IN THE UNITED STATES COURT OF APPEALS
FOR THE FIFTH CIRCUIT

United States Court of Appeals
Fifth Circuit

FILED
October 3, 2019

Lyle W. Cayce
Clerk

No. 18-60116

SIERRA CLUB; NATIONAL PARKS CONSERVATION ASSOCIATION; ENTERGY LOUISIANA, L.L.C.,

Petitioners

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY; ANDREW WHEELER, Administrator, United States Environmental Protection Agency,

Respondents

On Petitions for Review of Final Administrative Action of the United States Environmental Protection Agency

Before SMITH, WIENER, and ELROD, Circuit Judges.

WIENER, Circuit Judge:

In a December 21, 2017 Final Rule ("the Final Rule"), the United States Environmental Protection Agency ("the EPA") approved Louisiana's state implementation plan ("SIP") for controlling regional haze. Louisiana's regional haze SIP had two alleged problems. First, the SIP used an outdated air-pollution model called "CALPUFF" to measure the visibility impacts of powerplant emissions. Second, the SIP included a sparse explanation for how Louisiana weighed five mandatory statutory factors in determining the Best Available Retrofit Technology ("BART") for controlling emissions at Unit 6 of the Roy S. Nelson powerplant ("Nelson"). Despite the EPA's knowledge of these

problems, it determined that Louisiana had fulfilled its obligations under the Clean Air Act.

We consider two petitions for review of the Final Rule. One is from Petitioners-Appellants Sierra Club and National Parks Conservation Association (collectively, "Environmental Petitioners"). The other is from Petitioner-Appellant Entergy Louisiana, L.L.C., the owner of the Nelson powerplant, and Cleco Power, L.L.C., an intervenor in this case (collectively, "Industry Petitioners").

Environmental Petitioners maintain that Louisiana's SIP does too little to curb regional haze at federally protected areas. They contend that (1) Louisiana's determination that "low-sulfur coal" was the BART for the Nelson powerplant was deficient in several respects and (2) the EPA acted arbitrarily and capriciously in approving Louisiana's SIP because it knew about those deficiencies.

In contrast, Industry Petitioners insist that Louisiana's SIP overestimates the amount of pollution that their powerplants produce. In their challenge to the EPA's approval of Louisiana's "subject to BART" determinations, Industry Petitioners object to Louisiana's and the EPA's use of the "CALPUFF" model, which they maintain relies on several flawed technical assumptions.

We deny Industry Petitioners' petition. We afford "significant deference" to agency decisions involving analysis of scientific data within the agency's technical expertise. The EPA's selection of a model to measure air pollution levels is precisely that type of decision. The EPA therefore did not act

arbitrarily and capriciously in relying on the CALPUFF model to approve Louisiana's "subject to BART" determinations.

Although Environmental Petitioners' challenge presents a closer question, we deny that petition as well. Louisiana's explanation of its BART determination for Nelson omitted two of the five mandatory factors and failed to compare—or even set out—the numbers for the costs and benefits of the control options Louisiana considered. Louisiana also failed to explain how its decision accounted for the EPA-submitted analyses that pointed out substantial flaws in other analyses in the administrative record. But applying the deferential standards of the Administrative Procedures Act to the facts of this case, we hold that the EPA's approval of Louisiana's SIP was not arbitrary and capricious.

The petitions for review are denied.

I. BACKGROUND

This case addresses the EPA's approval of Louisiana's SIP for controlling regional haze. The Clean Air Act "requires the states and the federal government to set and seek to achieve targets for visibility in protected national parks and wildlife areas by modifying regulations that control air pollutants in ambient air."[1] Under the Act, the federal government identifies air pollutants and sets standards, and the states have "the primary responsibility" for implementing those standards through SIPs.[2] After a state

[1] *Texas v. EPA*, 829 F.3d 405, 411 (5th Cir. 2016) (citing 42 U.S.C. §§ 71410, 7491, 7492(e)(2)).

[2] *Id.* (citation omitted).

submits its SIP, the EPA reviews the SIP for compliance with the Clean Air Act.

Powerplants that emit sulfur dioxide ("SO_2") and oxides of nitrogen ("NOx") contribute to regional haze in protected federal areas.[3] Louisiana has five powerplants that cause or contribute to visibility impairments in such areas.[4] Since 2008, Louisiana has revised its SIP several times and established emission controls at some of those powerplants. In October 2017, Louisiana submitted its final SIP revisions, which addressed, *inter alia*, emission controls at Unit 6 of the Nelson powerplant.

On December 21, 2017, the EPA promulgated a final rule approving Louisiana's SIP. 82 Fed. Reg. 60,520 (Dec. 21, 2017) ("the Final Rule"). The two petitions for review of the Final Rule address the EPA's approval of (1) Louisiana's determination that Nelson and two units at the Cleco-owned Brame Energy Center ("Brame") are subject to BART for controlling emissions, (2) Louisiana's selection of low-sulfur coal as BART for controlling SO_2 emissions at Nelson, and (3) Louisiana's reasonable progress goals and long-term strategy.

Environmental Petitioners first address Louisiana's BART determination for Nelson. They contend that the Louisiana Department of

---

[3] *Id.* Regional haze is a "visibility impairment that is produced by a multitude of sources and activities that are located across a broad geographic area and emit fine particulates . . . and their precursors." 77 Fed. Reg. 42,834, 42,837 (July 20, 2012) (describing regional haze and the history of regional haze regulation).

[4] *See* 82 Fed. Reg. 22,936, 22,942 (May 19, 2017).

Environmental Quality ("LDEQ") erred in three ways: (1) determining that low-sulfur coal was BART for Nelson, despite the EPA-submitted analyses that contradicted the analyses in the record, (2) failing to provide a rational basis for rejecting a more effective pollution control, and (3) not complying with the BART guidelines or considering all the mandatory BART factors.

Environmental Petitioners next object to the Final Rule's approval of Louisiana's long-term strategy and reasonable progress goals. They maintain that Louisiana's 2017 SIP revisions did not fulfill the state's obligations to revise and resubmit its long-term strategy and reasonable progress goals after the EPA disapproved that strategy and those goals in 2012. Louisiana's 2017 SIP revisions did not impose additional controls at non-BART "reasonable progress" sources and did not address the state's reasonable progress goals or long-term strategy for achieving natural visibility conditions. According to Environmental Petitioners, the EPA improperly overlooked these omissions when it approved Louisiana's SIP.

Environmental Petitioners object to *the type* of BART control Louisiana implemented. Industry Petitioners, in contrast, object to Louisiana's determination that Nelson and Brame *are subject to* BART at all. Industry Petitioners challenge the technical assumptions underlying the modeling methods on which Louisiana and the EPA relied. Louisiana relied on the "CALPUFF" model, and the EPA relied on both the CALPUFF and the "CAMx" models. According to Industry Petitioners, the CALPUFF model overstates the visibility effects of powerplant emissions. They also maintain that the EPA

exceeded its authority by using its own CAMx modeling to support Louisiana's modeling results.

Each petitioner in this case is also a respondent-intervenor. The Environmental Petitioners, in addition to petitioning for review of some parts of the Final Rule, also intervened and filed a responsive brief opposing Industry Petitioners' petition. Likewise, Industry Petitioners, in addition to petitioning for review of some parts of the Final Rule, also intervened and filed a responsive brief opposing Environmental Petitioners' petition.

The EPA responded to both petitions, insisting that the Final Rule should be approved in full. The LDEQ filed an amicus brief supporting the EPA's position.

A. Statutory and Regulatory Framework

This case is governed by the Clean Air Act and the regulations implementing it. In 1977, "in response to a growing awareness that visibility was rapidly deteriorating in many places, such as wilderness areas and national parks," Congress amended the Act by enacting § 169A.[5]

That amendment established as a national goal "the prevention of any future, and the remedying of any existing, impairment in visibility in mandatory class I Federal areas which impairment results from manmade air pollution."[6] Protected class I Federal areas include "all (1) international parks, (2) national wilderness areas which exceed 5,000 acres in size, (3) national

[5] *North Dakota v. EPA*, 730 F.3d 750, 755 (8th Cir. 2013) (internal quotation omitted).
[6] 42 U.S.C. § 7491.

memorial parks which exceed 5,000 acres in size, and (4) national parks which exceed 6,000 acres in size."[7] Louisiana's Breton National Wildlife Refuge and the Caney Creek Wilderness Area in southwest Arkansas are the protected Class I Federal areas at issue here.[8]

The Clean Air Act is "an experiment in cooperative federalism," in which the federal government identifies pollutants and sets visibility targets, and the states implement those standards though SIPs.[9] The Act directed the EPA to issue regulations requiring: (1) that states submit SIPs to the EPA, (2) the installation of the "best available retrofit technology, as determined by the State . . . for controlling emissions" at specified air-pollution sources, and (3) that each state adopt a long-term strategy "for making reasonable progress" toward the national visibility goal.[10]

Based on the Act's directive, the EPA promulgated the Regional Haze Rule in 1999.[11] "The Regional Haze Rule established the guidelines for state compliance with the air visibility requirements of [the Clean Air Act]."[12] In 2005, the EPA revised that Rule and issued the BART guidelines, which set out the process for states to establish BART emissions limitations.[13]

---

[7] *Id.* § 7472(a).

[8] 77 Fed. Reg. 11,839, 11,845 (Feb. 28, 2012).

[9] *Texas*, 829 F.3d at 411.

[10] 42 U.S.C. § 7491(b)(2)(A)–(B). The EPA has stated that the national visibility goal is "to attain natural visibility conditions by the year 2064." 40 C.F.R. § 51.308(d)(1)(i)(B).

[11] 64 Fed. Reg. 35,714 (July 1, 1999); 40 C.F.R. § 51.308 ("Regional Haze Rule").

[12] *Texas*, 829 F.3d at 412.

[13] 70 Fed. Reg. 39,104 (July 6, 2005) ("BART Rule"); 40 C.F.R. Part 51, App. Y ("BART Guidelines").

The Clean Air Act and the Regional Haze Rule impose five requirements for SIPs:

> For each affected wilderness and national park, the plan must: (1) set "reasonable progress goals" toward achieving natural visibility conditions that ensure improvements in visibility on the most impaired days over the period of the implementation plan; (2) calculate baseline visibility and natural visibility conditions; (3) devise a long-term strategy with enforceable emissions limitations, compliance schedules, and other measures necessary to achieve the reasonable progress goals; (4) develop a monitoring strategy for measuring and reporting visibility; and (5) list the best available retrofit technology . . . that emission sources in the state will have to adopt to achieve the visibility goals, along with a schedule for implementing BART.[14]

After a state submits its SIP to the EPA, the agency reviews the SIP for compliance with the Clean Air Act. If the EPA determines that a SIP does not comply with the Act, it must promulgate a "Federal implementation plan" that fixes the SIP's shortcomings, unless the state corrects the deficiency.[15] The EPA's role is confined "to the ministerial function of reviewing SIPs for consistency with the Act's requirements."[16]

The parties focus on two of the Clean Air Act's and Regional Haze Rule's requirements: (1) the BART emission limits and (2) the reasonable progress goals and long-term strategy that each state must implement.

---

[14] *Texas*, 829 F.3d at 412 (citing 40 C.F.R. § 51.308(d), (e)).

[15] 42 U.S.C. § 7410(k)(3), (c)(1). Because the EPA approved Louisiana's SIP, there is no Federal implementation plan at issue here.

[16] *Texas*, 829 F.3d at 411 (quoting *Luminant Generation Co. v. EPA*, 675 F.3d 917, 921 (5th Cir. 2012)).

1. BART Emission Limits

The Regional Haze Rule defines BART 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."[17] The BART process has three steps. First, a state must identify all "BART-eligible sources." Second, it must determine which of those BART-eligible sources are "subject to BART." Third, for each source that is "subject to BART," the state must make a "BART determination" by analyzing and selecting the appropriate emission control for that source.[18]

Step one is identifying all "BART-eligible sources." That definition includes all stationary facilities that (1) were in existence before August 7, 1977 but were not in operation before August 7, 1962, (2) have "the potential to emit 250 tons per year or more of any visibility-impairing air pollutant," and (3) fall within one of 26 listed source categories.[19] The parties agree that Nelson and Brame satisfy these requirements and are "BART-eligible" sources.

Step two is making "subject to BART" determinations. The state must determine which of the BART-eligible sources emit air pollutants that "may reasonably be anticipated to cause or contribute to any impairment of visibility" in a Class I area.[20] The key words are "cause" and "contribute to."

---

[17] 40 C.F.R. § 51.301.

[18] BART Guidelines, 40 C.F.R. Part 51, App. Y at I.F; *see also Util. Air Regulatory Grp. v. EPA*, 471 F.3d 1333, 1335–36 (D.C. Cir. 2006) (explaining the process).

[19] 40 C.F.R. § 51.301.

[20] *Id.*

Sources that a state determines may reasonably be anticipated to "cause" or "contribute to" visibility impairment at a protected area are "subject to BART."[21] Under the BART Guidelines, a 1.0 deciview[22] change from an individual source "causes" visibility impairment, whereas a 0.5 deciview change from an individual source "contributes to" impairment.[23] In some instances, states may set a lower threshold for sources that "contribute to" visibility impairment.[24]

At the "subject to BART" screening step, states have discretion to either (a) determine that *all* BART-eligible sources are "subject to BART" via "collective attribution" or (b) conduct individualized testing to determine that a source, or a group of sources, is exempt from BART.[25] Here, Louisiana opted for the second option.

---

[21] *Id.*

[22] Visibility impairments are measured in deciviews. A deciview "is the unit of measurement on the deciview index scale for quantifying in a standard manner human perceptions of visibility." 40 C.F.R. § 51.301. "A higher deciview measurement indicates more haze and less visibility. . . . A single deciview is around the increment that the average person can perceive with the naked eye." *Texas*, 829 F.3d at 413 n.2.

[23] BART Rule, 70 Fed. Reg. at 39,120 ("[W]e are clarifying that for purposes of determining which sources are subject to BART, States should consider a 1.0 deciview change or more from an individual source to 'cause' visibility impairment, and a change of 0.5 deciviews to 'contribute' to impairment."). For a fuller background on the "cause" or "contribute" distinction, see *id.* at 39,117–39,122.

[24] *Id.* at 39,120–39,121 ("In a regulatory context, we believe that a State's decision as to an appropriate threshold for contribution could depend upon the number of sources affecting a class I area.").

[25] BART Guidelines, 40 C.F.R. Pt. 51, App. Y at III.

The third step is the "BART determination," in which a state must identify the appropriate emission control for each "subject to BART" source.[26] At each such source, the state must consider five statutory factors: (1) the costs of compliance, (2) the energy and nonair 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.[27]

For powerplants with generating capacities greater than 750 megawatts, like those at issue here, a state's BART determination must comply with the BART guidelines,[28] which provide step-by-step instructions for making BART determinations.[29] In contrast, at the BART-eligibility and "subject to BART" steps, the BART guidelines are advisory only.[30]

2. Reasonable Progress Goals and Long-Term Strategy

The Regional Haze Rule requires a state to "establish goals (expressed in deciviews) that provide for reasonable progress towards achieving natural visibility conditions" for each Class I area within that state.[31] The process and considerations for calculating these goals are as follows:

---

[26] *Id.* at IV.

[27] 42 U.S.C. § 7491(g)(2); Regional Haze Rule, 40 C.F.R. § 308(e)(1)(ii)(A) .

[28] Regional Haze Rule, 40 C.F.R. § 51.308(e)(1)(ii)(B); 42 U.S.C. § 7491(b)(2); *see also* 77 Fed. Reg. 11,839, 11,849 (Feb. 28, 2012).

[29] *See* BART Guidelines, 40 C.F.R. Part 51, App. Y § IV.

[30] *Util. Air Regulatory Grp.*, 471 F.3d at 1338–39.

[31] 40 C.F.R. § 51.308(d)(1).

> A state begins by calculating the steady linear rate of decreasing emissions that would achieve natural visibility in the covered wildernesses and national parks by the year 2064. 40 C.F.R. § 51.308. If a state determines that the linear rate would result in unreasonable regulations, it must propose an alternative set of reasonable progress goals and demonstrate both that the linear rate is unreasonable and that the alternative goals are reasonable. *Id.* § 51.308(d)(1)(ii). The Clean Air Act and the Regional Haze Rule require a state to consider four factors when setting reasonable progress goals: "the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements." 42 U.S.C. § 7491(g)(1); *see also* 40 C.F.R. § 51.308(d)(1)(i)(A) (repeating the factors listed in § 7491(g)(1)).[32]

The evaluation of the four statutory factors is often referred to as a "'four-factor analysis' or 'reasonable progress analysis.'"[33]

In addition to setting reasonable progress goals, a state must establish a "long-term strategy" to make reasonable progress toward achieving natural visibility conditions.[34] This strategy must include "enforceable emissions limitations, compliance schedules, and other measures necessary to achieve the reasonable progress goals."[35] As part of its long-term strategy, a state may impose additional emission reduction measures at sources that are not "subject to BART."[36] Sources that are regulated through the reasonable progress

---

[32] *Texas*, 829 F.3d at 412–13.
[33] 81 Fed. Reg. 66,332, 66,360 (Sept. 27, 2016).
[34] 40 C.F.R. § 51.308(d)(3).
[35] *Id.*; *see* 42 U.S.C. § 7491(b)(2)(A).
[36] 40 C.F.R. § 51.308(d)(3).

goals—rather than through BART—are referred to as "reasonable progress sources."[37]

B. Factual Background

The procedural history of this case began when Louisiana submitted its regional haze SIP to the EPA in 2008. Since then, Louisiana has revised and resubmitted its SIP many times. Louisiana submitted its final SIP revisions in October 2017, and the EPA approved Louisiana's SIP in its December 2017 Final Rule.[38]

1. Louisiana's 2008 Submittal

Louisiana submitted a SIP for addressing regional haze in June 2008. In that SIP, Louisiana relied on an emissions-trading program called the Clean Air Interstate Rule ("CAIR") to satisfy its BART, reasonable-progress, and long-term strategy obligations. The EPA reviewed that SIP in two separate actions in 2012.[39]

The first such action, a national rulemaking, was based on a D.C. Circuit decision that (1) held that states could not rely on CAIR to satisfy their BART obligations and (2) remanded CAIR to the EPA.[40] In that national rulemaking, the EPA finalized a "limited disapproval" of Louisiana's SIP because it had relied on CAIR.[41]

---

[37] *Id.*

[38] *See* Final Rule, 82 Fed. Reg. at 60,521–60,522 ("Our Previous Actions").

[39] *See* 82 Fed. Reg. 32,294, 32,295 (July 13, 2017) (detailing the procedural history).

[40] *See North Carolina v. EPA*, 531 F.3d 896, 930 (D.C. Cir. 2008), *reh'g granted in part*, 550 F.3d 1176 (D.C. Cir. 2008).

[41] 77 Fed. Reg. 33,642, 33,643 (June 7, 2012).

The second such action "partially disapproved" Louisiana's SIP submission based on issues other than, and "go[ing beyond]," the SIP's reliance on CAIR. In addition to this "partial disapproval" of particular parts of Louisiana's SIP, that action also included a "partial limited approval" of other parts of the SIP.

The "partial limited approval" part of that action was based on the EPA's conclusion that specified parts of the SIP, "as a whole, strengthen[ed] the State's SIP."[42] Although the EPA concluded that some of the SIP provisions—including Louisiana's reasonable progress goals and long-term strategy—did not comply with the Clean Air Act, those noncompliant provisions were included in the partial limited approval.[43]

In the "partial disapproval" part of that action, the EPA disapproved the parts of the SIP related to CAIR, including the BART analyses for non-electric generating unit ("EGU") sources[44] and the BART determinations for four specific non-EGU sources.[45] Those deficiencies are not at issue here.

A definitional note: *Limited* approvals and *partial* approvals are different. If a submittal does not meet all of the Act's requirements, but a "separable" part does meet those requirements, a "partial approval may be

---

[42] 77 Fed. Reg. 39,425, 39,426 (July 3, 2012) ("2012 Final Rule").

[43] *See id.*

[44] "[T]he term 'electric generating unit' or 'EGU' is used to mean a solid fuel-fired steam generating unit that serves a generator that produces electricity for sale to the electric grid." EPA Whitepaper on Available and Emerging Technologies for Reducing Greenhouse Gas Emissions from Coal-Fired Electric Generating Units (Oct. 2010), https://www.epa.gov/sites/production/files/2015-12/documents/electricgeneration.pdf.

[45] 2012 Final Rule, 77 Fed. Reg. at 39,426.

used to approve that part of the submittal and disapprove the remainder."[46] In contrast, if parts of a submittal do not meet the Clean Air Act's requirements, but "the submittal as a whole" has a "strengthening effect" on the SIP, the EPA may use a "limited approval" to enact the entire submittal.[47] The practical difference is

> that under a limited approval the EPA's approval action goes to the entire [submittal]. In other words, although portions of a [submittal] prevent the EPA from finding that the [submittal] meets a certain requirement of the Act, the EPA believes that the [submittal], as a whole, strengthens the SIP. Therefore, the EPA approves the entire [submittal]--even those portions that prohibit full approval. Likewise, when the EPA issues the limited disapproval, the disapproval applies to the entire [submittal] as failing to meet a specific requirement of the Act. The [submittal] remains a part of the [enforceable] SIP, however, under the limited disapproval, because the [submittal] strengthens the SIP. The disapproval only applies to whether the submittal meets a specific requirement of the Act and does not affect incorporation of the rule into the approved, federally enforceable SIP.[48]

In short, in a *partial* approval, the approved parts of the submittal go into effect and the disapproved parts do not. In a *limited* approval, the entire part that is "limitedly" approved—including the provisions within that part that do not

---

[46] Processing of State Implementation Plan Revisions at 2, the EPA Memorandum from John Calcagni (July 9, 1992), https://www.epa.gov/sites/production/files/2015-07/documents/procsip.pdf.

[47] *Id.* at 2–3.

[48] *Id.* at 3.

comply with the Clean Air Act—goes into effect and are incorporated into the approved SIP.

As a result of the partial disapproval, the EPA was required to promulgate a federal implementation plan within two years of that disapproval, unless it approved a corrected state plan.[49] The EPA did not promulgate a federal plan or approve a corrected state plan within that timeframe. Based on that, the Sierra Club sued the EPA, and a federal district court entered a consent decree requiring the EPA to issue a federal plan or approve a corrected state plan by December 15, 2017.[50]

2. Louisiana's 2017 Revisions and the EPA's Approval

To bring its SIP into compliance, Louisiana revised its SIP to, among other things, address BART for the Nelson and Brame powerplants. Nelson and Brame are two of the largest sources of SO_2 and NO_x emissions in Louisiana, are "BART-eligible," and have generating capacities greater than 750 megawatts.[51]

In August 2016, Louisiana submitted a partial plan addressing BART at "non-EGU" sources. The EPA proposed to approve that partial plan in October 2016 and finalized the approval in the December 2017 Final Rule.[52] The approval of that partial plan is not at issue here.

---

[49] 42 U.S.C. § 7410(c)(1).

[50] *See* Notice of Modification of Consent Decree, *Sierra Club v. Pruitt*, No. 15-cv-01555-JEB (D.D.C. Mar. 13, 2017).

[51] Final Rule, 82 Fed. Reg. at 60,525–26.

[52] 81 Fed. Reg. 74,750 (Oct. 27, 2016) (proposed rulemaking); Final Rule, 82 Fed. Reg. at 60,522 ("[W]e are finalizing that approval here.").

In February 2017, Louisiana submitted a revised plan addressing BART for EGU sources, including Nelson and Brame. In June 2017, Louisiana revised its SIP to make a BART determination for Nelson. Louisiana revised its SIP again in October 2017. The EPA's December 2017 Final Rule explains the relevant procedural history as follows:

> On June 20, 2017, LDEQ submitted a SIP revision for parallel processing related to Entergy's Nelson facility. On July 13, 2017, we proposed to approve this SIP revision along with the remaining portion of the February 2017 SIP revision that addressed BART for the Nelson facility. Specifically, we proposed to approve the LDEQ BART determinations for Nelson Units 6 and 4, and the Unit 4 auxiliary boiler, and the [administrative order on consent] that makes the emission limits that represent BART permanent and enforceable for the purposes of regional haze. We also solicited comment with respect to any information that would support or refute the costs in Entergy's evaluation of SO_2 controls for Unit 6. On June 21, 2017, Entergy submitted a comment to LDEQ on its proposed SIP revision requesting a three-year compliance deadline to achieve the proposed SO_2 BART limit for Nelson Unit 6. Entergy's letter explained that the company has coal contracts in place for the next three years, so the revised compliance date would provide the company sufficient time to transition to new mines with lower sulfur coal. Additionally, Entergy stated that it did not have the necessary equipment to blend varying fuel supplies. On August 24, 2017, we received a letter from LDEQ explaining their intent to revise the compliance date in the SIP revision for Nelson Unit 6 based on Entergy's comment letter. On September 26, 2017, we supplemented our proposed approval of the SO_2 BART determination for Nelson by proposing to approve the three-year compliance date. On October 26, 2017, we received LDEQ's final SIP revision addressing Nelson, including a final [administrative order of consent] with emission limits and a SO2 compliance date

> three years from the effective date of the EPA's final approval of the SIP revision.[53]

In the October 2017 SIP revisions, Louisiana (1) determined that Nelson and Brame were "subject to BART" and (2) determined that low-sulfur coal was BART for controlling SO_2 emissions at Nelson.

In reaching those conclusions, Louisiana considered analyses submitted by Entergy, Cleco, and the EPA. The analyses submitted by the parties addressed: (1) the modeling methods for making "subject to BART" determinations and (2) the potential control options for BART at Nelson. The EPA's analyses contradicted and sharply criticized significant parts of Entergy's and Cleco's analyses. The LDEQ included all the analyses as appendices to its revised SIP.

i. The "Subject to BART" Determinations

The LDEQ concluded that Nelson and Brame were "subject to BART." The department reached that conclusion based on dispersion modeling that established that those powerplants produced emissions that surpassed the 0.5 deciview threshold for "contributing to" visibility impairment at the Breton National Wilderness Area and the Caney Creek Wilderness Area.

The LDEQ relied on the "CALPUFF" model, which "predicts 24-hour average pollutant concentrations based on source emissions and how they disperse in the atmosphere" and converts those concentrations to daily

[53] 82 Fed. Reg. at 60,522.

deciview effects.[54] The BART guidelines provide that a state may "use CALPUFF or other appropriate model to estimate visibility impacts from a single source at a Class I area."[55] When the EPA promulgated those guidelines in 2005, CALPUFF was "the best regulatory modeling application currently available for predicting a single source's contribution to visibility impairment and [was then] the only EPA-approved model for use in estimating single source pollutant concentrations resulting from the long range transport of primary pollutants."[56] Although the EPA has recently removed CALPUFF as a "preferred" model for other air-quality modeling applications under the Clean Air Act, CALPUFF remains a recommended model for making "subject-to-BART" and BART emission control determinations.[57]

Both Entergy's and the EPA's CALPUFF modeling showed that Nelson and Brame each had a greater than 0.5 deciview impact on visibility impairment at Breton and Caney Creek. Entergy, however, submitted reports showing that CALPUFF's reliance on flawed assumptions imposed a too-high margin of error.

In addition to conducting CALPUFF modeling, Entergy and the EPA conducted another type of modeling called "CAMx." Entergy and the EPA submitted their CAMx analyses to the LDEQ.

---

[54] *See* BART Rule, 70 Fed. Reg. at 39,122 (describing the CALPUFF model in detail).

[55] BART Guidelines, 40 C.F.R. Part 51, App. Y, III.A.3.

[56] *Id.*

[57] 82 Fed. Reg. 5,182, 5,196 (Jan. 17, 2017) ("[T]his final action does not affect the EPA's recommendation that states use CALPUFF to determine the applicability and level of best available retrofit technology in regional haze implementation plans.").

The EPA's CAMx modeling showed that Nelson and Brame exceeded the 0.5 deciview threshold. In contrast, Entergy's CAMx modeling showed that those powerplants' emissions did not exceed the 0.5 deciview threshold. The EPA, however, concluded that Entergy's CAMx modeling "was not conducted in accordance with the BART Guidelines and d[id] not properly assess maximum baseline impacts, so [the EPA] consider[ed] this CAMx modeling provided by Entergy to be invalid for supporting a determination of minimal visibility impacts."[58]

When the LDEQ reviewed the models that the parties had submitted, it stated that it did "not have the expertise with which to review those [CAMx] model runs," and instead relied only on the CALPUFF modeling. The LDEQ did, however, include the CAMx analyses as appendices to its revised SIP.

ii. BART Determinations for Brame and Nelson

Louisiana's revised SIP also made BART determinations for Brame and Nelson. For the two Brame units, the LDEQ determined that "no additional controls constitute[d] BART." The LDEQ reached that determination based on those units' existing controls. At one of those units, BART was satisfied via the unit's earlier conversion from coal to natural gas. The other unit satisfied its BART obligations based on an earlier dry sorbent injection installation.[59]

For Nelson, the LDEQ changed its BART determination between the February 2017 revision and the June and October 2017 revisions. In the

---

[58] 82 Fed. Reg. at 32,299.

[59] Cleco does not challenge the LDEQ's determination about the BART controls at the Brame units; it challenges only the determination that the units are "subject to BART."

February 2017 SIP revision, the LDEQ concluded that no additional controls were necessary for Nelson to satisfy BART. Although the LDEQ stated that "low sulfur coal presents the most feasible control based on economics and impacts to visibility," it also stated that it "believe[d] that the visibility improvement that would be achieved through the installation and operation of controls at each of the Nelson units would be negligible, therefore the facility's existing controls satisfy the BART requirements and no further controls are necessary."

In its June 2017 SIP revision, however, the LDEQ changed course and determined that low-sulfur coal was BART for controlling SO_2 at Nelson. The October 2017 SIP revision retained that determination and extended the compliance date for BART at Nelson by three years.

In the October 2017 SIP revision, the LDEQ stated that it evaluated four different technologies for reducing emissions at Nelson: (1) low-sulfur coal, (2) dry sorbent injection ("DSI"), (3) dry flue-gas desulfurization ("FGD"), or a "dry scrubber," and (4) wet FGD, or a "wet scrubber." The LDEQ stated its reasoning for selecting low-sulfur coal as BART at Nelson as follows:

> In the Entergy BART five-factor SO_2 analysis for the Unit 6 Boiler, a number of emission reduction controls were reviewed. The reviewed controls included the use of a lower sulfur coal, DSI, enhanced DSI, dry flue-gas desulfurization (FGD) and wet FGD. LDEQ has reviewed and weighed the five factors carefully; after a review of the information that Entergy and EPA provided, LDEQ has concluded that the appropriate BART for this facility is to establish an emission limit of .6 lbs/MMBtu based on a 30 day rolling average as defined in the AOC (see Appendix D). While additional visibility benefits may be available through the use of

> FGD, the lower sulfur coal option results in visibility benefits at a lower annual cost. Along with the extra cost, FGD use results in additional waste spent due to spent reagent and has some power demands to run the equipment. LDEQ believes, at present, that the use of lower sulfur coal presents the appropriate SO_2 control based on consideration of economics, energy impacts, non-air quality environmental impacts, and impacts to visibility.

iii. Long-Term Strategy and Reasonable Progress Goals

Louisiana's revised SIP did not specifically set out a long-term strategy or impose emission controls at additional "reasonable progress sources." Neither did it evaluate the four "reasonable progress factors" for determining whether any non-BART reasonable progress sources should be controlled.

3. The EPA's Approval of Louisiana's SIP

The EPA proposed two separate rules to approve Louisiana's revised SIP. In May 2017, the EPA issued a proposed rule to approve the entire February 2017 SIP revision except for the part about Nelson, on which the EPA deferred action.[60] This rulemaking included an approval of Louisiana's "subject to BART" determination for Brame.[61]

In June 2017, Louisiana revised its SIP by changing its previous "no further controls" BART determination for Nelson to require the use of low-sulfur coal. In a July 2017 rulemaking ("the Proposed Rule"), the EPA proposed to approve the remaining part of Louisiana's SIP addressing Nelson.[62] The

---

[60] 82 Fed. Reg. 22,936 (May 19, 2017).
[61] *Id.* at 22,942–22,943.
[62] Proposed Rule, 82 Fed. Reg. 32,294, 32,300 (July 13, 2017).

Proposed Rule (1) agreed with the LDEQ that Nelson was "subject to BART" and (2) stated that the LDEQ had adequately analyzed the five mandatory BART factors.[63] But the Proposed Rule also criticized several aspects of the SIP revision, including Entergy's modeling, cost estimates, and supporting documentation. The Proposed Rule stated that the EPA performed its own modeling and analyses to correct those errors.[64]

After the EPA issued the Proposed Rule, Louisiana submitted a letter to the EPA explaining the state's intention to extend the compliance date in its draft SIP for Nelson by three years. In response to that letter, the EPA supplemented the Proposed Rule to reflect such change.[65]

Louisiana revised its SIP again in October 2017. As discussed above, that revision extended the date for Nelson to comply with BART by three years. The EPA finalized its proposed approval of all of Louisiana's SIP revisions when it issued the Final Rule on December 21, 2017.[66]

The Environmental and Industry Petitioners timely petitioned for review of the Final Rule. On the same day that this case was filed, the Environmental Petitioners also filed an administrative petition for reconsideration of the Final Rule. This court stayed the case pending the EPA's

---

[63] *Id.* at 32,296–32,297.
[64] *Id.* at 32,297–32,298.
[65] 82 Fed. Reg. 44,753 (Sept. 26, 2017).
[66] Final Rule, 82 Fed. Reg. 60,520 (Dec. 21, 2017).

decision on the administrative petition, then lifted the stay after the EPA denied that petition.[67]

II. STANDARD OF REVIEW

We review the EPA's approval of Louisiana's regional haze SIP under the standards set out in the Administrative Procedure Act ("APA"), which require us to set aside an agency action that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."[68] An action is arbitrary and capricious "if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise."[69]

The arbitrary and capricious standard is "narrow," and we must "be mindful not to substitute [our] judgment for that of the agency."[70] We "must also ensure that the agency 'examined the relevant data and articulated a satisfactory explanation for its action.'"[71] "We consider whether the decision

---

[67] *See* EPA's Response to Reconsideration Petition, https://www.regulations.gov/contentStreamer?documentId=EPA-R06-OAR-2016-0520-0011&contentType=pdf. Although we take notice of the administrative petition for reconsideration and the EPA's response to it, our review of the Final Rule "is limited to the record before the agency at the time of its decision." *Luminant*, 675 F.3d at 925 (quotation omitted).

[68] 5 U.S.C. § 706(2)(A).

[69] *Tex. Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 933 (5th Cir. 1998) (quoting *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983)).

[70] *10 Ring Precision, Inc. v. Jones*, 722 F.3d 711, 723 (5th Cir. 2013) (quoting *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43).

[71] *Id.* (quoting *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43).

was based on a consideration of the relevant factors and whether there has been a clear error of judgment."[72]

Additionally, federal agencies "are required to engage in 'reasoned decisionmaking.'"[73] The agency's process must be "logical and rational," and its decision "is lawful only if it rests 'on a consideration of the relevant factors.'"[74] The agency must "articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'"[75] Under this standard, courts have vacated agency decisions that created "unexplained inconsistencies in the rulemaking record."[76]

Under the Clean Air Act's structure of cooperative federalism, Louisiana is the entity considering "relevant factors," and the EPA's role is confined to ensuring that Louisiana's determinations complied with the Clean Air Act.[77] Under this structure, we review whether the EPA was arbitrary and capricious in approving Louisiana's compliance with the Act.

---

[72] *Id.* (quoting *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43).

[73] *Michigan v. EPA*, 135 S. Ct. 2699, 2706 (2015) (quoting *Allentown Mack Sales & Serv., Inc. v. NLRB*, 622 U.S. 359, 374 (1998)).

[74] *Id.* (quoting *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43).

[75] *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43 (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)).

[76] *U.S. Sugar Corp. v. EPA*, 830 F.3d 579, 651 (D.C. Cir. 2016); *see id.* at 650 (collecting D.C. Circuit authority and stating "[t]his court has 'often declined to affirm an agency decision if there are unexplained inconsistencies in the final rule'" (citation omitted)); *Gulf Power Co. v. FERC*, 983 F.2d 1095, 1101 (D.C. Cir. 1993) ("[W]hen an agency takes inconsistent positions . . . it must explain its reasoning.); *Gen. Chem. Corp. v. United States*, 817 F.2d 844, 846 (D.C. Cir. 1987) (holding agency action to be arbitrary because its analysis was "internally inconsistent and inadequately explained").

[77] *See Texas*, 829 F.3d at 411.

III. ANALYSIS

As a threshold matter, Industry Petitioners and Environmental Petitioners have standing. Industry Petitioners' standing is based on Entergy's and Cleco's ownership of the powerplants at issue. Environmental Petitioners have standing because one of the Sierra Club's members submitted a declaration adequately asserting that (1) he regularly visits the national parks in question, (2) he has concrete plans to return in the future, and (3) regional haze affects his visibility. Although the declarations submitted by the National Parks Conservation Association do not appear to give it standing in this case, "one party with standing is sufficient to satisfy Article III's case-or-controversy requirement."[78]

Each petition raises two major issues. Environmental Petitioners challenge the EPA's approval of (1) Louisiana's selection of low-sulfur coal as BART for controlling SO_2 emissions at Nelson and (2) Louisiana's reasonable progress goals and long-term strategy.

Industry Petitioners challenge the EPA's approval of Louisiana's "subject to BART" determinations at Nelson and Brame. They contend that (1) the CALPUFF modeling that Louisiana relied on was technically flawed; (2) the CAMx modeling, on which the EPA relied but Louisiana did not, was technically flawed; and (3) even if the CAMx modeling were not technically

---

[78] *Brackeen v. Bernhardt*, 937 F.3d 406, 421 (5th Cir. 2019) (quoting *Rumsfeld v. Forum for Acad. & Institutional Rights, Inc.*, 547 U.S. 47, 53 n.2 (2006)).

flawed, the EPA should not have considered it because Louisiana expressly did not consider it.

We address each issue in turn.

A. The Environmental Petitioners' Petition

The first part of Environmental Petitioners' challenge addresses the EPA's approval of Louisiana's determination that low-sulfur coal was BART for Nelson. The second part of their challenge addresses the EPA's approval of Louisiana's long-term strategy and reasonable progress goals.

We deny Environmental Petitioners' petition, and we explain our reasons below.

1. The EPA's Approval of the BART Determination for Nelson

In its October 2017 SIP revision, Louisiana selected low-sulfur coal as BART for controlling SO_2 emissions at Nelson. The LDEQ explained its determination as follows:

> In the Entergy BART five-factor SO_2 analysis for the Unit 6 Boiler, a number of emission reduction controls were reviewed. The reviewed controls included the use of a lower sulfur coal, DSI, enhanced DSI, dry flue-gas desulfurization (FGD) and wet FGD. LDEQ has reviewed and weighed the five factors carefully; after a review of the information that Entergy and EPA provided, LDEQ has concluded that the appropriate BART for this facility is to establish an emission limit of .6 lbs/MMBtu based on a 30 day rolling average as defined in the AOC (see Appendix D). While additional visibility benefits may be available through the use of FGD, the lower sulfur coal option results in visibility benefits at a lower annual cost. Along with the extra cost, FGD use results in additional waste spent due to spent reagent and has some power demands to run the equipment. LDEQ believes, at present, that

> the use of lower sulfur coal presents the appropriate SO_2 control based on consideration of economics, energy impacts, non-air quality environmental impacts, and impacts to visibility.

Environmental Petitioners contend that the EPA's approval of this determination was arbitrary and capricious for three reasons. First, Louisiana's selection of low-sulfur coal as BART at Nelson was inconsistent with the evidence that the state considered. Second, Louisiana did not provide a "rational basis" for rejecting more effective pollution controls. Third, in its BART determination, Louisiana did not weigh the Clean Air Act's factors in compliance with the mandatory BART guidelines.

i. The Evidence Louisiana Considered

According to Environmental Petitioners, Louisiana's BART determination rested solely on analysis by Nelson's owner, Entergy. Environmental Petitioners point out that the EPA was "unable to verify any of the company's costs" because those costs were based on a proprietary database to which the EPA was not given access.[79] Similarly, the EPA could not verify Entergy's modeling analyses because Entergy did not provide the "inputs" that were used in the modeling.

For the parts of Entergy's analyses that the EPA did review, the EPA concluded that Entergy's cost and visibility analyses, on which Louisiana relied, had many errors, including: (1) implementing improper costs, (2) inflated contingency estimates, and (3) modeling errors. The EPA pointed out

---

[79] Proposed Rule, 82 Fed. Reg. at 39,432.

these errors in the Proposed Rule: (1) "Entergy's control cost estimates included costs not allowed under our Control Cost Manual (*e.g.*, escalation during construction and owner's costs)"; (2) "Entergy also assumed a contingency of 25%, which we note is unusually high"; and (3) "Entergy's CALPUFF modeling included errors in its estimates of sulfuric acid and PM emissions."[80]

After noting these perceived errors, the EPA submitted its own BART analyses that reached markedly different cost-effectiveness estimates for each proposed control option at Nelson. The following table compares the EPA's and Entergy's cost-effectiveness calculations, in cost per ton of pollutant removed, for each control option.

Cost-Effectiveness Comparison[81]		
Technology	**Entergy's Calculation**	**the EPA's Calculation**
Low-sulfur coal	$597	$2,957
DSI	$5,611	$3,578 - $4,302
Wet scrubber	$4,413	$2,743
Dry scrubber (SDA)	$4,536	$2,706

Most striking is the difference between the EPA's and Entergy's calculations for low-sulfur coal. Entergy estimated that low-sulfur coal would cost $597 per ton of pollution removed; the EPA estimated that it would cost $2,957 per ton. Entergy's estimate for what the parties agree would be the most

[80] Proposed Rule, 82 Fed. Reg. at 32,298–32,299.

[81] The Proposed Rule contains a thorough narrative discussion of the EPA's analyses and the problems with Entergy's analyses. 82 Fed. Reg. at 32,298–32,299.

effective option—a dry scrubber—was significantly higher than the EPA's estimate. Entergy's estimate was $4,536 per ton of pollution removed; the EPA's was $2,706 per ton.

Similarly, the EPA's conclusions about the visibility improvements for each option differed from Entergy's conclusions. In the Proposed Rule, the EPA explained that the differences resulted from Entergy's model's failure to follow the BART guidelines.[82] The following chart compares the visibility improvement calculations (in deciviews) for each control option.

Expected Visibility Improvement Comparison for Caney Creek		
Technology	**Trinity Consultants' Calculation**	**the EPA's Calculation**
Low-sulfur coal	0.164	0.411
DSI	0.302	0.511
Dry scrubber (SDA)	0.355	0.831

According to Environmental Petitioners, Louisiana's reliance on Entergy's analyses—which the EPA's analyses concluded overestimated the costs and underestimated the benefits of more effective pollution controls—was irrational. After the EPA informed Louisiana of those errors, that state reached the same BART determination. In its SIP revision, Louisiana did not acknowledge the EPA's criticisms and did not attempt to reconcile the

[82] 82 Fed. Reg. at 32,299 ("As we discuss above and in the CAMx Modeling TSD, Entergy also provided additional screening modeling results using CAMx to support its conclusion that visibility impacts from Unit 6 are minimal. However, this modeling was not conducted in accordance with the BART Guidelines and does not properly assess maximum baseline impacts, so we consider this CAMx modeling provided by Entergy to be invalid for supporting a determination of minimal visibility impacts.").

conflicting the EPA and Entergy analyses. Environmental Petitioners insist that Louisiana's failure to explain why its decision remained unchanged after reviewing the EPA's contradictory analyses created an "unexplained inconsistenc[y] in the rulemaking record" that made the EPA's approval arbitrary and capricious.[83]

The EPA does not defend these discrepancies. In its brief, it concedes that the agency "was aware of these errors when it approved the SIP," acknowledges that the SIP revision contained "a number of errors," and describes Entergy's submissions as "Entergy's faulty analyses."

The EPA contends that, despite these errors, Louisiana "may, to the extent supported by the record as a whole, reach the same conclusion both before and after reviewing a particular set of information."[84] The EPA points to the fact that its own analyses were in the record and that the LDEQ included those analyses in an appendix to the revised SIP. The EPA insists that, based on the agency's earlier review of the "entirety of" Louisiana's SIP submission, Louisiana considered all the information in its October 2017 SIP submission, weighed that information in arriving at its final BART determination, and explained the reasons for its decision.

Industry Respondents defend the analyses they submitted to the LDEQ and insist that those analyses adequately supported Louisiana's BART determination. They criticize the analyses that the EPA submitted to the

---

[83] *U.S. Sugar Corp*, 830 F.3d 579 at 651.

[84] *See* 42 U.S.C. § 7410(k)(3) ("[the EPA] shall approve such submittal as a whole if it meets all of the applicable requirements of [the Act].").

LDEQ and challenge the EPA's earlier determination that their analyses failed to comply with the BART guidelines.

Environmental Petitioners have the better arguments on this point. Entergy and the EPA reached significantly different conclusions about the costs and visibility improvements of each emission control. But after the EPA submitted analyses pointing out flaws in Entergy's analysis, the LDEQ did not discuss the EPA-identified errors, and it reached the same BART determination for Nelson as it did before the EPA identified mistakes. Given the EPA's analysis showing that Entergy significantly underestimated the cost of low-sulfur coal and overestimated the cost of a scrubber, Louisiana's failure to address or reconcile the conflicting analyses appears to create an "unexplained inconsistenc[y]" in the rulemaking record.[85] Although that shortcoming in Louisiana's SIP is worthy of careful scrutiny, it does not fully resolve the matter.

ii. Rational Explanation for Rejecting a More Effective Control

Environmental Petitioners next contend that Louisiana did not provide a rational explanation for rejecting a more effective pollution control at Nelson. They point to the EPA's past actions that reviewed BART determinations for whether the costs and visibility benefits of a determination were within the range of the EPA's prior BART determinations.[86] They also cite the BART

---

[85] *See U.S. Sugar Corp.*, 830 F.3d at 651.

[86] *See* 82 Fed. Reg. 912,938 (Jan. 4, 2017) ("[T]he cost-effectiveness of all of the controls that form the basis of our proposed BART determinations are within a range found to be

guidelines, which recommend that "[a] reasonable range would be a range that is consistent with the range of cost effectiveness values used in other similar permit decisions over a period of time."[87]

The LDEQ's SIP revisions did not provide cost-effectiveness numbers for any of the control options it considered. Based on the LDEQ's failure to include those numbers in its SIP, the EPA was not able to compare the instant BART determination with the EPA's previously approved BART determinations. According to Environmental Petitioners, this lack of a comparison to prior EPA-approved BART determinations amounts to an "unexplained deviation from past practice."[88]

To bolster this argument, Environmental Petitioners compared the EPA's cost-effectiveness numbers for a scrubber with all of the EPA's prior BART determinations. Environmental Petitioners included a graph of those results, which shows that the cost-effectiveness numbers for a scrubber align with the EPA's prior BART decisions.

The EPA responds that, although in other actions it has stated that comparisons to prior BART determinations are helpful, the BART guidelines do not require such comparisons. The EPA points to the Final Rule's statements explaining that BART determinations depend on the unique

---

acceptable in other case."); 80 Fed. Reg. 18,944, 18,952 (Apr. 8, 2015) ("[T]he cost effectiveness . . . is within the range of what we consider to be cost-effective for BART.").

[87] BART Guidelines, 40 C.F.R. part 51, App. Y § IV.D.4.f.

[88] *See Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2125–26 (2016); *WildEarth Guardians v. EPA*, 770 F.3d 919, 941 (10th Cir. 2014).

circumstances of each source and that "[s]ome variation is to be expected because SIP actions are highly fact-dependent."[89] The EPA also cites several cases holding that states have broad authority to weigh the statutory factors and to pick appropriate emission controls.[90]

The EPA has the better argument on this point. Louisiana has the authority to select the appropriate BART emission control. The fact that a scrubber more closely aligns with the EPA's prior BART determinations did not preclude Louisiana from choosing low-sulfur coal instead. The guideline that Environmental Petitioners cite does not require that BART determinations align with the EPA's prior BART determinations:

> You should provide documentation of any unusual circumstances that exist for the source that would lead to cost-effectiveness estimates that would exceed that for recent retrofits. This is especially important in cases where recent retrofits have cost-effectiveness values that are within what has been considered a reasonable range, but your analysis concludes that costs for the source being analyzed are not considered reasonable. (A reasonable range would be a range that is consistent with the range of cost effectiveness values used in other similar permit decisions over a period of time.)[91]

Although the parties do not explain how low-sulfur coal compares to the EPA's prior BART determinations, the record is devoid of any "unusual

---

[89] 82 Fed. Reg. at 60,534–60,535.

[90] *See Oklahoma v. EPA*, 723 F.3d 1201, 1209 (10th Cir. 2013) ("[S]tates ha[ve] broad authority to weigh the statutory factors and make BART determinations."); *see also Ariz. ex rel. Darwin v. EPA*, 852 F.3d 1148, 1161 (9th Cir. 2017).

[91] BART Guidelines, 40 C.F.R. part 51, App. Y § IV.D.4.f.

circumstances" indicating that low-sulfur coal's cost-effectiveness estimates are out of line with prior BART determinations. Therefore, the guideline addressing "similar permit decisions over a period of time" does not apply here.

iii. Weighing the Statutory Factors and Compliance with the BART Guidelines

In making a BART determination, a state "shall take into consideration" five factors: (1) the costs of compliance, (2) the energy and nonair 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 that may reasonably be anticipated to result from the use of such technology.[92] States have discretion as to "the weight and significance" of each factor, as well as the appropriate emission control that qualifies as BART at a given source.[93]

In addition to considering those statutory factors, for powerplants with generating capacities greater than 750 megawatts, like Nelson and Brame, the state's BART determination "shall be determined pursuant to [the BART] guidelines."[94] The BART guidelines state:

> From the alternatives you evaluated . . . we recommend you develop a chart (or charts) displaying for each of the alternatives:
>
> (1) Expected emission rate . . . ;

---

[92] 42 U.S.C. § 7491(g)(2).

[93] BART Rule, 70 Fed. Reg. at 39,123; *see Oklahoma*, 723 F.3d at 1209 ("[S]tates ha[ve] broad authority to weigh the statutory factors and make BART determinations.").

[94] 42 U.S.C. § 7491 (b)(2)(B); *see* 40 C.F.R. § 51.308(e)(1)(ii)(B). In its brief, the EPA concedes that the BART Guidelines are mandatory at this step.

> (2) Emissions performance level . . . ;
> (3) Expected emissions reductions . . . ;
> (4) Costs of compliance—total annualized costs ($), cost effectiveness ($/ton), and incremental cost effectiveness ($/ton), and/or any other cost-effectiveness measures (such as $/deciview);
> (5) Energy impacts;
> (6) Non-air quality environmental impacts; and
> (7) Modeled visibility impacts.[95]
>
> . . . .
>
> You have discretion to determine the order in which you should evaluate control options for BART. Whatever the order in which you choose to evaluate options, you should always (1) display the options evaluated; (2) identify the average and incremental costs of each option; (3) consider the energy and non-air quality environmental impacts of each option; (4) consider the remaining useful life; and (5) consider the modeled visibility impacts. You should provide a justification for adopting the technology that you select as the "best" level of control, including an explanation of the CAA factors that led you to choose that option over other control levels.[96]

The LDEQ's explanation of its determination that low-sulfur coal was BART for Nelson states:

> In the Entergy BART five-factor SO_2 analysis for the Unit 6 Boiler, a number of emission reduction controls were reviewed. The reviewed controls included the use of a lower sulfur coal, DSI, enhanced DSI, dry flue-gas desulfurization (FGD) and wet FGD. LDEQ has reviewed and weighed the five factors carefully; after a review of the information that Entergy and EPA provided, LDEQ

---

[95] BART Guidelines, 40 C.F.R. part 51, App. Y § IV.E.1 (emphasis added).
[96] *Id.* (emphasis added).

> has concluded that the appropriate BART for this facility is to establish an emission limit of .6 lbs/MMBtu based on a 30 day rolling average as defined in the AOC (see Appendix D). While additional visibility benefits may be available through the use of FGD, the lower sulfur coal option results in visibility benefits at a lower annual cost. Along with the extra cost, FGD use results in additional waste spent due to spent reagent and has some power demands to run the equipment. LDEQ believes, at present, that the use of lower sulfur coal presents the appropriate SO_2 control based on consideration of economics, energy impacts, non-air quality environmental impacts, and impacts to visibility.

In the 2017 Final Rule, the EPA approved this explanation as compliant with the Clean Air Act. The Final Rule relied on the language in the revised SIP, which states that "LDEQ has weighed the five factors carefully" and reached its decision "after a review of both Entergy's and the EPA's information."[97] Referring to this statement, the Final Rule concludes:

> This indicates that the State reviewed the information it received from both Entergy and the EPA, and thus had adequate information upon which to base its determination. After reviewing the relevant information contained in LDEQ's SIP, we determined that the State's SIP meets the requirements of the Act and the applicable regulations and guidance.[98]

Environmental Petitioners challenge the EPA's approval of the LDEQ's explanation of its BART determination. Those Petitioners contend that, because the LDEQ failed to discuss how it weighed each statutory factor, it did not comply with the BART guidelines and therefore did not satisfy its

---

[97] Final Rule, 82 Fed. Reg. at 60,532.
[98] *Id.*

obligations under the Clean Air Act. They point to the LDEQ's failure to evaluate (1) the existing pollution controls at Nelson, (2) the remaining useful life of Nelson, (3) the cost-effectiveness of pollution controls, and (4) the visibility benefits of pollution controls.

In response, the EPA concedes that Louisiana "could have expanded its discussion of its decisionmaking process." The EPA nonetheless maintains that it "determined that the path Louisiana took in weighing the five factors and reaching its BART determination could be reasonably discerned from the record before it." The EPA's and Industry Respondents' arguments focus on the fact that Entergy's and the EPA's analyses—which were included as appendices to the SIP revisions—did the appropriate analysis and considered all the factors.

Environmental Petitioners are correct that the LDEQ's explanation did not discuss the Clean Air Act's factors of (1) the existing controls at Nelson, (2) Nelson's remaining useful life, or (3) the BART guidelines factor of "cost-effectiveness."

On the "existing control" factor, the LDEQ's failure to discuss the existing controls at Nelson highlights a factual dispute between the parties. Environmental Petitioners maintain that low-sulfur coal is already in use at Nelson and has been since 2015. The EPA's June 2017 technical support document states that "beginning in the Spring of 2015, Entergy began purchasing coals with lower sulfur contents that occur in a tighter range in comparison to those purchased in the past."

Regarding the "remaining useful life" factor, the LDEQ's explanation of its BART determination does not mention or address that factor. Neither does the LDEQ's explanation mention "cost-effectiveness." The BART guidelines require states to consider the cost-effectiveness of potential control options.[99] Those guidelines define that term as follows:

> Cost-effectiveness, in general, is a criterion used to assess the potential for achieving an objective in the most economical way. For purposes of air pollutant analysis, "effectiveness" is measured in terms of annualized control costs. We recommend two types of cost-effectiveness calculations - average cost effectiveness, and incremental cost effectiveness.
> . . .
> Average cost effectiveness means the total annualized costs of control divided by annual emissions reductions (the difference between baseline annual emissions and the estimate of emissions after controls), using the following formula . . . .[100]

Louisiana's explanation mentions "annual cost" but does not mention "cost-effectiveness." As the BART guidelines explain, annual cost and cost-effectiveness are different: Annual cost is the annualized capital cost for a control; cost-effectiveness is the annual cost of a control *divided by* the annual emissions reductions of that control. In general, the least effective control technology will almost always have the lowest absolute (or annual) cost. In contrast, the most effective control technology will often have the highest

---

[99] *See* BART Guidelines, 40 C.F.R. part 51, App. Y § IV.D.4.b; *see also id.* § IV.E.1.
[100] *Id.* § IV.D.4.(b)–(c).

absolute (or annual) cost.[101] Based on this distinction, the BART guidelines impose cost-effectiveness, *i.e.*, the cost per ton of pollution removed—instead of annual cost—as the relevant consideration.

* * *

The Clean Air Act requires states to consider five statutory factors when making a BART determination. The EPA then must approve or disapprove that determination. Our role is to decide whether the EPA was arbitrary and capricious in approving Louisiana's SIP.

The LDEQ's key statements on this issue are that (1) it "reviewed and weighed the five factors carefully," (2) it reached its decision after "review[ing] . . . the information that Entergy and EPA provided," and (3) the "lower sulfur coal option results in visibility benefits at a lower annual cost."

The LDEQ's short explanation is lacking in several respects. It did not (1) provide numbers supporting its conclusions, (2) address or reconcile the EPA's criticism of Entergy's analyses, (3) compare the costs or benefits of each control option, or (4) discuss Nelson's existing controls, remaining useful life, or the cost-efficiency of the potential control options. The EPA's and Industry Respondents' primary contention is that because *Entergy* and *the EPA* did the appropriate analysis and weighed the statutory factors—and the LDEQ said it reviewed those analyses and included them as appendices—the LDEQ appropriately weighed the factors. The parties' briefing on how Louisiana weighed the factors focuses almost entirely on the analyses that the EPA and

[101] *See* Proposed Rule, 82 Fed. Reg. at 32,298–32,299.

Entergy submitted. None of the briefs, however, cite any place in the record in which the LDEQ discusses all five statutory factors.

Moreover, the parties rely on the LDEQ's statement that it considered the analyses that Entergy and the EPA provided before making its determination, as well as the fact that those analyses were included as appendices to the SIP revisions. But the LDEQ expressly disavowed "agree[ing] with," "adopt[ing]," or "incorporat[ing]" any of Entergy's or the EPA's calculations in its revised SIP:

> LDEQ submits these comments in response to certain statements in the preamble [of the 2017 Proposed Rule] that matters were "adopted and incorporated" into the LDEQ SIP revision. LDEQ places all documents and information submitted to it in connection with the development of the SIP in an administrative record . . . . However, *placement in the record does not indicate that LDEQ agrees with or has "adopted" positions, conclusions, or decisions, nor has "incorporated" them into the SIP revision submitted to the EPA*. The final SIP document and any enforceable conditions included therein encompass the final decision by LDEQ.

Based on this express disavowal, we cannot conclude that the analyses Entergy and the EPA submitted to the LDEQ were incorporated into the terms of Louisiana's revised SIP.

And, in contrast to the BART guidelines' detailed instructions for making a BART determination, the LDEQ's explanation of its BART determination for Nelson provides hardly any details. The guidelines recommend "always" identifying the average and incremental costs of each option, but the LDEQ provided neither specific numbers supporting that decision nor a comparison

of the costs and estimated visibility benefits for each control option. Unlike the detailed analyses that the EPA and Entergy submitted—which did provide cost and pollution-control estimates for each control option—the LDEQ simply stated that low-sulfur coal had an unspecified "lower annual cost."

Despite these shortcomings, we conclude that the EPA's approval of Louisiana's BART determination was not arbitrary and capricious.[102] The standard of review is narrow and highly deferential. Our review is limited to "whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment."[103]

There was a plethora of record evidence—the analyses that Entergy submitted to the LDEQ—to support the BART determination. There was also considerable record evidence—the analyses that the EPA submitted—undermining that determination. The LDEQ stated that (1) it considered both of these analyses when it made its BART determination and (2) it "reviewed and weighed the five factors carefully." Although the LDEQ could have offered a more thorough explanation of its reasoning, its assurance that it weighed the five factors carefully indicates that its decision "rest[ed] 'on a consideration of the relevant factors'"[104] and that the agency did not "entirely fail[] to consider

---

[102] We note that this would be a much easier case if the LDEQ had (a) explained the weight it afforded to any of the five factors, (b) expressly compared the costs of each option, or (c) simply reproduced Entergy's charts and numbers in the revised SIP.

[103] *10 Ring Precision, Inc.*, 722 F.3d at 723 (quoting *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43).

[104] *Michigan*, 135 S. Ct. at 2706 (quoting *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43).

an important aspect of the problem."[105] The EPA's approval of that determination was not arbitrary and capricious.[106]

2. Louisiana's Long-Term Strategy and Reasonable Progress Goals

The second part of Environmental Petitioners' challenge is to the EPA's approval of Louisiana's long-term strategy and reasonable-progress goals. The Clean Air Act requires states to adopt long-term strategies "for making reasonable progress" toward the national visibility goal.[107] Louisiana's 2008 SIP included reasonable progress goals and a long-term strategy, but the 2017 SIP revisions did not.

Environmental Petitioners contend that the 2017 SIP revisions did not comply with the Act because they did not address Louisiana's long-term

---

[105] *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43.

[106] Environmental Petitioners cite no authority, and we are aware of no authority, demanding that Louisiana prefer the EPA's analyses to those provided by industry. Indeed, in a highly technical area such as cost-effectiveness of various control options, a private firm may well provide more accurate data inputs regarding a specific proposal at the specific plant it operates. To take one example, the EPA and Entergy disagreed about the cost-effectiveness of low-sulfur coal. Entergy calculated it to cost $597 per ton of pollutant removed while the EPA calculated $2,957 per ton. That discrepancy was based on Entergy's reliance on proprietary data, its contingency value, and its consideration of costs that the EPA does not allow in its control cost manual. *See* 82 Fed. Reg. at 32,298. The technical analyses used different approaches and presented different strengths and weaknesses. Louisiana scrutinized Entergy's analysis and chose to embrace it. It was free to do so. A state has "wide discretion" in formulating its SIP and "may select whatever mix of control devices it desires" so long as national standards are met. *Union Elec. Co. v. EPA*, 427 U.S. 246, 250, 266 (1976). That is why Congress tied the EPA's hands during SIP approval: "the Administrator *shall approve* such submittal as a whole if it meets all of the applicable requirements of this chapter." 42 U.S.C. § 7410(k)(3) (emphasis added).

[107] 42 U.S.C. § 7491(b)(2)(A)–(B).

strategy, set out reasonable progress goals, or impose emission controls at any additional "reasonable progress sources," such as the Dolet Hills powerplant. Dolet Hills, which is the largest single source of SO_2 emissions in Louisiana, is a non-BART-eligible EGU powerplant that could be subject to emissions controls as a reasonable progress source.

The EPA points to its actions in 2012 on this issue, including a proposed rule and a final rule ("the 2012 Proposed Rule" and "the 2012 Final Rule"), which included a "partial disapproval" and "partial limited approval" of Louisiana's 2008 SIP.[108] It insists that Louisiana's reasonable progress goals and long-term-strategy obligations were approved as part of the 2012 Final Rule's "partial limited approval." According to the EPA, the 2012 resolution of this issue time-bars the Environmental Petitioners challenge.

The EPA is correct. Louisiana was not required to re-do its reasonable progress analysis or re-evaluate the reasonable progress sources because that part of its 2008 SIP was approved and made effective by the 2012 Final Rule. The 2012 Final Rule "finaliz[ed] a partial limited approval and a partial disapproval of a revision to the Louisiana SIP submitted . . . on June 13, 2008."[109]

We resolve this issue based on the distinction between "partial" and "limited" approvals. A "limited approval" is used when some parts of a SIP do not meet the Clean Air Act's requirements, but the EPA concludes that "the

---

[108] 77 Fed. Reg. 11,839, 11,840 (Feb. 28, 2012) ("2012 Proposed Rule"); 2012 Final Rule, 77 Fed. Reg. at 39,425.

[109] 2012 Final Rule, 77 Fed. Reg. at 39,426.

submittal as a whole" has a "strengthening effect" on the SIP.[110] In a "limited approval," the provisions of a SIP that are "limitedly approved," including any provisions that do not comply with the Act, are incorporated into the SIP and go into effect. In contrast, in a "partial approval/disapproval," the partially approved parts of a submittal go into effect, and the disapproved parts do not.

The 2012 Final Rule contained a "partial limited approval" and a "partial disapproval." This sentence from the Final Rule addresses the parts of the SIP that were included in the "limited approval":

> EPA grants a partial limited approval of the LA RH SIP submittal for meeting the requirements of: 51.308(d), for the core requirements for regional haze SIPs, except for the requirements of 51.308(d)(3); 51.308(f), for the commitment to submit comprehensive periodic revisions of regional haze SIPs; 51.308(g), for the commitment to submit periodic reports describing progress towards the reasonable progress goals (RPGs); 51.308(h), for the commitment to conduct periodic determinations of the adequacy of the existing regional haze SIP; and 51.308(i), for coordination with state and Federal Land Managers.[111]

All provisions of the 2008 SIP referenced in this sentence were "limitedly approved," including the provisions after "except," which did not meet the Act's requirements. Through this "partial limited approval," the EPA concluded that all of the provisions referenced in that sentence would take effect because the submittal "as a whole . . . strengthen[ed] the Louisiana SIP" and the EPA did

---

[110] Processing of State Implementation Plan Revisions at 2–3, the EPA Memorandum from John Calcagni (July 9, 1992), https://www.epa.gov/sites/production/files/2015-07/documents/procsip.pdf.

[111] 2012 Final Rule, 77 Fed. Reg. at 39,426.

not specifically "address[] [them in the] partial disapproval."[112] Those referenced provisions therefore became effective when the EPA issued the 2012 Final Rule.

The following sentence in the 2012 Final Rule addresses the provisions of the SIP that were "partially disapproved":

> However, . . . the EPA is also partially disapproving the LA RH SIP submittal because it does not include fully approvable measures for meeting the requirements of 40 CFR 51.308(d)(3), long-term strategy for regional haze as it relies on deficient non-EGU BART analyses; and 51.308(e), BART requirements for regional haze visibility impairment with respect to emissions of visibility impairing pollutants from four non-EGUs.[113]

Because the provisions referenced in this sentence were "partially disapproved," they did not go into effect when the EPA issued the 2012 Final Rule. So, after the EPA issued the 2012 Final Rule, Louisiana was required to re-do only the parts of its SIP referenced in that partial disapproval. Those were (1) the parts of 2008 SIP's long-term strategy that "relie[d] on deficient non-EGU BART analyses" and (2) the parts of the 2008 SIP's long-term strategy that involved BART requirements "from four non-EGUs." These were the only two provisions that did not go into effect and needed to be remedied by Louisiana.

Other than these two deficiencies, the 2012 Final Rule "result[ed] in approval of all of the remaining elements of Louisiana's [2008 Regional Haze]

---

[112] *Id.* at 39,425.
[113] *Id.* at 39,426.

SIP."[114] That included Louisiana's reasonable progress analysis and long-term strategy.

Environmental Petitioners focus on one of the EPA's responses to a comment. In the first part of that response, the EPA elaborates on the partial disapproval and identifies the two deficiencies that Louisiana needed to address in its SIP revisions.

> [1] Louisiana must submit and the EPA must approve a revised SIP submittal to address . . . BART for EGUs to cure the deficiencies in the SIP resulting from the remand of CAIR. . . . [2] Louisiana must also submit revisions sufficient to cure the deficiencies in the non-EGU BART determinations.[115]

Environmental Petitioners rely on a different sentence in that response to contend that Louisiana was required to re-do its evaluation of the non-BART powerplants that qualify as reasonable progress sources. They point to this sentence in the EPA's response: "Louisiana must consider whether EGUs previously covered by the CAIR, whether subject to BART or not, should be controlled to ensure reasonable progress to meet the State's long-term strategies."[116] However, in context, that sentence simply restates Louisiana's overall obligations under the Clean Air Act. The response reads in full as follows:

> We have evaluated the LA RH SIP submittal as a whole and at this time we are taking final action on all elements of the LA RH SIP submittal that were not addressed in the national Better-

---

[114] *Id.* at 39,426.
[115] *Id.* at 39,427.
[116] *Id.*

> than-BART rule. *Louisiana must consider whether EGUs previously covered by the CAIR, whether subject to BART or not, should be controlled to ensure reasonable progress to meet the State's long-term strategies.* However, insofar as Louisiana's LTS and RPGs are affected by the remand of CAIR, those issues are addressed in the national Better-than-BART rulemaking and are outside the scope of this action on the remainder of the LA RH SIP. Also, the CAA expressly provides authority to the EPA to partially approve and partially disapprove a SIP revision. 42 U.S.C. 7410(k)(3). The EPA has adopted the partial approval approach numerous times in SIP actions across the nation over the last twenty years. Partial approval and partial disapproval is appropriate here because the EPA has determined that a portion of Louisiana's RH SIP meets regional haze requirements and a portion of it does not. . . . Therefore, *Louisiana must submit and the EPA must approve* a revised SIP submittal to address both NO_X and SO_2 BART for EGUs to cure the deficiencies in the SIP resulting from the remand of CAIR. Louisiana may elect to rely on the Transport Rule for NO_X BART for EGUs in that submittal. However, because Louisiana is not covered under the Transport Rule for SO_2, *the State must submit* source-specific SO_2 BART evaluations for the subject-to-BART EGUs in Louisiana. As discussed further in our responses to several comments below, *Louisiana must also submit* revisions sufficient to cure the deficiencies in the non-EGU BART determinations.[117]

This context, including the lack of an express directive to "submit" a new long-term strategy or to impose controls at additional reasonable progress sources, confirms that the 2012 Final Rule approved Louisiana's reasonable progress goals and selection of reasonable progress sources. Additionally, the

[117] 2012 Final Rule, 77 Fed. Reg. at 39,427 (emphasis added).

2012 Final Rule does not mention the single source Louisiana identified as a reasonable progress source, Big Cajun II. In three separate parts of the 2012 Final Rule, the EPA identifies the partially disapproved parts and directs Louisiana to address only those provisions.[118] If the EPA had intended to disapprove Louisiana's reasonable progress goals, long-term strategy, or identification of reasonable progress sources in this response, it would have included those provisions of the 2008 SIP in the "partial disapproval" sentence.

Because Louisiana's reasonable progress goals, long-term strategy, and evaluation of reasonable progress sources were included in the 2012 Final Rule's "partial limited approval" of Louisiana's 2008 SIP, we reject Environmental Petitioners' challenge on this issue.

ii. Notice and Comment

Environmental Petitioners alternatively claim that the EPA violated the APA's notice and comment requirements.

Under the APA, "notice of proposed rulemaking shall be published in the Federal Register," and "shall be accompanied by a statement of its basis and purpose. . . . The statement of basis and purpose shall include a summary of . . . the major legal interpretations and policy considerations underlying the proposed rule."[119]

Environmental Petitioners contend that the EPA did not include its reasoning addressing Louisiana's reasonable progress analysis in the July

---

[118] *Id.* at 39,426–39,427, 39,435.
[119] 42 U.S.C. § 7607(d)(3).

2017 Proposed Rule. They assert that the EPA's inclusion of additional reasoning on that issue in the December 2017 Final Rule amounted to a "major legal interpretation."

In the 2017 Proposed Rule, the EPA did not discuss Louisiana's reasonable progress analysis, long-term strategy, or evaluation of reasonable progress sources. Environmental Petitioners commented on the 2017 Proposed Rule's failure to address Louisiana's reasonable progress analysis and long-term strategy, and the EPA responded to that comment in the 2017 Final Rule. In its response to Environmental Petitioners' comments on the 2017 Final Rule, the EPA directed Environmental Petitioners to the 2012 Final Rule. The agency explained that it had already approved Louisiana's reasonable progress analysis, long-term strategy, and evaluation of reasonable progress sources.[120]

We conclude that this explanation is not a major legal interpretation or policy consideration underlying the 2017 Proposed Rule that required additional notice and comment. Rather, it is merely a response to a comment that pointed the Environmental Petitioners to the agency's earlier resolution of the issue in the 2012 Final Rule.

* * *

In short, the EPA's 2012 Final Rule, which "limitedly approved" most of Louisiana's 2008 SIP, did not require Louisiana to re-do its reasonable progress goals or its long-term strategy in its 2017 SIP revisions. Neither did

---

[120] *See* 82 Fed. Reg. at 60,539–60,540.

the EPA's response to Environmental Petitioners' 2017 comment "reopen" the issue[121] or violate the APA's notice and comment provision.

Environmental Petitioners' petition is denied.

B. The Industry Petitioners' Petition

In contrast to Environmental Petitioners' challenge to Louisiana's selection of emission controls to satisfy BART (step three of the BART analysis), Industry Petitioners challenge Louisiana's determinations that Nelson and Brame are "subject to BART" at all (step two of the BART analysis). Industry Petitioners object to the EPA's approval of Louisiana's "subject to BART" determinations, which relied on the "CALPUFF" model. They also challenge the EPA's reliance on its own "CAMx" modeling (on which Louisiana did not rely) to approve Louisiana's SIP.

The Clean Air Act states that a source is "subject to BART" if it "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility" in a Class I area.[122] Under the BART guidelines, a 1.0 deciview change from an individual source "causes" visibility impairment, whereas a 0.5 deciview change from an individual source "contributes" to visibility impairment.[123] Under some circumstances, states

---

[121] *See West Virginia v. EPA*, 362 F.3d 861, 872 (D.C. Cir. 2004) ("'[W]hether an agency has in fact reopened an issue, explicitly or implicitly,' depends on the 'entire context of the rulemaking including all relevant proposals and reactions of the agency.'" (citation omitted)).

[122] 42 U.S.C. § 7491(b)(2)(A).

[123] BART Rule, 70 Fed. Reg. at 39,120.

may set a lower threshold for sources that "contribute" to visibility impairment.[124]

In the BART guidelines, the EPA adopted CALPUFF as the preferred model for making "subject to BART" determinations.[125] The EPA recently removed CALPUFF as a "preferred" model for other air-quality modeling applications under the Clean Air Act, but retained CALPUFF as a preferred model for making "subject-to-BART" determinations.[126]

The LDEQ reviewed CALPUFF and CAMx modeling results that Entergy, Cleco, and the EPA submitted to the department. In the LDEQ's February and June 2017 SIP revisions, it determined that Nelson and two units at Brame were "subject to BART." Louisiana relied on CALPUFF modeling to determine that Nelson and Brame exceeded the 0.5 deciview threshold. The LDEQ acknowledged, but did not rely on, the CAMx modeling that the parties submitted. The LDEQ stated that it did "not have the expertise with which to review [the CAMx] model runs." And, in its amicus brief, the LDEQ states that it still does not have the technical expertise to review CAMx modeling.

---

[124] *Id.* at 39,120–39,121.

[125] BART Guidelines, 40 C.F.R. part 51, App. Y, III.A.3. *See* 69 Fed. Reg. 25,184, 25,194 (May 5, 2004) ("We are proposing that a CALPUFF assessment of an individual source be used as the preferred approach for determining whether a BART-eligible source may be exempt from BART.").

[126] 82 Fed. Reg. 5,182, 5,196 (Jan. 17, 2017) ("[T]his final action does not affect the EPA's recommendation that states use CALPUFF to determine the applicability and level of best available retrofit technology in regional haze implementation plans.").

In a May 2017 proposed rule, the EPA proposed to approve the "subject to BART" determination for Brame.[127] In the July 2017 Proposed Rule, it proposed to approve Louisiana's "subject to BART" and BART determinations.[128] Industry Petitioners submitted comments on those proposed rules (1) objecting to the LDEQ's reliance on CALPUFF and (2) criticizing the EPA's reliance on its own CAMx modeling. In the instant 2017 Final Rule, the EPA responded to those comments and approved the LDEQ's determination that Nelson and Brame have visibility effects greater than 0.5 deciviews at Class I areas and are therefore "subject to BART."[129]

Here, Industry Petitioners contend that the EPA's approval of Louisiana's "subject to BART" determinations at Nelson and Brame was arbitrary and capricious. The EPA and Environmental Respondents respond that we lack jurisdiction to consider Industry Petitioners' challenge. They also insist that (1) Louisiana permissibly relied on the CALPUFF model in making its BART determination and (2) the EPA was not arbitrary and capricious in considering its own CAMx modeling.

As we shall explain in greater detail, we conclude that (1) we have jurisdiction and (2) the EPA's approval of Louisiana's reliance on the CALPUFF model was not arbitrary and capricious.

---

[127] 82 Fed. Reg. 22,936, 22,941 (May 19, 2017).

[128] 82 Fed. Reg. 32,294, 32,296 (July 13, 2017).

[129] Final Rule, 82 Fed. Reg. at 60,520; *id.* at 60,525–60,526 (response to comments on modeling).

1. Jurisdiction

a. Environmental Respondents' Jurisdictional Arguments

Environmental Respondents contend that parts of Industry Petitioners' challenge address the 2005 BART guidelines rather than the 2017 Final Rule. Environmental Respondents assert that this court lacks jurisdiction over the parts of the Industry Petitioners' claim that address CALPUFF's use of 24-hour actual emissions and natural background conditions. According to Environmental Respondents, these are complaints about the policies underlying the 2005 BART guidelines, policies to which the EPA responded when it promulgated those guidelines. According to Environmental Respondents, these concerns should have been raised (1) in the D.C. Circuit and (2) within 60 days after those guidelines were published in the Federal Register.[130]

Environmental Respondents liken this case to *American Road & Transportation Builders Ass'n v. EPA*, 705 F.3d 453 (D.C. Cir. 2013), in which the D.C. Circuit considered a challenge to the EPA's approval of a state's SIP in 2011. In that case, the EPA's approval of a SIP relied on a rule that the agency had issued in 1994.[131] The petitioner did not claim that the state had *misapplied* the EPA's rule; rather, it contended that the policies announced in the 1994 rule were unlawful.[132] Because that challenge was to the 1994 rule—rather than to the 2011 SIP approval—the D.C. Circuit concluded that it lacked

---

[130] 42 U.S.C. § 7607(b)(1).
[131] 705 F.3d at 454–55.
[132] *Id.* at 456.

jurisdiction because the challenge was time-barred under the Clean Air Act's 60-day period for filing petitions for review.[133]

Environmental Respondents maintain that Industry Petitioners' claims objecting to CALPUFF's assumptions are similarly time-barred. They note that Industry Petitioners have an alternative route to recourse under the Clean Air Act's provision that provides for reconsideration of a rule if a petitioner can demonstrate that it was impracticable to raise an issue during the public comment period.[134]

The jurisdictional issue here is similar to the one that the D.C. Circuit considered in *American Road & Transportation Builders*. That court held that the petitioner's challenge was to the underlying the EPA rule rather than to the EPA's later approval of a SIP based on the standards set out in that underlying rule. The D.C. Circuit dismissed that challenge to a SIP approval because it was "duplicative of arguments the agency had already rejected" many years earlier.[135] The court explained that "[t]here would be no pressure to challenge regulations within the 60-day period after their promulgation if any petitioner could simply wait to test the substance of those regulations once the EPA applies them, for example, in an approval of a state SIP revision—as [the petitioner] has attempted to do here."[136]

---

[133] *Id.* at 458.
[134] *See* 42 U.S.C. § 7607(d)(7)(B).
[135] *Am. Road & Transportation Builders Ass'n*, 705 F.3d at 456.
[136] *Id.* at 458.

Similarly, in the instant petition for review, Industry Petitioners challenge the CALPUFF model based on its use of 24-hour actual emissions and natural background conditions. The EPA expressly rejected these arguments when it adopted CALPUFF as the preferred model at the time in 2005 that it issued the BART guidelines.[137]

But, unlike *American Road & Transportation Builders*, the BART guidelines at issue here recommend—but do not require—that states use CALPUFF.[138] Louisiana could have picked a different model. Because Industry Petitioners challenge Louisiana's choice to use CALPUFF modeling instead of a different model, Industry Petitioners' challenge is properly viewed as a challenge to the *application of* the BART guidelines rather than a challenge to the those guidelines themselves. Louisiana had the option to pick a different model, so the parts of Industry Petitioners' challenge addressing CALPUFF's flaws are not barred by the Clean Air Act's 60-day statute of limitations.

b. The EPA's Jurisdictional Arguments

The EPA maintains that, after actively participating in Louisiana's SIP-development process, the Industry Petitioners should have sought judicial

---

[137] BART Guidelines, 40 C.F.R. part 51, App. Y III.A.3 ("We recommend that States use the 24 hour average actual emission rate from the highest emitting day of the meteorological period modeled.").

[138] BART Rule, 70 Fed. Reg. at 39,123 ("The use of other models and techniques to estimate if a source causes or contributes to visibility impairment may be considered by the State, and the BART guidelines preserve a State's ability to use other models.").

review of Louisiana's modeling decisions in state court based on a Louisiana statute that allows for review of state rules and regulations.[139]

This argument is unavailing. Industry Petitioners challenge *the EPA's approval of* Louisiana's SIP, not the underlying state action. Although Industry Petitioners might also have been able to challenge Louisiana's process for developing its SIP in state court, the Clean Air Act expressly provides Industry Petitioners the opportunity to petition this court for review of the EPA's actions.[140]

2. CALPUFF Modeling

"A reviewing court must be 'most deferential' to the agency where, as here, its decision is based upon its evaluation of complex scientific data within its technical expertise."[141] And "because 'a model is meant to simplify reality in order to make it tractable,' it is no criticism of a model 'that it does not fit every application perfectly.'"[142]

---

[139] *See* La. R.S. § 49:963(a)(1)).

[140] 42 U.S.C. § 7607(b)(1).

[141] *BCCA Appeal Grp. v. EPA*, 355 F.3d 817, 824 (5th Cir. 2003) (quoting *Baltimore Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 103 (1983)). The D.C. Circuit, setting out a similar standard, has described this as "extreme deference":

> [W]e will "give an extreme degree of deference to the agency when it is evaluating scientific data within its technical expertise." . . . Furthermore, "we must defer to the agency's decision on how to balance the cost and complexity of a more elaborate model against the oversimplification of a simpler model." . . . We will "reverse only if the model is so oversimplified that the agency's conclusions from it are unreasonable."

West Virginia, 362 F.3d at 871 (citations omitted).

[142] *Ass'n of Battery Recyclers, Inc. v. EPA*, 308 F.3d 1047, 1063 (D.C. Cir. 2000) (citation omitted).

Despite the significant deference we afford to decisions involving analysis of scientific data within an agency's technical expertise, Industry Petitioners maintain that the EPA's approval of Louisiana's CALPUFF modeling was arbitrary and capricious. They first point to CALPUFF's shortcomings as a model, including that it (1) is unreliable at predicting visibility impacts at locations farther than 300 km from an emission source, (2) tends to overestimate visibility impacts, (3) uses "overly simplistic" assumptions, and (4) has a high margin of error. They next contend that the EPA's reliance on its own CAMx modeling was improper because the Clean Air Act does not give the EPA authority to cure a deficient SIP. Finally, even assuming that the EPA could rely on its own CAMx modeling, Industry Petitioners take issue with technical flaws in the EPA's CAMx modeling, including that model's: (1) use of "24-hour maximum emission rates" instead of "actual emission rates," (2) reliance on "absolute maximum modeled concentrations" instead of "relative response factors," and (3) deficient performance on a "model performance evaluation."

i. Distance Limitations

Industry Petitioners contend that the CALPUFF model used at Nelson and Brame exceeded that model's distance limitations and was inconsistent with the EPA's prior determination that CALPUFF is unreliable when assessing visibility impacts from sources more than 300 km from a Class I

area.[143] Nelson is 425 km from Breton and 460 km from Caney Creek; Brame is 422 km from Breton and 352 km from Caney Creek.

Industry Petitioners cite a 1998 statement from the EPA's Interagency Workgroup on Air Quality Modeling ("IWAQM") that "there are serious conceptual concerns with the use of puff dispersion [models like CALPUFF] for very long-range transport (300 km and beyond)." In a 2003 final rule, IWAQM concluded that the "CALPUFF dispersion model . . . performed in a reasonable manner . . . so long as the transport distance was limited to less than 300km."[144] According to Industry Petitioners, because CALPUFF does not perform "in a *reasonable* manner" at distances greater than 300 km, CALPUFF may not be used to determine that sources at such distances may "*reasonably* be anticipated" to cause or contribute to visibility impairment.

Industry Petitioners next point to several regional haze actions in which the EPA has stated that it has concerns about using CALPUFF at distances greater than 300 km. They rely on the Arkansas Regional Haze Federal Implementation Plan, the New Mexico Regional Haze SIP, and the EPA's statement defending its reliance on CAMx for Texas's and Oklahoma's regional haze SIPs.[145]

---

[143] Industry Petitioners raise the same concerns they raised in their comments on the Proposed Rule.

[144] 68 Fed. Reg. 18,458 (Apr. 15, 2003).

[145] Arkansas Regional Haze Federal Implementation Plan, 81 Fed. Reg. 66,332, 66,394 (Sept. 27, 2016) ("[T]here are concerns in using CALPUFF for modeling impacts at distances much greater than 300 km from the source . . . ."); New Mexico Regional Haze SIP, 79 Fed. Reg. 60,978, 60,983 (Oct. 9, 2014) ("CALPUFF results are less reliable at distances greater than 300 km.").

Industry Petitioners describe these statements and criticisms of CALPUFF as indicative of the EPA's failure to follow its own guidance and past practice. They contend that the Final Rule does not provide a rational explanation for this departure. And, although the EPA has stated that CALPUFF is permissible at sources farther than 300 km "with some additional considerations" such as stack height or size of emissions, Industry Petitioners maintain that the EPA did not address these "additional considerations" at Nelson and Brame.

The EPA responds that Industry Petitioners overstate and oversimplify the BART guidelines and the EPA's prior actions. The EPA insists, contrary to Industry Petitioners' assertions, that it has never stated that: (1) CALPUFF should not be used to model visibility impacts more than 300 km from the emissions source, (2) CALPUFF is unable to reliably predict visibility impacts at distances greater than 300 km, or (3) CALPUFF is "unreliable" and does not perform in a reasonable manner. The EPA also contends that Industry Petitioners' reliance on statements from IWAQM is misplaced, arguing that IWAQM's statements (1) set out guidelines for air quality models under the Clean Air Act for purposes other than regional haze analyses and (2) were issued in 1998 and 2003, before the EPA issued the BART guidelines in 2005.

The EPA explains that CALPUFF has been used at distances greater than 300 km, citing South Dakota's CALPUFF modeling for sources farther than 400 km, and Nebraska's CALPUFF modeling for sources between 300 and

600 km.[146] In the EPA's "Modeling Response to Comments" document, it stated that "the EPA and [Federal Land Managers] have utilized CALPUFF results in a number of different situations when the range was between 300–450 km or more."[147]

The EPA also points out that historically, "the use of CALPUFF was generally acceptable at 300 km or greater for larger emissions sources with elevated stacks." In its Modeling Response to Comments document, the EPA expressly stated that Nelson and Brame are "larger emissions sources with elevated stacks." Nelson has three BART-eligible electric generating units that have a combined 1200 megawatts of production capacity,[148] and Brame has two BART-eligible electric generating units with a combined output of 963 megawatts.[149] The EPA's CALPUFF analysis estimated that both Nelson and Brame exceeded the 1.0 deciview threshold for "causing" visibility impairment. These high visibility numbers for Nelson and Brame align with the EPA's statement in the BART Rule that it anticipated "that most of these plants are predicted to have much higher maximum impacts" than 1.0 deciviews.[150]

Finally, the EPA maintains that its own CAMx modeling provided additional support for the CALPUFF model's results. The EPA's CAMx

---

[146] Final Rule, 82 Fed. Reg. at 60,525 n.39.

[147] *See* Final Rule, 82 Fed. Reg. at 60,525 ("As discussed in the Modeling RTC document, EPA and FLM representatives have utilized CALPUFF results in a number of different situations when the range was between 300-450 km or more.").

[148] Final Rule, 82 Fed. Reg. at 60,522, 60,533.

[149] 82 Fed. Reg. at 22,944.

[150] BART Rule, 70 Fed. Reg. at 39,123.

modeling showed visibility impairments at Caney Creek from Nelson as high as 2.22 deciviews and from Brame as high as 2.83 deciviews.[151] According to the EPA, such large visibility-impact numbers provide additional support for the CALPUFF model's results.

We conclude that, although the EPA has "a higher confidence level" in CALPUFF modeling at distances under than 300 km, the agency did not act arbitrarily and capriciously by using that model at Nelson and Brame. Even though Nelson and Brame are farther than 300 km from the protected areas at issue here, the use of CALPUFF modeling aligns with the EPA's acceptance of CALPUFF at longer distances for powerplants with larger emissions sources with elevated stacks like Nelson and Brame.[152]

ii. The EPA's January 2017 Action

Industry Petitioners focus on the EPA's January 2017 action, which removed CALPUFF as the preferred model for long-range air quality assessments. For those assessments, the EPA concluded that photochemical

---

[151] Final Rule, 82 Fed. Reg. at 60,526 ("Entergy Nelson has a maximum modeled impact of 2.22 dv at Caney Creek, with 31 days out of the 365 days modeled exceeding 0.5 dv, and 9 days exceeding 1.0 dv. Similarly, Cleco Brame has a maximum modeled impact of 2.833 dv at Caney Creek, with 30 days out of a maximum 365 days modeled exceeding 0.5 dv and 10 days exceeding 1.0 dv.").

[152] Our opinion should not be read to countenance the reliability or accuracy of the CALPUFF model in general. Although the EPA maintains that it recommends that states continue to use CALPUFF modeling for "subject to BART" determinations based on "consistency across and within states in the regional haze program" and because most of the modeling for this planning period has already been completed, there is reason to question the EPA's recommendation that states continue using a model that it appears to know is not reliable when used at distances such as those involved here.

grid models like CAMx "are generally most appropriate . . . because they provide a spatially and temporally dynamic realistic chemical and physical environment for plume growth and chemical transformation."[153] Industry Petitioners maintain that the EPA's 2017 action confirms that states should rely on CAMx rather than CALPUFF when making BART determinations, because it more realistically simulates the processes involved in haze formation.

The EPA's January 2017 action, however, does not support Industry Petitioners' arguments. The EPA removed CALPUFF as a preferred model for *other* types of Clean Air Act analyses, but the agency expressly confirmed that CALPUFF remains a recommended option for BART determinations. "[T]his final action does not affect the EPA's recommendation that states use CALPUFF to determine the applicability and level of best available retrofit technology in regional haze implementation plans."[154]

But the EPA retained CALPUFF as a preferred model for BART determinations because of concerns about consistency between the states' BART determinations:

> The proposed changes to the Guideline do not affect the EPA's recommendation in the 2005 BART Guidelines to use CALPUFF in the BART determination process. Given that the overwhelming majority of BART determinations have been made using CALPUFF, we consider it appropriate for states (or the EPA) to continue to use this application for the remaining assessments

---

[153] 80 Fed. Reg. 45,340, 45,349 (July 29, 2015), *finalized at* 82 Fed. Reg. 5,182 (Jan. 17, 2017).

[154] 82 Fed. Reg. at 5,196.

> under the current Guideline with approved protocols. This approach assures consistency across and within states in the regional haze program. In addition, in many instances, the modeling of visibility impacts has already been completed even though the BART determination process is not yet done. Allowing states to continue to rely on CALPUFF avoids additional time and expense in developing a new assessment of visibility impacts for a SIP initially due in 2007.[155]

Because CALPUFF remains the BART guidelines' recommended model, the January 2017 action does not undermine the use of CALPUFF for BART determinations. Rather, the EPA's explanations about (1) consistency between states, (2) that most of the modeling for this planning period has already been completed, and (3) avoiding the "additional time and expense in developing a new assessment" support the use of that model here.

iii. Overestimation Bias

Industry Petitioners next object to several technical assumptions underlying the CALPUFF model. The most significant of these is CALPUFF's simulation of the transformation of SO_2 and NOx emissions into visibility-impairing sulfates and nitrates. CALPUFF's simplistic handling of chemical processes can result in "a systematic bias in the estimated concentrations and visibility impacts," in other words, an "overestimation bias." When compared with "real-world measurements," CALPUFF overpredicts the contribution of nitrates to visibility impairment. According to Industry Petitioners, a comparison between the "real-world" impairment data and the CALPUFF

[155] 80 Fed. Reg. at 45,350.

modeling results shows that the CALPUFF modeling here overestimated nitrate contributions "by nearly 500%."

Industry Petitioners cite 2005 guidelines from the Central Regional Air Planning Association ("CENRAP") warning that CALPUFF's overestimation bias may lead to "unwarranted and excessive control of emissions from some sources."[156] They maintain that the EPA has not articulated a satisfactory explanation for ignoring the technical shortcomings in the CALPUFF model.[157]

In defending its use of CALPUFF here, the EPA emphasizes the policy considerations underlying the BART guidelines. When the EPA proposed the BART guidelines that recommended CALPUFF as the preferred model, some commenters objected on the same grounds raised here: CALPUFF is unreliable at long distances, relies on simplified assumptions, and overpredicts visibility impairment.[158] The EPA responded to those criticisms by describing CALPUFF as a "conservative" screening model and stating that "conservatism is needed because the purpose of the [subject to BART] test [is] solely to determine if a closer look is needed."[159] At this "screening" step, the EPA emphasized that models should capture the "maximum" or "worst case" potential impacts of a source.[160]

---

[156] *See* Alpine Geophysics, LLC, CENRAP BART Modeling Guidelines, at 3–8 (Dec. 15, 2005).

[157] *10 Ring Precision, Inc.*, 722 F.3d at 723.

[158] BART Rule, 70 Fed. Reg. at 39,126.

[159] *Id.* at 39,123 ("[the EPA] understand[s] the concerns of commenters that the chemistry modules of the CALPUFF model are less advanced than some of the more recent atmospheric chemistry simulations.").

[160] *Id.* at 39,123, 39,126.

We conclude that the BART guidelines accounted for this "overestimation" bias. Those guidelines explain the assumptions underlying the CALPUFF model, including the use of "the 98th percentile visibility impairment rather than the highest daily impact," which was meant to "exclude roughly 7 days per year from consideration" and "minimiz[e] the likelihood that the highest modeled visibility impacts might be caused by unusual meteorology or conservative assumptions in the model." As the EPA explained in the analysis it submitted to the LDEQ, it "made the decision to consider the less conservative 98th percentile primarily because the chemistry modules in the CALPUFF model are simplified and likely to provide conservative (higher) results for peak impacts."

iv. Margin of Error

Entergy submitted analyses to the EPA that purported to demonstrate that Nelson's CALPUFF-predicted visibility impacts at Caney Creek and Breton fell within CALPUFF's margin of error. According to Industry Petitioners, its margin of error at Caney Creek is 1.38 deciviews, and its margin of error at Breton is 1.25 deciviews. So, based on Entergy's CALPUFF modeling analysis that calculated Nelson's baseline visibility impact at 0.703 deciviews at Caney Creek and 0.77 deciviews at Breton, the Entergy-calculated margin of error for CALPUFF would put Nelson below the 0.5 deciview "subject to BART" threshold.

Entergy submitted comments on this issue, relying on a Ninth Circuit decision, *National Parks Conservation Ass'n v. EPA*, 788 F.3d 1134, 1146–47 (9th Cir. 2015), in which the court concluded that the EPA did not

"meaningfully address" a comment about model-predicted visibility improvements that were within a model's margin of error.[161] There, the federal implementation plan for Montana sought to implement a control that CALPUFF predicted would improve visibility by only 0.085 deciview.[162] A commenter maintained that "an improvement of 0.085 deciview [was] 'beyond the CALPUFF model's ability to predict with any confidence.'"[163] The EPA responded to that comment, but the court concluded that the response did "not meaningfully address [the] comment" because it did not "also suffice as a reasoned response regarding how CALPUFF could be relied upon to predict an improvement of as little as 0.085 deciviews when PPL offered reasons to think that doing so was outside the model's capabilities."[164]

Entergy submitted its "margin of error" comments, which compared that case to this one. The EPA addressed Entergy's comments in its November 2017 Modeling Response to Comments document.

Industry Petitioners contend that the EPA's response to Entergy's comments did not adequately respond to the margin of error issue and

---

[161] 722 F.3d at 1146–47.

[162] *Id.* Notably, this small number is significantly smaller than the baseline impact values at issue here, which are above 1 deciview for both facilities.

[163] *Nat'l Parks Conservation Ass'n*, 788 F.3d at 1146–47.

[164] *Id.* One judge on that panel separately concurred to emphasize the procedural focus of the court's holding. "I write separately to underline my understanding that . . . we are not impugning the EPA's use of the CALPUFF model generally. Instead we are requiring a sufficiently reasoned response to a particular comment regarding CALPUFF's usefulness in these specific circumstances." *Id.* at 1149 (Berzon, J., concurring).

therefore failed to fulfill the agency's procedural obligation to consider significant comments made by the public.

> The EPA responded to this "margin of error" comment as follows:
>
> The commenter mischaracterizes the Ninth Circuit decision regarding the "margin of error" of the model. The commenter suggests that the Court agreed that the anticipated visibility benefits in that case were within the margin of error of the model. This is incorrect. The Ninth Circuit decision did not rule on any specific issue related to CALPUFF. Rather, the court ruled on a procedural error that the EPA did not respond to the comment received regarding the CALPUFF margin of error in its rulemaking as required under the law. Here and elsewhere in our previous response to comments we address a very similar comment with respect to CALPUFF modeling for Arkansas sources, as well as the commenter's analysis claiming to estimate the "margin of error."
>
> We responded to comments concerning a very similar "margin of error" analysis in our response to comments and final action for Regional Haze in Arkansas. The Trinity analysis discussed in the comment above purports to calculate a "margin of error" of the CALPUFF modeling for Entergy Nelson. In general, the commenter's analysis adds CALPUFF model results for a specific source or sources with CAMx model results and compares this value to visibility conditions derived from monitored data at each Class I area. This analysis is flawed for many reasons as discussed in detail in our Arkansas RTC document that discusses a similar analysis performed for Entergy Lake Catherine and fails to provide any assessment of the ability of the CALPUFF model to evaluate visibility impacts or the degree of visibility improvement that may be expected from available control technology to inform BART and reasonable progress evaluations. Whether or not the modeled visibility impacts or benefits lie below this calculated "margin of error" is immaterial to any assessment of whether or

> not the visibility impairment or benefits from controls can reasonably be anticipated to occur. We note that the commenter did not provide any spreadsheets or detailed calculations to support this analysis, therefore we were unable to fully review and respond to the individual calculations or specific methodology underlying the presented values in the commenter's summary report and comments.
>
> As discussed elsewhere in this document, we are confident that CALPUFF distinguishes, comparatively, the relative contributions from sources such that the differences in source configurations, sizes, emission rates, and visibility impacts are well-reflected in the model results. We agree with LDEQ that the CALPUFF model followed the reviewed protocol is an appropriate tool to evaluate visibility impacts and benefits to inform a BART determination.
>
> Furthermore, our CAMx modeling of coal-fired sources included in the LA RH SIP (see Appendix F) further supports the conclusion that the Entergy Nelson and Cleco Brame sources are subject to BART.

This explanation is fulsome. In it, the EPA (1) cited its responses on the same issue in the Arkansas and Texas federal implementation plans (which are in the administrative record here), (2) disagreed with the commenter's interpretation of *National Parks Conservation Ass'n*, (3) criticized the commenter's "calculated margin of error" methodology, (4) disagreed with the commenter's method of combining results from two different models, and (5) noted the commenter's failure to provide the underlying data. Although Industry Petitioners might not agree with the conclusion that the EPA reached, the EPA "meaningfully respond[ed]" to the substance of the comment.

* * *

In short, Industry Petitioners contend that CALPUFF uses oversimplified and unrealistic assumptions. The EPA agrees in part, but insists that those assumptions are based on reasoned policy decisions.

Given the conflicting technical contentions, we defer to the EPA's approval of Louisiana's reliance on the CALPUFF model. The EPA's selection of modeling methods to measure visibility impacts is exactly the type of decision for which "significant deference" is appropriate.[165] Although CALPUFF has documented flaws, (1) the BART guidelines continue to recommend that model for these determinations,[166] (2) the EPA has recently directed states to use that model,[167] and (3) it "has been used for almost every single-source BART analysis in the country."

We defer to the EPA's approval of Louisiana's reliance on the CALPUFF model. Industry Petitioners have not carried their "considerable burden" to overcome the "presumption of regularity" that we afford to "the EPA's choice of analytical methodology."[168] Because a model "is meant to simplify reality in order to make it tractable," and need not "fit every application perfectly,"[169] we

---

[165] *See Appalachian Power Co. v. EPA*, 135 F.3d 791, 802 (D.C. Cir. 1998) ("Statistical analysis is perhaps the prime example of those areas of technical wilderness into which judicial expeditions are best limited to ascertaining the lay of the land.").

[166] BART Guidelines, 40 C.F.R. part 51, App. Y, III.A.3.

[167] 82 Fed. Reg. 5,182, 5,196 (Jan. 17, 2017) ("[T]his final action does not affect the EPA's recommendation that states use CALPUFF to determine the applicability and level of best available retrofit technology in regional haze implementation plans.").

[168] *BCCA Appeal Grp.*, 355 F.3d at 832

[169] *Ass'n of Battery Recyclers*, 308 F.3d at 1063.

hold that the EPA's reliance on the CALPUFF model was not arbitrary and capricious.

Moreover, the Clean Air Act's structure gives states the primary responsibility for implementing the federal standards. The EPA's role is to review the states' plans for compliance with the Act's requirements. Within those respective roles, "the States may submit implementation plans more stringent than federal law requires," and the EPA "must approve such plans if they meet the minimum requirements" of the Clean Air Act.[170] At this "subject to BART" stage—the purpose of which is to determine which of the BART-eligible sources warrant a "closer look"[171]—Louisiana's reliance on a modeling method that tends to be overinclusive would result in a SIP that is more stringent than the federal requirements. The EPA's approval of such a SIP would be well within the agency's role to ensure the SIP "meet[s] the minimum requirements" of the Clean Air Act.[172]

3. Challenge to the EPA's CAMx Modeling

We have concluded that the EPA's reliance on the CALPUFF model was not arbitrary and capricious, so we need not address Industry Petitioners' contentions about the EPA's use of CAMx modeling.

---

[170] *Union Elec. Co.*, 427 U.S. at 265; *see* 42 U.S.C. § 7410(k)(3) ("[the EPA] shall approve [a SIP] submittal as a whole if it meets all of the applicable requirements of this chapter.").

[171] BART Rule, 70 Fed. Reg. at 39,127.

[172] *Union Elec. Co.*, 427 U.S. at 265.

IV. CONCLUSION

For the foregoing reasons, the petitions for review are DENIED.