

ALLEGHENY COUNTY HEALTH DEPARTMENT AIR QUALITY PROGRAM

June 26, 2023

SUBJECT: Reasonable Available Control Technology (RACT III) Determination
Pittsburgh Allegheny County Thermal, Ltd.
120 Cecil Way
Pittsburgh, PA 15222
Allegheny County

Title V Installation Permit No. 0044

TO: JoAnn Truchan, P.E.
Program Manager, Engineering

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I. Executive Summary

The Pittsburgh Allegheny County Thermal, Ltd. (PACT) facility is defined as a major source of NO_x emissions and was subjected to a Reasonable Available Control Technology III (RACT III) review by the Allegheny County Health Department (ACHD) required for the 2015 Ozone National Ambient Air Quality Standard (NAAQS). The findings of the review established that technically and financially feasible RACT would result in the following emissions changes, summarized in Table 1 below.

Table 1 Technically and Financially Feasible Control Options Summary for NO_x

Unit ID	Emissions Unit	Financially Feasible Control Option	Current NO _x PTE	RACT Reduction	Revised NO _x PTE	Annualized Control Cost (\$/yr)	Cost Effectiveness (\$/ton NO _x removed)
There are no additional technically and financially feasible control options available for NO _x reduction from RACT II to RACT III.							

These findings are based on the following documents:

- RACT analysis performed by Pittsburgh Allegheny County Thermal, Ltd. – 0044 Facility (PACT RACT III notification.pdf) – Submitted on January 11, 2023
- RACT II permit No. 0044-I001, issued March 25, 2020 and amended November 30, 2020 and March 23, 2021 (EPA approval on October 21, 2021, 86 FR 58223)

II. Regulatory Basis

On October 26, 2015, the US EPA revised the ozone NAAQS. To meet the new standards, ACHD requested all major sources of NO_x (potential emissions of 100 tons per year or greater) and all major sources of VOC (potential emissions of 50 tons per year or greater) to reevaluate NO_x and/or VOC RACT for incorporation into Allegheny County's portion of the PA SIP. ACHD has also incorporated by reference 25 Pa. Code, §§129.111-115 under Article XXI, §2105.08 ("RACT III").

This document is the result of ACHD's determination of RACT submitted by the subject source and supplemented with additional information as needed by ACHD. The provisions of RACT III will replace those of the previous RACT I and RACT II.

As part of the RACT regulations codified in 25 Pa. Code §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS) (RACT III), ACHD has adopted the Pennsylvania Department of Environmental Protection's established method under § 129.114(i) (relating to alternative RACT proposal and petition for alternative compliance schedule) for an applicant to demonstrate that the alternative RACT compliance requirements incorporated under § 129.99 (relating to alternative RACT proposal and petition for alternative compliance schedule) (RACT II) for a source that commenced operation on or before October 24, 2016, and which remain in force in the applicable operating permit continue to be RACT under RACT III as long as no modifications or changes were made to the source after October 24, 2016. The date of October 24, 2016, is the date specified in § 129.99(i)(1) by which written RACT proposals to address the 1997 and 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS) were due to the Department from the owner or operator of an air contamination source located at a major NO_x emitting facility or a major VOC emitting facility subject to § 129.96(a) or (b) (relating to applicability).

The procedures to demonstrate that RACT II is RACT III are specified in § 129.114(i)(1)(i), 129.114(i)(1)(ii) and 129.114(i)(2), that is, subsection (i), paragraphs (1) and (2). An applicant may submit an analysis, certified by the responsible official, that the RACT II permit requirements remain RACT for RACT III by following the procedures established under subsection (i), paragraphs (1) and (2).

Paragraph (1) establishes cost effectiveness thresholds of \$7,500 per ton of NO_x emissions reduced and \$12,000 per ton of VOC emissions reduced as "screening level values" to determine the amount of analysis and due diligence that the applicant shall perform if there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis. Paragraph (1) has two subparagraphs.

Subparagraph (i) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.

Subparagraph (ii) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.
- A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique.

Paragraph (2) establishes the procedures that the applicant that evaluates and determines that there is a new or upgraded pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis shall:

- Perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b) (relating to RACT proposal requirements).
- Submit that analysis to the Department (or appropriate approved local air pollution control agency) for review and approval.

The applicant shall also provide additional information requested by the Department (or appropriate approved local air pollution control agency) that may be necessary for the evaluation of the analysis submitted under § 129.114(i).

III. Facility Description

The Pittsburgh Allegheny County Thermal, Ltd., Stanwix Street facility is an industrial steam generation plant located at 120 Cecil Way in the downtown section of Pittsburgh, PA, which supplies steam for heating and refrigeration to commercial and institutional sites in that area. The plant is composed of four (4) boilers, with a common stack, which fire natural gas as their primary fuel and have the capacity to fire no. 2 fuel oil, in lieu of natural gas at times of emergency or natural gas curtailment. The last full compliance evaluation (FCE) at Pittsburgh Allegheny Co. Thermal, Ltd. (PACT) was conducted on August 24, 2021, and the facility was found to be in compliance. The facility currently has no violations.

The PACT Distribution System has been sold to a new owner with PACT scheduled to de-commission the entire facility in July 2023.

There were no modifications or changes made to the facility after October 24, 2016. There have been no changes to this facility since the RACT II permit No. 0044-I001, issued March 25, 2020, and amended November 30, 2020 and March 23, 2021.

PACT is a major source of NO_x emissions. PACT does not emit 50 tons per year or greater of VOC and is thus not a major source for VOC emissions.

Table 2 is a list of sources subject to § 129.114(i). The RACT II determination assures compliance with RACT III requirements:

Table 2 Facility Sources Subject to Case-by-Case RACT III

Source ID	Description	Rating	NO _x PTE (TPY)	Case-by-Case Limit (RACT II)	Case-by-Case Limit (RACT III)	RACT II as RACT III
B001	M21 Keystone O-type, package boiler.	150 MM Btu/hr	72.3	0.22 lb/MMBtu; 72.3 tpy; 644.12 MMscf/yr	No change from RACT II requirements (129.114(i)(1)(i))	Y
B002	M21 Keystone O-type, package boiler.	150 MM Btu/hr	72.3	0.22 lb/MMBtu; 72.3 tpy; 644.12 MMscf/yr	No change from RACT II requirements (129.114(i)(1)(i))	Y
B003	M21 Keystone O-type, package boiler.	150 MM Btu/hr	72.3	0.22 lb/MMBtu; 72.3 tpy; 644.12 MMscf/yr	No change from RACT II requirements (129.114(i)(1)(i))	Y
B004	M21 Keystone O-type, package boiler.	150 MM Btu/hr	72.3	0.22 lb/MMBtu; 72.3 tpy; 644.12 MMscf/yr	No change from RACT II requirements (129.114(i)(1)(i))	Y

IV. RACT III Determination

Boilers No. 1 through 4

Boilers 1, 2, 3 and 4 were not able to meet the RACT II Presumptive NO_x Requirements per 25 PA Code, §129.97 of 0.10 lb/MMBtu. A case-by-case evaluation was performed by PACT for the four boilers and the Technically Feasible Control Options are detailed in Table 3. However, these options were not economically feasible. Therefore, ACHD determined that RACT II for boilers No. 1 through 4 was the retention of the RACT I allowable emission rate of 0.22 lb/MMBtu for each boiler with the natural gas fuel restriction (50% of capacity) and annual emission limitations (72.3 tpy) as presented in Table 2 above.

Since Boilers No. 1 through 4 commenced operation before October 24, 2016, have not been modified, and are subject to RACT II requirements under 25 Pa Code § 129.99 (e), which satisfy § 129.114 (b), these sources meets the requirements for § 129.114 (i). The facility and ACHD reviews of the RBLC database, common industry knowledge, and an internet search showed that there are no new technically feasible control devices or methods for these boilers. Additionally, any significant new investments in any technically feasible NO_x controls are economically infeasible considering the anticipated shutdown and demolition of the PACT facility in July 2023. Therefore, RACT III for the boilers shall be continued compliance with RACT I and RACT II requirements contained in the current Title V operating permit.

In summary, Boilers 1, 2, 3, and 4 are not able to meet the Presumptive NO_x Requirements per 25 PA Code, §129.112(g)(1)(i) of 0.10 lb/MMBtu and there are no additional economically feasible control options considering the anticipated shutdown and demolition of the PACT facility in July 2023.

Table 3 RACT II Technically Feasible NO_x Control Cost Comparisons

Source ID	LNB (NO _x lb/MMBtu; \$/ton of NO _x removed) *	tpy NO _x Removed	NO _x Emissions Before the Control	NO _x Emissions After the Control	FGR + LNB (NO _x lb/MMBtu; \$/ton of NO _x removed) *	tpy NO _x Removed	NO _x Emissions Before the Control	NO _x Emissions After the Control
B001,	0.10; \$10,026	39.42	126.5	87.07	0.05; \$7,851	55.85	126.5	70.65
B002	0.10; \$10,026	39.42	126.5	87.07	0.05; \$7,851	55.85	126.5	70.65
B003	0.10; \$10,026	39.42	126.5	87.07	0.05; \$7,851	55.85	126.5	70.65
B004	0.10; \$10,026	39.42	126.5	87.07	0.05; \$7,851	55.85	126.5	70.65

* RACT II Technical Support Document; PACT – ract rv1 (Mar. 25, 2020)

V. RACT II as RACT III

The RACT III conditions listed in Table 5 below supersede the relevant conditions of Plan Approval Order and Agreement No. 265, issued November 9th, 1998 and RACT II. The RACT III conditions are at least as stringent as those from RACT II. Other RACT I conditions listed in Table 7 below not affected by RACT III remain in effect.

Application of RACT III requirements did not result in any emissions reduction. Application of RACT II conditions reduced 213.2 tons of potential NO_x emissions from the facility.

Table 4 RACT II as RACT III Summary

Unit ID	New source or change to existing source?	(RACT II) PTE (tpy)	RACT III PTE (tpy)	RACT II NO _x	RACT III NO _x	RACT III Same as RACT II?
B001	No	72.3	72.3	cbc	cbc	Y
B002	No	72.3	72.3	cbc	cbc	Y
B003	No	72.3	72.3	cbc	cbc	Y
B004	No	72.3	72.3	cbc	cbc	Y
TOTAL		289.2	289.2			

VI. RACT III Summary and Revised RACT III Permit Conditions

The Department has analyzed the facility’s proposal for considering RACT II requirements as RACT III and also performed an independent analysis. Based on the information provided by the facility and independently verified by the Department, ACHD has determined that the RACT II requirements satisfy the RACT III requirements. The RACT III requirements are identical to the RACT II requirements and are as stringent as RACT II.

Table 5 RACT I, RACT II, and RACT III Summary

Source ID	IP #0044-I001 Permit Condition No.	RACT I Requirement	RACT II Requirement	RACT III Requirement
Boilers 1-4 Four identical M21 Keystone O-type package boilers. 150 MMBtu/hr (each)	V.A.1.b	Order #265, 1.1	25 PA Code §129.99	§129.114(i)
	V.A.1.c	Order #265, 1.2	25 PA Code §129.99	§129.114(i)
	V.A.1.d		25 PA Code §129.99	§129.114(i)
	V.A.1.e	Order #265, 1.3	25 PA Code §129.99	§129.114(i)
	V.A.1.f		25 PA Code §129.99	§129.114(i)
	V.A.1.g		25 PA Code §129.99	§129.114(i)
	V.A.2.a		25 PA Code §129.100	§129.115
	V.A.2.b	Order #265, 1.4	25 PA Code §129.100	§129.115
	V.A.3.a		25 PA Code §129.100	§129.115
	V.A.4.a	Order #265, 1.5	25 PA Code §129.100	§129.115
	V.A.4.b		25 PA Code §129.100	§129.115
	V.A.4.c	Order #265, 1.6	25 PA Code §129.100	§129.115
	V.A.5.a		25 PA Code §129.100	§129.115
	V.A.6		25 PA Code §129.99	§129.114(i)

Table 6 Revised Permit Conditions

The following conditions were cited for case-by-case RACT (25 Pa. Code, §129.114 (i)):

IP #0044-I001	
V.A.1.b	V.A.1.f
V.A.1.c	V.A.1.g
V.A.1.d	V.A.6
V.A.1.e	

The following conditions were cited for compliance with case-by-case RACT (25 Pa. Code, §129.115):

IP #0044-I001	
V.A.2.a	V.A.4.b
V.A.2.b	V.A.4.c
V.A.3.a	V.A.5.a
V.A.4.a	