those numbers to yield a total urban excess measure. *Id.* § 3.2.

EPA next used the urban excess calculations to develop "weighted emissions scores" for each county in a C/MSA. *Id.* § 4.0. The notion underlying these scores is intuitive: if the urban excess numbers for the District of Columbia, for instance, reveal that all local $PM_{2.5}$ pollution is in the form of carbon, it would make little sense to think that a C/MSA county plays a significant part in the District's monitored violation if the county has zero carbon emissions. Thus, for purposes of evaluating the first of the nine factors—the "emissions in areas potentially included versus excluded," Holmstead Memo Guidance at 7—EPA determined that raw emissions data is usually less suggestive of contribution than data adjusted to account for the $PM_{2.5}$ species that actually comprise the urban excess.

Calculating weighted emissions scores required a number of steps. *See Technical Support Document* §§ 4.1–4.3. First, EPA determined the total metropolitan emissions of carbon, SO_2, NO_x, and crustal particles by summing the counties' individual emissions of each pollutant. For those pollutants, EPA then divided each county's emissions by total C/MSA emissions, calculating each county's percentage share of total metropolitan emissions. For example, if County A emits 50 tons of carbon and total C/MSA carbon emissions equal 100 tons, then the ratio would be fifty percent. Next EPA "weighted" these percentages by multiplying them by the proportion of urban excess attributable to the relevant pollutant. To continue with our hypothetical, then, if carbon

accounted for forty percent of urban excess, EPA would multiply fifty percent by four-tenths, and County A's weighted carbon score would be twenty. Having calculated a county's weighted scores for each $PM_{2.5}$ species, EPA then added these scores together to derive a county's total weighted emissions score. Importantly, because these scores scale a county's raw emissions based on attributes specific to an individual C/MSA—i.e., the urban excess number and the total level of metropolitan emissions—they only provide a measure for comparing counties within the same C/MSA.

Finally, EPA developed so-called "pollution roses" that depict 2001–2003 monitoring and meteorological data for each $PM_{2.5}$ air monitor. *See, e.g.*, *Technical Support Document* 6-11 to -12. Each pollution rose consists of concentric circles, with the circles' center representing the location of the air monitor. EPA then plotted dots around the circles, with each dot representing one monitored reading, the dot's size representing the magnitude of the reading, the dot's spatial location representing the prevailing wind direction on the day of the reading, and the dot's distance from the center of the circle representing the average wind speed on that day.

With this technical background in mind, we turn to petitioners' four primary arguments.

III.

Petitioners first lodge procedural challenges against EPA's promulgation of the final designations rule and the Holmstead Memo. Petitioners argue that EPA violated the Administrative Procedure Act, 5 U.S.C. § 553, by failing to publish both the Rule and the Holmstead Memo for notice and comment. They are in error as to both.

A. Final Designations Rule

Designation of nonattainment areas is governed by section 107(d) of the Clean Air Act. § 7407(d). The parties disagree as to which subsection of section 107(d) provides EPA's authority to promulgate designations. Industry petitioners argue that designations are promulgated under section 107(d)(6), which states: "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." § 7407(d)(6)(B). By contrast, EPA argues that the source of its authority is a provision of section 107(d)(1), entitled "Promulgation by EPA of designations," which states in relevant part:

> 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.

§ 7407(d)(1)(B)(i). The distinction between these provisions is important because the statute exempts designations under section 107(d)(1), among others, from the APA's section 553 notice-and-comment requirements; it does not, however, exempt designations under section 107(d)(6). *See* § 7407(d)(2)(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 of the United States Code (relating to notice and comment), except

nothing herein shall be construed as precluding such public notice and comment whenever possible.”).

EPA is entrusted with administering the Clean Air Act, of which section 107 is a part, and thus we review the agency’s construction of the statutory provisions under the familiar two-step framework set out in *Chevron U.S.A. Inc. v. Natural Resources Defense Council*, 467 U.S. 837 (1984). Under *Chevron* step one, we ask “whether Congress has directly spoken to the precise question at issue.” *Id.* at 842. If at that point we determine that “the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress.” *Id.* at 842–43. We proceed to *Chevron*’s second step only “if the statute is silent or ambiguous with respect to the specific issue.” *Id.* at 843. At the second step, we determine “whether the agency’s answer is based on a permissible construction of the statute.” *Id.*

Here we need go no further than the first step because the intent of Congress is clear. Petitioners’ reliance on section 107(d)(6) is misplaced. Subparagraph (B) of section 107(d)(6) requires that, “not later than December 31, 2004, the Administrator shall . . . promulgate the designations referred to in subparagraph (A).” § 7407(d)(6)(B). Subparagraph (A), in turn, states: “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)* [of § 7407(d)] for the July 1997 $PM_{2.5}$ national ambient air quality standards . . . .” § 7407(d)(6)(A) (emphasis added). Thus, contrary to petitioners’ claim, section 107(d)(6)(B), when read in conjunction with section 107(d)(6)(A), shows that section 107(d)(6) does not itself authorize the promulgation of designations. Rather, section 107(d)(6) merely governs the timing of $PM_{2.5}$ designations,

which are made under the authority contained in section 107(d)(1)—a provision that the statute expressly exempts from notice-and-comment requirements. *See* § 7407(d)(2)(B).

B. Holmstead Memo

Petitioners' argument that the Holmstead Memo had to undergo notice and comment stems, in part, from their erroneous belief that the final designations were subject to notice and comment. Our determination above, that the statute exempts the nonattainment designations from notice-and-comment procedures, suggests that the Holmstead Memo—which was simply the first step in the promulgation of designations—is also exempt.

Petitioners' further argument, that the Holmstead Memo is a legislative rule that must undergo notice and comment independent of the final rule to which it relates, is also unavailing. For support, petitioners point to *General Electric Co. v. EPA*, 290 F.3d 377 (D.C. Cir. 2002), in which we explained that whether an agency action is the type of action that must undergo notice and comment depends on "whether the agency action binds private parties or the agency itself with the 'force of law,'" *id.* at 382—that is, whether "a document expresses a change in substantive law or policy (that is not an interpretation) which the agency intends to make binding, or administers with binding effect," *id.* at 382–83 (quoting Robert A. Anthony, *Interpretive Rules, Policy Statements, Guidances, Manuals, and the Like—Should Federal Agencies Use Them to Bind the Public?*, 41 DUKE L.J. 1311, 1355 (1992)). *General Electric* further explained that "an agency pronouncement will be considered binding as a practical matter if it either appears on its face to be binding . . . or is applied by the agency in a way that indicates it is binding." *Id.* at 383 (internal citation omitted).

In response, EPA argues that the Holmstead Memo is merely a policy statement, not a legislative rule, because it does not create or modify legally binding rights or obligations. As EPA correctly notes, the APA expressly exempts policy statements from notice-and-comment requirements. *See* 5 U.S.C. § 553(b)(A) (specifying that, except when required by statute, the section 553 requirements for notice and comment do not apply "to interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice").

EPA has the better of this dispute. First, the Holmstead Memo is not binding on its face. It specifies that it merely "provides guidance to State and local air pollution control agencies . . . on the process for designating areas for the purpose of implementing the fine particle national ambient air quality standards." Holmstead Memo at 1. It then explicitly states that it is "not binding" on the states or EPA and notes that it provides only EPA's "current views" on the designation process, suggesting that those views are open to revision. *Id.* at 2. Unlike the agency documents at issue in *General Electric* and *CropLife America v. EPA*, 329 F.3d 876 (D.C. Cir. 2003), which petitioners also cite, the Holmstead Memo does not impose binding duties on states or the agency. It merely clarifies the states' existing duties under the Clean Air Act and explains the process EPA suggests for states to follow in providing their initial designations. As we explained above, *see supra* at 7–8, the Memo establishes a rebuttable C/MSA presumption and outlines nine factors for EPA to consider in its final designations, *see* Holmstead Memo Guidance at 5–7.

Petitioners point to language in the Holmstead Memo that they view as evidence of its binding character vis-à-vis the states: "A demonstration supporting the designation of

boundaries that are less than the full metropolitan area must show both that violations are not occurring in the excluded portions of the metropolitan area and that the excluded portions are not source areas that contribute to the observed violations." *Id.* at 7. But this language does not create a new burden on the states; it merely reiterates the statutory requirements. *See* § 7407(d)(1)(A)(i) (requiring Governors to designate as nonattainment "any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet)" the NAAQS).

Nor does the Holmstead Memo bind EPA. The Memo announces the C/MSA presumption as a *rebuttable* presumption, which preserves the agency's discretion to deviate from the boundaries of a C/MSA in the final designations. *See Panhandle Producers & Royalty Owners Ass'n v. Econ. Regulatory Admin.*, 822 F.2d 1105, 1110 (D.C. Cir. 1987) ("'An agency pronouncement is not deemed a binding regulation merely because it may have some substantive impact, as long as it leave[s] the administrator free to exercise his informed discretion.' . . . Presumptions, so long as rebuttable, leave such freedom." (quoting *Brock v. Cathedral Bluffs Shale Oil Co.*, 796 F.2d 533, 537 (D.C. Cir. 1986) (internal quotation marks omitted))).

Further, EPA has not applied the Holmstead Memo in a binding manner. Petitioners again cite *General Electric* for the proposition that an agency document will be considered binding if "the affected private parties are reasonably led to believe that failure to conform will bring adverse consequences." *Gen. Elec.*, 290 F.3d at 383 (quoting Anthony, *supra*, at 1328). The Memo "encouraged" states to address all nine factors EPA identified, but did not require them to do so. Holmstead Memo Guidance at 7. Some states did not address all or even any of the factors. *See, e.g.*, Letter

from Robert G. Burnley, Dep't of Envtl. Quality, Commonwealth of Virginia, to Donald S. Welsh, U.S. EPA Region III (Feb. 13, 2004) (recommending that all of Virginia be designated attainment without addressing any of the nine factors); Letter from Stephanie R. Timmermeyer, West Virginia Dep't of Envtl. Prot., to Donald S. Welsh, U.S. EPA Region III (Feb. 13, 2004) (recommending $PM_{2.5}$ nonattainment areas to match the existing ozone nonattainment areas without addressing any of EPA's other eight factors). EPA considered such submissions and did not impose "adverse consequences," notwithstanding the states' failure to address the factors listed in the Holmstead Memo. *Compare* State of West Virginia $PM_{2.5}$ Designations—Preliminary Recommendations, *with $PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 1014–15 (showing that EPA designated as attainment an area that West Virginia had proposed be designated nonattainment, despite the fact that West Virginia did not address eight of EPA's nine factors).

In sum, we deny petitioners' procedural claims because EPA was not required to submit either the final designations rule or the Holmstead Memo for notice and comment.

IV.

Petitioners next claim that EPA violated section 107(d) of the Clean Air Act by applying the C/MSA presumption and nine-factor test to identify areas that contribute to nearby $PM_{2.5}$ violations. As we explained above, we review EPA's interpretation of the Clean Air Act under *Chevron*, asking whether Congress has "directly spoken to the precise question at issue," 467 U.S. at 842, and if so, whether it has unambiguously foreclosed the agency's statutory interpretation, *e.g.*, *Sierra Club v. EPA*, 536 F.3d 673, 677 (D.C. Cir. 2008). But if the statute is either silent or

ambiguous on the specific question at issue, we defer to EPA's statutory interpretation so long as it is reasonable. *Id.*

At the outset we observe that section 107(d) is replete with the kinds of words that suggest a congressional intent to leave unanswered questions to an agency's discretion and expertise, *see Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 980 (2005) (statutory ambiguity is delegation to the agency "to fill the statutory gap in reasonable fashion"). Section 107(d) requires EPA to designate an area as nonattainment if it "contributes to ambient air quality in a nearby area" that exceeds the relevant standard, § 7407(d)(1)(A)(i), yet the statute defines neither "contributes" nor "nearby"—words that we have expressly found ambiguous as used in other sections of the Act. *See Envtl. Def. Fund v. EPA*, 82 F.3d 451, 459 (D.C. Cir. 1996) ("contributes to" ambiguous in another section of the Clean Air Act); *Sierra Club v. EPA*, 719 F.2d 436, 443–44 (D.C. Cir. 1983) (same, as to "nearby"). It authorizes EPA to revise state-submitted designations whenever it "deems" such modifications "necessary," yet it says nothing of what precisely will render a modification "necessary." § 7407(d)(1)(B)(ii). And section 107(d) requires states to submit $PM_{2.5}$ designations "based on air quality monitoring data collected in accordance with any applicable Federal reference methods," § 7407(d)(6)(A), yet it fails to define "based on" and "[t]here is no question that the phrase 'based on' is ambiguous," *Sierra Club v. EPA*, 356 F.3d 296, 305–06 (D.C. Cir. 2004); *accord. Nuclear Energy Inst., Inc. v. EPA*, 373 F.3d 1251, 1269 (D.C. Cir. 2004). "[A]mbiguities in statutes within an agency's jurisdiction to administer are delegations of authority to the agency to fill the statutory gap in reasonable fashion." *Brand X*, 545 U.S. at 980. Because it conveys no clear-cut approach for determining whether an

area contributes to a nearby $PM_{2.5}$ violation, section 107(d)'s text is consistent with such a delegation.

To be sure, a statute may foreclose an agency's preferred interpretation despite such textual ambiguities if its structure, legislative history, or purpose makes clear what its text leaves opaque. *Cf. Ariz. Pub. Serv. Co. v. EPA*, 211 F.3d 1280, 1287 (D.C. Cir. 2000) (court must "exhaust[] traditional tools of statutory construction" at *Chevron* step one). Notwithstanding petitioners' torrent of arguments to the contrary, this is not such a case—indeed, it isn't even close.

We start with the argument that petitioners judge to be their best. *See* Oral Arg. at 1:16–3:00. Pointing to section 107(d)(4), petitioners insist that the statute's express mandate that EPA apply the C/MSA presumption in other contexts conclusively proves that Congress intended to preclude its use here. Enacted as part of the 1990 Amendments to the Clean Air Act, section 107(d)(4) "revise[s] . . . by operation of law" the boundaries of certain urban ozone or carbon monoxide nonattainment areas "to include the entire metropolitan statistical or consolidated metropolitan statistical area," unless EPA determined that some portions "do not contribute significantly to the violation of the national ambient air quality standard." § 7407(d)(4)(A)(iv)–(v). In contrast, section 107(d)(6) says nothing about the C/MSA presumption. Instead it provides that the $PM_{2.5}$ area designations must be "based on air quality monitoring data" and promulgated in accordance with section 107(d)(1)'s general provisions for area designations. § 7407(d)(6)(A). Citing the familiar canon of statutory interpretation that "[w]here Congress includes particular language in one section of a statute but omits it from another section of the same Act, it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion or exclusion," *Russello v. United States*, 464 U.S.

16, 23 (1983) (internal quotation marks and brackets omitted), petitioners insist that the statute's exclusive inclusion of the C/MSA presumption for the ozone and carbon monoxide designations demonstrates Congress' unambiguous intent to preclude EPA from adopting the presumption here.

Although petitioners are correct that we construe statutes to give meaning to the disparate inclusion of particular language, that principle hardly compels the interpretation they favor. When interpreting statutes that govern agency action, we have consistently recognized that a congressional mandate in one section and silence in another often "suggests not a prohibition but simply a decision *not to mandate* any solution in the second context, i.e., to leave the question to agency discretion." *Cheney R. Co. v. ICC*, 902 F.2d 66, 69 (D.C. Cir. 1990); *see also Clinchfield Coal Co. v. Fed. Mine Safety & Health Review Comm'n*, 895 F.2d 773, 779 (D.C. Cir. 1990) ("[W]here an agency is empowered to administer the statute, Congress may have meant that in the second context the choice should be up to the agency."). Silence, in other words, may signal permission rather than proscription. For that reason, that Congress spoke in one place but remained silent in another, as it did here, "rarely if ever" suffices for the "direct answer" that *Chevron* step one requires. *Cheney*, 902 F.2d at 69 (internal quotation marks omitted); *see also Am. Forest & Paper Ass'n v. FERC*, 550 F.3d 1179, 1181 (D.C. Cir. 2008) (statute's discrepant inclusion of the modifier "competitive" to describe "markets" renders statutory provision lacking the modifier ambiguous).

Undaunted, petitioners insist that the silence here *is* unambiguously prohibitive. They point out that Congress not only refused to treat $PM_{2.5}$ like ozone and carbon monoxide but chose an altogether different scheme in subsection (d)(6)—one "based on air quality monitoring data,"

§ 7407(d)(6)(A), rather than OMB-drawn metropolitan boundaries and a multi-factor test. As indicated above, however, Congress's mere choice of different standards in subsections (d)(4) and (d)(6) tells us nothing about whether Congress wanted to mandate different approaches or to permit them. Thus, for this argument to succeed, subsection (d)(6) must itself preclude EPA from adopting a test for $PM_{2.5}$ like the one that Congress mandated for ozone and carbon monoxide in subsection (d)(4). But nothing in subsection (d)(6) even hints at such a prohibition. Subsection (d)(6)(A) requires states to submit $PM_{2.5}$ designations "based on air quality monitoring data collected in accordance with any applicable Federal Reference methods"; subsection (d)(6)(B) in turn requires EPA to promulgate those designations in accordance with subsection (d)(1)'s general provisions. For the sake of argument, we shall assume that subsection (d)(6)'s "based on" language unambiguously applies to EPA even though it appears only in the particular provision governing states. We shall also assume that the language substantively constrains EPA's discretion in determining nonattainment boundaries. But even given these assumptions, binding precedent, the statute's purpose, and basic common sense foreclose petitioners' argument that section 107(d)(6) itself precludes EPA from adopting the C/MSA presumption and nine-factor test.

First, as noted above, we have repeatedly held that the words "based on" are unquestionably ambiguous: they neither compel the agency to rest its decisions "solely on" the specified factor nor indicate the extent to which the agency may rely on additional factors. *Sierra Club*, 356 F.3d at 305–06; *accord. Nuclear Energy Inst.*, 373 F.3d at 1269. Instead, they simply constrain the agency from "abandon[ing]" or "supplant[ing]" the specified factor altogether. *Sierra Club*, 356 F.3d at 306. We need ask only whether EPA's $PM_{2.5}$

designations "can still reasonably be described as 'based on'" air quality monitoring data, *id.*, and we have no doubt that the contribution designations meet this modest standard. If nothing else, the contribution designations are "based on" the air quality monitoring data that demonstrate a nearby violation of the NAAQS. Even were this insufficient, EPA's use of air quality monitoring data as part of its nine-factor analysis—for instance, its use of urban excess and weighted emissions scores based on speciation data—would surely suffice.

Second, because subsection d(1) directs EPA to designate some areas as nonattainment despite monitoring data that provides no basis, on its own, to do so, *see* § 7407(d)(1)(A)(i), we think it quite clear that the statute contemplates reliance on factors other than monitoring data to determine contribution. How could EPA possibly fulfill its statutory duty to determine, for instance, whether emissions in Indiana contribute to monitored violations in Chicago without considering wind and emissions data from Indiana? Obviously it couldn't. That the statute fails to set forth the additional criteria for EPA to consider in evaluating contribution hardly forecloses EPA from developing such criteria in order to accomplish Congress's objectives. *See e.g.*, *Entergy Corp. v. Riverkeeper, Inc.*, 129 S. Ct. 1498, 1508 (2009). Indeed, when a statute is "silent . . . with respect to *all* potentially relevant factors, it is eminently reasonable to conclude that [the] silence is meant to convey nothing more than a refusal to tie the agency's hands." *Id.* (emphasis added).

Still undaunted, petitioners advert to section 107(d)(3)—which permits EPA to require a revision to an area designation "on the basis of air quality data, planning and control considerations, or any other air quality-related

considerations the Administrator deems appropriate," § 7407(d)(3)—as evidence that Congress "knew how to authorize a flexible, 'multi-factor' approach to attainment decisions when it so intended." Counties' Opening Br. 20. But the Supreme Court rejected just this kind of argument in *Entergy Corp. v. Riverkeeper, Inc.*, which asked whether EPA may engage in cost-benefit analysis under section 316(b) of the Clean Water Act given that it says nothing of cost-benefit analysis while other sections expressly authorize it. 129 S. Ct. at 1508. Pointing out that section 316(b) "is silent not only with respect to cost-benefit analysis but with respect to all potentially relevant factors," the Court rejected the claim that the silence reflected a prohibition, for if it did, "then the EPA could not consider any factors in implementing [section 316(b)]—an obvious logical impossibility." *Id.* Here we face just this kind of overwhelming statutory silence. Although logic dictates that EPA must evaluate *some* factors in addition to monitoring data to determine contribution, the statute says nothing about *which* factors it should consider. We thus have no difficulty rejecting the claim that the statute unambiguously forecloses EPA from adopting the C/MSA presumption or considering its nine factors in applying it.

The legislative history petitioners cite fails to rehabilitate their claim that section 107(d)(6) unambiguously requires EPA to base all $PM_{2.5}$ designations—including nonattainment designations for contribution—"on air quality monitoring data" alone. Although petitioners are correct that in the Transportation Equity Act for the 21st Century, Congress provided for the deployment of a $PM_{2.5}$ monitoring network to produce adequate monitoring data for these designations, that does nothing to dispel the ambiguity over what criteria EPA should rely on to assess contribution. Indeed, the particular provision of TEA-21 that petitioners emphasize actually reinforces that ambiguity rather than resolves it. *See* TEA-21

§ 6102(c)(1) ("Only data from the monitoring network . . . shall be considered for such designations. Nothing in the previous sentence shall be construed as affecting . . . the Administrator's authority to promulgate the designation of an area as nonattainment, under section 107(d)(1) of the Clean Air Act, based on its contribution to ambient air quality in a nearby nonattainment area.").

In sum, we conclude that neither section 107(d)'s requirement that $PM_{2.5}$ designations be "based on air quality monitoring data" nor its mandate that EPA apply the C/MSA presumption and a multi-factor test for pollutants other than $PM_{2.5}$ unambiguously reveals Congress's intent to prevent EPA from using the presumption and the nine-factor test to determine contribution here. Our rejection of petitioners' purportedly strongest argument is a fair harbinger of the fate of their remaining statutory complaints.

To begin with, petitioners waived two of their statutory arguments by failing to raise them in their opening briefs. *See New York v. EPA*, 413 F.3d 3, 20 (D.C. Cir. 2005) (petitioners waive those arguments that they fail to raise in their opening briefs). Specifically, not until their reply briefs did they present a statutory challenge to EPA's interpretation that a "nearby" area under section 107(d)(1)(A) may include non-contiguous areas, or to its conclusion that an area's future reductions in emissions qualifies as a relevant factor for assessing contribution. This leaves just two general challenges: petitioners' claim that the C/MSA presumption and the nine-factor test run afoul of the statutory term "contribute"; and their claim that the presumption impermissibly encroaches on states' statutory prerogative to have first-say on area designations within their borders.

As to the textual claim, petitioners insist that the verb "contribute" necessarily connotes a significant causal relationship, meaning that EPA may not designate a county as contributing to nonattainment if "corrective measures in [the county] will do nothing to address the problem or help achieve compliance in the nonattainment area." Counties' Opening Br. 25. We reject both the major and the minor premise. Although petitioners cite one dictionary that supports the claim that the adverb "significantly" is implicit in the verb "contribute," EPA cites other dictionaries that define "contribute" without reference to any threshold level of significance. This alone suggests an ambiguity that fatally undermines petitioners' *Chevron* step one argument. *See Cellular Telecomms. & Internet Ass'n v. FCC*, 330 F.3d 502, 509 (D.C. Cir. 2003) ("[D]ueling over dictionary definitions is pointless, for it fails to produce any plain meaning of the disputed word."). But even were we to think that "contribute" unambiguously means "significantly contribute," we still disagree that "significantly contribute" unambiguously means "strictly cause." *Cf. Michigan v. EPA*, 213 F.3d 663, 667–68 (D.C. Cir. 2000) ("significant" is ambiguous). Given that the statute uses the word "contribute" and that a contribution may simply exacerbate a problem rather than cause it, we see no reason why the statute precludes EPA from determining that a county's addition of $PM_{2.5}$ into the atmosphere is significant even though a nearby county's nonattainment problem would still persist in its absence. In fact, a contrary interpretation of "contribute" would effectively preclude a nonattainment designation for *any* attaining county when the cause of the violation is metropolitan-wide. We may not interpret "contribute" in a way that does such violence to section 107(d)'s very purpose.

We also reject petitioners' argument that EPA violated the statute by failing to articulate a quantified amount of

contribution that would trigger a nonattainment designation. Petitioners apparently prefer a bright-line, "objective" test of contribution, *see, e.g.*, Counties' Opening Br. 28, but it is the statute, not petitioners' preferences, that constrains EPA's discretion. And nothing in the statute compels EPA to quantify a uniform amount of contribution below which counties will automatically escape nonattainment designations or to quantify similar thresholds for the nine factors EPA evaluated in making those determinations. Section 107(d) is ambiguous as to how EPA should measure contribution and what degree of contribution is sufficient to deem an area nonattainment, as even petitioners seem to concede, *see* Counties' Reply Br. 13 ("EPA was supposed to be defining and deciding 'contributes.'"). Thus, reasonably exercising the discretion that Congress delegated to it, EPA interpreted "contribute" to mean "sufficiently contribute," and then applied the C/MSA presumption and nine-factor test precisely to identify those areas that meet that definition. Petitioners offer no plausible reason to think that the statute forecloses this approach.

Nor do we agree with petitioners that EPA's failure to quantify its analysis somehow rendered its interpretation of "contribute" arbitrary and capricious and therefore unreasonable under *Chevron* step two. *Cf. Northpoint Tech., Ltd. v. FCC*, 412 F.3d 145, 151 (D.C. Cir. 2005) (statutory interpretation that is arbitrary and capricious is unreasonable under *Chevron* step two). An agency is free to adopt a totality-of-the-circumstances test to implement a statute that confers broad discretionary authority, even if that test lacks a definite "threshold" or "clear line of demarcation to define an open-ended term." *PDK Labs., Inc. v. DEA*, 438 F.3d 1184, 1195 (D.C. Cir. 2006) (internal quotation marks omitted). To be reasonable, such an "all-things-considered standard" must simply define and explain the criteria the agency is applying,

id. at 1194, something the Holmstead Memo and certainly the Technical Support Document did in spades. Of course, EPA may have applied its nine-factor test inconsistently, resulting in similar counties being treated dissimilarly—a question we address in Part V. EPA may also have applied it so erroneously in a particular case that it could not have reasonably concluded that a county was contributing to nearby violations—an issue we consider in Part VI. But EPA's use of a flexible multi-factor analysis is not in and of itself unreasonable just because it lacks quantitative standards. *See id.* at 1194–95.

We are equally unimpressed by petitioners' last general argument: that the C/MSA presumption unlawfully "deprived states of the deference to which their designations were entitled" under section 107(d). States' Opening Br. 1. To the extent petitioners are claiming that EPA owes the states a measure of *procedural* deference under section 107(d), we agree that EPA must wait its turn before it makes any individual county designations. Indeed, in contrast to its many ambiguities, section 107(d)(1) clearly provides that states submit their "initial designations" first, § 7407(d)(1)(A), and only then does EPA promulgate or modify the designations as it "deems necessary," § 7407(d)(1)(B)(ii). Not only is that precisely what happened here, but nothing in section 107(d)(1) prevents EPA from developing general principles to govern its exercise of discretion when the time comes, or from announcing those general principles before the states submit their initial designations. To the extent petitioners think that EPA owes the states a measure of *substantive* deference under section 107(d)(1)—a claim that seems implicit in their objection that the C/MSA presumption somehow alters states' "burden" in the designation process, *see* States' Opening Br. 24—we disagree. Though EPA may, of course, go along with states'

initial designations, it has no obligation to give any quantum of deference to a designation that it "deems necessary" to change. *See, e.g.*, *Pa. Dep't of Envtl. Prot. v. EPA*, 429 F.3d 1125, 1129 (D.C. Cir. 2005) (recognizing that section 107(d) gives "deference" to states' initial designations provided EPA deems no modification necessary). In short, EPA had authority to apply the C/MSA presumption at the time it rejected the states' submissions. We see no reason why section 107(d)(1) would force EPA to bite its tongue until then.

Having rejected petitioners' arguments that section 107(d) unambiguously precludes EPA from adopting the C/MSA presumption and nine-factor test, we can easily conclude that EPA reasonably interpreted the statute as permitting it to do so. Even if we read section 107(d) favorably to petitioners, it requires only that EPA designate, based on air quality monitoring data, nonattainment areas that either violate or contribute to violations of the $PM_{2.5}$ NAAQS. Acting on evidence that urban $PM_{2.5}$ violations usually stem from metropolitan-wide activities, EPA adopted a presumption that designates all metropolitan areas as nonattainment when at least one metropolitan area registers a $PM_{2.5}$ violation, as well as a specifically defined multi-factor analysis to assess when that presumption fails to reflect the realities of a given metropolitan area. Petitioners give us every reason to think they would prefer another system of analysis—specifically, one that would allow them to escape certain nonattainment designations—but they give us no reason to think the system EPA selected is unreasonable.

V.

Petitioners next argue that the Designations Rule is arbitrary and capricious because it is riddled with methodological flaws and inconsistencies. They challenge the

Rule in four regards: EPA's designation of noncontiguous townships as nonattainment, the agency's refusal to account for some potential emissions reductions, the so-called carbon error in some weighted emissions scores, and the way EPA applied the nine-factor test.

"[W]e apply the same standard of review under the Clean Air Act as we do under the Administrative Procedure Act (APA), 5 U.S.C. § 706(2)(A)," *Allied Local & Reg'l Mfrs. Caucus v. EPA*, 215 F.3d 61, 68 (D.C. Cir. 2000), and will set aside the Designations Rule only if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," § 7607(d)(9)(A). We must affirm the Rule if the record shows EPA considered all relevant factors and articulated a "rational connection between the facts found and the choice made." *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962). Of particular note in this challenge, we give an "extreme degree of deference to [EPA] when it is evaluating scientific data within its technical expertise," *City of Waukesha v. EPA*, 320 F.3d 228, 247 (D.C. Cir. 2003) (internal quotation marks omitted). Such deference is especially appropriate in our review of EPA's administration of the complicated provisions of the Clean Air Act. *See Nat'l Ass'n of Clean Air Agencies v. EPA*, 489 F.3d 1221, 1229 (D.C. Cir. 2007).

In basing its designation decisions on a rigorous analysis of each county's particular attributes, EPA satisfied the requirements of reasoned decisionmaking. Given our highly deferential standard of review, these four challenges provide no basis to question EPA's general analysis or to upset the entire Designations Rule.

A. Designation of Noncontiguous Townships

As we have described above, EPA's designation analysis starts with two presumptions. *See supra* at 12–13. First, "if a $PM_{2.5}$ monitor [is] violating" the NAAQS, "at a minimum [EPA will] designate the entire county where that monitor is located as nonattainment" because the "county boundary" is "the basic jurisdictional boundary for determining the extent of the area reflected by the $PM_{2.5}$ monitor." *$PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 946–47. Second, all counties within the C/MSA contribute to that violation. *See id.* at 947; Holmstead Memo Guidance at 4. When these presumptions operate in tandem, a violating monitor within a C/MSA will result in a single contiguous block of nonattainment counties that includes both the county with the violating monitor and the other C/MSA counties that are deemed to contribute to that violation. Likewise, when EPA includes out-of-C/MSA counties in a nonattainment block, those counties typically adjoin violating counties. But EPA also invites states to recommend smaller $PM_{2.5}$ designation areas on a "case-by-case basis" if they "provide an adequate justification demonstrating that a smaller area would include the full area that is violating the standards and all nearby source areas that contribute to the violation." Holmstead Memo Guidance at 6. Some states took up EPA's offer and asked that a township rather than a county be designated as nonattainment when a power plant in the township was the overwhelming source of the county's contribution to a nearby $PM_{2.5}$ violation. *See $PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 947; *Technical Support Document* § 6.5.4.4 (Discussion).

To borrow petitioners' imagery, this approach created an island of nonattainment—the township—surrounded by a sea of attainment throughout the remainder of the county. Industry petitioners argue that creating such islands of nonattainment arbitrarily deviates from the presumption that

designations should be made at the county level. Because emissions from a power plant in a township do not skip over all other parts of the surrounding county and come to rest in a nearby area with a violating monitor, petitioners argue that violating areas designated nonattainment should be contiguous to those areas contributing to the violation.

We find no fault in EPA's conclusion that it would be unreasonable to designate as nonattainment those areas that do not, in fact, contribute to violations. EPA designated as nonattainment a township with an emitting source—rather than the entire county—because "it would be inappropriate to include other portions of a county, merely because those portions lay between the large stationary source and the remainder of the designated nonattainment area." *$PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 947. Although contiguity of nonattainment areas may follow from the operation of the Rule's twin presumptions, the designations process does not mandate that result when the scientific data show that a source contributing to a violation is not in an area contiguous to the county with the violating monitor. According to the Technical Support Document, EPA designated townships rather than entire counties as nonattainment only when a power plant in the township was responsible for the vast majority of the county's $PM_{2.5}$ emissions. For example, the Conesville Plant in Franklin Township emitted 99% of the SO_2, 90% of the NO_x, 78% of the carbon, and 87% of the crustal emissions for all of Coshocton County. *See Technical Support Document* § 6.5.4.4 (Factor 1). By designating only Franklin Township as nonattainment, EPA accounted for the lion's share of Coshocton County's emissions that "are contributing to the violation in the Columbus Metropolitan Area," *id.* (Discussion). EPA presented comparable statistics for the townships designated nonattainment in Adams and Gallia Counties. *Id.* § 6.5.4.6 (Factor 1) (providing a similar

rationale for designating Monroe and Sprigg Townships in Adams County and Cheshire Township in Gallia County). EPA reasonably concluded there was no need to designate as nonattainment any other part of these counties.

Industry petitioners also argue that EPA failed to use monitoring or modeling data in designating townships as nonattainment. But petitioners fail to identify any township designations lacking such support. And although we have no obligation to comb through the voluminous record in this case to determine the merits of an argument for which petitioners offer no support, *see* FED. R. APP. P. 28(a)(9)(A) (requiring briefs to contain "citations to the authorities and parts of the record on which the appellant relies"), we note at least one instance in which we easily found that the record contradicts their assertion. EPA used air quality modeling to determine that the power plant in Franklin Township was responsible for the vast majority of Coshocton County's contribution to $PM_{2.5}$ violations in the Columbus Metropolitan Area. *See* Memorandum from Brian Timin & Richard Damberg, EPA Office of Air Quality Planning & Standards, Air Quality Modeling To Assess Power Plant Impacts 2 (Jan. 20, 2006); *Technical Support Document* § 6.5.4.4 (Discussion, Factor 1, Factor 2); *see also* $PM_{2.5}$ *Designations Rule*, 70 Fed. Reg. at 947 (explaining that EPA uses speciation data from monitors to determine which sources contribute to violations).

Finally, industry petitioners contend that because EPA designated only contiguous areas as nonattainment for excessive levels of ozone, it acted arbitrarily in not doing so for $PM_{2.5}$. But ozone was the subject of a different designations process and a separate rulemaking, and nothing compels EPA to use the same approach for $PM_{2.5}$. Petitioners emphasize that $PM_{2.5}$ and ozone are both pollutants that can travel long distances. That similarity alone, however, is not

enough to force EPA to treat the two pollutants as if they pose the same threat to public health and welfare. When EPA set forth the criteria it would use during the $PM_{2.5}$ designations process, it explained that "unlike ozone," $PM_{2.5}$ "can arise on a very localized basis. For example, violations can be caused by the emissions from a single major source or set of sources." Holmstead Memo Guidance at 6. Given this critical difference, EPA was well within its discretion to consider state recommendations for smaller $PM_{2.5}$ designations on a "case-by-case basis," *id.*

B. Future Reductions in Emissions

When it is evident that federally enforceable pollution controls will yield significant near-term reductions in emissions, EPA accounts for those forecasted reductions in estimating an area's emissions levels for the purpose of evaluating contribution. *See* Letter from Stephen L. Johnson, Adm'r, EPA, to David M. Flannery, Counsel For Midwest Ozone Group et al., Attach. at 13 (Aug. 16, 2007) ("Johnson Attach."). Industry petitioners argue that EPA overestimated emissions levels and thus made mistaken designations by failing to account for future reductions from two federal programs: the Clean Air Interstate Rule (CAIR) and the NO_x State Implementation Plan (also known as the "NO_x SIP Call"). *See generally North Carolina v. EPA*, 531 F.3d 896, 902–03 (D.C. Cir.) (describing programs), *modified,* 550 F.3d 1176 (D.C. Cir. 2008). We find no error in EPA's refusal to consider estimates of lower emissions levels that might result from these two programs.

EPA promulgated CAIR to reduce SO_2 and NO_x emissions from upwind sources in 28 states and the District of Columbia that contribute to nonattainment levels for ozone and $PM_{2.5}$ in downwind states. *Id.* at 903. When EPA made its $PM_{2.5}$ designations, it reasonably decided emissions

reductions from CAIR were, at the time, uncertain and should not be a factor in estimating emissions levels for the designations process. *See* Johnson Attach. at 13 (explaining that EPA would include projected emissions reductions only for federally enforceable agreements that were "in place by the time that EPA was required to promulgate the designations in December 2004"). As discussed above, designations for C/MSAs, counties, and townships turn in part on contributions from identifiable sources. When EPA made its designation decisions in December 2004, there was no assurance that a state's compliance with CAIR, which did not become effective until March 2005, would result in reduced $PM_{2.5}$ emissions for specific sources. Indeed, CAIR did not require states to submit to EPA their recommendations as to which power plants would reduce SO_2 and NO_x emissions and how they would do so until September 2006—nearly two years after the agency had designated areas under the $PM_{2.5}$ NAAQS. *See Rule To Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule)*, 70 Fed. Reg. 25,162, 25,162 (May 12, 2005); *Rule To Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule): Reconsideration*, 71 Fed. Reg. 25,304, 25,305 (Apr. 28, 2006) ("Each State covered by CAIR may independently determine which emission sources to control, and which control measures to adopt."). Even EPA's provisional compliance regime—designed to start reductions in emissions levels before states were required to file their plans—did not take effect until more than a year after the agency had completed designating areas. *See Rulemaking on Section 126 Petition from North Carolina To Reduce Interstate Transport of Fine Particulate Matter and Ozone*, 71 Fed. Reg. 25,328, 25,328 (Apr. 28, 2006); *see also North Carolina*, 531 F.3d at 903 (describing program). It was therefore reasonable for EPA to disregard as too speculative any claimed emissions reductions that might come from

CAIR when it promulgated the $PM_{2.5}$ designations in December 2004. *See* Johnson Attach. at 8 n.11.

It was likewise reasonable for EPA to disregard forecasted reductions from the NO_x SIP Call. Created to reduce ozone pollution, this program requires 22 upwind states and the District of Columbia to decrease NO_x emissions, a significant precursor to $PM_{2.5}$, but it has nothing to do with reducing SO_2, another significant $PM_{2.5}$ precursor. *See Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone*, 63 Fed. Reg. 57,356, 57,356 (Oct. 27, 1998). The power plants in question are often among the largest sources of SO_2 in their respective areas. *See* Johnson Attach. at 8. EPA concluded that reducing NO_x but not SO_2 was a step in the right direction for reducing $PM_{2.5}$, but it fell short of what EPA required to consider forecasted reductions in its designations. *See id.* at 14. Lacking evidence of significant near-term reductions in SO_2, EPA reasonably decided not to alter nonattainment designations based only on forecasted reductions in NO_x. *See, e.g.*, *Technical Support Document* § 6.4.4.1 (Factor 9) (showing EPA designated as attainment Stokes County, North Carolina, because a power plant there installed controls certain to reduce significantly both NO_x and SO_2).

C. Carbon Error

In making nonattainment designations, EPA relied upon a mistaken estimate of carbon emissions by power plants that burn bituminous coal. Industry petitioners seize on this error as evidence that the Designations Rule is arbitrary and capricious. We disagree. EPA used the best available information, and the mistaken estimate of carbon had no effect on the reasonableness of the challenged designations.

Among the analytical tools EPA uses to make designation determinations is a county's weighted emissions score, which allows the agency to compare SO_2, NO_x, carbon, and crustal emissions across counties within a C/MSA. *See* *$PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 947. This score is not based on measurements of actual emissions by a particular source. Instead, EPA uses emissions estimates from the National Emissions Inventory (NEI) to calculate total $PM_{2.5}$ emissions, as well as SO_2, NO_x, carbon, and crustal emissions for each county. *See* What Is the National Emissions Inventory (NEI)?, http://www.epa.gov/ttn/chief/net/neiwhatis.html (last visited June 11, 2009). The NEI is a database assembled by EPA's Emission Inventory and Analysis Group that houses estimates of the kinds and amounts of substances emitted by particular sources, including point sources like power plants and mobile sources like automobiles. Based on these estimates, EPA creates "speciation profiles," which describe the chemicals that make up the emissions associated with a particular type of source. *See* Speciation: Emissions Modeling Clearinghouse, http://www.epa.gov/ttn/chief/emch/speciation/ (last visited June 11, 2009).

The speciation profile EPA used for large electric generating units (EGUs) estimated that carbon makes up 21% of their $PM_{2.5}$ emissions. As it turns out, that estimate was wrong for plants that burn bituminous coal. Carbon accounts for only 2.9% of their $PM_{2.5}$ emissions. *See* J.A. at 2848–49. EPA updated the speciation profile for these plants in its 2006 revision of the $PM_{2.5}$ NAAQS, but retained the old profile for plants that burn primarily lignite coal.

Industry petitioners argue that because the 2004 designations were based on a flawed EGU profile that vastly overestimated carbon emissions, EPA's nonattainment designations for counties with large electric power plants that

burn bituminous coal—particularly the 23 identified in the petition for reconsideration—are likewise flawed. EPA responds that its ultimate designations did not turn on any one estimate of a single chemical component of $PM_{2.5}$. Rather, the agency relied on numerous data points, including emissions levels and county rankings of weighted emissions scores within a C/MSA, that were largely unaffected by the lower carbon estimate. According to EPA, changes in the speciation profile for plants that burn bituminous coal did not substantially lower total $PM_{2.5}$ emissions estimates. Instead, the proportions of pollutants emitted by these sources changed. Specifically, the estimate of crustal particles, also a precursor to $PM_{2.5}$, increased as the carbon estimate decreased. *See* Johnson Attach. at 4.

We hold that EPA was not obligated to upend the designations process when it discovered a mistake in its speciation profile for certain power plants. EPA used the best information available in making its designations, and that is all our precedent requires. In *American Iron & Steel Institute v. EPA*, 115 F.3d 979, 1006 (D.C. Cir. 1991), the petitioners argued that EPA's estimate for the mercury concentration permitted in the Great Lakes was flawed because the agency used inaccurate data that had since been corrected. Relying on *ICC v. Jersey City*, 322 U.S. 503 (1944), and *Vermont Yankee Nuclear Power Corp v. Natural Resources Defense Council*, 435 U.S. 519 (1978), we held that EPA did not act arbitrarily by using the older data in its calculation. "The agency was not obliged to stop the entire process because a new piece of evidence emerged. If this were true then the administrative process could never be completed. An agency does, however, have an obligation to deal with newly acquired evidence in some reasonable fashion." *Am. Iron*, 115 F.3d at 1007.

Here, EPA dealt with newly acquired evidence in a reasonable fashion by explaining why it would not have changed the challenged designations. EPA is correct that revisions to the speciation profile for plants that burn bituminous coal altered only one component of the weighted emissions score, which itself is only one of numerous analytical tools used to assess the first of nine factors EPA considers in determining contribution to $PM_{2.5}$ violations. Speciation profiles for power plants are by no means the exclusive or even the primary basis for EPA's designations, but merely make up one part of a much larger and multi-factored decisionmaking process. Johnson Attach. at 6–7.

Petitioners nonetheless contend that the carbon error is particularly important because carbon typically makes up a large portion of the urban excess and therefore weighs heavily in these counties' weighted emissions scores, which themselves weigh heavily in the contribution analysis because of the presence of large power plants. That may be so, but EPA granted a March 2006 request to recalculate the weighted emissions scores using the revised estimates and concluded

> that even if [the agency] were to reconsider the designations, the area by area evaluation of counties with emissions scores or activities contributing to violations of the NAAQS would not result in a different outcome. Of the counties [petitioners] identified in [their] petition, EPA sees no change in the rank or magnitude of sources relative to other counties in the areas that would negate the appropriateness of inclusion of the counties within their respective designated nonattainment areas.

Letter from Stephen L. Johnson, Adm'r, EPA, to David M. Flannery, Counsel For Midwest Ozone Group et al. 2–3 (Aug. 16, 2007); *see also* J.A. at 2881–83 (showing initial and revised scores for the 23 counties identified by petitioners); Johnson Attach. at 10–12 (explaining why particular designations would not have changed with new data). Even with a change in the estimated proportion of carbon emitted by plants that burn bituminous coal, the overall level of pollutants emitted by those EGUs generally stayed the same, as did county rankings of weighted emissions scores. For example, EPA explained that using the new speciation data for a power plant in Jefferson County, Indiana, would not have changed its nonattainment designation despite industry petitioners' claim that it is among the most problematic of EPA's determinations. *See* J.A. at 2826 (Midwest Ozone Petition for Reconsideration). Although the weighted emissions score for Jefferson County would have been lower, it still would have been higher than surrounding counties' scores because of the significant levels of SO_2 and NO_x that the county's power plant continued to emit. Johnson Attach. at 12. EPA dealt with the so-called carbon error in a reasonable fashion.

D. Application of the Nine-Factor Test

As explained above, EPA uses nine factors—including things like air quality, population density, and traffic patterns—to determine the boundaries of areas contributing to nearby $PM_{2.5}$ violations. *See $PM_{2.5}$ Designations Rule*, 70 Fed. Reg. at 947; *see also supra* at 8. State petitioners argue generally that EPA arbitrarily applied its nine-factor test by treating similarly situated counties differently without adequately explaining the allegedly divergent outcomes. In each of their challenges, petitioners seize upon discrete data points and ignore the very nature of the nine-factor test, which

is designed to analyze a wide variety of data on a "case-by-case basis," Holmstead Memo Guidance at 6. It is EPA's holistic assessment of numerous factors that drives the process—no single factor determines a particular designation. And although petitioners seek to paint a picture of system-wide inconsistencies, their challenges really amount to an attack on EPA's designations of a small group of New York counties. Although we address such individual challenges in Part VI, we conclude here that with respect to the system as a whole, EPA consistently applied its nine-factor test and adequately explained its decisions based on record evidence.

1. First Factor:
EPA's Characterizations of County Emissions

The first of the nine factors EPA uses to designate areas calls for the agency to consider how emissions levels contribute to nearby $PM_{2.5}$ violations. In describing these levels, EPA characterizes a county's emissions as low, high, significant, insignificant, and so forth. State petitioners argue that EPA characterized county emissions inconsistently, providing further evidence that the designations were arbitrary. For example, petitioners claim it is manifestly arbitrary to designate as attainment counties with emissions levels EPA characterized as "low" based on weighted emissions scores of 9.4 (Sevier County, Tennessee) and 6.3 (Jasper County, Georgia), while designating as nonattainment counties with lower scores of 4.5 (Orange County, New York), 3.7 (Westchester County, New York), and 1.9 (Rockland County, New York). States' Opening Br. 34. As explained above, a weighted emissions score reflects only a county's share of a C/MSA's total emissions. Weighted emissions scores cannot be used in any meaningful way to compare emissions levels between counties in different C/MSAs. Because cumulative emissions scores for all

counties within a C/MSA must total 100, areas with few counties (like the Athens, Georgia, MSA) will invariably have relatively larger county-level scores than areas with numerous counties (like the NY-NJ-CT-PA C/MSA), even though emissions levels in the smaller C/MSA may be lower.

Likewise, petitioners argue that two instances in which EPA revised a county designation from nonattainment to attainment show that its characterization of emissions data and subsequent designations were arbitrary. EPA originally described the emissions levels in Woodford County, Kentucky, as "significant" and designated it as nonattainment. *Technical Support Document* § 6.4.3.3 (Factor 1). But EPA later concluded—without any change in emissions levels—that the county "has relatively low emissions," *id.* (Justifications for Changes to EPA Recommendations Contained in the June 24, 2004, Letters to States), and revised its designation to attainment. These changes, petitioners argue, reflect the flawed manner in which EPA applied the first factor. But EPA adequately explained the change. After the initial designation, Kentucky submitted evidence that $PM_{2.5}$ violations in nearby Fayette County were due to local sources, not emissions from Woodford County as originally thought. *Id.* Petitioners reply that EPA used the new data to explain the change in Woodford County's designation, not the change in EPA's assessment of emissions levels. To the extent that is even true, though, we can reasonably discern EPA's path. Given that the weighted emissions score is a rough estimate of a county's relative (and relevant) emissions in the first place, EPA simply interpreted the numeric score differently when the new data suggested its facial significance was inaccurate.

In the same vein, petitioners contend EPA acted arbitrarily in revising its designation for Jasper County,

Georgia. Finding "significant emissions" that potentially contribute to $PM_{2.5}$ violations in other parts of the region, EPA originally designated the county as nonattainment. *See id.* § 6.4.2.2 (Factor 1). Data later submitted by Georgia, however, showed that emissions from a source in Jasper County were actually insignificant, prompting EPA to redesignate the county as attainment. *See id.* § 6.4.2.1 (Justification for Changes to EPA Recommendations Contained in the June 24, 2004, Letters to States); Letter from Ron Methier, Chief, Air Prot. Branch, Ga. Dep't of Natural Res., to Beverly Bannister, Dir., Air, Pesticides & Toxics Mgmt. Div., EPA Region 4, at 2 (Nov. 1, 2004). Far from being arbitrary, these revised designations demonstrate the reasonableness of EPA's case-by-case approach to applying the first factor.

2. First Factor:
EPA Region 1's Use of a Bright-line Test

As explained in greater detail in Part VI, EPA Region 1 used a bright-line test to determine which counties within a C/MSA would be designated as attainment. The test worked like this: EPA Region 1 ranked each of its counties from highest to lowest according to their weighted emissions scores. Starting from the top of the list, EPA Region 1 added each county's score and stopped when the sum hit 80%. Counties above the 80% cut-off point were presumed to be nonattainment; those below were designated as attainment, provided they did not have a violating monitor and were not among those recommended for nonattainment status by a state. *See Technical Support Document* § 6.1.1 (Factor 1). State petitioners argue that application of this 80% test led to inconsistent area designations, and they are right in one instance. Rockland County, New York, which is not in EPA Region 1 and was designated as nonattainment, would have been designated as attainment under the 80% test. Such an

inconsistency is evidence of an arbitrary designation, but as Part VI explains, EPA's mistaken designation of Rockland County is an aberration, and petitioners fail to identify any other designation that might have changed had EPA applied the 80% test elsewhere. Nothing about the way EPA Region 1 applied the first factor reveals a fundamental problem with EPA's evaluation of emissions in potentially contributing areas.

3. Second Factor: Use of Design Values

Under the second of the nine factors, which looks to air quality, EPA uses monitoring data to compute a "design value" to describe the concentration of ambient $PM_{2.5}$ in a county. *See supra* at 12. The agency then compares the design value to the annual NAAQS to help determine whether the county is violating $PM_{2.5}$ standards or contributing to violations nearby. *See id.*; EPA Br. 14. State petitioners argue that EPA arbitrarily designated some counties as nonattainment despite their relatively low design values and other counties as attainment despite their higher design values. For example, EPA designated Hardin County, Kentucky, as attainment even though its design value of 14.1 was higher than the 12.5 design value for Westchester County, New York, which was designated as nonattainment. *See Technical Support Document* § 6.4.3.2 (Factor 2); *id.* § 6.2.2 (Factor 2).

As EPA explained, however, design values alone do not determine designations based on contribution. Indeed, they are merely one component, albeit an important one, of a complex process that ultimately yields designations. Petitioners' argument ignores the multiple factors EPA uses in making case-by-case assessments of counties' contributions to nearby violations. *See* Holmstead Memo Guidance at 4. Some areas, like Hardin County, may have relatively high

design values but still fall short of violating the annual $PM_{2.5}$ standard of 15 micrograms per cubic meter. And many such counties are not contributing areas because they have low rankings for other factors like population, traffic, and emissions levels. *See, e.g.*, *Technical Support Document* § 6.4.3.2 (explaining Hardin County's attainment designation). The three areas state petitioners use as examples of inconsistent treatment—Nassau, Suffolk, and Westchester Counties in New York—may have had lower design values when compared to other attainment areas, but each ranked high for emissions levels, population, and number of commuters, all of which support the determination that they contributed to nearby violations. *See id.* § 6.2.2. In short, EPA had ample evidence upon which it based its designation of these counties as nonattainment, despite their relatively low design values.

4. Sixth and Seventh Factors:
Distance Between a Power Plant and a Violating Monitor

EPA takes account of the distance between a power plant and a violating monitor to help determine whether an area's meteorological features (the sixth factor) and its particular geography and topography (the seventh factor) will increase the likelihood that emissions from the plant will contribute to a violation. State petitioners argue that EPA used this distance inconsistently. For example, the agency designated Clearfield County, Pennsylvania, as attainment even though it has a power plant 60 miles from a violating monitor. *See id.* § 6.3.4.2 (Discussion). By contrast, EPA designated Orange County, New York, as nonattainment even though its power plant is 50 miles from the closest violating monitor. *See id.* § 6.2.2. But EPA never placed the type of weight on the distance factor that petitioners' argument assumes. Although EPA considered the distances, it weighed other factors as well. For example, Orange County has very high emissions

levels, and meteorological data show winds blowing from the county toward violating monitors elsewhere. *See id.* Clearfield County, on the other hand, has mountainous terrain and other geographic features limiting emissions travel. *See id.* § 6.3.4.2 (Discussion). Petitioners claim that the attainment designation for Jasper County, Georgia, demonstrates inconsistency because it has a power plant 45 miles from the nearest violating monitor. But the plant's emissions are relatively insignificant, and other factors—such as low population and few commuters—support the county's designation. *See id.* § 6.4.2.1 (Justification for Changes to EPA Recommendations Contained in the June 24, 2004, Letters to States); Letter from Ron Methier to Beverly Bannister at 2. Once again, seizing upon a single factor misapprehends the purpose of the nine-factor test.

5. Multiple Factors

Finally, petitioners compare weighted emissions scores, design values, population density, number of commuters, and population growth for four attainment counties (Lee County, Alabama; Russell County, Alabama; Sevier County, Tennessee; and Fulton County, Ohio) with the same data for one nonattainment county—New York's Orange County—to illustrate that EPA applied the nine factors inconsistently, rendering the designation process unpredictable and arbitrary. *See Technical Support Document* §§ 6.4.2.5, 6.4.6.2, 6.5.4.9. Although this argument acknowledges, where the others do not, that EPA considers how the various factors might work together, it fails for two reasons. First, as we have already explained, *see supra* at 15, comparisons of weighted emissions scores between counties in different C/MSAs are meaningless. And second, even though Orange County ranked relatively low on some factors, which might suggest it was a good candidate for an attainment designation, it also has emissions levels of $PM_{2.5}$, SO_2, and NO_x that far exceed

the levels of the four attainment counties petitioners point to. *See Technical Support Document* § 6.2.2. Orange County's designation, which is adequately justified, is yet another illustration of the case-by-case analysis that the Designations Rule calls for and the nine-factor test achieves.

VI.

Petitioners finally argue that even if the $PM_{2.5}$ nonattainment designations are reasonable as a general matter, certain individual county designations are independently arbitrary and capricious. With but one exception, we reject these challenges as well.

A. New York County Designations

New York challenges the nonattainment designations of five counties surrounding New York City: Suffolk, Westchester, Nassau, Orange, and Rockland—collectively the "outer counties." We find New York's claims without merit, except for its challenge to the designation of Rockland County, which we remand to EPA for additional explanation.

New York makes several broad challenges to the designations of the outer counties. Most generally, the state argues that EPA's designations lack a rational basis and that EPA failed to respond to the comments New York submitted. To justify the nonattainment designations for Westchester, Suffolk, and Nassau Counties, EPA cites their high emissions, population, traffic, and commuting patterns. For Orange County, EPA relies on high emissions, as indicated by a weighted emissions score ranking it fifth in the CMSA. EPA also relies on meteorological data to show that wind blows from each of the outer counties toward the violating monitors some percentage of the time. *Technical Support Document* at 6-24 to -36. EPA considered and responded in some

detail to New York's comments challenging the designations. Responses to Comments EPA Region 2 at 2-9 to -14. We find that EPA's basis for designating Suffolk, Westchester, Nassau, and Orange Counties can reasonably be discerned from the record. *See Motor Vehicles Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) ("We will . . . 'uphold a decision of less than ideal clarity if the agency's path may reasonably be discerned.'" (quoting *Bowman Transp., Inc. v. Arkansas-Best Freight Sys., Inc.*, 419 U.S. 281, 286 (1974))).

New York next contends that EPA did not correctly take into account commuting data for the outer counties and points to its own data showing that only 13% of outer county commuters drive to New York City. States' Opening Br. 39. EPA responds that the relevant factor on which it relied was not the percentage of commuters but rather the raw number of commuters. New York correctly highlights the inconsistency in EPA's treatment of Rockland County's commuter data, which is discussed below, but as to the other counties, New York's arguments are not persuasive. The Technical Support Document shows that Westchester and Nassau Counties each have over 100,000 commuters to New York and Bronx Counties. *Technical Support Document* at 6-29. Suffolk County has fewer commuters to New York and Bronx Counties (roughly 44,000), but it has higher Vehicle Miles Traveled (VMT) than either Westchester or Nassau Counties, likely due to its location on eastern Long Island. *Id.* New York is correct that Orange County's commuter numbers and VMT are far lower than any of the other three counties, *id.*, but EPA based Orange County's nonattainment designation on its high emissions, not its commuter numbers, *id.* at 6-24. EPA's reliance on commuting data is supported by the record, which shows significant numbers of commuters and VMT for Westchester, Nassau, and Suffolk Counties.

New York also maintains that EPA impermissibly changed its theory of outer county contribution from contribution to a violating monitor in New Haven, Connecticut, to contribution to violating monitors in Manhattan and the Bronx. EPA's initial rationale for designation in the Technical Support Document reads: "Nassau County ranks high for emissions, population, traffic, and commuting patterns. In addition, an analysis of pollution roses and back trajectories to New Haven, CT showed a contribution from Nassau County." *Id.* Based on comments submitted by New York and Connecticut, EPA agreed that the violating New Haven monitor was "not representative of community exposure" and thus should not be the basis of designations. *See id.* at 6-35. EPA did not, however, change the outer counties' designations on this ground.

New York's claim that EPA's continued nonattainment designations were arbitrary fails because EPA's rationale for the designations can be discerned from the Technical Support Document, which lists numerous reasons for designation other than contribution to the New Haven monitor. It is a reasonable reading of the Technical Support Document to attribute the list of factors, such as emissions and commuters, as referring to contribution to the violating monitors in Manhattan and the Bronx, while the initial rationale for contribution to New Haven was back trajectories and pollution roses. More important, New York is protesting the iterative process of revision that the CAA itself mandates: EPA revised its position in response to New York's comments. New York's underlying complaint is that the iterations should have continued, perhaps *ad infinitum*. But such a process is inconsistent with the CAA: Congress imposed deadlines on EPA and thus clearly envisioned an end to the designation process.

Although we reject New York's challenge to the designations of Westchester, Suffolk, Nassau, and Orange Counties, the state's challenge to Rockland County's nonattainment designation has merit. EPA appears to have acted inconsistently in designating Rockland County as a nonattainment area.

First, New York persuasively shows that Rockland's treatment was inconsistent with the treatment of other counties in the same CMSA that fall within a different EPA region. New York notes that EPA Region 1, which encompasses the CMSA's New England counties, employed what New York terms an "80% test" in deciding which counties would be designated nonattainment. The Region 1 materials do not reference such a test, but New York is correct in its description of the process EPA Region 1 apparently employed. Region 1 "dropped" from nonattainment consideration Litchfield and Middlesex Counties in Connecticut and Hampden and Berkshire Counties in Massachusetts because: "(1) none of these counties contain violating $PM_{2.5}$ monitors, (2) none were recommended for nonattainment designation by the state, and (3) all have emissions scores ≤ 2.5." *Id.* at 6-6. Region 1 arrived at the 2.5 cutoff by ranking all of the CMSA counties from highest to lowest weighted emissions score, summing the weighted emissions scores from top to bottom, and drawing a line after the county at which the cumulative emissions score equaled 80%—thus, the "80% test." Any counties below the 80% line were dropped from further consideration if they did not contain a violating monitor and were not recommended by the state for a nonattainment designation. *See id.* at 6-4 to -6. Although this may be a reasonable approach in the abstract, New York's complaint is that, if this process had been applied in Region 2, which includes the New York counties, Rockland County would have been dropped from

consideration instead of designated nonattainment. EPA responds that the "80% test" was no test at all. But the agency's characterization is unavailing because no matter how Region 1's process is characterized, the fact remains that Rockland County would have been designated attainment if it had been in Region 1, but was designated nonattainment by EPA Region 2. Such inconsistent treatment is the hallmark of arbitrary agency action.

Second, EPA's rationale for designating Rockland County changed between the initial designation and the final designation, with no apparent change in data. The only rationale EPA cited in its initial designation of Rockland was that Rockland "is contiguous to . . . Orange and Westchester Counties," both of which EPA designated as nonattainment. *Id.* at 6-24. In the initial designations, EPA characterized Rockland County's commuter numbers as "low," *id.* at 6-31; when it revised its designations, EPA characterized Rockland County's commuter numbers as "significant," though there was no intervening change in data, *id.* at 6-35.

Third, and relatedly, New York argues that EPA treated Rockland County differently than Dutchess County in New York and Ocean County in New Jersey, both of which were designated attainment. New York notes that both counties have similar or worse values than Rockland on most or all of the factors EPA assessed. EPA's response, laid out in its brief to this court, is that of the factors New York cites, only commuting was significant for Rockland, and that Rockland's numbers of commuters to violating counties are three times the same statistic for Dutchess and Ocean Counties. EPA also notes that Rockland has large power plants, while Ocean County does not. EPA Br. 154.

EPA's attempt to distinguish Rockland County does not withstand close inspection. First, EPA cannot rely on Rockland's power plants to distinguish Rockland from Ocean County because power plants are solely a proxy for emissions, and Rockland has lower emissions than either Ocean or Dutchess County. Second, EPA is correct that, while Rockland has three to four times the number of commuters to violating counties as the other two counties, EPA initially characterized Rockland's commuter numbers as "low." The agency's later rhetorical revision of its characterization to "significant" is not justified by any change in the underlying data, which renders suspect EPA's reliance on commuters as the sole basis for distinguishing Rockland from the other two counties.

In sum, Rockland County's nonattainment designation is troubling because of the apparent inconsistency in EPA's approach to designations in different EPA regions, EPA's varying characterizations of Rockland's statistics, and EPA's treatment of Rockland as compared to Dutchess and Ocean Counties. In light of the agency's scientific expertise and the complexity of the designation process, we remand to give EPA another opportunity to provide a coherent explanation for its designation. *See, e.g.*, *North Carolina v. EPA*, 550 F.3d 1176 (D.C. Cir. 2008).

B. Other Individual County Challenges

We have considered the other individual county challenges lodged by Petitioners and conclude that none of them has merit. Our standard of review is deferential. EPA "must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *State Farm*, 463 U.S. at 43 (quoting *Burlington Truck Lines*, 371 U.S. at

168). The record before us shows that EPA considered numerous relevant factors for each challenged county, and the evidence supports the nonattainment designations EPA promulgated. In the accompanying judgment, we deny the petitions for review of the remaining individual county designations.

VII.

Having considered petitioners' remaining arguments and finding them without merit, we deny the petitions for review in all respects save one: the designation of Rockland County is remanded to EPA.

So ordered.