

PRECEDENTIAL

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

No. 14-3147

NATIONAL PARKS CONSERVATION ASSOCIATION;
SIERRA CLUB; CLEAN AIR COUNCIL,
Petitioners

v.

UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY,
Respondent

* Pennsylvania Department of Environmental Protection;
Homer City Generation LP,
Intervenors

*(Pursuant to Clerk Order dated 08/21/14)

On Petition for Review of Final Agency Action
of the United States Environmental Protection Agency
(EPA-R03-OAR-2012-0002)

Argued April 14, 2015

Before: AMBRO, VANASKIE, and SHWARTZ,
Circuit Judges

(Opinion Filed: September 29, 2015)

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OPINION OF THE COURT

VANASKIE, *Circuit Judge*.

Section 169A of the Clean Air Act, 42 U.S.C. § 7491, and implementing regulations promulgated by the United States Environmental Protection Agency (“EPA”) require states to evaluate the impact that emissions from certain sources of pollution within their borders have on atmospheric visibility in national parks and wilderness areas. After conducting this evaluation, the Commonwealth of Pennsylvania declined to require its sources to implement additional pollution controls because it concluded that the

costs associated with the controls outweighed the limited visibility improvements they would produce. The Commonwealth's conclusions were set forth in its 2010 State Implementation Plan ("SIP"), which was approved by the EPA in 2014.

Alleging that the EPA's approval of Pennsylvania's SIP was arbitrary and capricious, the National Parks Conservation Association, Sierra Club, and Clean Air Council (collectively, "Conservation Groups") filed the petition for review presently before the Court. For the reasons that follow, we will grant the petition in part and deny it in part, and remand the matter to the EPA for further consideration.

I.

A. Statutory and Regulatory Framework

In 1970, Congress enacted the Clean Air Act, 42 U.S.C. §§ 7401–7671q, to address the increasing amount of air pollution created by the industrialization of the United States and the resulting threat to public health and welfare. Employing "cooperative federalism," the Clean Air Act gives both the federal government and the states responsibility for maintaining and improving air quality: "the federal government develops baseline standards that the states individually implement and enforce." *Bell v. Cheswick Generating Station*, 734 F.3d 188, 190 (3d Cir. 2013) (citation and quotation marks omitted).

As originally enacted, the Clean Air Act "did not elaborate on the protection of *visibility* as an air-quality related value." *Chevron U.S.A., Inc. v. EPA*, 658 F.2d 271, 272 (5th Cir. 1981) (emphasis added). In 1977, however,

Congress added § 169A to the Clean Air Act “[i]n response to a growing awareness that visibility was rapidly deteriorating in many places, such as wilderness areas and national parks” *Id.* With § 169A, Congress “established as a national goal the ‘prevention of any future, and the remedying of any existing, impairment in visibility in mandatory class I areas which impairment results from man-made air pollution.’” *Am. Corn Growers Ass’n v. EPA*, 291 F.3d 1, 3 (D.C. Cir. 2002) (per curiam) (quoting 42 U.S.C. § 7491(a)(1)). The protected “Class I areas” include certain national parks and wilderness areas under 42 U.S.C. § 7472(a).¹ “Visibility impairment” means both “reduction in visual range and atmospheric discoloration.” *Id.* § 7491(g)(6).

In connection with § 169A, Congress directed the EPA to issue regulations to ensure “reasonable progress” toward the national goal of restoring visibility conditions to their natural state in Class I areas. *Id.* § 7491(a)(4). Congress dictated that the EPA’s regulations require adoption of a State Implementation Plan (“SIP”) by each state that has a Class I area within its borders or whose emissions “may reasonably be anticipated to cause or contribute to any impairment of visibility” in any Class I area. *Id.* § 7491(b)(2). Each SIP must include, *inter alia*, emission limits, compliance

¹ There are 156 Class I areas in the United States, including 47 national parks, 108 wilderness areas, and one international park. No Class I area is located within Pennsylvania’s borders. 40 C.F.R. pt. 51, app. Y.; EPA, *List of 156 Mandatory Class I Federal Areas*, <http://www.epa.gov/visibility/class1.html> (last visited Aug. 26, 2015).

schedules, and a long-term strategy for meeting the national visibility goal. *Id.* In response to this statutory directive, the EPA promulgated the Regional Haze Rule in 1999. *Regional Haze Regulations*, 64 Fed. Reg. 35,714 (July 1, 1999).²

² The EPA has explained the visibility impairment known as “regional haze” as follows:

Regional haze is visibility impairment that is produced by a multitude of sources and activities which are located across a broad geographic area and emit fine particles (PM_{2.5}) (*e.g.*, sulfates, nitrates, organic carbon, elemental carbon, and soil dust) and their precursors (*e.g.*, sulfur dioxide (SO₂), nitrogen oxides (NO_x), and in some cases, ammonia (NH₃) and volatile organic compounds (VOC)). Fine particle precursors react in the atmosphere to form fine particulate matter, which impairs visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see. PM_{2.5} can also cause serious health effects and mortality in humans and contributes to environmental

Section 169A and the Regional Haze Rule also require each SIP to include a determination of the best available retrofit technology (“BART”) for certain major stationary sources of pollution that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area. *North Dakota v. EPA*, 730 F.3d 750, 756 (8th Cir. 2013) (citing 42 U.S.C. § 7491(b)(2)(A); 40 C.F.R. §§ 51.301, 51.308(e)). BART is defined as “an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility.” 40 C.F.R. § 51.301.

To satisfy the BART requirements, a state’s SIP must first identify all “BART-eligible” sources within its borders. Under the regulations, a stationary source of air pollution is BART-eligible if it: (1) was in existence on August 7, 1977, but not in operation prior to August 7, 1962; (2) fits within one of 26 identified categories; and (3) has the potential to emit annually at least 250 tons of any air pollutant. *Id.*

Next, a state’s SIP must determine which of these BART-eligible sources are “subject to BART.” A source is subject to BART if it “emits any air pollutant which may

effects such as acid deposition
and eutrophication.

Approval and Promulgation of Air Quality Implementation Plans; Commonwealth of Pennsylvania; Regional Haze State Implementation Plan, 77 Fed. Reg. 3,984, 3,985 (Jan. 26, 2012).

reasonably be anticipated to *cause* or *contribute* to any impairment of visibility in any mandatory Class I Federal area.” *Id.* § 51.308(e)(1)(ii) (emphasis added). The EPA recommends that a state consider a source to “cause” visibility impairment if it is responsible for a change in visibility in a Class I area of at least 1.0 deciview.³ *Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations*, 70 Fed. Reg. 39,104, 39,118 (July 6, 2005). The suggested threshold for determining whether a source “contributes” to visibility impairment at a level no higher than 0.5 deciviews. *Id.*

For each BART-eligible source that is subject to BART, the state must conduct a source-specific analysis to determine appropriate emission limitations. In so doing, states “weigh[] the following five factors: (1) ‘the costs of compliance’; (2) ‘the energy and non[-]air quality environmental impacts of compliance’; (3) ‘any existing pollution control technology in use at the source’; (4) ‘the remaining useful life of the source’; and (5) ‘the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.’”

³ Changes in visibility are expressed in a standard unit of measurement known as the deciview. *See* 40 C.F.R. § 51.301 (stating that the deciview is “a measurement of visibility impairment” that is “derived from calculated light extinction, such that uniform changes in haziness correspond to uniform incremental changes in perception across the entire range of conditions, from pristine to highly impaired”). A higher deciview value corresponds with a greater level of visibility impairment.

WildEarth Guardians v. EPA, 759 F.3d 1064, 1068 (9th Cir. 2014) (quoting 42 U.S.C. § 7491(g)(2); 40 C.F.R. pt. 51, app. Y).

To aid states in identifying BART-eligible sources and determining appropriate emission limitations, the EPA issued the BART Guidelines, 70 Fed. Reg. 39,156. *WildEarth Guardians*, 759 F.3d at 1068. The Guidelines, issued in 2005, provide states with a five-step process for making their source-specific BART determinations, and these five steps subsume the statutory considerations listed above. *Id.* at 1068–69 (citing 70 Fed. Reg. 39,127). Under the Guidelines, a state is to first identify all available retrofit control technologies. Second, technically infeasible options are eliminated. Third, the effectiveness of the remaining control techniques is assessed. Fourth, the impacts, including the cost of compliance, energy impacts, non-air quality impacts, and the remaining useful life of the facility, are evaluated. Finally, a state must estimate the visibility impacts at Class I areas. *Id.* at 1069 (citing 70 Fed. Reg. 39,164, 39,166). While states are required to use the Guidelines when making BART determinations for any fossil fuel-fired power plant with a total electricity generating capacity of 750 megawatts or more, the Guidelines are advisory for smaller BART-eligible sources. *Id.* (citing 42 U.S.C. § 7491(b)(2)(B); 40 C.F.R. § 51.308(e)(1)(ii)(B)).

As an alternative to conducting this source-specific analysis, states may instead implement another program if they can demonstrate it is “better-than-BART” at reducing emissions. Specifically, the regional haze regulations permit a state to “opt to implement or require participation in an emissions trading program or other alternative measure” if it can show that the program would result in “greater reasonable

progress” toward the national goal of restoring natural visibility “than would be achieved through the installation and operation of BART.” 40 C.F.R. § 51.308(e)(2). States participating in such programs do not have to conduct a source-specific BART analysis or compel pollution sources within their borders to install, operate, and maintain BART at their facilities. *Id.*

Regardless of whether a state conducts the source-specific BART analysis or follows the better-than-BART approach, it must ultimately submit its SIP to the EPA. The EPA, in turn, must review the SIP and determine whether it meets the requirements of the Clean Air Act. 42 U.S.C. § 7410(a)(1). The EPA is required to approve a SIP as a whole if it meets all the statutory requirements, and it may approve any portion of a SIP that meets the requirements. *Id.* at § 7410(k)(3). If a state fails to submit a SIP, submits an incomplete SIP, or submits a SIP that does not meet the statutory requirements, the EPA must enact its own Federal Implementation Plan (“FIP”), unless the state can provide a SIP that the EPA can approve within two years. *North Dakota*, 730 F.3d at 757 (citing 42 U.S.C. § 7410(c)).

B. Procedural Background

Pennsylvania submitted its regional haze SIP to the EPA in December 2010, identifying 34 BART-eligible sources of pollution within its borders. App. 43–171. These pollution sources—various power plants, mills, refineries, and other facilities around the state—emit visibility-impairing particulate matter (“PM”) into the atmosphere, as well as the chemical precursors to PM, which include sulfur dioxide (“SO₂”) and oxides of nitrogen (“NO_x”). Pennsylvania elected to treat each of these 34 BART-eligible sources as

subject to BART,⁴ and it opted to follow the five-step process outlined in the Guidelines for making source-specific BART determinations.⁵ Pennsylvania, however, chose to follow the better-than-BART approach with respect to the eight fossil fuel electric generating stations with a capacity of 750 megawatts or more.

Thus, Pennsylvania conducted a source-specific BART analysis regarding the SO₂ and NO_x emissions of each source with an electricity generating capacity below 750 megawatts, but did not do so for the fossil fuel electric generating stations having a capacity of 750 megawatts or more. Pennsylvania noted that these sources participated in the “cap and trade” program⁶ for SO₂ and NO_x emissions established by EPA

⁴ This practice ensures that a BART analysis is conducted for every BART-eligible source, even if the deciview impact from the source is not high enough that the source would be considered to “cause” or “contribute” to visibility impairment in any Class I area under 40 C.F.R. § 51.308(e)(1)(ii).

⁵ Pennsylvania was obligated to follow the Guidelines for each of the eight fossil fuel-fired power plants in the state that have electricity generating capacity of at least 750 megawatts, but the Guidelines were advisory for the remaining BART-eligible sources. *See* 42 U.S.C. § 7491(b)(2)(B); 40 C.F.R. § 51.308(e)(1)(ii)(B).

⁶ A cap and trade program is an environmental policy tool that involves setting a mandatory cap on emissions while providing pollution sources with flexibility as to how they

Clean Air Interstate Rule (“CAIR”), 70 Fed. Reg. 25,162 (May 12, 2005), and concluded that the sources’ participation in the cap and trade program was better than BART at reducing such emissions.

Ultimately, Pennsylvania’s SIP found that requiring additional emission controls at any of the 34 BART-eligible sources would result in only minimal visibility improvement in affected Class I areas. Weighing this minimal improvement against the cost of implementing the controls, Pennsylvania concluded that additional controls were not warranted.

In January 2012, the EPA issued a proposed rule providing for a limited approval of Pennsylvania’s SIP (“2012 Proposed Rule”). *Approval and Promulgation of Air Quality Implementation Plans; Commonwealth of Pennsylvania; Regional Haze State Implementation Plan*, 77 Fed. Reg. 3,984 (Jan. 26, 2012). The EPA concluded that Pennsylvania’s BART analysis complied with the statutory requirements of the Clean Air Act and the regional haze regulations. However, the EPA declined to address Pennsylvania’s reliance on the better-than-BART CAIR program regarding SO₂ and NO_x emissions for certain pollution sources, noting that particular issue was the subject of a separate rulemaking proceeding. The EPA also announced a one-month period for interested parties to comment on the 2012 Proposed Rule.

comply with the cap. See EPA, *Cap and Trade*, <http://www.epa.gov/captrade> (last visited Aug. 26, 2015).

On June 7, 2012, the EPA issued its final rule (the “National Rule”) in the separate proceeding referenced by the 2012 Proposed Rule, disapproving the SIPs submitted by Pennsylvania and 14 other states to the extent they relied on the CAIR program to limit SO₂ and NO_x emissions. *Regional Haze: Revisions to Provisions Governing Alternatives to Source-Specific Best Available Retrofit Technology (BART) Determinations, Limited SIP Disapprovals, and Federal Implementation Plans*, 77 Fed. Reg. 33,642 (June 7, 2012). With this disapproval, the EPA also promulgated FIPs for 13 of the states (including Pennsylvania), effectively replacing the states’ reliance on the CAIR program with reliance on the newly promulgated Cross-State Air Pollution Rule, better known as the Transport Rule. By issuing the National Rule, the EPA also finalized its conclusion that the Transport Rule was better-than-BART at reducing SO₂ and NO_x emissions, and that it addressed the shortcomings of the CAIR program previously identified by the United States Court of Appeals for the District of Columbia Circuit.⁷

⁷ The EPA initially promulgated CAIR in 2005, but the D.C. Circuit vacated the rule in 2008, noting multiple fatal flaws not pertinent to the present case. *North Carolina v. EPA*, 531 F.3d 896, 921 (D.C. Cir. 2008) (per curiam). On rehearing, the D.C. Circuit elected to leave CAIR in place while the EPA crafted a new program to address CAIR’s deficiencies. *North Carolina v. EPA*, 550 F.3d 1176, 1178 (D.C. Cir. 2008) (per curiam). EPA responded by promulgating the Transfer Rule. The D.C. Circuit vacated this rule in 2012, *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7, 37 (D.C. Cir. 2012), but the Supreme Court later

Shortly thereafter, on July 13, 2012, the EPA finalized its limited approval of Pennsylvania’s SIP. *Approval and Promulgation of Air Quality Implementation Plans; Pennsylvania; Regional Haze State Implementation Plan*, 77 Fed. Reg. 41,279 (July 13, 2012). With this “2012 Final Rule,” the EPA responded to comments regarding the 2012 Proposed Rule and reaffirmed its conclusion that Pennsylvania’s BART analysis was proper.

In response to the 2012 Final Rule, the Conservation Groups filed a petition for review with this Court, challenging the rule on a number of fronts. *Nat’l Parks Conservation Assoc. v. EPA*, No. 12-3534. We did not reach the merits of the petition, though, since the EPA filed a motion for voluntary remand without vacatur in order to consider and respond in greater detail to the Conservation Groups’ concerns. We granted the motion on October 22, 2013, and remanded the matter to the EPA.

Following remand, the EPA entered a final rule on April 30, 2014 (“2014 Final Rule”), reissuing its limited approval of Pennsylvania’s SIP. *Approval and Promulgation of Air Quality Implementation Plans; Pennsylvania; Regional Haze State Implementation Plan*, 79 Fed. Reg. 24,340 (Apr. 30, 2014). With this rule, the EPA expanded its responses to certain comments and acknowledged numerous deficiencies in Pennsylvania’s source-specific BART analysis. In the end, however, the EPA approved the SIP, finding that

overturned the decision, upheld the Transport Rule, and remanded for further proceedings. *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584, 1609–10 (2014).

Pennsylvania reasonably concluded that no additional pollution controls were required at the 34 BART-eligible sources given the low visibility impact of the sources in Class I areas and the high cost of implementing the controls.

This petition for review followed, with the Conservation Groups alleging that the EPA arbitrarily and capriciously approved Pennsylvania's SIP. We subsequently granted motions to intervene filed by the Pennsylvania Department of Environmental Protection (the state agency responsible for drafting Pennsylvania's SIP) and Homer City Generation, L.P., a coal-fired power plant in Indiana County, Pennsylvania.

II.

Under § 307(b)(1) of the Clean Air Act, we have jurisdiction to review a final EPA action that is “locally or regionally applicable” within our Circuit. 42 U.S.C. § 7607(b)(1); *GenOn REMA, LLC v. EPA*, 722 F.3d 513, 519 (3d Cir. 2013). However, a petition for review regarding any “nationally applicable regulations promulgated, or final action taken, by the Administrator [of the EPA] . . . may be filed *only* in the United States Court of Appeals for the District of Columbia.” 42 U.S.C. § 7607(b)(1) (emphasis added).

When reviewing a final EPA action, we must “determine whether it is ‘arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.’” *GenOn REMA*, 722 F.3d at 525 (quoting 42 U.S.C. § 7607(d)(9)(A)). While this is a narrow and deferential standard of review, *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983), we must nevertheless ensure that the EPA “examined the relevant data

and articulated a satisfactory explanation for its action, including a rational connection between the facts found and the choice made.” *Prometheus Radio Project v. FCC*, 373 F.3d 372, 389–90 (3d Cir. 2004) (citation and quotation marks omitted).

III.

A. Transport Rule

The Conservation Groups challenge the EPA’s decision to allow Pennsylvania to rely on the Transport Rule in lieu of conducting a source-specific BART analysis regarding SO₂ and NO_x emissions from each source with an electricity generating capacity of at least 750 megawatts. In particular, they argue that the Transport Rule is not better-than-BART at reducing SO₂ and NO_x emissions, has not been implemented as the EPA assumed it would be when it permitted Pennsylvania to rely on the rule, and is subject to further delays and legal challenges.

The EPA counters that this appeal is not the appropriate vehicle to challenge its finding that the Transport Rule is better-than-BART or its decision to approve states’ reliance on this rule, as both these determinations stem from a final rule and separate rulemaking proceeding not presently before this Court. Moreover, the EPA argues that under 42 U.S.C. § 7607(b)(1), the Conservation Groups must pursue any such challenge in the D.C. Circuit. We agree with the EPA on both points.

Following extensive administrative proceedings, the EPA issued its National Rule on June 7, 2012. 77 Fed. Reg. 33,642. With it, the EPA finalized the emissions-limiting

Transport Rule, a replacement to the CAIR program that had been invalidated by the D.C. Circuit in *North Carolina v. EPA*, 531 F.3d 896, 921 (D.C. Cir. 2008) (per curiam). The National Rule included the finding that the emission trading programs established by the Transport Rule are better-than-BART. 77 Fed. Reg. 33,643 (“In this action, the EPA is finalizing our finding that the trading programs in the Transport Rule . . . achieve greater reasonable progress towards the national goal of achieving natural visibility conditions in Class I areas than source-specific . . . (BART) in those states covered by the Transport Rule.”). The EPA also finalized its disapproval of the SIPs submitted by Pennsylvania and 14 other states to the extent they relied on the CAIR program to limit SO₂ and NO_x emissions, and promulgated FIPs for 13 states (including Pennsylvania), effectively replacing the states’ reliance on the CAIR program with reliance on the newly promulgated Transfer Rule. *Id.*

By contrast, the 2014 Final Rule, which the Conservation Groups challenge here, does not address the merits of the Transport Rule or Pennsylvania’s reliance on it. Instead, it notes those issues were addressed in a “separate but related action,” referring to the National Rule. *See* 79 Fed. Reg. 24,340–41. Prior to issuing the 2014 Final Rule, the EPA repeatedly explained that the propriety of the Transport Rule, the CAIR program, and Pennsylvania’s reliance on the Transport Rule or the CAIR program were beyond the scope of these rulemaking proceedings. *See, e.g.*, 2012 Final Rule, 77 Fed. Reg. 41,282 (“Comments related to [the Transport Rule] as an alternative to BART for [electricity generating units] are beyond the scope of this rulemaking. The EPA addressed similar comments concerning the Transport Rule as

a BART alternative in [the National Rule].”); 2012 Proposed Rule, 77 Fed. Reg. 3,984 (“[W]e are not taking action in this notice to address the Commonwealth’s reliance on CAIR to meet certain regional haze requirements.”).

In short, the Conservation Groups seek to use this appeal from the administrative proceedings that culminated in the 2014 Final Rule to challenge decisions the EPA reached in separate proceedings. We find no support for this approach in the text of the Clean Air Act provision authorizing judicial review of EPA actions. *See* 42 U.S.C. § 7607(b)(1). Additionally, as the administrative record upon which these decisions were made is not before us, we lack the information necessary to evaluate the EPA’s action regarding the Transport Rule. *See Fed. Power Comm’n v. Transcontinental Gas Pipe Line Corp.*, 423 U.S. 326, 331 (1976) (stating that “we have consistently expressed the view that ordinarily review of administrative decisions is to be confined to consideration of the decision of the agency . . . and of the evidence on which it is based”) (citation and quotation marks omitted). Accordingly, we cannot entertain the Conservation Groups’ challenge to the Transport Rule.

Moreover, even if the Conservation Groups could use this appeal to challenge the Transport Rule, we are not the proper court to hear the challenge. Under 42 U.S.C. § 7607(b)(1), petitions for review of “nationally applicable regulations promulgated, or final action taken, by the Administrator [of the EPA] . . . may be filed *only* in the [D.C. Circuit].” *Id.* (emphasis added). We conclude that the EPA’s National Rule, which finalized the Transport Rule (applicable to 28 states and the District of Columbia) and resulted in 13 FIPs permitting various states to rely on the Transport Rule, falls into this category. *See Texas v. EPA*, No. 10-60961,

2011 WL 710598, at *5 (5th Cir. Feb. 24, 2011) (unpublished) (“Our conclusion today—that an EPA action involving the SIPs of numerous far-flung states is ‘nationally applicable’ and thus reviewable only in the D.C. Circuit—is consistent with the holdings of our sister circuits to have considered the question.”); *W. Va. Chamber of Commerce v. Browner*, No. 98-1013, 1998 WL 827315, at *4 (4th Cir. Dec. 1, 1998) (unpublished) (“An EPA rule need not span ‘from sea to shining sea’ to be nationally applicable.”) (footnote omitted); *Puerto Rican Cement Co. v. EPA*, 889 F.2d 292, 299–300 (1st Cir. 1989) (finding EPA regulations to be “nationally applicable” where they applied to any SIP “that ha[d] been disapproved with respect to prevention of significant deterioration of air quality in any portion of any State where the existing air quality is better than the national ambient air quality standards,” and the list of states governed by the regulations changed as SIPs were approved and disapproved by the EPA).⁸

Accordingly, we will deny the Conservation Groups’ petition for review to the extent it challenges the Transport Rule or Pennsylvania’s reliance on it.

⁸ What’s more, even the Conservation Groups appear to recognize that their challenge to the Transport Rule should be heard by the D.C. Circuit: the National Parks Conservation Association and Sierra Club are participants in consolidated appeals challenging the Transport Rule that are currently pending before the D.C. Circuit. *See Util. Air Regulatory Grp. v. EPA*, No. 12-1342 (D.C. Cir.).

B. Source-Specific BART Analysis

The Conservation Groups also contend that Pennsylvania's source-specific BART analysis failed to comply with the Guidelines in many respects, and that the EPA violated the Clean Air Act by arbitrarily approving Pennsylvania's SIP despite these fatal flaws. The EPA counters that Pennsylvania's analysis was largely proper, and that the errors it committed did not affect the reasonableness of the state's decision not to require its BART-eligible sources to implement additional pollution controls. In what resembles a harmless-error argument, the EPA asserts that, despite Pennsylvania's flawed analysis, the resulting overall picture supported its ultimate decision. As discussed below, while we reject some of the arguments advanced by the Conservation Groups, we are nevertheless compelled to conclude that the EPA arbitrarily approved Pennsylvania's SIP given the multiple flaws in Pennsylvania's BART analysis and the EPA's insufficient explanation as to why it could overlook them.

1. Identification of All Available Retrofit Control Technologies

The Conservation Groups contend that Pennsylvania failed to satisfy the BART requirement of identifying all available pollution control technologies. In particular, they argue that the state did not consider upgrades to existing electrostatic precipitator ("ESP") control technologies for BART-eligible power plants within the state, or other available combinations of controls.

The EPA counters that Pennsylvania's SIP notes that ESP upgrades were considered for all but two power plants,

and that Pennsylvania had declined to consider upgrades at those two facilities because they had recently installed “state-of-the-art” ESP controls. The EPA also argues that Pennsylvania did consider combinations of controls, including fabric filters on sources where technically feasible.

While we agree with the EPA that Pennsylvania’s SIP states that upgrades and combinations were considered, we cannot discern from the administrative record the specifics of Pennsylvania’s analysis or why it rejected certain upgrades or combinations. As the Conservation Groups noted in their comments to the 2012 Final Rule, App. 487, Pennsylvania’s SIP states in conclusory fashion that ESP upgrades, enhancements, or replacements were considered for certain sources. *See, e.g.*, App. 221 (stating that “[t]he retrofit technologies reviewed” during the course of the BART analysis for the Mitchell Power Station “included fuel-related modifications, ESP upgrades, enhancements or replacement, replacement of the ESPs with fabric filters or compact hybrid particulate collectors”). What the SIP fails to do, however, is identify or describe the upgrades considered or explain why these controls were rejected. Similarly, the EPA has failed to explain—either in the 2014 Final Rule or now on appeal—how it could meaningfully evaluate Pennsylvania’s analysis described in such conclusory fashion. We acknowledge that EPA and BART regulations do not require exhaustive analysis of every conceivable emissions control. *See* 40 C.F.R. pt. 51, app. Y § IV.D. n.12 (explaining that “[i]t is not necessary to list all permutations of available control levels that exist for a given technology”). Nonetheless, the EPA has failed to satisfactorily explain why the SIP’s conclusory listings are acceptable.

2. Baseline Level for PM Emissions

The Conservation Groups next challenge Pennsylvania's source-specific BART analysis regarding PM emissions from 13 power plants. Specifically, they contend the state improperly concluded that the filterable emission limit of 0.1 pound of particulate matter per million British thermal units ("0.1 lb/MMBtu") represents BART for those facilities.⁹ The Conservation Groups argue the limit is not sufficiently stringent, and note that lower limits (between 0.07 lb/MMBtu and 0.012 lb/MMBtu) have qualified as BART at other facilities. In short, they assert that Pennsylvania had no reasoned basis for selecting the emission limit that it did, and that the EPA arbitrarily approved Pennsylvania's BART analysis regarding PM emissions predicated on this threshold.

In the 2014 Final Rule, the EPA concedes that Pennsylvania failed to determine whether the 0.1 lb/MMBtu emission limit actually represents BART for those facilities. *See* 79 Fed. Reg. 24,344 ("Here, Pennsylvania determined that PM BART for most of the subject-to-BART [electricity generating units] was their existing permitted emission limits

⁹ After a state has identified the best available control technology for reducing emissions at a particular source, it must then set an "emission limit." This limit represents the emission-reduction capabilities of the identified control technology. *See* 2014 Final Rule, 79 Fed. Reg. 24,344 (stating that "once a state has selected a control technology that represents BART, the state must then complete the BART analysis by selecting an emission limit that represents the emission-reduction capabilities of that control technology").

of 0.1 lb/MMBtu, which can be achieved by the existing [control technology]. While the EPA agrees with the commenter that Pennsylvania ideally should have examined whether 0.1 lb/MMBtu actually reflects the ‘degree of reduction achievable’ for the particular [control technology] at each facility, EPA thinks that Pennsylvania’s failure to do so was not fatal in this instance”) (footnote omitted). The EPA excuses this failure for two reasons. First, it argues that Pennsylvania’s error was essentially harmless, as imposing a stricter PM emission limit on these sources would have minimal visibility impact in Class I areas since the PM emissions from these sources were responsible for only a minimal portion of the visibility impairment in these areas. Second, the EPA claims that the issue is “largely moot[.]” *Id.* at 24,345. Specifically, the agency notes that many of these 13 power plants have retired or put in motion plans to retire or convert to cleaner burning fuels since Pennsylvania conducted its BART determinations. The EPA also notes that the remaining sources will have to comply with a more stringent PM emission limit of 0.03 lb/MMBtu by 2015 due to the implementation of the Mercury and Air Toxics Standards (“MATS”) Rule. *Id.* at 24,344.

We find the EPA’s arguments unconvincing. As discussed in greater detail *infra*, Part III.B.7, the EPA’s claim of harmless error is unpersuasive since the agency has offered scant justification for this position, apart from its own assurances that the multiple flaws in Pennsylvania’s analysis did not impact the reasonableness of its conclusions. Similarly, the EPA has not identified, nor have we located, any legal support for the EPA’s contention that it may excuse errors in a state’s BART analysis as moot based on events that are yet to transpire. To the contrary, the EPA has a

statutory obligation to disapprove a SIP that does not comply with the Clean Air Act and to promulgate a FIP if the deficiencies are not timely cured. *See* 42 U.S.C. § 7410(k) (requiring the EPA to review SIPs to ensure compliance); *id.* § 7410(l) (prohibiting the EPA from approving a revision to a SIP if it would interfere with any applicable requirement of the Clean Air Act).

3. Alternative Pollution Control Limits: BACT, LAER, and MACT

The Conservation Groups also contend Pennsylvania’s BART analysis regarding PM emissions did not comply with the Guidelines because the state did not consider more stringent emission limits developed as part of separate air quality permitting processes under the Clean Air Act. In particular, they argue that limits imposed by other programs—known as best available control technology (“BACT”), lowest achievable emission rate (“LAER”), and maximum achievable control technology (“MACT”)—are relevant to the BART analysis because they demonstrate achievable emission reductions.¹⁰

¹⁰ BACT is “an emission limitation based on the maximum degree of reduction of each pollutant . . . which the permitting authority, on a case-by-case-basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for [the] facility” 42 U.S.C. § 7479(3). Under the Clean Air Act’s Prevention of Significant Deterioration program, no new major air pollutant emitting facility may be constructed unless the facility is equipped with BACT. *Alaska Dep’t of Env’tl.*

In response, the EPA notes that the BART Guidelines do not require states to consider the exact *emission limits* determined to be BACT and LAER. Instead, they must consider the *technologies* used to achieve BACT and LAER when conducting the first step of the BART analysis: identifying all available control technologies for their pollution sources. See BART Guidelines, 40 C.F.R. pt. 51, app. Y (“*Technologies* required as BACT or LAER are available for BART purposes and must be included as control alternatives.”) (emphasis added). Moreover, the EPA notes that the stringent emission levels determined to be BACT or LAER are not necessarily achievable by BART-eligible sources because those programs apply to new and newly

Conservation v. EPA, 540 U.S. 461, 468 (2004). In “nonattainment areas”—areas that are not in attainment with the Clean Air Act’s National Ambient Air Quality Standards—new and modified pollution sources are required to install LAER, which is more stringent than BACT. See *Citizens Against Ruining the Env’t v. EPA*, 535 F.3d 670, 673 n.3 (7th Cir. 2008). Under the Clean Air Act’s National Emission Standards for Hazardous Air Pollutants program, the EPA imposes MACT on major sources of certain hazardous air pollutants. MACT “must reflect ‘the maximum degree of reduction in emissions’ that the EPA determines is ‘achievable,’ taking into consideration ‘the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements.’” *Nat’l Res. Def. Council v. EPA*, 749 F.3d 1055, 1057 (D.C. Cir. 2014) (quoting 42 U.S.C. § 7412(d)(2)).

modified sources, while BART governs pollution sources constructed before 1977.

The EPA also notes that, for sources of PM emissions that are subject to MACT standards, the BART Guidelines permit—but do not require—states to rely on the stringent MACT standards for purposes of BART. In other words, the Guidelines create a presumption that a state’s reliance on the MACT standards satisfies BART, but they do not require the state to rely on the MACT standard to satisfy BART. *See* BART Guidelines, 40 C.F.R. pt. 51, app. Y (“We believe that, in many cases, it will be unlikely that States will identify emission controls more stringent than the MACT standards without identifying control options that would cost many thousands of dollars per ton. Unless there are new technologies subsequent to [issuance of] the MACT standards which would lead to cost-effective increases in the level of control, you may rely on the MACT standards for purposes of BART.”).

We agree with the EPA’s reading of the BART Guidelines on these points. As a result, we reject the Conservation Groups’ contention that Pennsylvania improperly failed to consider BACT, LAER, and MACT emission limitations.

4. Cost-Effectiveness Threshold

The Conservation Groups argue that Pennsylvania failed to properly evaluate the cost-effectiveness of the pollution controls available for each BART-eligible source. In particular, they note that Pennsylvania did not set a “threshold” for cost-effectiveness—that is, an amount of money at which it would reject any available control option

as too expensive. Absent such a threshold, the Conservation Groups contend, Pennsylvania had no principled way of determining when a pollution control was a cost-effective method of improving visibility in affected Class I areas.

The EPA asserts that nothing in the Clean Air Act requires Pennsylvania to set a fixed threshold of cost-effectiveness, and that the Guidelines make no mention of such a threshold in their instructions on how to evaluate cost-effectiveness. *See* BART Guidelines, 40 C.F.R. pt. 51, app. Y; *Nat'l Parks Conservation Ass'n v. EPA*, 788 F.3d 1134, 1142 (9th Cir. 2015) (“To be sure, the Act and the Regulations do not specifically require that EPA explain its cost-effectiveness decisions through use of a ‘bright line’ rule.”). Instead of drawing a line in the sand on cost-effectiveness, the EPA notes that Pennsylvania’s SIP appropriately determined that pollution “sources with a higher degree of potential visibility improvement from control would justify higher cost controls,” and that “only low cost controls would be justified for sources with a lower degree of potential visibility improvement.” App. 100.

Because we agree that Pennsylvania was not compelled to set a threshold for cost-effectiveness, we conclude that the EPA did not act arbitrarily by approving Pennsylvania’s SIP absent such a threshold.

5. Cost-Effectiveness Metric

The Conservation Groups also assert that Pennsylvania used an improper metric when calculating the cost-effectiveness of additional pollution controls. Specifically, they argue that Pennsylvania evaluated the cost of controls based on the dollars-per-deciview metric rather than the

dollars-per-ton metric required by the Guidelines.¹¹ The Conservation Groups contend that Pennsylvania's use of the dollars-per-deciview metric distorted the true cost of pollution controls and led to the state's conclusion that additional pollution controls were not warranted at any of the BART-eligible sources.

In responding to this argument during the notice-and-comment period and now on appeal, the EPA has taken seemingly inconsistent positions. In the text of the 2014 Final Rule, the EPA states, without elaboration, that Pennsylvania's use of the dollars-per-deciview metric was "flawed." 2014 Final Rule, 79 Fed. Reg. 24,342 (stating that "EPA agrees with the commenters that Pennsylvania's reliance on the [dollars-per-deciview] metric was flawed for multiple reasons"). On appeal, however, the EPA responds that the Guidelines specify that cost-effectiveness calculations be expressed in terms of dollars-per-ton, but they do not forbid the consideration of the dollars-per-deciview metric as well.¹²

¹¹ As its name implies, the dollars-per-ton metric is a measurement of the costs associated with removing a ton of a particular pollutant from a source's emission. The dollars-per-deciview metric, by contrast, considers the costs associated with pollution reduction that would result in a 1.0 deciview visibility improvement. The dollars-per-ton metric is frequently abbreviated as "\$/ton," while the dollars-per-deciview metric is abbreviated as "\$/dv."

¹² As the Tenth Circuit has noted, the Guidelines "permit the BART-determining authority to use dollar per deciview as an optional method of evaluating cost effectiveness." *Oklahoma v. EPA*, 723 F.3d 1201, 1221 (10th

Cir. 2013) (citing 40 C.F.R. pt. 51, app. Y(IV)(E)(1)). As to the issue of whether states are *required* to use the dollars-per-ton metric in evaluating cost-effectiveness, however, “[t]he guidelines themselves are a bit unclear.” *Id.* at 1221 n.13. The Tenth Circuit explains:

In the section on cost effectiveness, the guidelines mention only the dollar-per-ton metric. 40 C.F.R. pt. 51 app. Y(IV)(D)(4)(c). However, the guidelines later state that, in evaluating alternatives, “we recommend you develop a chart (or charts) displaying for each of the alternatives” that includes, among other factors, the cost of compliance defined as “compliance—total annualized costs (\$), cost effectiveness (\$/ton), and incremental cost effectiveness (\$/ton), *and/or* any other cost-effectiveness measures (such as \$/deciview).” *Id.* app. Y(IV)(E)(1) (emphasis added).

Id.

The EPA also notes that Pennsylvania considered both metrics with respect to 33 of its 34 BART-eligible sources. Resp. Br. 46.

Our review of the EPA's decision is limited to the reasoning supplied in its final rule, not the justifications subsequently crafted and proffered by the agency's appellate counsel. See *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 50 ("It is well-established that an agency's action must be upheld, if at all, on the basis articulated by the agency itself.") (citations omitted); *Safe Air for Everyone v. EPA*, 488 F.3d 1088, 1091 (9th Cir. 2007) (stating that "our review of an administrative agency's decision begins and ends with the reasoning that the agency relied upon in making that decision"). As a result, we are left with the EPA's conclusion that Pennsylvania's use of the dollars-per-deciview metric is "flawed" in multiple unidentified respects and no meaningful explanation as to why the EPA ignored these flaws. This rationale is insufficient to justify the EPA's approval of Pennsylvania's analysis of cost-effectiveness.

6. Cumulative Visibility Impact

As part of its source-specific BART analysis, Pennsylvania was required to calculate the visibility improvement that could be achieved in Class I areas by implementing additional pollution controls at its BART-eligible sources. The state's calculations for each source, however, took into account only the potential impact such controls would have on the visibility in the Class I area *most severely impacted* by the source. Pennsylvania did not consider the "cumulative visibility impact"—that is, it did not calculate the total visibility improvement for *all* affected Class I areas that would result from installing additional

controls at each source. As a result, the Conservation Groups argue, Pennsylvania underestimated the visibility impact of each source and, correspondingly, underestimated the cost-effectiveness of additional control technologies.

In the 2014 Final Rule, the EPA admits that Pennsylvania should have calculated the cumulative visibility impact from its sources. 79 Fed. Reg. 24,342 (“EPA also agrees with the commenters that, in considering the visibility improvement expected from the use of controls, Pennsylvania should have taken into account the visibility impacts at all impacted Class I areas rather than focusing solely on the benefits at the most impacted area.”). The EPA contends this error, among others, was harmless, a contention we address below.

7. Harmless Error

To justify its approval of Pennsylvania’s admittedly flawed BART analysis, the EPA advances a harmless error argument. In particular, the EPA contends it reasonably approved Pennsylvania’s conclusion that pollution controls were not warranted as the overall picture that emerged from the state’s analysis demonstrated that the improvement in visibility at affected Class I areas as a result of the controls would be minimal. Based on the administrative record before us, however, that conclusion is a bridge too far.

In the 2014 Final Rule, the EPA concedes that Pennsylvania’s BART determinations contained “systemic deficiencies” and a “large number” of errors. 79 Fed. Reg. 24,341, 24,343 (quotation marks omitted). On a broad scale, the EPA acknowledges that Pennsylvania’s SIP lacked necessary technical information and supporting

documentation, and that it was insufficiently thorough. *Id.* at 24,342 (noting that “many of the comments criticizing Pennsylvania’s BART determinations are correct,” and that “the Pennsylvania regional haze SIP contains very limited information describing Pennsylvania’s analyses and consideration of the BART factors”); *id.* (stating “Pennsylvania should have provided a more thorough and detailed analysis of costs and visibility impacts in its regional haze SIP”). More specifically, the EPA concedes that Pennsylvania erred at multiple steps of the BART analysis. For example, by failing to consider the cumulative visibility impact of each source, Pennsylvania understated the impact that pollution originating within its borders had on Class I areas beyond those borders. *Id.* (“EPA also agrees . . . that . . . Pennsylvania should have taken into account the visibility impacts at all impacted Class I areas rather than focusing solely on the benefits at the most impacted area.”). The EPA also admits that Pennsylvania’s cost-effectiveness calculations were flawed. *Id.* (“Similarly, EPA agrees with the commenters that Pennsylvania’s reliance on the \$/dv metric was flawed for multiple reasons.”); *id.* (agreeing with the commenters “that many of the [pollution] controls under consideration [by Pennsylvania] were likely cost-effective measures,” even though the state rejected them as too expensive).

Tellingly, the EPA concedes that these various failures impaired its ability to independently assess Pennsylvania’s analysis. In the agency’s own words, it has a duty under the Clean Air Act “to exercise independent technical judgment in evaluating the adequacy of a state’s regional haze SIP, including its BART determinations.” *Approval, Disapproval and Promulgation of Implementation Plans; State of*

Wyoming; Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze, 79 Fed. Reg. 5,032, 5,064 (Jan. 30, 2014). Here, however, with respect to the control technologies considered by Pennsylvania and the costs associated with those controls, the EPA concedes that “the cursory information available in the record does not allow for an assessment of how these numbers were derived or whether Pennsylvania’s analyses were reasonably done.” 2014 Final Rule, 79 Fed. Reg. 24,342. Regarding Pennsylvania’s determination of potential visibility improvements in Class I areas, the EPA similarly notes that “it is difficult to assess the estimates of the improvements in visibility associated with various controls given the limited information in the SIP as to the assumptions relied on in the modeling and the summary nature of the results provided.” *Id.* Likewise, regarding Pennsylvania’s estimates of the costs of implementing certain pollution controls, the EPA laments: “Unfortunately, where controls were estimated to be more cost-effective, EPA cannot assess the extent to which Pennsylvania’s analyses are reasonable estimates for purposes of making a BART determination.” *Id.*

Despite the multitude of problems with Pennsylvania’s SIP, and the EPA’s admitted inability to adequately assess the state’s analysis, the EPA asserts that “the information that Pennsylvania did provide” is sufficient to conclude “that Pennsylvania’s ultimate BART determinations were nevertheless reasonable.” *Id.* Without citation to supporting authorities or further explanation, the EPA broadly claims that, “based on the cost estimates for other BART sources in other states” it has reviewed, “Pennsylvania’s cost numbers appear to be generally consistent for such controls” *Id.*

The EPA further concludes that “[w]here Pennsylvania estimated the costs of controls to be in the tens of thousands or hundreds of thousands of dollars per ton of pollutant removed, Pennsylvania’s conclusions that such controls are not cost-effective seem reasonable, even assuming that the true cost[s] of controls are likely less than what Pennsylvania estimated.” *Id.*

As a reviewing court, we must ensure that the EPA “articulate[s] a satisfactory explanation” for its decision to approve Pennsylvania’s SIP, “including a rational connection between the facts found and the choice made.” *Prometheus Radio Project*, 373 F.3d at 389–90 (citation and quotation marks omitted). The EPA’s conclusory assertions on the issue of control costs and its invocation of its own experience addressing cost estimates do not suffice. *See Natural Res. Def. Council, Inc. v. Hodel*, 865 F.2d 288, 298 (D.C. Cir. 1988) (per curiam) (“[C]onclusory remarks . . . do not equip a decisionmaker to make an informed decision about alternative courses of action or a court to review the [agency’s] reasoning.”); *see also Ass’n of Private Colleges & Univs. v. Duncan*, 870 F. Supp. 2d 133, 154 (D.D.C. 2012) (“That this explanation could be used to justify any [determination] at all demonstrates its arbitrariness.”); *Nat’l Parks Conservation Ass’n*, 788 F.3d at 1145 (remanding where the “reasoning fails to reveal to a reader how EPA determined that the cost of controls were not justified”).

The EPA also asserts that “[w]hen the other key BART factor—visibility—is taken into account, . . . an overall picture emerges that supports Pennsylvania’s BART determinations.” 2014 Final Rule, 79 Fed. Reg. 24,342. In essence, the EPA contends that, given Pennsylvania’s calculations showing that its BART-eligible sources had

minimal visibility impact at Class I areas, it was reasonable to conclude that additional pollution controls were unwarranted.

We are unpersuaded by this reasoning. As noted above, the 2014 Final Rule repeatedly criticizes Pennsylvania's SIP calculations and supporting documentation, noting that the SIP is so lacking that it is difficult to assess the visibility impact calculations Pennsylvania did conduct. What the EPA could determine, however, was that Pennsylvania underestimated the impact of pollution from its sources because it failed to calculate the cumulative visibility impact from each source. The EPA now urges us to rely on these very same visibility impact calculations to conclude that the "overall picture" supports Pennsylvania's BART analysis. The EPA unconvincingly insists we rely on what it has said is flawed.¹³

¹³ The EPA also argues that because 26 of Pennsylvania's 34 BART-eligible sources had less than a 0.5 deciview impact on any Class I area, the state could have exempted these 26 sources from its BART analysis. Under the agency's own regulations and the BART Guidelines, however, a state need not exempt these sources. *See, e.g.*, Regional Haze Regulations, 70 Fed. Reg. 39,104, 39,107 ("States certainly have the discretion to consider that all BART-eligible sources within the State are 'reasonably anticipated to cause or contribute' to some degree of visibility impairment in a Class I area."); BART Guidelines, 40 C.F.R. pt. 51, app. Y ("Once you have compiled your list of BART-eligible sources, you need to determine whether . . . to make BART determinations for all of them . . .").

In the end, the EPA has identified a host of problems with Pennsylvania's BART analysis. What it has not done, however, is provide a sufficient explanation as to why it overlooked these problems and approved Pennsylvania's SIP. Because we, as a reviewing court, need an agency to show its work before we can accept its conclusions, we will remand this case to the EPA for further consideration.

IV.

For the aforementioned reasons, we will vacate the 2014 Final Rule to the extent it approved Pennsylvania's source-specific BART analysis and remand to the EPA for further proceedings consistent with this Opinion.