PRECEDENTIAL

SIERRA CLUB,
Petitioner

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

*PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION,
Intervenor Respondent

*(Pursuant to the Court Order dated 8/5/19)

_____

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

(EPA-1: EPA-R03-OAR-2017-0290)

_____

Argued May 21, 2020

_____

Before: McKEE, BIBAS, and NYGAARD, *Circuit Judges*.

(Opinion filed: August 27, 2020)

Zachary M. Fabish, Esq.
Sierra Club Environmental Law Program
50 F Street, N.W.
8th Floor
Washington, DC 20001

Charles McPhedran, Esq. **[Argued]**
Earthjustice
1617 John F. Kennedy Boulevard

Suite 1130
Philadelphia, PA 19103

Mychal Ozaeta, Esq.
Earthjustice
707 Wilshire Boulevard
Suite 4300
Los Angeles, CA 90017

Counsel for Petitioner

Brandon N. Adkins, Esq. **[Argued]**
United States Department of Justice
Environment & Natural Resources Division
P.O. Box 7611
Ben Franklin Station
Washington, DC 20044

Counsel for Respondent

Robert A. Reiley, Esq.
Pennsylvania Department of Environmental Protection
Office of Chief Counsel
9th Floor
400 Market Street
Rachel Carson State Office Building
Harrisburg, PA 17101

Jesse C. Walker, Esq. **[Argued]**
Office of Attorney General of Pennsylvania
Bureau of Regulatory Counsel
RCSOB 9th Floor
P.O. Box 8464
Department of Environmental Protection
Harrisburg, PA 17105

Counsel for Intervenor

_____

OPINION

_____

McKEE, *Circuit Judge*.

The Sierra Club petitions for review of the Environmental Protection Agency's approval of new Pennsylvania National Ambient Air Quality Standards (NAAQS). The proposed standards govern pollution output at coal-burning power plants in the Commonwealth. The Sierra Club argues that the standards wrongly claim to reduce pollution output at Pennsylvania's most advanced plants while simply rubberstamping an average of current pollution output as its supposed new gold standard. Further, the Sierra Club criticizes the proposal's minimum temperature threshold—a measure that allows plants to nearly quintuple their pollution output when operating below 600 degrees Fahrenheit—as unsupported and unsupportable given the technical record before the agency. Finally, the Sierra Club claims that the approved standards lack enforceable reporting regulations. Because we agree that the regulatory regime which springs forth from these three defining characteristics is neither supported by adequate facts nor by reasoning found in the administrative record, we hold that the EPA's approval was arbitrary and capricious. We will therefore grant the petition for review and remand to the agency with instructions that it develop enforceable pollution controls in accordance with its legal obligations.

I.

This dispute is governed by the Clean Air Act which gives Circuit Courts of Appeals original jurisdiction to review the EPA's approval of a state's proposed pollution standards.[1] CAA is a model of cooperative federalism. Indeed, that philosophy has been described as the Act's "core principle."[2] Thus, although the EPA is charged with setting the NAAQS,[3]

[1] 42 U.S.C. § 7607(b)(1).

[2] *Miss. Comm'n on Envtl. Quality v. E.P.A.*, 790 F.3d 138, 156 (D.C. Cir. 2015) (quoting *E.P.A. v. EME Homer City Generation, L.P.*, 572 U.S. 489, 511 n.14 (2014)).

[3] *See* 42 U.S.C. § 7408(a) (directing the EPA to list "air pollutants" whose emissions "cause or contribute to air pollution which may reasonably be anticipated to endanger

the individual states are afforded discretion in the planning and implementation of plans to achieve the EPA's goals for reduction in air pollutants.[4]

One such pollutant is ground level ozone, which is not a naturally occurring compound. This ozone is the result of a chemical reaction that occurs when power plants and industrial boilers mix nitrogen oxides (NOx) with the organic compounds they are emitting as air pollution.[5] It is similar to the process that creates most anthropogenic (*i.e.*, human produced) ozone, which primarily arises from the "photolysis of nitrogen dioxide by sunlight, occurring in the presence of hydrocarbons."[6]

A. Relevant standards and history

This dispute has its beginnings in the EPA's 2008 revision to its 1997 ozone National Standard. There, the EPA tightened the cap on ozone pollution to an average of 75 parts-per-billion over an 8-hour period (the previous standards had permitted 80 parts-per-billion[7]).[8] Seventeen counties around

---

public health or welfare"); 42 U.S.C. § 7409(a)-(b) (for such listed air pollutants, EPA must set "ambient air quality standards the attainment and maintenance of which . . . are requisite to protect the public health" with an "adequate margin of safety").

[4] 42 U.S.C. §§ 7410, 7502.

[5] E.P.A., *Ground-level Ozone Basics*, https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics.

[6] Peter J. A. Rombout, et al., *Rationale for an Eight-Hour Ozone Standard*, 36 J. OF THE AIR POLLUTION CONTROL ASSOC. 913, 913 (1986), https://doi.org/10.1080/00022470.1986.10466130.

[7] *EPA Proposes New National Ambient Air Quality Standards for Ozone*, 20 No. 3 AIR POLLUTION CONSULTANT 2.12, 2.13 (2010).

[8] 73 Fed. Reg. 16,436 (Mar. 27, 2008). This 8-hour averaging period allows for variation in emissions throughout the day. Since 1997, the EPA has accepted such 8-hour averages for ozone emissions, and has judged compliance based on the fourth-highest (*i.e.*, lowest) daily maximum from each 8-hour window, averaged over three years. 20 No. 3 AIR POLLUTION CONSULTANT at 2.13.

Philadelphia and Pittsburgh were unable to achieve the new 2008 requirements for pollution control.[9] Accordingly, the Commonwealth was required to design a state implementation plan (SIP) for its major sources of NOx and volatile organic compounds.[10] Power plants are one of the most significant sources of these pollutants, and were therefore most directly impacted by these proposals.

Pennsylvania's proposal had to satisfy Reasonably Available Control Technology (RACT) requirements.[11] RACT is a technology-forcing standard designed to induce improvements and reductions in pollution for existing sources. It is a term of art at the foundation of the EPA's decision-making, but is not defined in the Clean Air Act.[12] The EPA itself originally defined this standard in internal guidance as requiring "the toughest controls considering technological and economic feasibility that can be applied to a specific situation . . . [a]nything less than this is by definition less than RACT."[13] Because the parties do not dispute this long-standing definition, we assume without deciding that the EPA's definition is correct. Therefore, RACT is "the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility."[14]

---

[9] Pennsylvania DEP, "Attainment Status by Principal Pollutants," http://www.dep.pa.gov/Business/Air/BAQ/Regulations/Pages/Attainment-Status.aspx.

[10] *See* 42 U.S.C. §§ 7511c(a), 7502(c)(1).

[11] 42 U.S.C. § 7502(c)(1) (imposing the RACT requirement).

[12] 42 U.S.C. § 7502(c)(1). *See also Natural Res. Def. Council, Inc. v. E.P.A.*, 571 F.3d 1245, 1252 (D.C. Cir. 2009) (finding "reasonably available control technology" under the Clean Air Act to be ambiguous).

[13] Memorandum from Roger Strelow, Assistant Admin. for Air and Waste Mgmt., U.S. E.P.A., to Regional Admins., Regions I - X, at 2-3 (Dec. 9, 1976), https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/19761209_strelow_ract.pdf.

[14] E.P.A., State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation

Pennsylvania calls the SIP's implementation of that standard the RACT II Rule, as it is a second generation approach (since RACT must be reconsidered at each NAAQS revision).[15]

RACT is not designed to rubber-stamp existing control methods. It is a technology-forcing mechanism. When originally introducing the standard, the EPA noted that "the control agency, using the available guidance, should select the best available controls, deviating from those controls only where local conditions are such that they cannot be applied there and imposing even tougher controls where conditions allow."[16]

Thus, in order to satisfy RACT, a proposed SIP must satisfy both technological and economic feasibility. The EPA explains, "[t]he technological feasibility of applying an emission reduction method to a particular source should consider the source's process and operating procedures, raw materials, physical plant layout, and any other environmental impacts such as water pollution, waste disposal, and energy

---

of Title I of the Clean Air Act Amendments of 1990, 57 Fed. Reg. 55,620, 55,624/3 (proposed Nov. 25, 1992); *Navistar Intern. Transp. Corp. v. E.P.A.*, 941 F.2d 1339, 1343 (6th Cir. 1991) ("Since 1976, the EPA has interpreted reasonably available control technology to be the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.") (internal quotation marks omitted); *Washington Envtl. Council v. Bellon*, 732 F.3d 1131, 1137 (9th Cir. 2013) (describing same description of the standard adopted into state law as part of an EPA-approved SIP).

[15] JA38; *see also* JA247 ("The evaluation or reevaluation of what constitutes RACT-level control for affected sources is a requirement that must be fulfilled each time the EPA promulgates a new NAAQS . . ."). For clarity, given the potential for confusion between the general RACT approach and Pennsylvania's specific implementation here, dubbed RACT II, we refer to the proposed changes as the SIP whenever possible.

[16] Memorandum from Roger Strelow, *supra* n.10.

requirements."[17] Whereas the economic feasibility "considers the cost of reducing emissions and the difference in costs between the particular source and other similar sources that have implemented emission reduction."[18] When calculating the cost, the EPA has previously cautioned: "Economic feasibility rests very little on the ability of a particular source to 'afford' to reduce emissions to the level of similar sources. Less efficient sources would be rewarded by having to bear lower emission reduction costs if affordability were given high consideration. Rather, economic feasibility . . . is largely determined by evidence that other sources in a source category have in fact applied the control technology in question."[19]

A key technological element of this discussion is the development of selective catalytic reduction (SCR). SCR originated in the 1970s and is currently a preferred method for limiting coal-fired power plant pollution. More than 300 coal power plants in the U.S. feature the technology.[20] SCR can, potentially, remove up to 100% of the ozone pollution produced by a plant. However, most systems are only designed for 90% reduction. By comparison, another potential pollution control, SNCR, achieves 25-75% reductions.[21] The SCR process involves injecting a substance such as ammonia or urea as a catalyst into the post-combustion flue gas. That causes the harmful NOx pollution to break down into its component nitrogen and water molecules and to be dispersed as vapor.[22]

Plants that are unable to meet specified pollution limits are allowed to average their emissions with other plants of the

---

[17] E.P.A., State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental, 57 Fed. Reg. 18,070, 18,073 (proposed Apr. 28, 1992) (first introducing RACT as a standard to regulate emissions from existing sources).
[18] *Id.*
[19] *Id.*
[20] JA108.
[21] *Id.*
[22] E.P.A., *Air Pollution Control Technology Fact Sheet* at 3, https://www3.epa.gov/ttncatc1/dir1/fscr.pdf.

same owner or operator to comply with the limits.[23] A plant is also permitted under section 129.99 of the RACT II Rule to request an alternative RACT limit that applies only to its own facility. These are called "source-specific RACT limits."[24] It is important to stress that the overall RACT limit is therefore not a hard cap if certain older plants could not otherwise satisfy the requirements.

B. The Pennsylvania proposal

Pennsylvania's SIP was submitted in May 2016.[25] It proposed that NOx emission limits for SCR-equipped coal-fired power plants operating at 600 degrees or higher be required to emit less than 0.12 pounds of NOx per million British Thermal Units (MMBtu) (a unit of heat).[26] Yet when SCR-equipped boilers operate below 600 degrees Fahrenheit, a higher limit between 0/16 and 0.4 lb/MMBtu limit would be permitted.[27] Pennsylvania had originally not offered any reduced limit on SCR-equipped facilities but added these provisions (and an accompanying temperature exception, discussed below) in response to critical feedback from the EPA, which suggested a 0.12 lb/MMBtu limit for such plants.[28]

In March 2018, the EPA provisionally approved Pennsylvania's proposal.[29] A number of groups opposed it. They expressed particular concern over the regulations for coal-fired combustion plants, which generate a large percentage of Pennsylvania's emissions.[30] Surrounding states opposed Pennsylvania's proposal and submitted negative public comments during the ensuing comment period.

For instance, New York took issue with the EPA's claim that the Pennsylvania limits were "comparable to NOx

---

[23] JA39. The other plants must be subject to the same NOx presumptive limits and be at the same facility or within the same nonattainment area. *Id.*

[24] *Id.*

[25] JA26.

[26] 25 Pa. Code § 129.97(g)(1)(viii).

[27] *Id.* § 129.97(g)(1)(vi)(C).

[28] JA330.

[29] JA26.

[30] JA47-52.

emission limitations in other states."[31] New York compared its own limits to those proposed by Pennsylvania and argued that its limits were "more stringent nearly across the board."[32] According to New York, Pennsylvania was proposing limits that were "comparable to limits that were effective in New York from 1995 to 2014."[33]

New York argued that the EPA's finding that Pennsylvania's proposal was comparable to New York and Connecticut ignored the fact that both states are partway through a multi-year emission limit reduction plan. Additional substantial reductions are already completed in Connecticut and expected in New York by 2023.[34] Finally, New York criticized the relatively lenient 30-day averaging of pollution proposed by Pennsylvania. New York, by contrast, requires a 24-hour average, which the state claimed prevents emitters from relying on the month-long average to balance out days when they do not use pollution control mechanisms.[35]

Maryland also opposed Pennsylvania's proposal. It argued: "all of Pennsylvania's coal-fired boilers equipped with SCR have demonstrated that they can achieve NOx emission rates far below 0.12 lb/MMBtu, including hours where the SCR inlet temperature may be lower than 600 F."[36] Maryland noted that the proposed limits were "on average, nearly 60% higher than what they have achieved in the past."[37] The submission included data showing that all of Pennsylvania's powerplants were capable of emissions lower than the proposed limit, down to as low as 0.043 lb/MMBtu.[38]

C. Petitioner's critiques

The Sierra Club offered even more pointed criticism. It submitted lengthy comments against the proposal. In particular, the Sierra Club used data from the EPA's own

---

[31] JA351.
[32] JA352.
[33] *Id.*
[34] *Id.*
[35] *Id.*
[36] JA354.
[37] JA355.
[38] *Id.*

sources to demonstrate that at least some of Pennsylvania's plants have historically been able to emit NOx at 50% of the proposed limit.[39] The Sierra Club also argued that other neighboring states have not received a temperature threshold for their plants. It is therefore not at all clear why it is appropriate or reasonable for Pennsylvania to be given one. This is particularly important because the Sierra Club provided evidence regarding at least one Pennsylvania plant showing that it has operated below the proposed limit (600 degrees) in the past.[40] Lastly, the Sierra Club complained that the Pennsylvania proposal failed to require plants to report their temperature records. There would be no reliable method for monitoring whether plants were even complying with these emission limits. Consequently, a plant could explain away higher emissions by claiming it was operating below 600 degrees at the time, without having to substantiate that claim. The combination of this lack of mandatory reporting and the temperature waiver created a potent loophole for polluters to walk through.[41]

Despite these concerns, the EPA eventually gave the Pennsylvania plan formal approval in 2019.[42] Within the 60-day statutory window to contest that decision, the Sierra Club filed the present petition for review.[43]

II.

The EPA had jurisdiction to review and approve Pennsylvania's SIP.[44] The SIP is "locally or regionally applicable" within the Third Circuit.[45] Accordingly, we have

---

[39] JA336-41.

[40] JA341-45 (modeling temperatures and pollution at the Cheswick plant). This data suggests that Cheswick would be able to evade the 0.12 lb/MMBtu limit by operating at lower temperatures, as it has in the past.

[41] JA345-46

[42] JA7.

[43] See 84 Fed. Reg. 20,274 (May 9, 2019) (JA007); 42 U.S.C. § 7607(b)(1).

[44] JA028; *see* 42 U.S.C. §§ 7502, 7410(k).

[45] 42 U.S.C. § 7607(b)(1).

jurisdiction to review the EPA's final approval of the Commonwealth's proposal.

A. Standard of Review

We accord due deference to a final EPA action, in light of the agency's expertise. We will remand only when the agency's decision "[i]s 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.'"[46]

But to receive such deference, the agency cannot reach whatever conclusion it likes and then defend it with vague allusions to its own expertise; instead, the agency must support its conclusion with demonstrable reasoning based on the facts in the record. When it fails to do so, an agency action is arbitrary and capricious—examples include the agency "entirely fail[ing] to consider an important aspect of the problem."[47] Or offering only a "conclusory statement" which "failed to articulate a rational basis for its conclusion."[48] Or indeed if "cit[ing] no data whatsoever in support of its decision."[49] We have held that "courts are 'not obliged to stand aside and rubber-stamp their affirmance of administrative decisions that they deem inconsistent with a statutory mandate

---

[46] *Nat'l Parks Conservation Ass'n v. E.P.A.*, 803 F.3d 151, 158 (3d Cir. 2015) (internal citation omitted). This is illustrated, for example, in *Berks County v. E.P.A.*, an unpublished 2015 decision, where we denied a petition for review because we found the EPA had considered all the data and made a reasonable decision. 619 Fed. Appx. 179, 184 (3d Cir. 2015).

[47] *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983); s*ee, e.g., E. Bay Sanctuary Covenant v. Barr*, 964 F.3d 832, 857 (9th Cir. 2020) (remanding an agency action because it "entirely failed to consider an important aspect of the problem") (citing 463 U.S. at 43); *Sierra Club, Inc. v. U.S. Forest Serv.*, 897 F.3d 582, 605 (4th Cir. 2018) (same); *Genuine Parts Co. v. E.P.A.*, 890 F.3d 304, 341 (D.C. Cir. 2018) (same).

[48] *W.R. Grace & Co. v. E.P.A.*, 261 F.3d 330, 342 (3d Cir. 2001).

[49] *Natural Res. Def. Council, Inc. v. E.P.A.*, 790 F.2d 289, 309 (3d Cir. 1986).

or that frustrate the congressional policy underlying a statute.'"[50]

However, we cannot "substitute [our] judgment for that of the agency."[51] We will therefore defer to the agency's expertise if we can discern "a rational connection between the facts found and the choice made."[52] Even when "[a]n agency has engaged in line-drawing determinations" we review primarily to determine whether the result is "'patently unreasonable' or run[s] counter to the evidence before the agency."[53]

B. Standing

We briefly consider standing, and find it is satisfied here. The Sierra Club asserts that it holds standing based on the interests of its members.[54] It describes the particular impact increased pollution will have on the health and enjoyment of its members, who prioritize outdoor activities (and, presumably, good health). To have standing in an environmental case, "[t]he relevant showing . . . is not injury to the environment but injury to the plaintiff."[55] Standing exists where "(1) [the plaintiff] . . . has suffered an 'injury in fact' that is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) the injury is fairly traceable to the challenged action of the defendant; and (3) it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision."[56] When, as here, an association sues on behalf of its membership, it may do so when "the interests at stake are germane to the organization's

---

[50] *Pa. Fed'n of Sportsmen's Clubs, Inc. v. Kempthorne*, 497 F.3d 337, 347 (3d Cir. 2007) (quoting *Nat'l Labor Relations Bd. v. Brown*, 380 U.S. 278, 291 (1965)).
[51] *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43.
[52] *Prometheus Radio Project v. FCC*, 373 F.3d 372, 389–90 (3d Cir. 2004), *as amended* (June 3, 2016) (quoting *State Farm Mut. Auto. Ins. Co.*, 463 U.S. at 43).
[53] *Id.* at 390 (quoting *Sinclair Broad. Grp. Inc. v. FCC*, 284 F.3d 148, 162 (D.C. Cir. 2002).
[54] Pet. Br. at 16-18.
[55] *Friends of the Earth, Inc. v. Laidlaw Envtl. Servs. (TOC), Inc.*, 528 U.S. 167, 181 (2000).
[56] *Id*. at 180-81.

purpose, and neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit."[57]

The Sierra Club's claim here is sufficiently particularized to satisfy the Supreme Court's test from *Laidlaw*.[58] There, the Court accepted statements similar to the ones Petitioner makes here that the direct interests of its members were at stake. The Court held that this imminent harm was distinct from the theoretical future interest in visiting remote destinations threatened with environmental harm rejected as insufficient in *Lujan.*[59] The Sierra Club describes the negative impact of ozone pollution on the health and recreational opportunities available to its members.[60] When, as here, the complaint demonstrates such an actual harm that will "directly affect[] those affiants' recreational, aesthetic, and economic interests," standing is satisfied.[61]

III.

The Sierra Club challenges the EPA's approval of the Pennsylvania SIP on the three grounds described in their public comments above. We consider each in turn: the selection of a 0.12 NOx/MMBtu pollution limit instead of a stricter requirement; the 600-degree temperature threshold; and the lack of a reporting requirement on power plant inlet temperatures. While the reasoning supporting each element is questionable individually, joined together they are decidedly worse than the sum of their parts. Working in tandem, these three elements spawn a pernicious loophole centered on the

---

[57] *Id*. at 181 (citing *Hunt v. Washington State Apple Advert. Comm'n*, 432 U.S. 333, 343 (1977)).
[58] 528 U.S. at 183–84.
[59] *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 564 (1992).
[60] JA332 (discussing health consequences which particularly affect children and those with asthma, and environmental damage including visible injury to trees and vegetation).
[61] 528 U.S. at 184. *Cf. Sierra Club v. E.P.A.*, 754 F.3d 995, 1000-02 (D.C. Cir. 2014) (finding the Sierra Club lacked standing when it alleged merely speculative harm from potential future changes to clear air policies).

600-degree threshold, one which would easily permit operators to exceed the 0.12 NOx/MMBtu cap.

A. 0.12 NOx/MMBtu Limit

The Pennsylvania Department of Environmental Protection (DEP) has freely admitted that its requested 0.12 NOx/MMBtu pollution limit "is not the lowest achievable emissions rate (LAER) for this technology."[62] It correctly notes that satisfying RACT is not the same thing as meeting LAER.[63] This is obvious since LAER applies only to new sources, whereas RACT is a technology forcing standard for existing polluters.[64] Thus, DEP ignores the obvious possibility that an existing source can both fall short of LAER and also fail to satisfy RACT.

Nonetheless, the EPA and DEP argue that RACT need not be the best possible emissions limit; it must be the best limit that is also economically and technically achievable for plant operators. That general proposition is certainly correct. However, it fails when applied to this record. Here, DEP itself analyzed the pollution reduction capabilities of five different plants and found that three are already capable of meeting the 0.12 lb/MMBtu limits with little or no changes.[65] One, Homer City, has committed to updating its SCR systems to meet that standard.[66] But a fourth, Cheswick, is currently operating well above the limit (from 0.21 to 0.22 lb/MMBtu).[67] 0.12 lb/MMBtu was selected as it represents the average pollution output of the three plants that are already compliant over the last five years.[68] Suffice to say, an average of the current

---

[62] JA247
[63] *Id.*
[64] *Nat. Resources Def. Council, Inc. v. Thomas*, 838 F.2d 1224, 1236 (D.C. Cir. 1988) (noting that LAER applies to "new sources in nonattainment areas" whereas RACT governs "existing sources in nonattainment areas").
[65] JA325.
[66] *Id.*
[67] JA329.
[68] *Id.*

emissions being generated by existing systems, will not usually be sufficient to satisfy the RACT standard.[69]

The EPA seeks to explain this 0.12 lb/MMBtu choice by observing that power needs fluctuate between winter and summer, so using data from only part of the year is not necessarily reflective of the overall pollution possible on a yearly basis. But this simply ignores the fact that by averaging current emissions over five years, the 0.12 lb/MMBtu result already accounts for seasonal variation.[70]

Moreover, the DEP data in the record appears to simply average the net emissions rate of each plant, without considering these facilities' widely varying actual output of pollutants. For example, the DEP data purports to give Unit 2 at both Keystone (0.09 lb/MMBtu emissions) and Montour (0.15 lb/MMBtu) equal weighting in its average (for a 30-day average of 0.12 lb/MMBtu between the two Units). But this record suggests that Keystone Unit 2 is normally operating at higher capacity than Montour Unit 2—in June 2003, for instance, Keystone Unit 2 produced 128.8 tons of NOx emissions, whereas Montour Unit 2 produced only 74.9 tons.[71] An equal weighting thus distorts the real-world emissions rates. In the example above, the correctly weighted average rate would have been 0.112 lb/MMBtu, below the unconvincing 0.12 lb/MMBtu proposal.

Even more disquieting, the EPA ignores its own Air Markets Program Data showing that all five Pennsylvania power plants noted above have actually achieved much greater reductions than 0.12 NOx/MMBtu during at least 150 months that Sierra Club identifies (0.07 NOx/MMBtu or lower average in those months).[72] The EPA claims that other unspecified plants may perform worse than these five, but since this limitation applies only to SCR-equipped plants, the five plants under consideration (Cheswick, Montour, Keystone, Bruce

---

[69] *See Navistar Intern. Transp. Corp.*, 941 F.2d at 1343 (reiterating that RACT must be, "the lowest emission limitation that a particular source is capable of meeting . . .").
[70] JA329.
[71] JA337.
[72] JA336-39.

Mansfield, and Homer City) represent the vast majority of the regulated sites in Pennsylvania.[73] The EPA fails to specify whether or how these five units are unrepresentative of Pennsylvania's SCR-equipped coal-fired plants, aside from speculating that they may be.

Indeed, the EPA itself acknowledges that the Pennsylvania plants are capable of achieving better than 0.12 NOx/MMBtu. It relies on data from 2011, 2015, and 2016, when, on average, the year-long average pollution across Pennsylvania power plants equipped with SCR was 0.107 lb/MMBtu.[74] While the EPA uses this data to support the marginally higher 0.12 lb/MMBtu standard, it provides no explanation for setting RACT at a higher level than 0.107 lb/MMBtu. It has already been shown that the latter lower level is readily achievable on a yearly average.

Furthermore, the Sierra Club demonstrates that the EPA's baseline data from 2011, 2015, and 2016 is not necessarily reflective of the lowest possible emissions averages. In fact, those non-consecutive chosen years happen to be among the *highest* emission years in recent records.[75] For example, the modern Seward Generation plant in New Florence, PA, which touts itself as the largest waste coal-fired power plant in the world and was constructed in 2004,[76] produced its highest emission count on record in 2011, and nearly equaled that in 2015.[77] By contrast, emissions were lower by 10% in 2012 (0.092 instead of 0.103 in 2011).[78]

Further, as the Sierra Club stresses, those levels were achieved *voluntarily*. They were not the result of any coercive RACT regulations. Absent any regulatory pressure

---

[73] Or. Arg. Trans. at 5-6. Only 14% of large Pennsylvania plants are equipped with SCR. JA053. It was also revealed at oral argument that this limited number has since fallen further: the Bruce Mansfield plant was decommissioned in 2019. Or. Arg. Trans. at 5.

[74] JA55 n.26.

[75] JA340.

[76] *Seward Generation Power Plant*, https://robindale.energy/seward-generation.

[77] JA340.

[78] *Id.*

whatsoever, the plants were able to operate at limits lower than those in Pennsylvania's SIP.[79] Thus, the EPA's apparent supposition that a limit below 0.12 lb/MMBtu was not feasible is not only unsupported by this record, but actually contradicted by it.

The agency suggests that even if the five plants cited could achieve a lower limit, other *unspecified* facilities might not be able to. This position is even less compelling after it was revealed at oral argument that the SCR-equipped facilities in the state are primarily just the five plants under consideration.[80] The EPA's reliance on the supposed inability of other unnamed facilities, for which it has provided no data or details, is not helpful. Moreover, even if a RACT standard was unachievable by a particular older plant, that plant could take advantage of a "source-specific RACT," which eases requirements for a specific facility that is unable to comply with pollution controls.[81]

Finally, the EPA's technical report on the Pennsylvania plan for emissions does provide some guidance for expected emissions levels from coal-fired boilers.[82] However, the fact that this data is based on EPA research dating back to 1994 is relegated to an accompanying footnote, in which the agency quietly concedes, "[i]t is possible that further technological advancements may have been proven to result in lower NOx emissions levels than those reported [here]."[83]

Given this concession by the agency that technological advances may allow for a more environmentally friendly standard than the one approved here, reliance on a study that is more than two-and-a-half decades old is neither a persuasive nor reasonable basis for adopting the higher standard it is urging upon us now.[84]

---

[79] *Id.*
[80] Or. Arg. Trans. at 5-6.
[81] JA68-69.
[82] JA55.
[83] *Id.* at n.25.
[84] JA10.

Indeed, nearby states' data demonstrate the progress that has been made in the intervening decades. Maryland, for instance, requires its SCR-equipped plants to adhere to a 0.09 NOx/MMBtu limit.[85] Further, as noted above, Maryland indicates that 0.12 NOx/MMBtu was "nearly 60% higher" than the emissions limits Pennsylvania's plants "have achieved in the past."[86]

In response, the EPA contends that Pennsylvania's limits are comparable to some other states. They may be, and we do not suggest that Pennsylvania must achieve the absolute lowest level of emissions that is technologically possible for the approved limit to satisfy RACT. However, there is an important distinction that the agency's assertion ignores. The 0.12 lb/MMBtu limit applies only to SCR-equipped plants—in other words, the most technologically advanced facilities in the state.[87] It is therefore simply not reasonable for the EPA to attempt to justify its approval of the higher rate by comparing it with the general pollution limitations in other states. Those other states are regulating all their coal-fired plants, rather than separating out their SCR-equipped facilities. This makes Pennsylvania's lax limit of 0.12 lb/MMBtu even less justifiable on this record. As we have noted, those more efficient limits apply only to a handful of its most modern plants. Thus, the EPA's approval of Pennsylvania's more lenient pollution levels cannot be explained by the fact that that some unspecified "other" plants may not be able to attain a lower limit. This is particularly true since the EPA's own data clearly establishes the contrary for nearly all of the SCR-equipped plants in the state, and does so in years with higher than average emissions.

As the EPA's own data demonstrates, a lower limit would clearly have been practicable. We realize, of course, that "mere" data alone may not require a particular result. However, the EPA is able neither to offer a reasonable justification for failing to require a stricter standard, nor to justify the standard it endorsed. That standard represents a mere acceptance of the status quo.

---

[85] JA355.
[86] *Id.*
[87] JA56.

We confronted a similar challenge to the EPA's approval of a Pennsylvania SIP proposal (brought by a coalition of environmental groups, including the Sierra Club) in 2015.[88] There, the underlying data and analysis conducted by Pennsylvania were clearly inadequate. For example, it failed to consider the cumulative impact of multiple pollution sources, rather than each individually. Moreover, even the EPA agreed that the Commonwealth's proposal contained "systemic deficiencies," and that it should have done more review.[89] Despite that very appropriate concession, the agency nevertheless approved the SIP. It claimed to have done so because the conclusions were at worst harmless error.[90] However, approving the proposed standards without sufficient explanation was not "harmless" at all. Rather, we stated that the error of relying on an admittedly faulty analysis was a bridge too far: "the EPA has identified a host of problems with Pennsylvania's . . . analysis. What it has not done, however, is provide a sufficient explanation as to why it overlooked these problems and approved Pennsylvania's SIP."[91] Despite the deference appropriately afforded to agency determinations of these issues, we found it necessary to remand "[b]ecause we, as a reviewing court, need an agency to show its work before we can accept its conclusions . . ."[92]

The same is true here. Without any basis for justifying their selection of a 0.12 lb/MMBtu limit, and evidence that a lower limit was practicable, Respondents struggle to meet even our deferential standard of review. Our deference to agency expertise is not a blank check allowing the EPA to act arbitrarily, nor does it give the EPA a pass on having to explain how its proposed limit is consistent with RACT. Here, the EPA has failed to adequately explain how and why a 0.12 lb/MMBtu limit is permissible on this record. Although it has offered vague allusions to the inability of unspecified plants to meet a

[88] *Natl. Parks Conserv. Ass'n v. E.P.A.*, 803 F.3d 151 (3d Cir. 2015).
[89] *Id.* at 165–67.
[90] *Id.* at 166.
[91] *Id.* at 167.
[92] *Id.*

lower standard, the agency has deprived us of the ability to review its decision by "show[ing] its work."[93]

B. 600-Degree Temperature Threshold

The EPA's questionable reasoning above is badly compounded by the agency's simultaneous approval of a 600-degree threshold for SCR use. Taken together with the reporting requirements discussed below, approval of this regulatory scheme was clearly arbitrary and capricious.

Regarding the threshold, neither the EPA nor DEP can explain why it is necessary at all. It is not a common exemption.[94] Moreover, even assuming such a temperature threshold were reasonable, the record does not support the conclusion that 600 degrees Fahrenheit is the proper limit. The EPA instead justifies the threshold by observing that SCR controls become increasingly less effective at lower temperatures.[95] We readily accept that nearly all chemical reactions occur with greater efficiency at higher temperatures—this is merely a rote application of the Arrhenius Equation (which maintains that "reaction rates depend on the . . . temperature"[96]). However, that does not by itself justify approving higher pollution levels at cooler operating temperatures because the ill effects of running SCR at low temperatures are temporary or easily reversed.[97] For instance, a higher rate of accumulation of the by-products (primarily ammonium bisulfate) at an increased rate at lower temperatures can be readily reversed when the plant reverts to

---

[93] *Id.* The agency should also have specifically analyzed the 30-day averaging that Pennsylvania's plan entails, which is longer than neighboring states' averaging periods during the ozone season. Response Br. at 32-33.

[94] According to the record, other states have not requested such a threshold in their SIP proposals. JA343.

[95] JA54.

[96] JOHN C. KOTZ, ET AL., CHEMISTRY AND CHEMICAL REACTIVITY 696 (7th ed. 2009).

[97] JA343.

normal temperatures during the daytime, or peak hours.[98] The EPA failed to consider the practicality of such remedies to lower temperature operation, despite the fact, as discussed below, that SCR controls routinely operate well below 600 degrees.[99]

DEP attempts to bolster the threshold requirement by pointing to a response it gave during the public comment period.[100] However, while that response defends a 600-degree limit, it is contrary to record evidence. The DEP had noted:

> "While the minimum operating temperature varies depending on the type of SCR system, typically for the SCR to function at its target efficiency rate and optimize the control of NOx emissions, the temperature of the EGU flue gas entering the SCR must be no less than 600°F. When the EGU flue gas temperature falls below 600°F, less efficient NOx emission reduction occurs along with increased ammonia slip and increased potential for air heater fouling leading to unscheduled outages."[101]

The EPA relies upon this to argue "Pennsylvania determined that SCR controls *cannot* result in lower NOx emissions rates when operating below the temperature threshold."[102] Yet, in making that argument, the EPA fails to explain why operating below SCR's "target efficiency rate," as DEP explains would occur below 600 degrees, means that SCR "*cannot* result in lower NOx emissions." That inference simply does not naturally follow, and the agency impermissibly leaves us to puzzle how it reached its conclusion.

---

[98] *Id.* (citing EPRI, In*vestigation of Catalyst Deactivation from Operation Below the Minimum Operating Temperature (abstract)*, Product ID: 1023928 (Sept. 11, 2012), available at https://www.epri.com/#/pages/product/1023928 [link not functioning as of 8/14/2020]).

[99] JA343.

[100] Intervener Br. at 36-39.

[101] JA283.

[102] Response Br. at 35 (emphasis added).

Further, the EPA's own data demonstrates that DEP's argument, and the EPA's conclusion drawn from it, is incorrect. In selecting the threshold, the EPA found 600 degrees "consistent with the technical limitations of the SCR."[103] However, in the same paragraph of its technical summary, the EPA admitted that SCR-based pollution controls are used in temperatures ranging from 315 to 698 degrees Fahrenheit.[104] The EPA also offers a telling chart of SCR peak performance, which demonstrates that as the reaction temperature declines, the efficiency of NOx reduction also falls.[105] Although it can operate at over 90% efficiency at 750 degrees, SCR is reduced to approximately 77.5% efficiency at 600 degrees and 62.5% efficiency at 550 degrees.[106] Yet the agency fails to provide any information to support the crucial next step of its reasoning: whether and how 77.5% compares in terms of economic and technical viability with 62.5% efficiency.

This Court is left to infer that whereas 77.5% efficiency is worthwhile, at 62.5% efficiency, SCR controls no longer add value to the pollution control process. That is not an impossible conclusion, but there is simply no evidence, nor any effort to supply such evidence, in this record. Further, it directly contradicts the agency's suggestion that operating below 600 degrees "cannot result in lower NOx emissions rates."[107]

While this shows that efficiency does decline at an increasing rate below 600 degrees, the same is true of 650 degrees, and 700 degrees. Further, nothing in the record before the agency demonstrates why the 65% efficiency at 550 degrees is inadequate or, in the terms of RACT, economically or technologically infeasible. The EPA's case here boils down to showing that there is a general connection between setting a limit and lower NOx removal efficiency, which the record

---

[103] JA54.
[104] *Id.*
[105] Response Br. at 37 (SCR System NOx Removal Versus Temperature).
[106] *Id.*
[107] *Id.* at 35.

supports, and then asking us to trust their "technical judgment" as to the proper limit.[108]

While we defer to the agency's expertise, the agency's decisions must nevertheless be rational and supported by record evidence. Here, we have only the agency's generic reliance on "technical expertise" to explain why 600 degrees was a rational cutoff.[109] Indeed, the EPA points out that 700-750 degrees is the optimal operating temperature of most SCR systems.[110] Thus, if the 600-degree cutoff was based upon the efficiencies of higher burning temperatures, the selection of the cooler, and thus less efficient and "dirtier," 600 degree threshold would be an even greater mystery. We would have hoped (and the law requires) that the agency would rely upon its technical expertise to justify and explain this decision, not to simply adopt it via *ipse dixit* authority. Moreover, it is important to note that the agency neglected to explain why Pennsylvania in particular needs this threshold when neighboring states have neither requested nor received one. Without explaining specifically how the 600-degree threshold satisfies RACT, the EPA accepted an arbitrary number proposed by PA DEP.

---

[108] *Id.* at 38. By contrast, the EPA is on firmer ground when the Sierra Club argues that the EPA has failed to justify the 30-day averaging period by which emissions are produced. Pet. Br. at 33. There the EPA did consider the averaging periods in neighboring states and concluded that Pennsylvania's fleet of coal-fired plants and the nature of the shorter averaging periods elsewhere (active only during ozone season) did not require a change to the Pennsylvania SIP. Response Br. at 32; JA77-78. This careful analysis further highlights how much was missing from the agency's approach elsewhere.

[109] Response Br. at 38.

[110] JA11 ("NOx removal efficiency decreases more drastically when temperatures are lower than the optimal operating range," which is "700° to 750° F"). The EPA also explicitly acknowledged in its final approval of the plan that "neither Pennsylvania nor EPA explained in detail why the minimum SCR temperature exemption . . . is adequate for RACT." *Id.*

The U.S. Court of Appeals for the D.C. Circuit has previously rejected similar efforts by the EPA to proceed based upon such a "hunch."[111] In *Sierra Club v. EPA*, the EPA set a 130-ppm carbon monoxide output limit on certain industrial boilers. That was based on data suggesting that at less than 150 ppm, the benefits of further reduction were negligible.[112] However, the data the EPA used to reach that determination had previously been rejected by the agency as unreliable. Thus, the D.C. Circuit Court held that the proposed standard was arbitrary and capricious. The EPA had relied on the data to conclude that further reductions would not be helpful.[113] The court explained, "even if EPA had grounds to conclude that there is some nonzero level of CO emissions that marks a point below which [pollution] emissions cannot be further reduced, it offered no basis for identifying 130 ppm as that level."[114]

Likewise, here the data could support establishing a threshold limit, but the agency fails to establish why 600 degrees suffices whereas 550 or 650 degrees does not. Unlike the flawed underlying data rejected by the D.C. Circuit, here the EPA fails to provide any uncontradicted data to support its threshold limitation. Instead, it summarily concludes that were Pennsylvania to institute a 550-degree limit, "additional NOx reductions achieved would be marginal."[115]

The threshold limit also serves to eviscerate the agency's already flawed 0.12 lb NOx/MMBtu limit discussed above. The evidence here establishes that since the SIP took effect, the Cheswick power plant appears to have begun using the 600-degree threshold as a loophole to avoid activating its SCR system.[116] At night, when power needs drop and the plant can lower its operating temperatures, the emissions at Cheswick have not declined commensurately. On the contrary, they have soared—up to 0.35 lb NOx/MMBtu—more than

---

[111] *Sierra Club v. E.P.A.*, 884 F.3d 1185, 1198 (D.C. Cir. 2018).
[112] *Id.* at 1195.
[113] *Id.* ("EPA relied on the same data it had elsewhere decisively characterized as untrustworthy.").
[114] *Id.* at 1197.
[115] Response Br. at 39; JA12.
[116] JA342.

three times the daytime emissions. This resulted in the entire plant's average emissions substantially increasing.[117] We cannot ignore the fact that this increase in polluting emissions only started after implementation of the new SIP standard was approved.[118]

The EPA tacitly acknowledged the existence of this loophole in its public response to the Sierra Club's concerns. There, the agency tried to argue that there was no loophole because the plants must still cap emissions at the higher, non-SCR limit of 0.16 lb-0.40 lb/MMBtu, depending on the boiler type.[119] The EPA argues it is thus not a "loophole" but the natural result of plants lowering their operating temperatures at night due to reduced demand.[120] That argument collapses upon itself. It is, in fact, describing what can only be defined as *a loophole*. It should be obvious that a loophole need not allow plants to escape regulation entirely. Nevertheless, the temperature threshold permits plants to evade the lower SCR limits of the Pennsylvania SIP. The EPA is thus flatly wrong when it concludes that allegations the threshold constitutes a loophole are not "supported in theory or fact."[121] Thus, we must remand in order for the agency to develop an alternative federal implementation plan.[122]

C. Reporting Requirement

Finally, the proposed SIP's lack of a tangible reporting requirement is the third chink in the plan's shoddy enforcement regime. In light of this deficiency, the temperature threshold exception discussed above becomes even more pernicious. Operating in tandem, these two provisions allow plant operators to evade the above 0.12 lb/MMBtu limits altogether by claiming they were operating below 600 degrees at the time

---

[117] JA341-42.

[118] *See* JA344-45 (demonstrating the pattern of increased emissions after SIP was implemented).

[119] JA12.

[120] Response Br. at 45.

[121] *Id.* Because these increased emissions started only after the SIP's temperature threshold was implemented, it cannot be explained as a necessary byproduct of the plant's nighttime operations.

[122] 42 U.S.C. § 7410(c)(1).

non-compliant emissions occurred. Without a record of inlet temperature data at the time of emission, it will be impossible to ascertain the validity of such claims.

The EPA and DEP reject the notion that the reporting requirements are insufficient. First, they point to the text of the Pennsylvania SIP as incorporated into state regulation. They then add many additional details regarding how this statutory oversight will be enforced that are nowhere to be found in the administrative record. "Our review must . . . be based on 'the administrative record [that was] already in existence' before the agency, not 'some new record made initially in the reviewing court' or 'post-hoc rationalizations' made after the disputed action."[123] Thus, we can only consider the record as it existed when the EPA issued its approval, not any post-hoc justifications offered during the course of litigation.

This means that support for the reporting regime must be found in the following requirements, which existed at the time of approval:

> The owner and operator of an air contamination source subject to this section . . . shall keep records to demonstrate compliance [with the SIP] in the following manner: (1) **The records must include sufficient data and calculations** to demonstrate that the requirements [of the SIP] are met. (2) Data or information required to determine compliance shall be recorded and maintained in a time frame consistent with the averaging period of the requirement.[124]

The parties dispute whether this SIP requirement that "sufficient data and calculations" be recorded suffices to ensure that temperature records are preserved. The Sierra Club argues these terms are too vague to be enforceable. We agree. The Clean Air Act requires: "plan provisions shall include enforceable emission limitations, and such other control

---

[123] *Christ the King Manor, Inc. v. Sec. U.S. Dept. of Health and Human Servs.*, 730 F.3d 291, 305 (3d Cir. 2013) (quoting *Rite Aid of Pa., Inc. v. Houstoun*, 171 F.3d 842, 851 (3d Cir.1999)) (alterations in original).

[124] 25 Pa. Code § 129.100(d) (emphasis added).

measures, means or techniques . . . as well as schedules and timetables for compliance, as may be necessary or appropriate . . ."[125] The Sierra Club also complains that the law allows only Pennsylvania to request the records;[126] there is no provision for public insight into how the plants are operating, and therefore no way for interested members of the public, or more crucially, the EPA itself, to conduct oversight. The absence of public access conditions enforcement upon a given administration's approach to enforcement of state environmental regulations. We do not believe that Congress intended to tether enforcement of the Clean Air Act safeguards to the vicissitudes of those political winds.

In *New York v. E.P.A.*, the Court of Appeals for the D.C. Circuit held that when a state proposal's lack of sufficient reporting requirements prevents the EPA from conducting enforcement, a given regime thereby fails to comply with the Clean Air Act.[127] There, the EPA had approved a reporting regime that depended on operators self-identifying a "reasonable possibility" of experiencing an increase in pollution. It left to the independent hands of those operators whether, in fact, they matched that description.[128] Therefore, operators could freely increase their emissions and avoid detection simply by claiming that there was no "reasonable possibility" that they would have experienced an increase in pollution output. The court concluded, "EPA needs to explain how its recordkeeping and reporting requirements allow it to identify [noncompliant] sources."[129] The court also expressed doubt about an enforcement regime's "reliance on state programs to establish minimum recordkeeping and reporting standards."[130] Effective regulation must not depend on the candor or veracity of the very entities being regulated. This is particularly true under the CAA, where past practices of

---

[125] 42 U.S.C. § 7502(c)(6); *see also* Reply Br. at 26 (citing cases that rejected the EPA's approval of unenforceable standards).
[126] 25 Pa. Code § 129.100(i).
[127] 413 F.3d 3, 35 (D.C. Cir. 2005).
[128] *Id.* at 34-35.
[129] *Id.* at 34.
[130] *Id.* at 35.

weighing economic factors have historically counseled against complete compliance.

The same logic applies here. First, the EPA delegated recordkeeping entirely to Pennsylvania's internal procedures. This delegation failed to require that records be available to the public. Instead, it deferred what "data and calculations" were "sufficient" for compliance to an operator's interpretation. That "honor code" approach might suffice in the type of world we aspire to. But it is more than a little fanciful to base a regulatory enforcement regime upon such aspirations.[131] Instead, of requiring a regime that could readily be "policed" and enforced, the EPA endorsed an emissions regime with no discernible enforcement mechanism.

Anticipating this weakness in their initial argument, the EPA and PA DEP offer a second line of justification. They provide more detail on how the regulatory regime will function. In its brief, DEP explains that under existing state law, plant operators are required by their operating permits to record their operating temperatures and to preserve those records for inspection on request of the state.[132] In particular, the state describes how "major polluters" under Title V (a category into which, it assures us, all of the power plants under review fall) are required to maintain and make available suitable records for public review and inspection. The Title V permitting process itself incorporates the RACT requirements,

---

[131] Moreover, in that aspirational world, regulation would not be needed to ensure compliance. As the Founders recognized: "[i]f men were angels, no government would be necessary." THE FEDERALIST No. 51 (James Madison). Instead, by requiring a regime that could readily be "policed" and enforced, the EPA endorsed an emissions regime with no discernible enforcement mechanism.

[132] Intervener Br. at 54-55 (citing 25 Pa. Code §§ 127.12(a)(3), 127.411(a)(4)(i), 127.12b(c), 127.441, 127.442). Intervenors direct us to this and other parts of their brief in their 28j letter, but the further explication they provide was not present in the record when the EPA issued its approval of the SIP and is therefore not a valid basis for our decision making now. DEP 28(j) letter dated May 28, 2020 at 1-2.

by making each permitee agree to keep suitable records to enforce RACT provisions.[133]

Yet at oral argument, PA DEP conceded that temperature inlet data is not specifically included in these Title V permit records. Instead, counsel posited that "*if* the Department has the temperature data, citizens are able to review that."[134] This tacitly demonstrates that the data's availability is speculative and dependent on the regulated entity. Counsel explicitly confirmed this point. When asked, "so sometimes it'll be there, and sometimes it won't," PA DEP's counsel admitted, "that's correct, Your Honor . . . *if* the Department has records, they must be made available to the public."[135] It is a strange regulatory system indeed that is based on the good faith of the regulated entity to keep records which may be prejudicial to its operation and profitability.

Moreover, the recordkeeping provisions cited by PA DEP do not require operators to record temperature inlet data.[136] Intervenor's own record cites reveal that PA DEP actively removed prior requirements for "how the records shall be maintained or in what format[.]"[137] And even if this were not the case and the EPA had actually submitted after-the-fact evidence that temperature inlets were recorded, we would be unable to consider that evidence. We are bound to examine only "the administrative record . . . already in existence before the agency, not some new record made initially in the reviewing court or post-hoc rationalizations made after the disputed action."[138]

Because the SIP's 600-degree threshold necessarily depends upon accurate temperature reporting, the EPA's approval of such inadequate requirements on this record was

---

[133] Intervener Br. at 55 (citing 25 Pa. Code Chapter 127, Subchapter G).
[134] Oral Arg. Trans. at 42-43 (emphasis added).
[135] *Id.* at 43 (emphasis added).
[136] Intervenor's Br. at 12, 56 (citing 25 Pa. Code §§ 127.511, 129.100).
[137] JA289.
[138] *Christ the King Manor, Inc.*, 730 F.3d at 305 (internal quotation marks and citation omitted).

arbitrary and capricious. Thus, the reporting requirements must be vacated.

IV.

Therefore, we will grant the petition for review and vacate the agency's action on each of these three provisions of the Pennsylvania plan. On remand, the agency must either approve a revised, compliant SIP within two years or formulate a new federal implementation plan.[139] That proposal must be technology forcing, in accord with the agency's RACT standard,[140] and lack the gaping loophole found in the enforcement regime proposed here.

[139] 42 U.S.C. § 7410(c)(1) (providing two years for the EPA to promulgate a federal implementation plan in such circumstances); *E.P.A. v. EME Homer City Generation, L.P.*, 572 U.S. 489, 498 (2014) (acknowledging this timeline).
[140] Memorandum from Roger Strelow, *supra* n.10, at 2.