



Bureau of Air Quality

Draft Final-Form Rulemaking 25 Pa. Code Chapters 121 and 129

Additional RACT Requirements for Major Sources of NO_x and VOCs for the 2015 Ozone NAAQS

Air Quality Technical Advisory Committee
April 7, 2022

Tom Wolf, Governor

Patrick McDonnell, Secretary

Rulemaking Outcomes

This final-form rulemaking will:

- Reduce emissions of oxides of nitrogen (NO_x) and volatile organic compounds (VOC), which are precursors to the formation of ground-level ozone.
- Reduce concentrations of ground-level ozone, which results in health benefits as well as benefits to vegetation and ecosystems.
- Provide co-benefits that may include increased energy efficiency and reduction of co-pollutants such as hazardous air pollutants and greenhouse gases.

Entities Subject to Rulemaking

- The rulemaking applies to stationary sources within existing facilities that have the potential to emit (PTE) 100 tons per year (TPY) of NO_x or 50 TPY of VOC.
 - “Existing” means sources or facilities which commenced operation on or before August 3, 2018.
 - The rulemaking does not apply to sources subject to certain requirements in Chapter 129 or sources with a PTE of less than one TPY of NO_x or VOC.
- The rulemaking also applies to sources at existing facilities that become major for NO_x or VOC after August 3, 2018.
- There are approximately 500 Title V facilities in this Commonwealth which may be subject to this final-form rulemaking.

Reason for Rulemaking

- On October 26, 2015, the United States Environmental Protection Agency (EPA) lowered the primary and secondary National Ambient Air Quality Standards (NAAQS) for ozone to 0.70 ppm (2015 Ozone NAAQS).
- Re-evaluation of Reasonably Available Control Technology (RACT) is a requirement under the Clean Air Act to be fulfilled by a State each time an ozone NAAQS is promulgated for nonattainment areas.
- Because the entire Commonwealth is in the Ozone Transport Region and is treated as a moderate nonattainment area, RACT is applicable statewide to major sources of NO_x and/or VOC.

Why August 3, 2018?

- Nonattainment designations for the 2015 Ozone NAAQS were promulgated by EPA on June 4, 2018, and became effective on August 3, 2018.
- EPA published the Nonattainment Area State Implementation Plan Requirements for the 2015 Ozone NAAQS on December 6, 2018.

What is RACT?

- Reasonably Available Control Technology (RACT) is defined as “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.”
- RACT analyses are done in a top-down fashion. Technically feasible control technologies are ranked from most effective control to least effective control and each one is analyzed for economic feasibility (cost analysis).

What is RACT?

- The EPA Air Pollution Control Cost Manual sets procedures for calculating economic feasibility.
 - Capital costs are annualized using capital recovery factors.
 - Annual operating costs are added in to acquire a total annual cost.
 - The total annual cost is divided by annual emission reductions per pollutant.
 - The result is a cost per ton of pollutant reduced.
- Generally, RACT is not as stringent as the Commonwealth's Best Available Technology (BAT).
 - BAT applies to new sources at time of installation or modification.
 - RACT applies to existing sources.

▶ RACT III Presumptive Requirements

- The Department has analyzed what constitutes RACT for certain source categories to establish presumptive requirements for the 2015 Ozone NAAQS (RACT III).
- These requirements may take the form of work practices, emission limitations, or other emission control measures.
- If an owner or operator cannot meet presumptive RACT, they will need to propose an averaging plan or a case-by-case RACT requirement.

▶ RACT III Case-by-Case Requirements

- An owner or operator is required to submit a case-by-case RACT evaluation if there is no presumptive requirement for the source category.
- An owner or operator may submit a case-by-case RACT evaluation if they cannot meet the presumptive requirements due to facility or source-specific issues.
- Each case-by-case RACT evaluation is generally source specific and may consider circumstances unique to each source, facility, or situation.
- The outcome of a case-by-case RACT analysis may include specific control technologies, work practices, emission limitations, or any combination thereof.

EQB and Public Comment

- On May 19, 2021, the Environmental Quality Board (EQB) adopted the proposed rulemaking by a vote of 17-2.
- The proposed rulemaking was published for public comment on August 7, 2021.
- Three public hearings were held on September 7, 8, and 9. No testimony was received.
- The public comment period ended on October 12, 2021.
- The Department received comments from 25 commentators, including the Independent Regulatory Review Commission (IRRC), EPA, environmental advocacy groups, consultants, and the regulated community.

Select Comments - EPA

- Case-by-case determinations issued under §§ 129.96—129.100 for RACT II cannot be deemed to satisfy the case-by-case requirements for RACT III without additional documented review.
- The RACT III compliance date cannot be later than the regulatory RACT implementation date established in 40 CFR 51.1312(a)(3)(i), which for Pennsylvania is January 1, 2023.

Select Comments - General

- The compliance costs to the regulated community given in the proposed Regulatory Analysis Form are underestimated.
- More stringent presumptive standards, more extensive monitoring, and higher cost-effectiveness benchmarks should be implemented.
- The regulation is long overdue and Pennsylvania must act quickly to finalize it.

Select Comments - Applicability

- The term “in existence” should be clarified with respect to the applicability date for RACT III of August 3, 2018.
- The Department should provide additional clarification that NO_x standards apply only to major NO_x emitting facilities and VOC standards apply only to major VOC emitting facilities.

Select Comments - Applicability

The regulation should establish compliance dates for the following scenario:

- A source has the potential to emit (PTE) less than one ton of NO_x or one ton of VOC, as applicable, and is initially exempted from RACT III requirements under § 127.111(c). Subsequently, the owner or operator determines that based on new information or a change made to the source, the PTE of the source is no longer below the one ton of NO_x or VOC threshold.

Select Comments - Presumptive

- Compliance dates for the presumptive RACT requirements and RACT emission limitations should be extended.
- The term “other combustion source” should be included with the presumptive category for direct-fired heaters, etc.
- The Department should include presumptive RACT for process heaters between 20 and 50 MMBtu/hr.

Select Comments - Presumptive

- Presumptive RACT for steel facilities should be included in the rulemaking.
- Flares should be added to the presumptive category covering incinerators and oxidizers.
- The requirements for municipal solid waste landfills should be updated to reflect the new Federal plan.

Select Comments - Presumptive

- The rich-burn engine presumptive NO_x emission limit should be corrected from 0.6 g/bhp-hr to 2.0 g/bhp-hr consistent with the Technical Support Document.
- It is inappropriate to set the natural gas combustion unit NO_x limit as the presumptive NO_x RACT emission limitation for direct-fired heaters, etc.

Select Comments - MWCs

- The Department should set a lower presumptive NO_x limit than the proposed 150 ppmvd corrected at 7% oxygen for **municipal waste combustors** (MWCs). This limit should require the installation and operation of NO_x emission control technology such as low NO_x burners and selective non-catalytic reduction.
- The proposed presumptive NO_x limit for MWCs is further weakened by allowing owners and operators to average emissions and request case-by-case RACT.

Select Comments - MWCs

- Instead of a presumptive NO_x limit for MWCs, the Department should establish that owners and operators of MWCs are required to submit case-by-case RACT evaluations that reflect the use of tools and cost thresholds from the Ozone Transport Commission.
- The proposed presumptive NO_x limit is appropriate for MWCs.

➤ Select Comments – Combustion Units

- Presumptive NO_x RACT emission limits should be in units of pounds per hour.
- Startup and low load operation should be exempted from meeting the presumptive NO_x RACT emission limits.
- The regulation should include presumptive NO_x RACT emission limits for coal-fired electric generating units (EGUs) that are lower than the RACT II emission limits and without any temperature qualifications.

Select Comments – Turbines

- Presumptive NO_x RACT emission limits for turbines rated at less than 4,100 bhp should be revised from 85 ppm to 150 ppm as dry low-NO_x combustors do not exist for these small turbines.
- The size category thresholds for simple-cycle turbines should be amended to range from 1,000 to less than 4,100 bhp and from 4,100 to less than 60,000 bhp.
- The combined-cycle turbines should be split into two size categories at 4,100 bhp.

▶ Comments – Glass Melting Furnaces

- Glass melting furnaces should not be included in the RACT III rulemaking.
- If included in the regulation, the glass melting furnace RACT requirements should preserve the provisions of the existing glass melting furnace regulations (§§ 129.301—129.310).
- The cost analysis underestimates the cost of selective catalytic reduction (SCR) and does not account for particulate matter control equipment costs.

▶ Select Comments – Averaging Plan

- Owners and operators should be able to use an averaging plan even if all the sources can meet the presumptive requirements.
- Averaging plans should not be limited to facilities within the same nonattainment area.
- Averaging plans should be allowed to include sources not subject to presumptive emission limits.
- The Department should clarify the term “aggregate” and further explain the averaging calculations.

➤ Select Comments – Averaging Period

- Daily averaging for combustion units does not allow any buffer for startup, shutdown, and low-load conditions.
- Daily emission levels may violate presumptive NO_x emission limitations during periods when a 30-day average would not.
- The combustion of waste coal, which has unpredictable characteristics, does not lend itself to daily emission averaging periods.
- “Daily average” is not defined.

Select Comments – Case-by-Case

- The Department should clarify the implementation of the provision that allows compliance with RACT II case-by-case to assure compliance with RACT III case-by-case.
- The compliance schedule for submitting case-by-case RACT evaluations is too aggressive.
- Owners and operators submitting case-by-case RACT evaluations should not be afforded an extra year to comply with the RACT III regulation.

Select Comments – Case-by-Case

- The Department should have more discretion with respect to alternative compliance schedules.
- High presumptive cost-effectiveness values will require a significant number of case-by-case proposals that the Department may not be contemplating.
- The Department should use presumptive cost-effectiveness benchmarks when evaluating case-by-case RACT proposals.

Select Comments – Notification

- The purpose of the detailed notification requirements, including compliance methods and exempt sources, is unclear.
- The notification should only include sources subject to RACT III and not to prior RACT requirements.
- The timeline for submitting the notification is too short.

Draft Final-Form Rulemaking

§ 121.1. Definitions.

- Amended the definitions of “Major NO_x Emitting Facility” and “Major VOC Emitting Facility” at final to clarify that the facility-wide emission thresholds of 100 TPY NO_x and 50 TPY VOC apply to the owners and operators of facilities located in Bucks, Chester, Delaware, Montgomery, and Philadelphia counties for the purposes of both RACT II (§§ 129.96—129.100) and RACT III (§§ 129.111—129. 115).

Draft Final-Form Rulemaking

§ 129.111. Applicability.

- Amended the language in subsections (a) and (b) from proposed to final to revise “in existence” to “commenced operation” for clarity.
- Included § 129.74 (control of VOC emissions from fiberglass boat manufacturing materials) in the list of exempted standards in subsections (a) and (b).
- Added subsection (e). Facilities that become minor in accordance with subsection (d) and subsequently regain major status will be subject to RACT III.

Draft Final-Form Rulemaking

§ 129.112. Presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule.

- Added “or flare” to paragraph (c)(8).
- Revised subsection (e) to reflect the current federal municipal solid waste landfill rules (Part 62, Subpart 000 and Part 60, Subpart XXX).
- Revised the limit for MWC in subsection (f) from 150 to 110 ppmvd NO_x @ 7% oxygen.
- Made clarifying revisions to subparagraph (g)(1)(vi) and deleted subparagraph (g)(1)(viii).

Draft Final-Form Rulemaking

§ 129.112 continued

- Revised upper limit size threshold for combined cycle turbines in subparagraph (g)(2)(i) from 180 MW to 4,100 bhp.
- Revised natural gas and fuel oil emission limits within this category to 120 and 150 ppmvd NO_x @ 15% oxygen, respectively.

Draft Final-Form Rulemaking

§ 129.112 continued

- Added new subparagraph (g)(2)(ii) for combined cycle turbines between 4,100 bhp and 180 MW.
- Revised proposed subparagraph (g)(2)(ii) to final-form subparagraph (g)(2)(iii).
- Revised proposed subparagraphs (g)(2)(iii) and (g)(2)(iv) to final-form subparagraphs (g)(2)(iv) and (g)(2)(v), respectively.

Draft Final-Form Rulemaking

§ 129.112 continued

- The limits for new subparagraph (g)(2)(ii) are the same as were proposed for the 1,000 bhp to 180 MW category.
- Revised the upper limit size thresholds for simple cycle turbines in final-form subparagraphs (g)(2)(iv) and (g)(2)(v) from 3,000 bhp to 4,100 bhp.
- Revised the natural gas NO_x RACT emission limit for small simple cycle turbines in final-form clause (g)(2)(iv)(A) from 85 to 120 ppmvd NO_x @ 15% oxygen.

Draft Final-Form Rulemaking

§ 129.112 continued

- Revised the presumptive NO_x RACT emission limitation for rich-burn engines firing natural gas in clause (g)(3)(iv)(A) from 0.6 to 2.0 gram NO_x /bhp-hr.
- Added “or other combustion source” to subsection (k).
- Added the glass melting furnace regulations (§§ 129.301—129.310) to subsection (m).
- Revised the petition submission deadline in paragraph (n)(1) to December 31, 2022.

Draft Final-Form Rulemaking

§ 129.113. Facility-wide or system-wide NO_x emissions averaging plan general requirements.

- Revised the averaging plan submission deadline in subsection (b) to December 31, 2022.

Draft Final-Form Rulemaking

§ 129.114. Alternative RACT proposal and petition for alternative compliance schedule.

- Revised the alternative RACT proposal submission deadline in subparagraph (d)(1)(i) to December 31, 2022.
- Extensively revised subsection (i) from proposed to final to provide options for the owner or operator to demonstrate that RACT II case-by-case conditions remain RACT for RACT III.

Draft Final-Form Rulemaking

§ 129.114 continued

- Revised subsection (j) from proposed to final to establish what the Department will do with the analyses submitted under final-form subsection (i).
- Added subsection (k) to provide that the Department will submit the specified information to the EPA for approval as a revision to the State Implementation Plan (SIP).

Draft Final-Form Rulemaking

§ 129.114 continued

- Revised proposed subsection (j) to final-form subsection (l) and revised proposed subsections (k)—(n) to final-form (m)—(p).
- Revised the petition submission deadline in final-form paragraph (l)(1) to December 31, 2022.

Reason for § 129.114(i)

- EPA will not approve a regulation that establishes a blanket approval for the Department to deem that case-by-case RACT II remains RACT for RACT III.
- The final-form rulemaking contains options in final-form subsection (i) for an owner or operator to submit an analysis demonstrating that the applicable RACT II conditions remain RACT for RACT III.
- Owners and operators of facilities that have added or modified sources since RACT II are not eligible to submit this analysis.

§ 129.114(i) Options

- If there is no new emission control technology available and RACT II cost-effectiveness is equal to or above certain thresholds, then the analysis shall contain:
 - How it was determined that no new technology exists.
 - List of technology that was evaluated for RACT II.
 - Summary of the RACT II cost analysis.
- If there is no new emission control technology available and RACT II cost-effectiveness is below certain thresholds, then the analysis shall contain:
 - How it was determined that no new technology exists.
 - List of technology that was evaluated for RACT II.
 - Newly updated cost analysis.

§ 129.114(i) Options

- If there is new emission control technology available, then the analysis shall contain a newly updated, top-down RACT analysis.
- In all instances, the Department may request additional information from the owner or operator.

§ 129.114(j)

§ 129.114 continued

Under subsection (j), the Department will:

- Review the analyses.
- Publish notice in the Pa Bulletin and newspapers for a minimum 30-day public comment period and opportunity for public hearing for the public to review and comment on the analyses and supporting documentation.
- Prepare a summary of comments and responses.
- Issue the necessary plan approvals and operating permit modifications as appropriate in conformance with Chapter 127.

§ 129.114 (k)

§ 129.114 continued

Under final-form subsection (k), the Department will submit the following information described under subsection (j) to the Administrator of the EPA as a revision to the Commonwealth's SIP.

- The analyses, supporting documentation and summary of public comments and responses.
- The necessary plan approvals and operating permit modifications issued as appropriate.

Draft Final-Form Rulemaking

§ 129.115. Written notification, compliance demonstration and recordkeeping and reporting requirements.

- Revised the notification submission deadline in subsection (a) to December 31, 2022.
- Added direct-fired heaters, etc. to paragraph (b)(1).
- Added paragraph (b)(5) for direct-fired heaters, etc. specifying a daily average if the source has NO_x CEMS.
- Revised the stack test waiver submission deadline in paragraph (e)(1) to December 31, 2022.
- Added clarifying language to subsection (f).

Additional Information

The final rulemaking package, including the final-form Annex A, preamble, regulatory analysis form, comment response document and technical support document will be available when the rulemaking is considered by the Environmental Quality Board.

▶ Anticipated Final Rulemaking Schedule

- Air Quality Technical Advisory Committee – April 7, 2022
- Small Business Compliance Advisory Committee – April 27, 2022
- Citizens Advisory Council Policy and Regulatory Oversight Committee – 2nd Quarter 2022
- Citizens Advisory Council – 2nd Quarter 2022
- Environmental Quality Board – 2nd Quarter 2022
- Final-Form Rulemaking Promulgated and submitted to EPA as State Implementation Plan revision – 4th Quarter 2022



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