

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

[EPA-R03-OAR-2024-0047; FRL-9920-01-R3]

#### Air Plan Disapproval; Pennsylvania; Reasonably Available Control Technology Case-by-Case Permits for Keystone, Conemaugh and Homer City Generating Facilities for the 1997 and 2008 Ozone National Ambient Air Quality Standards

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is proposing to disapprove state implementation plan (SIP) revisions submitted by the Pennsylvania Department of Environmental Protection (PADEP) on behalf of the Commonwealth of Pennsylvania (Pennsylvania). PADEP submitted SIP revisions for the Keystone, Conemaugh and Homer City electric generating facilities on May 26, 2022 to address certain reasonably available control technique (RACT) requirements for the 1997 and 2008 ozone national ambient air quality standards (NAAQS). EPA is proposing to disapprove the May 26, 2022 SIP revisions for these facilities as the SIPs contain problematic provisions and fail to justify the selection of permit limits as RACT consistent with applicable requirements and case law. This action is being taken under the Clean Air Act (CAA).

**DATES:** Written comments must be received on or before March 22, 2024.

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA-R03-OAR-2024-0047 at <https://www.regulations.gov>, or via email to [gordon.mike@epa.gov](mailto:gordon.mike@epa.gov). For comments submitted at *Regulations.gov*, follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *Regulations.gov*. For either manner of submission, EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be confidential business information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located

outside of the primary submission (*i.e.* on the web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <https://www.epa.gov/dockets/commenting-epa-dockets>.

#### FOR FURTHER INFORMATION CONTACT:

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#### SUPPLEMENTARY INFORMATION:

##### I. Background

The RACT requirements in CAA section 182(b)(2) apply to all ozone nonattainment areas classified as Moderate or higher (*i.e.* Serious, Severe, or Extreme). Section 184(b)(1)(B) of the CAA also applies RACT to all areas located within ozone transport regions. The entire Commonwealth of Pennsylvania is part of the Ozone Transport Region (OTR) established by section 184 of the CAA and therefore subject statewide to RACT requirements.

On May 16, 2016, Pennsylvania submitted a SIP revision intended to satisfy CAA sections 182(b)(2)(C), 182(f), and 184 for the 1997 and 2008 8-hour ozone NAAQS for all major sources of nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) in Pennsylvania not subject to control techniques guidelines (CTGs), with a few exceptions not relevant to this action. On May 9, 2019, EPA published a final action fully approving certain provisions and conditionally approving other portions of Pennsylvania's May 16, 2016, SIP submission to implement RACT for the 1997 and 2008 Ozone NAAQS (hereafter the "RACT II rule"). 84 FR 20274 (May 9, 2019). Specifically, EPA's action fully approved sections 121.1, 129.96, 129.97, and 129.100 of Title 25 of the Pennsylvania Code (25 Pa. Code) as meeting certain aspects of major stationary source RACT in CAA sections 172, 182, and 184 for the 1997 and 2008 ozone NAAQS, and conditionally approved 25 Pa. Code sections 129.98 and 129.99 following a commitment provided by Pennsylvania to submit additional SIP revisions to

address the deficiencies identified by EPA in the May 16, 2016 SIP revision. *Id.* at 20290.

On August 27, 2020, the Third Circuit held unlawful and vacated EPA's approval of certain SIP provisions challenged by the Sierra Club. *Sierra Club v. EPA*, 972 F.3d 290 (3rd Cir. 2020) ("*Sierra Club*"). The case related to EPA's approval of only that portion of the RACT II rule applicable to coal-fired electricity generating units (EGUs) equipped with selective catalytic reduction (SCR) for control of NO<sub>x</sub>. Specifically at issue was EPA's approval of the presumptive RACT NO<sub>x</sub> limit for these EGUs of 0.12 pounds of NO<sub>x</sub> per Million British Thermal Units (MMBtu) of heat input (lbs/MMBtu) when the inlet temperature to the SCR was 600 degrees Fahrenheit or above, found at 25 Pa. Code 129.97(g)(1)(viii); the application of the less stringent NO<sub>x</sub> limits of 25 Pa Code 129.97(g)(1)(vi) to EGUs with SCR when the inlet temperature to the SCR was below 600 degrees Fahrenheit; and the failure of the RACT II rule at 25 Pa. Code 129.100(d) to specifically require these EGUs to keep temperature data for the inlet temperature to the SCRs and report that data to PADEP.

The Court explained that, while RACT does not require the lowest achievable emissions limit, Pennsylvania's adoption of a limit derived from the average historical NO<sub>x</sub> emissions of the units at these EGUs, without more, was insufficient. The record showed that certain units within Pennsylvania were capable of achieving significantly lower rates of NO<sub>x</sub> emissions. The Court found that EPA did not sufficiently explain why a lower standard was infeasible. *Sierra Club*, 972 F.3d at 299-303. Second, the Court held that Pennsylvania's standard acted as a loophole because it permitted unlimited operations without the use of SCR controls if exhaust gas temperature was kept below what the Court considered an arbitrary temperature threshold of 600 degrees Fahrenheit. *Id.* at 303-07. Third, the Court held that Pennsylvania's reporting requirements were not enforceable. *Id.* at 307-09.

Consequently, the Court vacated EPA's approval of this portion of the 2016 SIP and ordered EPA either to approve a revised, compliant SIP or promulgate a FIP within two years (*i.e.*, by August 27, 2022). *Sierra Club* at 309. The Court stated that the new standard—SIP or FIP—"must be technology forcing, in accord with [EPA's] RACT standard, and lack the gaping loophole found in the [2016 SIP's] enforcement regime." *Id.* On August 16, 2022, EPA took final action

to disapprove the vacated portions of the May 19, 2020 approval. 87 FR 50257. EPA published its proposed FIP on May 25, 2022. 87 FR 31798. EPA issued a FIP on August 31, 2022. 87 FR 53381.

Following the Court’s decision, PADEP required that by April 1, 2021, each source within a facility which had been subject to the presumptive 0.12 lb/MMBtu limit submit a permit application in accordance with 25 Pa. Code 129.99 setting forth a RACT analysis for each unit at the facility.<sup>1</sup> On or about April 1, 2021, Conemaugh, Homer City, Keystone, and Montour submitted permit applications to PADEP with RACT analyses.<sup>2</sup> PADEP found the permit applications to be technically deficient and therefore issued technical deficiency letters to each of these sources seeking additional information. Although the sources submitted additional information, PADEP decided that it would do its own case-by-case RACT analysis for each EGU at each facility and propose new RACT limits for each EGU in amended title V permits. Once these permits became final, PADEP intended to submit each permit to EPA as a SIP revision to meet the RACT requirement for each source. EPA also continued to regularly discuss with PADEP their efforts to develop case-by-case RACT/title V permits for these sources.

From September 11, 2021, through November 6, 2021, PADEP serially issued draft RACT/title V permits for four sources, while Allegheny County issued a draft RACT/title V permit for Cheswick in December 2021.<sup>3</sup> EPA submitted timely comments on each draft permit. Many of the concerns and

issues identified in EPA’s first set of comments (which was on the Keystone permit) appeared again in the draft permits for the other sources. EPA’s comments raised significant concerns over the approvability of each permit because each remained inconsistent with the court’s decision, and PADEP did not address those concerns with each subsequent draft permit it published for comment. On May 26, 2022, PADEP submitted case-by-case RACT determinations to EPA as a revision to the Pennsylvania SIP which still contained the approvability issues EPA had flagged in its comments, for Keystone, Conemaugh, and Homer City. PADEP submitted a case-by-case RACT determination for Montour as a revision to the Pennsylvania SIP on June 9, 2022, but subsequently formally withdrew it.<sup>4</sup> In addition, the Cheswick facility permanently ceased operations and surrendered all of its air permits to the Allegheny County Health Department.<sup>5</sup> The Homer City facility also ceased all coal-burning operations on July 1, 2023.<sup>6</sup> Prior to July 1st, only Unit 3 at Homer City was operating. However, because Homer City has not formally surrendered its CAA permits, which would demonstrate that the shutdown is permanent, and because PADEP has not withdrawn the SIP submission with regard to Homer City, EPA will continue to consider the approvability of the RACT NO<sub>x</sub> limits for Homer City.

EPA notes that the May 2022 permits for Keystone and Conemaugh also contain case-by-case RACT limits for certain gas or oil-fired auxiliary boilers at these facilities. However, EPA is not taking action at this time on the case-by-case RACT limits in these permits for

two auxiliary boilers at Keystone (Source IDs 037 and 038) and the two at Conemaugh (Source IDs 039 and 041). These auxiliary boilers were not subject to the presumptive RACT limit in 25 Pa. Code 129.97(g)(1)(viii) for which EPA issued a final disapproval in August 2022.

**II. Summary of the Case-by-Case Permit SIP Revisions**

EPA notes that the RACT limits in PADEP’s May 2022 SIP submittal addressed RACT limits for the large Electric Generating Units (EGUs) at Conemaugh, Keystone, and Homer City for only the 1997 and 2008 ozone NAAQS. These source-specific limits were established pursuant to 25 Pa. Code 129.99, which was conditionally approved by EPA in March 2019. Section 129.99 of 25 Pa. Code allows a source to apply for an alternative RACT limit (a.k.a. “case-by-case” RACT limit) to the otherwise default (a.k.a. “presumptive”) RACT limits where appropriate. In response to comments,<sup>7</sup> PADEP affirmed that the RACT limits for the EGUs at these three sources do not address the 2015 ozone NAAQS.<sup>8</sup>

*Summary of Pennsylvania’s Process for Setting Limits*

PADEP developed the NO<sub>x</sub> limits for each of the EGUs at each facility using a similar methodology, which included using similar years of data. Table 1 in this document summarizes the three NO<sub>x</sub> emission rates applicable to each unit at each facility as proposed by Pennsylvania for public comment, and the final limits in the permits submitted by PADEP for approval as SIP revisions.

**TABLE 1—PROPOSED RATES AND FINAL RATES IN 2022 PA SIP SUBMISSION**

Facility	Unit	Capacity	Proposed limits			Submitted as SIP revision (final)		
			SCR on lb/MMBtu daily avg.	All conditions lb/MMBtu daily avg.	All conditions lb/hr 30-day avg.	SCR on lb/MMBtu daily avg.	All conditions lb/MMBtu daily avg.	All conditions lb/hr 30-day avg.
Conemaugh	1	8,280	0.070	0.27	700	0.070	0.27	700
	2	8,280	0.070	0.27	700	0.070	0.27	700
Keystone	1	8,717	0.080	0.30	800	0.080	0.30	770
	2	8,717	0.080	0.30	800	0.080	0.30	770
Homer City	1	6,792	0.080	0.45	550	0.080	0.45	600
	2	6,792	0.080	0.45	550	0.080	0.45	600
	3	7,260	0.070	0.27	510	0.070	0.27	560

<sup>1</sup> See “Conemaugh RACT II Review Memo” p. 2, “Homer City RACT II Review Memo” p. 3 and “Keystone RACT II Review Memo” p. 2, available in the docket of this action.

<sup>2</sup> The Bruce Mansfield EGUs ceased all operations prior to April 1, 2021 and therefore did not submit a RACT permit application.

<sup>3</sup> See 51 Pa.B. 5834, September 11, 2021 (Keystone); 51 Pa.B. 6259, October 2, 2021 (Conemaugh); 51 Pa.B. 6558, October 16, 2021 (Homer City); 51 Pa.B. 6930, November 6, 2021

(Montour); Allegheny County Health Department Public Notices, December 2, 2021 (Cheswick).

<sup>4</sup> See document dated October 26, 2022 from EPA Region III to Acting Secretary Ramez Ziadeh of PADEP available in the docket of this action.

<sup>5</sup> See document dated April 15, 2022 from Allegheny County to Lee Bahl of GenOn Holdings LLC available in the docket of this action.

<sup>6</sup> See <https://www.pjm.com/planning/service-requests/gen-deactivations>.

<sup>7</sup> All three Response to Comments (RTC) documents are in the docket for this matter. The

Conemaugh Response to Comments (Con RTC) and Keystone Response to Comments (Key RTC) are both dated May 12, 2022. The Homer City Response to Comments (HC RTC) in the official SIP submission is marked “Draft” and does not contain a date.

<sup>8</sup> See, e.g., Conemaugh Response to Comments, p. 2: “incorporates the provisions and requirements contained in the amended RACT II approval for the facility, which are intended to satisfy the [CAA] RACT requirements for the 1997 and 2008 . . . ozone [NAAQS].”

A technical evaluation memo (TEM) accompanying each draft permit issued for public comment provided an initial explanation for PADEP's methodology for determining the proposed RACT level of controls for each facility.<sup>9</sup> For each unit at each facility, PADEP states that it followed a "top-down" approach to determine NO<sub>x</sub> emissions limits, which included searching for and identifying the "best methodology, technique, technology, or other means for reducing NO<sub>x</sub> while factoring environmental, energy and economic considerations into the analysis." Con TEM, p. 2; Key TEM, p. 2; HC TEM, p. 2. This included identifying the controls installed on coal-fired units in some other states. PADEP then used the EPA Control Cost Manual (sixth edition), June 12, 2019, and sometimes vendor's quotes, to determine whether control options PADEP identified as technically feasible were also cost effective. Con TEM, pp. 2–3; Key TEM, p. 2; HC TEM, p. 3. PADEP performed some type of analysis for multiple NO<sub>x</sub> control technologies<sup>10</sup> for each facility before "determin[ing] that no additional controls are cost effective." Con TEM at 3. See, e.g., Con TEM pp. 3–19. In lieu of new controls, PADEP determined that for each of the three facilities, changes to the way the facilities operated their SCR and changes to how they "tuned" the boilers were the only technically available and cost-effective controls for reducing NO<sub>x</sub> emissions. Con TEM, pp. 2–3; Key TEM, pp. 2–3; HC TEM, pp. 2–3. This approach resulted in PADEP adopting three separate but related limits for each EGU at each of the three

facilities. The proposed and final rates are in Table 1 of this document. The method that PADEP used to arrive at each of the three rates is summarized below.

#### *Selection of SCR-on lb/MMBtu Daily Average Rates*

To determine the "SCR-on" limit representing RACT for when the SCR is operating, PADEP "analyzed daily NO<sub>x</sub> emissions rates from EPA's Clean Air Markets Division (CAMD) database at varying operating load conditions" for most of the units at each facility. Con TEM, p. 3; HC TEM pp. 4–13; Key TEM p. 3. PADEP examined data for each facility ranging from 2016 to 2020, depending on the facility.<sup>11</sup> For certain months within the 2016–2020 time frame, PADEP states that it analyzed the percentage of daily heat input and corresponding percentage of daily reagent injection for a unit or units at each facility to ascertain how heat input and reagent input affected daily NO<sub>x</sub> emissions, and to determine the lowest emission limit each unit could technically and economically achieve with the SCR. PADEP's analysis included examining the percentage of maximum heat rate input for the unit for each day of certain months and the corresponding percentage of maximum ammonia (the reagent used) input observed per day for the same month. Con TEM, p. 4; Key TEM, pp. 3–8; HC TEM pp. 4–13. From this data, PADEP identified a "load" or heat input level at which it seemed that Conemaugh stopped injecting ammonia into the flue gas stream, see Con. TEM, p. 6, but did not identify loads or heat inputs at which Homer City's or Keystone's units stopped injecting ammonia. See HC TEM pp. 4–13, Key TEM pp. 3–8. PADEP also presented NO<sub>x</sub> emission rate data for certain months for each source during various ozone seasons, and for some periods outside of ozone seasons.<sup>12</sup> For each facility, PADEP found that the automated controls that run the SCR seemed to be set at an emissions "set point," expressed as pounds of NO<sub>x</sub> per million Btus of heat input (lb NO<sub>x</sub>/MMBtu), and that these

set points varied over time.<sup>13</sup> For Conemaugh, PADEP concluded that "additional emission reductions would be achieved if the operator operated the SCR with a lower emissions setpoint while the SCR is running." Con. TEM, p. 6. For Keystone, PADEP stated "[b]oth units at Keystone seem to be able to achieve a NO<sub>x</sub> rate of 0.060 lb/MMBtu on a daily average basis," but cited "varying load conditions and other factors" as affecting SCR performance and therefore proposed (and finalized) a daily average SCR-on rate of 0.08 lb/MMBtu for both. Key TEM, p. 6. PADEP does not provide further information on what these other factors are or what impact they and load conditions would have that lead to the selection of the 0.08 lb/MMBtu limit. For Homer City units 1 and 2, PADEP's analysis concluded that the facility seemed to be targeting a NO<sub>x</sub> emission rate of 0.10 lb/MMBtu when the SCR was operating, but identified "rare" periods where the units achieved rates below 0.05 lb/MMBtu. HC TEM, p. 5. However, PADEP concluded that "[d]espite the fact that emissions under 0.10 lb/MMBtu are possible under at least some operating conditions, accounting for other operating condition requires a limit above the minimum achievable." HC TEM, p. 8. PADEP therefore proposed (and finalized) a 0.080 lb/MMBtu daily average operating rate for Units 1 and 2 when the SCR is operating. For Unit 3, PADEP found that it was also targeting a NO<sub>x</sub> emission rate of 0.10 lb/MMBtu, but during July 2019 was able to consistently achieve NO<sub>x</sub> rates between 0.08 and 0.09 lb/MMBtu despite daily load swings. HC TEM, p. 9–10. PADEP identified two other instances where Unit 3 was capable of achieving NO<sub>x</sub> rates lower than 0.08, but did not identify the lowest achievable SCR-on rate before determining that other factors require a limit above the lowest achievable NO<sub>x</sub> rate.<sup>14</sup> Without identifying the lowest achievable NO<sub>x</sub> emission rate or explaining how the other factors affect that rate, PADEP proposed (and finalized) a rate of 0.07 lb/MMBtu when the SCR is operating. HC TEM, pp. 12–13.

Certain changes made to PADEP's proposed rates for each source in response to comments received are discussed in EPA's analysis of the final rates.

<sup>13</sup> Con TEM, pp. 3–8; Key TEM, pp. 3–7; HC TEM, pp. 4–13.

<sup>14</sup> The other factors PADEP cites are varying loads, operating load, catalyst condition, exhaust temperature and velocity, moisture level, initial NO<sub>x</sub> levels in the exhaust, and other unnamed factors. HC TEM, p. 13.

<sup>9</sup> All three technical evaluation memos (TEMs) are in the docket for this matter. The Homer City technical evaluation memo (HC TEM) is dated October 14, 2021. The Conemaugh technical evaluation memo (Con TEM) is dated September 28, 2021. The Keystone technical evaluation memo (Key TEM) is dated August 25, 2021.

<sup>10</sup> Potential controls evaluated included: Precombustion Controls (Switching to Natural Gas, Switching from high to low emitting or zero emitting units), Combustion Controls (Partial or full oxy firing, Oxygen enhanced combustion, LNB installation, LNB Optimization, LNB Upgrade, Flue Gas Recirculation (FGR), Separated overfired air, Rotating opposed fire air) Post Combustion Controls (Additional SCR, SCR Optimization, Economizer Bypass during low load, startup, and shutdown to allow SCR operation, V-temp economizer during low load, startup, and shutdown to allow SCR operation, Flue gas reheat during low load, startup, and shutdown to allow SCR operation, Dry sorbent injection prior to SCR during low load conditions to allow SCR operation, addition of Selective Non-Catalytic Reduction (SNCR), SNCR Optimization, Return of partially operating SCR and SNCR systems to full operation) Station Wide Improvements (Installation/improvement of digital process controls on equipment to minimize NO<sub>x</sub> emissions and detect equipment in need to maintenance, Improved/increased equipment cleaning and maintenance practices). See Con TEM p. 4–19; Key TEM, pp. 3–17; HC TEM pp. 3–21.

<sup>11</sup> Note that Key TEM p. 3, Con TEM p. 3 and HC TEM p. 4, state that the years reviewed are 2017–2020, but Key RTC p. 8, Con RTC p. 9 and HC RTC p. 7 state years reviewed were 2016–2020.

<sup>12</sup> For Keystone, the months examined were May 2017 and April 2018. Key TEM pp. 3–6. For Homer City, the months were June 2019 (unit 1), July of 2019 and 2020 (unit 2), and December 2017, July 2019, September 16, 2019 and Dec. 4, 2019 (unit 3). HC TEM, pp. 4–14. For Conemaugh, dates examined included May 2017, September 5, 2019, and April 4, 2020. Con TEM pp. 3–8.

### *Selection of All Conditions lb/MMBtu Daily Average Rate*

The lb/MMBtu limits in the “All Conditions lb/MMBtu Daily Average” columns of Table 1 in this document, represent the daily average NO<sub>x</sub> limits that PADEP determined each unit at each facility could achieve solely through the operation of its existing low-NO<sub>x</sub> burners with overfire air, so long as the sources “tuned” their boilers to optimize the reduction of NO<sub>x</sub> rather than to obtain the highest heat output. PADEP describes boiler tuning as making a number of adjustments to the boiler operating parameters that affect the generation of NO<sub>x</sub> in the boiler fire box, including excess air levels, secondary air biasing, fuel/auxiliary air damper adjustments, burner tilt, fuel flow biasing, and changes to primary air flows. See, e.g., Con. TEM, pp. 14–15. As stated in the technical evaluation memo for Conemaugh, “[g]enerally boiler’s regular inspection, preventive maintenance, tuning, practicing during shutdown and upset conditions to prevent excess emissions, inspections and testing of Over Fire Air (OFA) components, and adjusted of burner angle to minimize NO<sub>x</sub> emissions results in lowering NO<sub>x</sub> emissions by 5–15% or at an average of 10.%. [sic]” Con. TEM, p. 15. For each of the EGU boilers (units) at each of the facilities, PADEP determined that the boiler burners had not been tuned to minimize NO<sub>x</sub> emissions, but rather had been tuned to maximize output. Key TEM, p. 13; HC TEM, p. 15; Con TEM, pp. 14–15. For each facility, PADEP concluded that tuning the boilers to minimize NO<sub>x</sub> emissions could result in lowering NO<sub>x</sub> emissions by 5% to 15%, so PADEP elected to apply an average NO<sub>x</sub> reduction of 10% when setting the “All Conditions lb/MMBtu Daily Average” rate. Id.

### *Selection of All Conditions 30-Day Rolling Average lb/hr Rate*

Regarding the 30-day rolling average pounds of NO<sub>x</sub>/hour limits in the column in Table 1 labeled “All Conditions lb/hr 30-day Average,” there is some ambiguity in how PADEP arrived at the final rates for Keystone and Conemaugh. In the Keystone RTC, PADEP states the 30-day lb/hr limit was “derived from the emission level at 0.08 lb/MMBTU at full load . . . with an additional small margin to account for the fact that it is impossible to completely avoid all periods of operation when complying with the 0.080 lb/MMBtu is technically infeasible.” Key RTC, p. 10. Similar language stating that the 30-day lb/hr

rate was derived from the daily SCR-on rates is also in Con RTC p. 11 and HC RTC p. 9. PADEP’s explanation for how the 30-day lb/hr limits were derived in the Technical Evaluation Memos is more ambiguous and does not explicitly state the 30-day lb/hr rate is derived from the daily SCR-on lb/MMBtu rate. A description of what PADEP did in the Technical Evaluation Memos is outlined below.

PADEP seems to have generally performed a similar analysis of similar years of data for all three facilities, but used a different method to set the 30-day lb/hr rates for Conemaugh and Homer City than for Keystone. For each source at each facility, PADEP says it analyzed “mass-based NO<sub>x</sub> emission rate in pounds per hour on a 30 operational day rolling average basis using EPA’s CAMD database at all operating conditions for [the units] from 2017–2020. Mass based emission rate on a 30 operational day rolling average basis is dependent on number of hours a unit is operated, on average, at high load vs low load for the past 30-days [sic].”<sup>15</sup> Con TEM p. 15; see also Key TEM pp. 13–14, HC TEM pp. 17–19.

Following this analysis for each facility, for Conemaugh and Homer City PADEP used the SCR-on lb/MMBtu rate for each unit at each facility, then multiplied that SCR-on rate by each unit’s maximum MMBtu per hour rating to arrive at the number of pounds per hour that each unit would emit if they ran at their full heat input rating while complying with that unit’s SCR-on lb/MMBtu rate. For example, the technical review memo for Conemaugh explains that:

“Each of Conemaugh’s units emits about 580 lb NO<sub>x</sub> per hour assuming an emission level of .070 lb/MMBtu and 100% load. The impact to the environment should never exceed this level on a long-term basis. The Department is proposing a limit of 700 lb/hr limit on a 30 operational day rolling basis which accounts for all operating scenarios including situations during which the SCR is not able to operate. The compliance buffer also accounts for the fact that both units at Conemaugh operate as much as 10% over their rated capacity.” (Con TEM, p.15).

For Conemaugh, PADEP concluded that Units 1 and 2 were operating between 55% and 100% load during this time and both were able to achieve at or below 625 lb/hr on a 30-operating day basis. PADEP found that during this time period both units operated at

around a 0.075 lb/MMBtu NO<sub>x</sub> emissions rate, with occasional higher spikes in rate. Based on this data, PADEP concluded:

“Given that the Department believes that NO<sub>x</sub> rates below .07 are readily achievable with the SCR in operation, and the fact that both units were able to achieve a 30-day rolling NO<sub>x</sub> rate of under 625 lb/hr despite operating at a rate between .075 and .1, DEP believes that Conemaugh Generating Station can achieve a NO<sub>x</sub> rate of 700 lb/hr on a 30-day rolling basis. Even if the facility were to operate at low load for a significant time during a 30-day averaging period—generating significantly more mass emissions than operation at higher loads with SCR, emission rates at high load should be significantly below 700 lb/hr allowing the facility to “make up” for higher emissions during times of low load, assuming the facility operates to the NO<sub>x</sub> rate of .045–.05 lb/MMBtu it is usually capable of meeting when the SCR is operating.” Con TEM, pp. 16–17.

Thus, for Conemaugh, PADEP proposed and finalized an all conditions 30-day rolling average lb/hr limit of 700 lb/hr.

For Homer City, PADEP used the proposed SCR-on daily average NO<sub>x</sub> limit of 0.08 lb/MMBtu for Units 1 and 2, multiplied by the maximum MMBtu per hour for each of these units, to arrive at a 30-day rolling average limit of 550 lb of NO<sub>x</sub> per hour for each unit. For Unit 3, PADEP used the proposed SCR-on lb/hr daily average limit of 0.07 lb/MMBtu multiplied by the maximum heat input for Unit 3 to arrive at a rolling 30-day average limit of 510 lbs of NO<sub>x</sub> per hour. HC TEM, p. 17. In response to a comment from Homer City, PADEP raised the 30-day rolling average lb/hr limits to 600 lb/hr for Units 1 and 2 and 560 lb/hr for unit 3.

For Keystone, PADEP appears to have arrived at its proposed and final 30-day rolling average lb/hr limit through a different method. PADEP’s TEM states that PADEP analyzed the mass-based NO<sub>x</sub> emission rate pounds per hour on a 30-day rolling average at all operating conditions for Units 1 and 2 from 2017–2020. Key TEM, p. 13. The TEM then provides Figure 5, which graphs the 30-day rolling NO<sub>x</sub> rates for Units 1 and 2, but only for the 2017 ozone season. Key TEM, P. 14. From Figure 5, the TEM concludes that both units were able to achieve at or below 800 lbs/hr on a 30-day rolling average basis, continuously. Key TEM, p.14. The TEM then asserts that based on the CAMD data, “DEP believes that by managing combination of hours of operations when a unit is operating at loads supporting SCR and at lower loads with [low NO<sub>x</sub> burners], Unit 1 and Unit 2 can achieve 800 lbs/hr on a 30-day operating day rolling average basis despite the changes in utilization of the boiler.” Id. From this,

<sup>15</sup> The Conemaugh TEM does not show the results of the full analysis of the 2017–2020 data. For example, Figure 6 in the Con TEM shows only ozone season operating load versus 30-day rolling average NO<sub>x</sub> emissions on a lb/hr basis for the 2017 ozone season. Con TEM, p. 6.

PADEP concluded that the 800 lb/hr 30-day rolling average limit under all operating conditions is RACT. *Id.* However, in response to comments, this limit was changed to 770 lbs/hr for both units. Key RTC pp. 6.

In the response to comments document for Conemaugh, PADEP explained that the 30-day rolling average lbs/hr all conditions rate “. . . is the glue that holds the three emission limits together and ensures that the emission reductions from the two Conemaugh Generating Station units are maximized. . . . This emission limit applies at all times and in all circumstances, without exception.” Con RTC, p. 6.<sup>16</sup> PADEP further asserts that the SCR-on lb/MMBtu daily average rate minimizes the emissions that occur when operating with the SCR, while also claiming that the 30-day rolling average lb/hr all conditions rate minimizes “both the amount of time that the units can be operated when the SCR is technically unavailable, as well as forces the load (and therefore mass emission rate) to the lowest rate possible when it is not being operated due to technical unavailability.” See, e.g. Con RTC, p. 6. The RTC further explains that “[a]t any load above approximately 30%–40%, operation without control by the SCR results in emissions greater than 700 lbs/hr. As the load climbs, the emissions per hour climb proportionately.” *Id.* PADEP asserts that the 700 lb/hr rolling 30-day average limit “ensures that the operator will maximize operating hours with the SCR and minimize heat input (and total mass emissions) when operation of the SCR is technically infeasible.” *Id.*

### III. EPA’s Evaluation of the RACT Permit Limits in the SIP Submittals

EPA’s review of the RACT permit limits in each of the three case-by-case RACT permits submitted as SIP revisions by PADEP has identified several issues appearing in each permit which preclude approval of the SIP submissions as satisfying RACT requirements. In summary, EPA has determined that there are issues regarding the enforceability of the SCR-on permit limits, Director’s discretion issues related to the SCR-on limits, and an inadequate justification for why the SCR-on limits meet the definition of RACT for each source. Moreover, because some of the 30-day rolling hourly average pound per hour mass limits appear to be derived from the daily lb/MMBtu SCR-on limits, the failure of the SCR-on limit to meet the

criteria for RACT calls into question whether the 30-day limits are RACT.<sup>17</sup> Also, EPA cannot verify from PADEP’s submitted SIPs whether these 30-day rolling average pound per hour mass limits actually act as a constraint on operation of the EGUs without operation of the SCR in a way that represents RACT. In addition, PADEP has added a “compliance margin” buffer to the 30-day rolling average pound per hour limits without an adequate explanation of why that buffer is necessary to make the limits technologically or economically feasible. Each of these issues is discussed below. As a result, EPA is proposing to disapprove this SIP revision.

#### *Lack of Enforceability of the “SCR-On” Limits for Each EGU at Each Facility*

Neither the permits nor the background information submitted with the SIP set forth clear, objective criteria for determining when emissions from each EGU are subject to the SCR-on lb/MMBtu daily average limit(s). As such, it is not possible in all circumstances for EPA or the public to determine whether this limit applies, and therefore whether the sources are in noncompliance with that limit. As a result, EPA is proposing to disapprove the PADEP SIP revision on this basis.

Each permit includes language stating the NO<sub>x</sub> emissions are limited at a certain level, but that certain emissions are excluded when evaluating whether the limitations are met. Specifically, the permits contain exclusions for:

“. . . emissions during start-up, and shut-down; operation pursuant to emergency generation required by PJM, including any necessary testing for such emergency operations; and during periods in which compliance with this emission limit would require operation of any equipment in a manner inconsistent with technological limitations, good engineering and maintenance practices, and/or good air pollution control practices for minimizing emissions.” See, e.g., Conemaugh final permit, Section E, Restrictions, #001, p. 176. Keystone Final Permit, p. 169, and Homer City Final Permit p. 134.<sup>18</sup>

<sup>17</sup> In Key RTC p. 10 PADEP states the 30-day lb/hr limit was “derived from the emission level at 0.08 lb/MMBTU at full load. . . . with an additional small margin. . . .” Similar language stating that the 30-day lb/hr rate was derived from the daily SCR-on rates is also in Con RTC p. 11 and HC RTC p. 9. PADEP’s explanation for how the 30-day lb/hr limits were derived in Key TEM pp. 13–14, Con TEM pp. 15–17 and HC TEM pp. 17–19 is more ambiguous and doesn’t explicitly state the 30-day lb/hr rate is derived from the daily SCR-on lb/MMBtu rate as noted under the “Selection of All Conditions 30-day Rolling Average lbs/hr Rate” heading in section II.

<sup>18</sup> PJM is the Pennsylvania-New Jersey-Maryland Interconnection, a regional transmission organization operating in the midatlantic states.

EPA has determined that the exclusion during “Operation pursuant to emergency generation required by PJM” is problematic. This condition is not defined in the permit for Homer City but is defined in the final permits for Conemaugh (p. 176) and Keystone (p.169), stating that “the emissions limit remains in effect unless the permittee demonstrates that compliance with the [applicable emission limitation] is technically infeasible.” There are no bounds or explanation in the permit regarding what would equate to technical infeasibility, nor is there information on whom the permittee would demonstrate this infeasibility to or how EPA or the public could determine whether such an adequate demonstration was made. In response to comments, PADEP stated:

“the Conemaugh Station permit includes a process where emissions can be requested for exclusion from calculation of the 0.070 lb/MMBtu emission limit if the owner/operator makes a demonstration of technical infeasibility to the Department’s satisfaction. The general factors that may lead to technical infeasibility are included in the Conemaugh Station permit, and mirror SIP-approved RACT regulations in neighboring states. In fact, the list of general factors in Conemaugh’s permit is more limited than the factors listed in regulations promulgated by one commentator. See COMAR 26.11.38.04 section 4.”<sup>19</sup> Con RTC, p. 3.

EPA did not find the suggested list of “general factors” which may lead to a determination of technical infeasibility.

EPA also notes that this type of post-hoc determination allowing the director to grant exemptions from a SIP-approved emission limit during periods of startup, shutdown or other periods is the type of director’s discretion prohibited by the CAA, for the reasons set forth in EPA’s 2015 startup, shutdown and malfunction (SSM) SIP Action. 80 FR at 33840, 33917 (June 12, 2015). As stated in the 2015 SSM SIP Action, “SIP provisions cannot contain director’s discretion to alter SIP requirements, including those that allow for variances or outright exemptions for emissions during SSM events.” 80 FR at 33917. In the case of the permits submitted as part of Pennsylvania’s 2022 SIP revision, each contains language that allows the director to decide whether or not emissions from a source during any hour should be counted towards the more stringent SCR-on emission limits of 0.07–0.08 lb/MMBTU or to the less stringent emission limits of 0.27–0.45 lb/MMBTU. Although the rates would not change, the director would be making a

<sup>19</sup> COMAR is the Code of Maryland Regulations.

<sup>16</sup> Nearly identical statements are in Key RTC p. 6 and HC RTC p. 6.

decision as to whether certain emissions should be exempted from the more stringent SCR-on lb/MMBtu 24-hour average rate. This is the type of unilateral, ad hoc (or post hoc) decision by the director which could negate the possibility of enforcement of an otherwise enforceable SIP emission limit by EPA or the public and which is barred by EPA as first established in the 1999 SSM Guidance. 1999 SSM SIP guidance at 3, 80 FR 33840 at 33917.

In addition, pursuant to EPA's responsibilities under sections 110(k)(3), 110(l) and 193 of the CAA, the Agency cannot approve a SIP provision that automatically preauthorizes the state to unilaterally revise the SIP emission limit (in this case by making determinations that it did not apply at certain times) without meeting the applicable procedural and substantive statutory requirements for SIP revisions. 80 FR at 33918. As stated in EPA's 2015 SSM SIP Action, "[i]t is a fundamental tenet of the CAA that states cannot unilaterally change SIP provisions, including the emission limitations within SIP provisions, without the EPA's approval of the change through the appropriate process." Id.

In the quoted response to comments on this issue, PADEP claims that the list of general factors in the permits (which EPA could not locate) are more limited than factors listed in Maryland's regulations. EPA notes that it has not approved the cited Maryland regulation, COMAR 26.11.38.04, as RACT for EGUs, so the cited example does not carry any weight in EPA's analysis of this SIP revision.<sup>20</sup> PADEP claims that the list of general factors (which again, EPA could not locate) "mirror SIP-approved RACT regulations in neighboring states," but PADEP does not identify these other SIP-approved RACT regulations and EPA is not aware of what PADEP may be referencing. Without knowing which SIP-approved RACT regulations PADEP is referring to, EPA cannot judge the relevance of this argument.

The exclusion for "periods in which compliance with this emission limit would require operation of any equipment in a manner inconsistent with technological limitations, good engineering practices, and/or good air pollution control practices . . ." is also problematic. No permit provides

<sup>20</sup> See the final document at 82 FR 24546 (May 30, 2017) approving the NO<sub>x</sub> limits for Maryland's EGUs as SIP strengthening measures, and the final document at 84 FR 5004 (February 20, 2019) approving Maryland's RACT regulations for controlling VOC major sources for the 2008 ozone NAAQS, which notes that Maryland will address major sources of NO<sub>x</sub> in another SIP. None of the VOC regulations approved included the language in COMAR 26.11.38.04.

additional definitions or instruction on how this provision should be interpreted or applied. Similar to other provisions at issue here, this lack of definition makes this exemption provision difficult or impossible to enforce.

Although the permits require that the sources keep certain data and submit a monthly report to PADEP, it is in the sources' discretion to identify in these monthly reports "whether or not they believe they are subject to the [SCR-on] lb NO<sub>x</sub>/MMBtu limit" and "clearly document how [they] determined whether or not they believe they are subject to the [SCR-on] lb NO<sub>x</sub>/MMBtu hourly limit."<sup>21</sup> But this does not explain how PADEP will determine whether certain hours of NO<sub>x</sub> emissions from the sources should be counted towards the SCR-on daily average lb/MMBtu limits for each source, or the circumstances under which these emissions would be excluded from the limit. It is even more difficult to understand how EPA or the public would discern which hours of emissions should be counted towards the SCR-on limit. If it is unknown which hours of emissions count, it is impossible to determine whether a source complied with the SCR-on limit. In other words, without clear and objective criteria for excluding these emissions, neither EPA nor the public could determine whether the sources were complying with the SCR-on limit at each source. Although this situation is somewhat different than the situation faced by the Third Circuit in the *Sierra Club* appeal (lack of adequate recordkeeping), the lack of objective criteria for determining compliance in this situation leads to the same problem identified by that court, which is that there is no way for interested members of the public or EPA to conduct oversight. *Sierra Club* at 307.

#### *Pennsylvania's Inadequate Justification of Certain Limits as RACT*

EPA understands the PADEP's submission to argue that RACT for these facilities is comprised of: (1) a low daily SCR-on lb/MMBtu limit with exclusions as outlined in the prior section; (2) a

<sup>21</sup> Conemaugh final permit, p. 177. The final unredacted permits for all three facilities also state that the monthly reports should include the hourly load levels, heat input, ammonia injection rates, NO<sub>x</sub> rates, total NO<sub>x</sub> emissions, the SCR emission set point, SCR inlet and outlet temperature, and clearly indicate any days which the SCR-on lb/MMBtu emission limit is exceeded. For days exceeding the SCR-on lb/MMBtu limit, the above information must be provided on an hourly basis and the permittee must give a detailed explanation for why they exceeded their emission limit. Conemaugh permit, p. 176, Keystone permit pp. 170–171, Homer City permit p. 137.

much higher all conditions daily lb/MMBtu limit that provides a permissible emissions level under all operating conditions including when the SCR is not operating; and (3) the 30-day rolling average all conditions lb/hr limit, which is intended to provide some restriction on the extent to which the source could claim exclusions from the SCR-on rate. EPA has identified issues with each of these limits as discussed in the subsections below. EPA does allow for the possibility that different or alternative emissions limits (AELs) can apply during different modes of operation in the manner that PADEP has done here for the three different limits described.<sup>22</sup> However, EPA has stated that those AELs "must be clearly stated components of the emission limitation, must meet the applicable level of control required for the type of SIP provision (e.g., be RACT for sources located in nonattainment areas) and must be legally and practicably enforceable."<sup>23</sup>

Accordingly, here EPA must evaluate whether this combination of limits satisfies the OTR RACT requirement. PADEP did not provide any justification for why these limits appropriately function as alternative emission limits. In the 2015 SSM SIP Action, EPA recommended states consider seven criteria when developing alternative emission limits.<sup>24</sup> These recommended criteria assure the alternative emission limitations meet basic CAA requirements. PADEP did not explain why the alternative emission limitations included in this SIP revision meet CAA requirements, including RACT, and EPA cannot approve alternative emission limitations without such a showing.

Further, PADEP developed the emissions limits for the Keystone, Conemaugh and Homer City Facilities by reviewing only operating data and emissions rates from a limited number of years.<sup>25</sup> PADEP claims that using emissions and operating data from a limited set of relatively recent years is justified because these years reflect what is currently possible due to aging

<sup>22</sup> "State Implementation Plans: Response to Petition for Rulemaking; Restatement and Update of EPA's SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls To Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction" 80 FR 33840, section XI.D.

<sup>23</sup> *Ibid.* P 33913.

<sup>24</sup> *Ibid.* p. 33914.

<sup>25</sup> EPA also notes an inconsistency in how PADEP discusses the data that was considered in developing the limits at issue in this SIP revision. In the RTCs, PADEP references data from 2016–2020. (Key RTC p. 8, Con RTC p. 9, and HC RTC p. 7). However, in the TEMs, PADEP references data from 2017–2020.

equipment and changes in operating patterns, including the impact of changes made to the catalyst in the SCR system in order to meet the requirements of the 2011 Mercury Air Toxics Standard (MATS) (Key RTC p. 8, Con RTC p. 9, and HC RTC p. 7).

However, PADEP presented no data or analysis showing that aging equipment, particularly the SCR control systems, have deteriorated such that data from earlier years are unreliable. PADEP's submittals have also not justified a rate selection methodology that relies on a limited set of years, nor have they explained why the selected years represent the lowest rate that can now be achieved when accounting for such changes. Stated differently, the RACT limits (regardless of averaging time) must reflect levels that represent periods of good emissions control, not business as usual (e.g., a 5-year average of past results) or higher-emitting periods.

#### *Selection of the SCR-On lb/MMBtu Daily Average Emission Rates*

PADEP's own data and analysis calls into question whether the final SCR-on daily average lb/MMBtu rates for Conemaugh (0.070 lb/MMBtu), Keystone (0.080 lb/MMBtu) and Homer City (0.080 lb/MMBtu for Units 1 and 2, and 0.070 lb/MMBtu for Unit 3) are RACT. Based on PADEP's SIP submission, EPA cannot determine whether the SCR-on rates for any of the three facilities are the lowest rates that can be achieved considering technological and economic feasibility. Although PADEP makes a general determination that optimization of the existing SCRs at each facility is RACT, the data PADEP provided in its SIP submission do not support a claim that these rates are the lowest achievable rates that can reasonably be obtained at each unit when the SCRs are operating, considering technological and economic feasibility. In addition, PADEP then applies an upward adjustment to these rates to account for factors, such as lag time, changes in boiler operating patterns, and aging of equipment, that PADEP states it has already accounted for by using data from 2017 to 2020 in their analyses for setting the RACT limits. As such, there should be no needed upward adjustment to account for these factors. Also, PADEP consistently applies a compliance margin to its rates without explaining what the margin is, in many cases, or why such a margin is needed to make the selected limit technologically or economically feasible.

#### *Conemaugh*

For Conemaugh, PADEP asserts that it examined CAMD emissions and other data for Units 1 and 2 for the years 2017–2020, but because both units are similar, assumed that data from unit 1 applied to unit 2 and therefore only discussed unit 1 data.<sup>26</sup> Con TEM, pp. 3–4. Figure 1 in the TEM is a graph showing percentage of heat input, NO<sub>x</sub> emission rates and percentage of ammonia injection rates during May 2017. From this graph, PADEP determined that Conemaugh Unit 1 maintained a NO<sub>x</sub> emission rate of 0.045 lb/MMBtu from May 5th through May 18th, which PADEP attributed to an ammonia injection control system operating at a set point of 0.045 lb/MMBtu. Con TEM, p. 4. From May 19th through the end of May 2017, PADEP observed that the “relative difference between the ammonia injection rates and heat input rates have increased,” leading to a steady NO<sub>x</sub> emission rate around 0.08 lb/MMBtu. Id. PADEP then notes that following May 2017, unit 1 only operated with varying set points between 0.065 and 0.08 lb/MMBtu throughout the 2017 and 2018 ozone seasons. Con TEM, p. 5. PADEP further observed that NO<sub>x</sub> rates increased significantly in 2019 and provided a graph (Figure 2) which PADEP asserts shows that during this month, Conemaugh ceased injecting ammonia for NO<sub>x</sub> control at around 50% heat input, and even when operating at 100% of heat input, the NO<sub>x</sub> emission rates stayed around 0.1 lb/MMBtu. PADEP concluded that “this strongly suggests that additional emission reductions would be achieved if the operator operated the SCR with a lower emission set point while the SCR is running.” Con TEM, p. 6. In addition, PADEP identified an April 2020 example when the SCR was not operating despite the boiler operating at loads “clearly supporting” SCR operation, with NO<sub>x</sub> emissions close to 0.3 lb/MMBtu during this time. Con TEM, p. 7. From this PADEP concluded that “[s]imply choosing not to operate the SCR is not indicative of the control level achievable by the system.” Id. Based on this data, PADEP then selected an SCR-on rate of 0.07 lb/MMBtu for Conemaugh. Id. The only explanation given for this specific rate is that it “includes a factor to provide an appropriate compliance margin,

<sup>26</sup> In response to a comment submitted on Conemaugh, PADEP replied that during the 2018 ozone season, with a few exceptions, Conemaugh's unit 2 was consistently able to achieve daily emission levels in the .055–.07 lb NO<sub>x</sub>/MMBtu range. Con. RTC, p. 7.

fluctuations in load, any lag in the control system as well as to account for other factors in the facility's future operations.” Con TEM, p. 8.

The response to comments (RTC) document for Conemaugh adds discussion of a 2017 study performed on unit 1 in May 2017 that suggested that running the SCR with a set point of 0.04 lb/MMBtu caused a spike in mercury emissions, and also discusses a 2016 study at the end of ozone season on unit 2 that suggested running the SCR at a 0.050 lb/MMBtu set point also caused an increase in mercury emissions. RTC, pp. 6–8. Based on further analysis, PADEP concluded that “a setpoint of 0.06 lb NO<sub>x</sub>/MMBtu . . . is achievable by [Conemaugh].” RTC p. 8. However, the RTC states, without explanation, that PADEP is choosing to keep the 0.07 lb NO<sub>x</sub>/MMBtu daily average emission rate. RTC p. 8.

EPA finds that PADEP's explanation of why this limit meets the definition of RACT is inadequate. Having concluded in the RTC that a 0.06 setpoint is achievable at Conemaugh, PADEP provides no explanation as to why it selected 0.07 lb/MMBtu as the daily average SCR-on rate. Nor is there any explanation of why a compliance margin is necessary, what compliance margin was applied in this instance, how fluctuations in load or lag in the control system affect the lowest achievable emissions rate, and how or why the rate must be adjusted to account for future operations. In the absence of an explanation of how PADEP selected the specific 0.07 lb/MMBtu rate and how any of these other factors affect the technical and economic feasibility of the lowest rate identified, EPA cannot support PADEP's conclusion that the 0.07 lb/MMBtu daily average rate is RACT for when Conemaugh's SCRs are operating.

#### *Keystone*

Like Conemaugh, PADEP's analysis for Keystone's SCR-on daily average rate of 0.08 lb/MMBtu does not adequately explain why this rate represents the lowest emission limit that Keystone's two units are capable of meeting based on technological and economic feasibility. In the TEM for Keystone, PADEP explains that it analyzed EPA's CAMD data for Keystone Units 1 and 2 from 2017–2020. Key TEM, p. 3. The TEM then includes a graph (Figure 1) showing certain daily operating statistics for unit 2 for the month of May 2017, from which PADEP concludes that unit 2 was able to maintain a NO<sub>x</sub> emission rate below 0.06 while the SCR was operating. TEM, p. 4. The TEM then shows a graph (Figure 2) plotting certain

daily operating parameters for unit 1 during May 2017. TEM, p. 5. From Figure 2, PADEP concludes that unit 1 was able to achieve a 0.05 lb/MMBtu rate for ten days, but this rate increased to 0.09 lb/MMBtu for the rest of the month because the operator elected to inject less ammonia into the SCR system even though the heat input remained almost constant at levels supporting SCR operation. Key TEM, p. 5. From this and other data, PADEP concludes that both Keystone units can achieve an SCR-on rate of 0.06 lb/MMBtu on a daily average basis.

The Keystone response to comments contains a long discussion of a study Keystone submitted at some point in time purporting to show the effects of trying to operate the SCR at a NO<sub>x</sub> emission rate setpoint of 0.05 to 0.06 lb/MMBtu during May 2017. Keystone RTC, p. 26. The RTC notes that when Unit 2 attempted to operate at 0.055 lb/MMBtu for two months in 2017, pressure drop across the air preheater increased to a level requiring measures—in this case raising the SCR setpoint to 0.08 lb/MMBtu—to reduce the pressure drop. Id. at 27. The same study found that operating unit 1's SCR at a 0.05 lb/MMBtu setpoint for only 15 days resulted in SCR catalyst fouling which prevented the SCR from operating under 0.08 to 0.09 lb/MMBtu rates for the rest of the test period. Id. The Keystone RTC then discusses at length the meaning of the study and information submitted by another source and the effect of different SCR set points on pressure drop, catalyst fouling, and the ability to meet certain NO<sub>x</sub> emission rates. Key RTC, pp. 27–30. PADEP concluded from these studies that Keystone should conduct a future setpoint study to determine that optimal emission levels from the SCR are achieved, but that based on the current evidence, the SCR controls setpoint should be changed from 0.06 to 0.07 lb NO<sub>x</sub>/MMBtu.<sup>27</sup> Key RTC, p. 32. However, PADEP set a NO<sub>x</sub> emission rate of 0.08 lb/MMBtu because “varying load conditions and other factors can and do affect SCR performance and resulting NO<sub>x</sub> emission rates.” TEM, p. 6.

EPA acknowledges that catalyst fouling and other similar factors may affect the feasibility of SCR to achieve

<sup>27</sup> The final unredacted permit does not mention this setpoint study. Instead, Section E, Source Group Restrictions, subsection VI, Work Practice Requirements, condition #012 requires that Keystone submit a technical evaluation to PADEP on the possibility of heating the flue gas prior to the SCR inlet to allow SCR operation at low load levels. Keystone final permit, p. 172. This condition does not appear in the redacted final permit submitted for inclusion into the SIP.

low rates. However, similar to EPA's review of the Conemaugh limit, in the absence of an explanation of how any of these other factors affect the technical and economic feasibility of the lowest rate identified, EPA cannot support PADEP's conclusion that the 0.08 lb/MMBtu daily average rate represents RACT.

#### *Homer City*

Similar to EPA's assessment of the rates for Conemaugh and Keystone, PADEP does not provide adequate justification for Homer City's final SCR-on daily average rates of 0.08 lb/MMBtu for units 1 and 2 and 0.07 lb/MMBtu for unit 3 are the lowest emission limit that these sources can meet based on technological and economic feasibility. The TEM for Homer City explains that PADEP evaluated data from 2017–2020 for all three units. PADEP notes that the unit 1 and 2 SCR were upgraded in 2018, and “NO<sub>x</sub> emission rates significantly improved,” TEM, p. 6, but fails to explain why, in light of this, PADEP thought consideration of 2017 data was appropriate. For units 1 and 2, PADEP notes that during 2019 and 2020 the SCR were operated to generally keep NO<sub>x</sub> emission rates at 0.10 lb/MMBtu, but also identified periods of time when the NO<sub>x</sub> emission rate for unit 2 went as low as 0.05 lb/MMBtu because more ammonia was being injected. TEM, p. 5. The TEM states that other instances of between 0.05 and 0.10 lb/MMBtu were identified. TEM, p. 5. Looking at additional data following the upgrade, PADEP suggested that “had July of 2020's ammonia injection rates matched that of July 2019, significantly [sic] emissions reductions could have been achieved during that timeframe.” TEM p. 6. The TEM then states that “[d]espite the evidence presented,” other factors such as load, exhaust temperature, etc., and other unspecified factors “can and do affect SCR performance” and require an operating limit above the never specified achievable minimum. TEM, p. 8. PADEP then selected an SCR-on rate of 0.08 lb/MMBtu as a daily average for units 1 and 2 but provided no analysis or explanation why 0.08 lb/MMBtu is the lowest rate that these units could meet based on technological and economic feasibility. See TEM, pp. 4–9. The TEM also states that the rate includes an unspecified factor to include a compliance margin, account for load fluctuations, control system lags, and projected future changes in operations. TEM, p. 9. In the RTC, PADEP seems to apply the “findings” from Keystone's attempt to operate the SCR with a low 0.05 lb/MMBtu setpoint that such a

setting leads to fouling of the air preheater, high pressure drops, and SCR catalyst fouling before determining that an emission rate of 0.08 lb/MMBtu will not cause these problems at Homer City. RTC, p. 11.

For unit 3, the TEM states that there is evidence that unit 3 can meet a NO<sub>x</sub> emission rate between 0.08 and 0.09 lb/MMBtu, but limited evidence that it can meet a lower limit under certain circumstances. TEM, p.10. Citing the same factors affecting SCR performance as it cited for units 1 and 2, PADEP then concludes a value above the minimum SCR rate is needed, but without explanation sets the SCR-on daily average rate at 0.07 lb/MMBtu. TEM, p. 13. In their response to comments document, PADEP seems to rely upon Keystone's study of operating the SCR at a low set point to support their selection of the SCR-on limits for all the units. However, there is no discussion of why the Keystone study can be applied to Homer City, particularly given that Homer City seems to use an economizer bypass to keep the SCR operating at lower temperatures than might be possible at Keystone.

#### *Selection of the All Conditions 30-Day Rolling Average lb/hr Rate*

The PADEP permits allow significant emissions to be excluded from the daily lb/MMBtu SCR-on rate under a variety of conditions, and it is necessary to evaluate whether the alternative emissions limits applicable during these excluded conditions constitute RACT. Although the PADEP permits contain a daily lb/MMBtu no-SCR rate, PADEP suggests that the 30-day rolling average lb/hr rate is “the glue” that holds the emissions limits together, and EPA acknowledges that it is a critical component to the RACT justification because it establishes the practical limitation on the extent to which the source can operate without SCR over an extended period of time. Accordingly, EPA must evaluate whether PADEP's 30-day rolling average limit satisfies the RACT requirement. EPA's assessment is that PADEP fails to clearly demonstrate that the All Conditions 30-day rolling average lb/hr rate necessitates that these facilities operate their SCR to achieve the lowest emission rate that is technologically and economically feasible, which is required to meet the definitions of RACT.

PADEP asserts that the 30-day rate represents RACT because “[a]t any load above approximately 30%–40%, operation without control by the SCR results in emissions greater than 700 lbs/hr.” See, e.g., Con RTC p. 6. This suggests that the SCR would be



necessary at higher loads, but it does not address the question of whether it meets the RACT requirements when the facilities could run at 30–40% without using SCR. The EPA believes that it is possible that the sources could operate at low loads while simultaneously meeting the daily All Conditions lb/MMBtu rate and the 30-day lb/hr rate, thereby creating a permissible way to avoid operating the SCR for long periods of time. This resembles the 600-degree temperature SCR “loophole,” which the

Third Circuit was highly critical of, that allowed facilities to operate just below the temperature threshold at night when demand was low and to avoid running the SCR. *Sierra Club*, 306. The 30-day lb/hr all conditions rate does not appear to resolve this issue.

Furthermore, PADEP’s justification for the All Conditions 30-day lb/hr rates leave many specifics about the justification of the selected rates unanswered. Each of PADEP’s technical evaluation memos have similar language

stating “[PADEP] evaluated and analyzed mass-based NO<sub>x</sub> emission rate in pounds per hour on a 30-day rolling average basis from EPA’s Clean Air Markets Division (CAMD) database at all operating conditions . . . from 2017–2020.” PADEP then presents a set of graphs for each unit depicting the 30-day average rolling NO<sub>x</sub> emissions (lb/hr) overlaid with percentage of maximum heat input (MMBtu). The time frames explored in these graphs is summarized in table 2 of this document.

TABLE 2—TIME FRAMES FOR 30-DAY AVERAGE DATA PROVIDED BY PADEP

Location in technical evaluation memo	Facility	Unit	Time frame
pg. 16, figure 6	Conemaugh	1	May 2017–September 2017.
pg. 16, figure 6	Conemaugh	2	May 2017–September 2017.
pg. 14, figure 5	Keystone	1	May 2017–September 2017.
pg. 14, figure 5	Keystone	2	May 2017–September 2017.
pg 18, Figure 11	Homer City	1	January 2019–December 2021.
pg 18, Figure 11	Homer City	2	January 2019–December 2021.
pg 18, Figure 11	Homer City	3	January 2019–September 2020 (approximate).

None of these graphs displays data for the full 2017–2020 timeframe PADEP evaluated and analyzed. Only the graphs from Homer City units display data for more than a single year. PADEP’s analysis then consists of a qualitative description of the 30-day lbs/hr average the units were able to achieve in the time frames in table 2 of this document, but lacks data or description of what 30-day lb/hr all conditions rates were observed outside of those time frames. Without additional information about the 30-day average lb/hr rates achieved during the four years PADEP analyzed, EPA cannot determine whether the lb/hr limit selected for each unit represent an average of these years of data, which the *Sierra Club* court found problematic, or the lowest emissions in lb/hr which these sources achieved in this time frame, considering technological and economic feasibility.

PADEP may or may not have reviewed a complete set of data from 2017–2020, but the analysis of this was not included in the technical evaluation memos or the response to comment documents. As such, EPA could not determine whether or this 30-day all conditions lb/hr rate “. . . ensures that the operator will maximize operating hours with the SCR and minimize heat input (and total mass emissions) when operation of the SCR is technically infeasible.”

Additionally, the compliance buffer added to the 30-day lb/hr all conditions rate does not appear to be sufficiently justified. PADEP states in its Technical Evaluation Memo for Conemaugh “[e]ach of Conemaugh’s units emits about 580 lb NO<sub>x</sub> per hour assuming an emission level of .070 lb/MMBtu and 100% load. The impact to the environment should never exceed this

level on a long-term basis.” Con TEM p. 15. It would appear PADEP arrived at this number simply by multiplying the daily SCR-on (lb/MMBtu) Rate by each boiler’s rated capacity (MMBtu/hr). Similar statements were made in the memos for Keystone and Homer City. See table 3 of this document, for this calculation for each boiler at Keystone, Conemaugh and Homer City. The table also compares this to the permit limits contained in PADEP’s 2022 SIP Submission, as well as a simple calculation of the percent increase in those limits (a compliance buffer added by PADEP). However, no explanation is given for why compliance buffers of 10–21% are needed, or why certain units should receive more than double the buffer of others.

TABLE 3—COMPLIANCE BUFFERS FOR PADEP’S 30-DAY ALL CONDITIONS lb/hr RATES

Facility	Unit	Rated capacity (MMBtu/hr)	Permit limit daily SCR-on (lb/MMBtu)	Calculated at capacity (lb/hr)	Permit limit 30-day avg. (lb/hr)	Compliance buffer (%)
Conemaugh	1	8,280	0.070	580	700	21
	2	8,280	0.070	580	700	21
Keystone	1	8,717	0.080	697	770	10
	2	8,717	0.080	697	770	10
Homer City	1	6,792	0.080	543	600	10
	2	6,792	0.080	543	600	10
	3	7,260	0.070	508	560	10

*EPA Approval Would Not Be Consistent With CAA Section 110(l)*

Section 110(l) of the CAA prohibits the Administrator from approving any SIP revision “. . . if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in section 7501 of this title), or any other applicable requirement of this chapter.” For over 15 years, EPA has interpreted section 110(l) as permitting approval of a SIP revision as long as “emissions in the air are not increased,” thereby preserving “status quo air quality.” *Ky. Res. Council, Inc. v. EPA*, 467 F.3d 986, 991 (6th Cir. 2006); see also *Indiana v. EPA*, 796 F.3d 803, 806 (7th Cir. 2015); *Ala. Env’t Council v. EPA*, 711 F.3d 1277, 1292–93 (11th Cir. 2013); *Galveston-Houston Ass’n for Smog Prevention v. EPA*, 289 F. App’x 745, 754 (5th Cir. 2008). This turns on EPA’s interpreting “interfere” as meaning “to hinder or make worse.” *Ky. Res. Council*, 467 F. 3d at 995. The court in a recent Third Circuit decision confirmed that a 110(l) analysis is not a one-size-fits-all provision and the variables that must be analyzed depend on the particular interference the SIP revision poses. *Center for Biological Diversity v. EPA*, 75 F.4th 174, 181 (3rd Cir. 2023). Here, with the information available to EPA, EPA could not determine that approval of the SIP revisions at issue would not result in interference. Therefore, EPA approval of these SIP revisions would not be consistent with section 110(l).

#### IV. Proposed Action

EPA’s review of these materials indicates that Pennsylvania’s May 2016 SIP Submittals for Keystone, Conemaugh and Homer City Generating facilities: (1) do not adequately support Pennsylvania’s justification for the selection of RACT limits for the large EGU boilers; (2) lack enforceable objective clear criteria for determining when emissions from each EGU are subject to the SCR-on 24-hour average limit; and (3) contain unbounded director’s discretion provisions. For these, and other reasons described above, EPA is proposing to disapprove Pennsylvania’s May 26, 2022 SIP revisions. EPA is soliciting public comments on the issues discussed in this document. These comments will be considered before taking final action.

#### V. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be

found at <https://www.epa.gov/laws-regulations/laws-and-executive-orders>.

#### A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a “significant regulatory action” as defined by Executive Order 12866 and was therefore not submitted to the Office of Management and Budget for review.

#### B. Paperwork Reduction Act (PRA)

This proposed action does not impose an information collection burden under the PRA because it does not contain any information collection activities.

#### C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action merely proposes to disapprove a SIP submission as not meeting the CAA.

#### D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. The action imposes no enforceable duty on any state, local or tribal governments or the private sector.

#### E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

#### F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. This action does not apply on any Indian reservation land, any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction, or non-reservation areas of Indian country. Thus, Executive Order 13175 does not apply to this action.

#### G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per

the definition of “covered regulatory action” in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it merely proposes to disapprove a SIP submission as not meeting the CAA.

#### H. Executive Order 13211, Actions That Significantly Affect Energy Supply, Distribution or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

#### I. National Technology Transfer and Advancement Act

This rulemaking does not involve technical standards.

#### J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, February 16, 1994) directs Federal agencies to identify and address “disproportionately high and adverse human health or environmental effects” of their actions on minority populations and low-income populations to the greatest extent practicable and permitted by law. EPA defines environmental justice (EJ) as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” EPA further defines the term fair treatment to mean that “no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies.”

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, the EPA’s role is to review state choices, and approve those choices if they meet the minimum criteria of the Act. Accordingly, this proposed action disapproves state law as meeting Federal requirements and does not impose additional requirements beyond those imposed by state law.

The air agency did not evaluate environmental justice considerations as

part of its SIP submittal; the CAA and applicable implementing regulations neither prohibit nor require such an evaluation. EPA did not perform an EJ analysis and did not consider EJ in this action. Due to the nature of the action being taken here, this action is expected to have a neutral to positive impact on the air quality of the affected area. Consideration of EJ is not required as part of this action, and there is no

information in the record inconsistent with the stated goal of E.O. 12898 of achieving environmental justice for people of color, low-income populations, and Indigenous peoples. This action merely proposes to disapprove a SIP submission as not meeting the CAA.

**List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Incorporation by

reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Reporting and recordkeeping requirements, Volatile organic compounds.

**Adam Ortiz,**

*Regional Administrator, Region III.*

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