pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MEMO

FROM: Linda Piscioneri *LLP 11/3/23*
Air Quality Engineering Review

TO: William Weaver *WRW* 11/6/23
Regional Program Manager
Air Quality Program

THRU: Tom Bianca, P.E. ***TPB 11/3/23***
West Permitting Chief

DATE: February 23, 2023

RE: Letterkenny Army Depot
RACT 3 Review Memo (Eng Misc 2574)
Title V Permit No. 28-05002
Letterkenny Township, Franklin County

Introduction/Facility Description

On December 21, 2022, Letterkenny Army Depot (LEAD) submitted a RACT 3 proposal regarding sources at their facility in Letterkenny Township, Franklin County. LEAD is a U.S. Depot Systems Command installation whose mission consists of supply, ammunition storage, maintenance and base operations.

Per the RACT 3 application, "*LEAD operates several boilers and paint booths as well as other small combustion and VOC sources at the facility. Each source included in the Title V Operating Permit 28-05002 was evaluated for RACT III applicability*."

The site inventory of sources for the facility is as follows:

Source ID	Name of Source	Physical Location
31	Johnson Boiler Bldg. 1	Building 1
32	Johnson Boiler Bldg. 1	Building 1
36	Johnson Boiler Bldg. 3	Building 3
37	Johnson Boiler Bldg. 3	Building 3
41	Smith Boiler Bldg. 12	Building 12
42	Smith Boiler Bldg. 12	Building 12
46A	C-B Boiler Bldg. 37sw	Building 37
51	Smith Boiler Bldg. 51	Building 51
52	York-Shipley Boiler Bldg. 57	Building 57
53	York-Shipley Boiler Bldg. 57	Building 57
83	Smith Boiler Bldg. 5316	Building 5316

Source ID	Name of Source	Physical Location
86	(39) Boilers 2.5 MMBtu/Hr Or Less	Various buildings
87	(9) Boilers >2.5 and <50 MMBtu/Hr	Various buildings
88	(328) Propane/ Natural Gas Heaters	Various buildings
102B	Coating Booth in Bldg. 57	Building 57
103B	Coating Booth in Bldg. 57	Building 57
106	Paint Booth 59 Bldg. 350	Building 350
107	Paint Booth 60 Bldg. 350	Building 350
108	Paint Booth 61 Bldg. 350	Building 350
109A	Pallet Coating Booth Bldg. 350	Building 350
111	Paint Booth 3886 Bldg. 320	Building 320
112	Paint Booth 3880 Bldg. 320	Building 320
113	Paint Booth 3882 Bldg. 320	Building 320
114	Paint Booth 3885 Bldg. 320	Building 320
121	Paint Booth 3881 Bldg. 320	Building 320
122	Paint Booth 4378 Bldg. 320	Building 320
123	Paint Booth 200 Bldg. 370	Building 370
125	Paint Booth 2813 Bldg. 370	Building 370
126	Paint Booth 4298 Bldg. 370	Building 370
128	Paint Booth 280 Bldg. 37	Building 37
131	Paint Booth 6744 Bldg. 37	Building 37
132	Paint Booth 3884 Bldg. 320	Building 320
137	Paint Booth 8052 Bldg. 37	Building 37
140	Paint Booths in Ammo Area	Building 3382
142	Paint Booth 3883 Bldg. 320	Building 320
143	Industrial Wastewater Treatment Plant	Building 360
144	Specialty Coatings/Stenciling Inks	Various buildings
145	Photographic/Printing Operations	Various buildings
146	Emergency CI ICE	Various buildings
147	(12) Diesel Engine Test Cells	Buildings 37 & 350
148	Metal Pretreatment Acid Wash	Various buildings
149	(2) Flame Spray Booth	Building 350
200	Paint Booth 4757 Bldg. 370	Building 370
201	Powder Coating Booth R4247 Bldg. 370	Building 370
202	Paint Booth S3599 Bldg. 1N	Building 1
203	Paint Booth 3155 Bldg. 5807	Building 5807
204	Stand-Alone Paint Booth, Bldg. 350	Building 350
205	Bldg. 320 IR Drying/Coating Booth	Building 320
300	Painting Outside Booths	Various areas
301A	Clean Up Solvents	Various buildings

Source ID	Name of Source	Physical Location
302	Static Firing	OB/OD grounds
401A	Open Burning/Flash Off of Military	OB/OD grounds
401B	Open Detonation	OB/OD grounds
401C	Flashing Furnace	OB/OD grounds
419	Cold Cleaning Machines	Various buildings
420	Above Ground Gasoline Storage Tanks> 2000 Gallons	Building 3323
421	Two Paint Stripping Tanks, Tl & T2 - Bldg. 370	Building 370
421A	Two Paint Stripping Tanks, Tl & T2 - Bldg. 377	Building 377
422	AP Rocket Motor Destruction Facility	Building 8001
423	One Paint Stripping Tank, R3419 - Bldg. 350	Building 350

Facility Emissions and Control Equipment

As per site inventory in the Title V Operating Permit #28-05002, the facility's paint and coating booths are controlled with dry filters (Source ID's 102B-142 and 200-205). Canister filters are used as control for the Flame Spray Booths (Source ID 149), and a regenerative thermal oxidizer (RTO, Source ID C04) is an add-on control for Source ID's 106-109A. Emissions from the Rocket Motor Destruction Facility (Source ID 422) are controlled by a caustic scrubbing Pollution Abatement System (Control ID C422). None of the remaining sources at the facility are equipped with add-on emissions controls.

Emissions at LEAD for the last five years, in tpy, were reported in AIMS as follows:

	2017	2018	2019	2020	2021
CO	16.0	19.5	24.9	19.9	18.1
NOx	25.6	28.1	33.2	27.8	22.8
PM10	79.9	116.2	173.6	165.8	115.7
PM2.5	79.9	116.2	173.6	165.8	115.7
SOx	5.3	5.9	5.3	6.7	9.7
VOC	33.3	34.9	42.4	27.5	20.6
HAP	5.2	5.5	32.3	1.4	7.6

RACT 3:

NOx

The Title V Operating Permit #28-05002 for LEAD has a NOx RACT 1 limit of 100 tpy for the facility (Section E, Group 017, Condition #001 (5)). Thus, LEAD is not subject to RACT 3 requirements for NOx due to the emissions cap.

From the DEP review memo for LEAD's RACT 2 proposal, "*The facility is not subject to NOx RACT II requirements pursuant to § 129.96 since potential NOx emissions are less than major source thresholds before the RACT II effective date of January 1, 2017. Minor source federally enforceable emission NOx limits were included in the operating permit for the facility as a part*

of RACT I." The RACT 2 analysis was based on actual NOx emissions of 31.5 tons reported in AIMS for 2016.

For RACT 3, there is one new NOx emission source since the RACT 2 analysis, Source ID 422, AP Rocket Motor Destruction Facility. The current operating permit imposes an additional NOx emissions limit on Source ID 422 of 35 tpy by Condition #003 of the Section D requirements for Source ID 422.

From the emissions table above, the highest reported NOx emissions in the five years since the RACT II analysis was done were 33.2 tons in 2019. In summary, the facility is not subject to RACT 3 requirements for NOx pursuant to §129.111 since LEAD is not a major NOx emitting facility.

VOC

LEAD is a major source for VOC emissions that has been in operation prior to August 3, 2018. As noted in DEP's review memo for the facility's RACT 2 proposal, "*The facility is subject to additional VOC RACT II requirements pursuant to § 129.96 since the facility is a major source of VOC emissions. Except for Source ID's 421 and 423, presumptive RACT II requirements and RACT II emission limitations pursuant to § 129.97 are proposed for the remaining VOC sources that are subject to § 129.96 at the facility*." Thus, in accordance with 25 Pa. Code Section 129.111, the facility is subject to the Department's RACT 3 requirements for VOC emissions cited in 25 Pa. Code Sections 129.111 thru 129.115.

Exempt and Presumptive RACT 3 Sources of VOC

After email discussions with Sam Pelesky, LEAD revised its RACT III proposal for several exempt and presumptive RACT 3 VOC sources on 2/16/23. From the summary statement of the revised proposal: "*LEAD has completed a full analysis of the RACT III requirements against all emissions sources listed in Title V Operating Permit #28-05002. The NOx requirements of RACT III do not apply to the facility as LEAD already has an enforceable facility wide emission limit of 100 tons per year NOx placed in the Title V Operating Permit #28-05002. LEAD already complies with 25 Pa Code §§129.52d, so the requirements of RACT III are not applicable to the facility's paint booths and coating operations. Except for the facility's paint stripping tanks, all other VOC emissions sources are exempt from or already meet the presumptive RACT requirements. With the concurrence of the PADEP, LEAD believes they are already in full compliance of the RACT III regulations*."

The source-by-source analysis of all exempt and presumptive RACT III VOC sources at LEAD is detailed in the review memo for the renewal of Title V Operating Permit #28-05002. However, a summary of the method of RACT 3 VOC compliance for all of the facility's sources is as follows:

Source ID	Name of Source	Method of RACT 3 Compliance for VOC
31	Johnson Boiler Bldg. 1	Presumptive RACT by 25 Pa. Code § 129.112(c)(2); 2.7 tpy VOC limit in TV #28-05002, Section E, Group 017, Condition #001 (10)
32	Johnson Boiler Bldg. 1	
36	Johnson Boiler Bldg. 3	
37	Johnson Boiler Bldg. 3	
41	Smith Boiler Bldg. 12	
42	Smith Boiler Bldg. 12	
46A	C-B Boiler Bldg. 37sw	
51	Smith Boiler Bldg. 51	
52	York-Shipley Boiler Bldg. 57	
53	York-Shipley Boiler Bldg. 57	
83	Smith Boiler Bldg. 5316	
86	(39) Boilers 2.5 MMBtu/Hr Or Less	
87	(9) Boilers >2.5 and <50 MMBtu/Hr	
88	(328) Propane/ Natural Gas Heaters	
102B	Coating Booth in Bldg. 57	Exempt according to 25 Pa. Code § 129.111(a) based on compliance with 25 Pa. Code § 129.52d
103B	Coating Booth in Bldg. 57	
106	Paint Booth 59 Bldg. 350	
107	Paint Booth 60 Bldg. 350	
108	Paint Booth 61 Bldg. 350	
109A	Pallet Coating Booth Bldg. 350	
111	Paint Booth 3886 Bldg. 320	
112	Paint Booth 3880 Bldg. 320	
113	Paint Booth 3882 Bldg. 320	
114	Paint Booth 3885 Bldg. 320	
121	Paint Booth 3881 Bldg. 320	
122	Paint Booth 4378 Bldg. 320	
123	Paint Booth 200 Bldg. 370	
125	Paint Booth 2813 Bldg. 370	
126	Paint Booth 4298 Bldg. 370	
128	Paint Booth 280 Bldg. 37	
131	Paint Booth 6744 Bldg. 37	
132	Paint Booth 3884 Bldg. 320	
137	Paint Booth 8052 Bldg. 37	
140	Paint Booths in Ammo Area	
142	Paint Booth 3883 Bldg. 320	
143	Industrial Wastewater Treatment Plant	#28-05002, Sect E, Grp 017, Cond #001 (6)
144	Specialty Coatings/Stenciling Inks	#28-05002, Sect E, Grp 017, Cond #001 (8)
145	Photographic/Printing Operations	#28-05002, Sect E, Grp 017, Cond #001 (9)
146	Emergency CI ICE	#28-05002, Sect E, Grp 017, Cond #001 (10)

Source ID	Name of Source	Method of RACT 3 Compliance for VOC
147	(12) Diesel Engine Test Cells	#28-05002, Sect E, Grp 017, Cond #001 (10)
148	Metal Pretreatment Acid Wash	#28-05002, Sect E, Grp 017, Cond #001 (12)
149	(2) Flame Spray Booth	Exempt – not a source of VOC
200	Paint Booth 4757 Bldg. 370	Exempt according to 25 Pa. Code § 129.111(a) based on compliance with 25 Pa. Code § 129.52d
201	Powder Coating Booth R4247 Bldg. 370	
202	Paint Booth S3599 Bldg. 1N	
203	Paint Booth 3155 Bldg. 5807	
204	Stand-Alone Paint Booth, Bldg. 350	
205	Bldg. 320 IR Drying/Coating Booth	
300	Painting Outside Booths	
301A	Clean Up Solvents	#28-05002, Sect E, Grp 017, Cond #001 (7)
302	Static Firing	Exempt by 25 Pa. Code § 129.111(c)
401A	Open Burning/Flash Off of Military	PRES RACT by 25 Pa. Code §129.112(c)(2)
401B	Open Detonation	PRES RACT by 25 Pa. Code §129.112(c)(2)
401C	Flashing Furnace	Exempt by 25 Pa. Code § 129.111(c)
419	Cold Cleaning Machines	Exempt – subject to 25 Pa. Code § 129.63
420	Above Ground Gasoline Storage Tanks> 2000 Gallons	#28-05002, Sect E, Grp 017, Cond #001 (11)
421	Two Paint Stripping Tanks, Tl & T2 - Bldg. 370	19.74 tpy VOC PTE; Case-by-case RACT 3
421A	Two Paint Stripping Tanks, Tl & T2 - Bldg. 377	Source installed after August 3, 2018
422	AP Rocket Motor Destruction Facility	Exempt by 25 Pa. Code § 129.111(c)
423	One Paint Stripping Tank, R3419 - Bldg. 350	9.90 tpy VOC PTE; Case-by-case RACT 3
C04	Regenerative Thermal Oxidizer	Presumptive RACT by 25 Pa. Code § 129.112(c)(8)

Case-by-Case RACT 3 Evaluation

The case-by-case sources at this facility include:

- Source ID 421 Two Paint Stripping Tanks, T1 & T2 – Bldg. 370
- Source ID 423 One Paint Stripping Tank, R3419 – Bldg. 350

Both sources were subjects of a prior alternative VOC RACT 2 proposal submitted by LEAD.

From DEP's 3/2/18 Title V Permit Renewal No. 28-05002 review memo, "*Letterkenny operates one paint stripping tank in Building 350 and two paint stripping tanks in Building 370 for the stripping of cured epoxies and polyurethanes from aluminum and steel parts. Potential VOC emissions from the tank in Building 350 are 9.9 ton per year and a combined 19.8 tons per year from the two tanks in Building 370.*

The stripping tank in building 350 was initially constructed sometime in 1971 and later replaced with a new tank sometime in 2003. The two stripping tanks located in building 370 were constructed sometime in 1985. Since Letterkenny constructed all three stripping tanks without prior approval from the Department, a plan approval application for the construction of the three paint stripping tanks was submitted by Letterkenny in 2014 and later updated in February and April 2015. The application addressed RACT I requirements for the two stripping tanks located in Building 370. Since all three stripping tanks were in existence on or before July 20, 2012 and are not in any of the presumptive RACT II source categories listed under§ 129.97, the facility also proposed an alternative VOC RACT II emission limitation pursuant to § 129.99(c) of the then proposed regulations.

Under 129.99(c), a RACT proposal in accordance with the procedures in 129.92(a)(l) - (5), (7) (10) and (b) (relating to RACT proposal requirements) was submitted by the facility. The RACT II proposal considered the technical and economic feasibility of add-on controls as well as the feasibility of material substitution and found that neither add-on controls nor material substitution were feasible control options. Letterkenny proposed that VOC emission limits along with various workpractice and recordkeeping requirements be considered RACT for the paint stripping tanks. The proposal was subseqµently approved by the Department and the RACT requirements were incorporated in Letterkenny's Title V operating permit. Letterkenny has proposed that the RACT proposal submitted in 2014 and later updated in 2015 meets the alternative RACT II proposal requirements pursuant to 129.99(d)."

LEAD has not modified either source since the RACT 2 requirements were added to its TV Operating Permit #28-05002 Section E, Group 008 (RACT Requirements for Bldg 350 & 370 Paint Stripping Tanks Pursuant to § 129.99(d)) and is subject to VOC emission limits of 19.74 tpy for the stripping tanks in building 370 (Source ID 421) and 9.9 tpy for the tank in building 350 (Source ID 423).

Per 25 Pa. Code Section 129.114, Alternative RACT proposal and petition for alternative compliance schedule, in Section (i), "*An owner or operator subject to subsection (a), (b) or (c) and § 129.99 that has not modified or changed a source that commenced operation on or before October 24, 2016, and has not installed and commenced operation of a new source after October 24, 2016, may, in place of the alternative RACT requirement or RACT emission limitation required under subsection (d), submit an analysis, certified by the responsible official, in writing or electronically to the Department or appropriate approved local air pollution control agency on or before December 31, 2022, that demonstrates that compliance with the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate approved local air pollution Control agency under § 129.99(e) (relating to alternative RACT proposal and petition for alternative compliance schedule) assures compliance with the provisions in subsections (a)—(c) and (e)—(h), except for sources subject to § 129.112(c)(11) or (i)—(k)*."

Letterkenny Army Depot asserts that it qualifies under 129.114(i)(1)(i), which provides that "*The owner or operator of a subject source or facility 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: (i) equal to or greater than $7,500 per ton of NOx emissions reduced or $12,000 per ton of VOC emissions reduced shall include the following information in the analysis:" [required information is listed as (A)-(E)]

DEP concurs that this option applies per Table 2 of DEP's 3/2/18 Title V Permit Renewal No. 28-05002 review memo as shown below.

[begin quote from TV permit renewal memo]

RACT evaluation based on USEPA 's OAQPS Control Cost Manual (Three Paint Stripping Tanks)

Tables 1 and 2 show an evaluation of the cost effectiveness for each control option. The cost proposals are based primarily on equations in the EPA OAQPS Control Cost Manual, Sixth Edition.

Table I-Ranking of Technically Feasible Control Options by Control Effectiveness

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency	Overall Reduction (%)
1	Regenerative Thermal Oxidizer	98.0	90.0	88.2
2	Catalytic Oxidation	98.0	90.0	88.2
3	Rotary Concentrator/Oxidizer	98.0	90.0	88.2
4	Recuperative Thermal Oxidizer	98.0	90.0	88.2
5	Carbon Adsorber (onsite regeneration)	95.0	90.0	85.5
6	Refrigerated Condenser	90.0	90.0	81.0
7	Biofiltration	90.0	90.0	81.0

Table 2 – Ranking of the technically feasible control options per cost effectiveness, per building:

Bldg. No.	Control Technology	Capital Cost ($)	Annualized Cost ($/yr)	VOC Reduction (tons/yr)	Average Cost Effectiveness ($/ton removed)	Incremental Cost ($/incremental ton removed)
350	Carbon Adsorber	411,311	196,400	8.46	23,203	n/a-most cost effective
350	Rotary Concentrator/Oxidizer	462,879	219,579	8.73	25,147	86,713
350	Biofiltration	549,857	215,955	8.02	26,930	n/a-less stringent
350	Catalytic Oxidation	695,511	273,084	8.73	31,275	286,881
350	Refrigerated Condenser	446,645	322,160	8.02	40,175	n/a-less stringent
350	Regenerative Thermal Oxidizer	868,618	453,629	8.73	51,951	962,323
350	Recuperative Thermal Oxidizer	608,337	542,265	8.73	62,102	1,293,920
370	Carbon Adsorber	305,435	217,452	16.93	12,845	n/a-most cost effective
370	Biofiltration	549,857	235,370	16.04	14,676	n/a-less stringent
370	Rotary Concentrator/Oxidizer	649,692	297,946	17.46	17,061	150,569
370	Catalytic Oxidation	1,020,195	391,222	17.46	22,402	325,046
370	Refrigerated Condenser	722,048	518,804	16.04	32,348	n/a-less stringent
370	Regenerative Thermal Oxidizer	1,115,809	696,643	17.46	39,891	896,353
370	Recuperative Thermal Oxidizer	723,439	906,445	17.46	51,905	1,288,801

[end quote from TV permit renewal memo]

Two other VOC control technologies were explored for the RACT analysis but rejected as infeasible and were not included in the above cost analysis. Flaring was rejected due to the low energy content of the stripping tank exhaust streams and wet scrubbing was rejected due to the low water solubility of the primary VOC being captured.

RACT 3 129.114(i)(1)(i) ANALYSIS:

Informed by the preceding RACT 2 analysis, DEP can address the re-evaluation required under 129.114(i)(1)(i)(A)-(E). This requires the applicant to include the following information in the abbreviated RACT 3 case-by-case analysis: [requirements in **bold**; discussion following each requirement in regular font]

(A) 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.

From Letterkenny's RACT III evaluation: "*To comply with RACT III Final-form paragraph (1)(i)(A) -(E), LEAD has conducted extensive internet research on abatement systems with associate costs of purchase, installation, and operation and determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available since the BAT Analysis completed in 2017. The BAT analysis, provided as an attachment to this evaluation, specifies a list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)— (3) included in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e). The attached BAT analysis also specifies a summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under §129.99(d) or as calculated consistent with the EPA Air Pollution Control Cost Manual, 6th Edition, EPA/452/B-02-001, January 2002. Having performed the economic feasibility review, LEAD has demonstrated there has not been any new methodologies or technological advancement in abatement systems since the previous BAT analysis making abatement costs prohibitive. As such, LEAD proposes that the RACT requirements of the current Title V permit meets the requirements of RACT III and remain in place for these sources*."

In addition to LEAD's search for VOC control technologies, DEP consulted the following sources:

- BACT/LAER Clearinghouse was searched for the last five years for metal finishing and paint stripping permits. Applications of an RTO to facilities with much larger PTE were found to be cost effective but would not be economically feasible for LEAD.
- The Masters' Association of Metal Finishers news archives was searched under the category of products and technology.
- The National Association of Metal Finishers *Products Finishing* periodical was searched. Current and archived issues were examined under the parts cleaning section using a search for "VOC emissions control".
- The VOC Control section of APC Technologies, Inc. was consulted.
- The VOCs and Air Contaminant Control section of Precision Combustion, Inc. was also consulted.

DEP was unable to find any new VOC control technologies that LEAD had not already considered in its analysis.

(B) a list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)—(3) included in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e).

Letterkenny Army Depot's RACT 3 submittal included a BAT analysis for the newly installed Building 377 stripping tanks that included each of the air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under RACT 2.

(C) a summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (b) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the "EPA Air Pollution Control Cost Manual" (sixth edition), EPA/452/b-02-001, January 2002, as amended.

Letterkenny Army Depot's RACT 3 submittal included a summary of the economic feasibility analyses conducted for the new stripping tanks under RACT 2.

(D) a statement that an evaluation of each economic feasibility analysis summarized in clause (c) demonstrates that the cost effectiveness remains equal to or greater than $7,500 per ton of NOx emissions reduced or $12,000 per ton of VOC emissions reduced.

The BAT analysis for the Building 377 stripping tanks from Letterkenny Army Depot's RACT 3 submittal included the following summary:

"*Based on the analysis in Section 3, the VOC control technologies found to be technically feasible for the stripping tanks in Building 377 at the LEAD facility include:*

- *Thermal Oxidation (both recuperative and regenerative)*
- *Catalytic Oxidation*
- *Carbon Adsorption*
- *Rotary Concentration/Oxidation*
- *Refrigerated Condensation, and*
- *Biofiltration*

Table 1 shows the ranking and the annual control costs per ton of VOC for all the technically feasible control technologies. As shown in the table, the average annual costs of the technically feasible controls ranged from approximately ***$18,000 to $44,500 per ton of VOC removed****. Tables 2 through 9 show the details of the economic evaluation for the technically feasible control options. Table 10 provides an estimate of associated ductwork costs, which would apply to each control option and has been added to the total control option costs.*

Control options with the lowest annualized costs are use of a carbon adsorber with on-site regeneration or biofiltration. As noted in section 3.8 above, the constituents in the emissions from the tanks are not ideal candidates for biofiltration, so it is unlikely that a reduction efficiency of 90% is achievable. Other control options do not provide a significant reduction in VOC emissions at increasing costs.

LEAD is of the opinion that the economic evaluation indicates that it is not economically feasible to utilize any of these end-of-pipe control options to reduce VOC emissions from the stripping tanks in Building 377."

(E) additional information requested by the Department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.

DEP did not require any additional information regarding the case-by-case aspect of the Letterkenny Army Depot's RACT 3 analysis.

DEP ASSESSMENT:

DEP concurs with the selection of the carbon adsorber as the most cost-effective of the technically feasible VOC control technologies for the facility's stripping tanks. Having evaluated the cost calculations for the carbon adsorber, DEP concurs with the overall magnitude of the estimated cost of $12,845/ton (2015 dollars) to control the PTE of 19.74 tpy VOC for the two Building 370 tanks and $23,203/ton (2015 dollars) to control the PTE of 9.9 tpy VOC for the Building 350 tank.

The Chemical Engineering Plant Cost Index (CEPCI) from 2015-2021 (most current year available) is 1.2935. Using that value to update the RACT 2 cost analysis to current dollars results in even greater cost-ineffectiveness for the carbon adsorber control technology as shown below:

Source	Description	RACT 2 $/ton (2015)	RACT 3 $/ton (2022)
Source ID 421	Two Paint Stripping Tanks, Tl & T2 - Bldg. 370	$12,845	$16,615
Source ID 423	One Paint Stripping Tank, R3419 - Bldg. 350	$23,203	$30,012

The Department has reviewed the source information, control technologies or measures, and cost analysis performed by the company. The Department also performed an independent analysis which included, the Department's continuous review of permit applications since the applicability date of RACT II, internet searches, BACT/RACT/LAER Clearinghouse search, knowledge gained from the Department permitting staff participating in technical presentations by several vendors and manufacturers of pollution control technology, and a review of EPA and MARAMA's documents. Based on review of these materials, along with training and the expertise of the reviewing staff, the Department concludes that there are no new or updated air pollution control technologies available for the affected sources at this facility, and that good management practices, including an OM&M plan and appropriate recordkeeping as embodied in the existing approved case-by-case RACT 2 requirements in the facility's Title V permit, Section E, Group 008 (RACT Requirements for Bldg 350 & 370 Paint Stripping Tanks Pursuant to § 129.99(d)), assure compliance with requirements of RACT 3 in § 129.111 - § 129.115, for the affected sources, as follows:

#001 - Pursuant to the Reasonably Available Control Technology (RACT) provisions of §§129.96 and 129.99, the permittee shall limit combined volatile organic compound (VOC) emissions from the Two Paint Stripping Tanks, T1 & T2 - Bldg 370, Source ID 421 to less than or equal to 19.74 tons per year based on a 12-month rolling total.

#002 - Pursuant to the Reasonably Available Control Technology (RACT) provisions of §§129.96 and 129.99, the permittee shall limit volatile organic compound (VOC) emissions from the One Paint Stripping Tank, R3419 - Bldg 350, Source ID 423 to less than or equal to 9.9 tons per year based on a 12-month rolling total.

#003 - Pursuant to the Reasonably Available Control Technology (RACT) provisions of §§129.96,129.99 and 129.100, the records shall be retained by the owner or operator for 5 years and made available to the Department or appropriate approved local air pollution control agency upon receipt of a written request from the Department or appropriate approved local air pollution control agency.

#004 - Pursuant to the Reasonably Available Control Technology (RACT) provisions of §§129.96 and 129.99, the permittee shall keep and maintain adequate solvent purchase and usage records to demonstrate compliance with the RACT emission limits in Conditions #001 and #002.

#005 - Pursuant to the Reasonably Available Control Technology (RACT) provisions of §§129.96 and 129.100 the permittee shall keep records to demonstrate compliance with §§ 129.96—129.99 in the following manner:

(1) The records must include sufficient data and calculations to demonstrate that the requirements of §§ 129.96—129.99 are met.

(2) Data or information required to determine compliance shall be recorded and maintained in a time frame consistent with the averaging period of the requirement.

#006 - Pursuant to the Reasonably Available Control Technology (RACT) provisions of §§129.96 and 129.99, the permittee shall
comply with the following:

(a) The tanks shall be covered when not in use, to minimize vapor escape.

(b) The operating temperature of the tanks shall be no greater than 160°F. While the tanks are in operation, the temperature of the tanks shall be monitored and recorded at a minimum of once per shift. The records shall include, at a minimum, the following information:

1.) The date and time of the measurement.
2.) The temperature of each tank (degrees Fahrenheit).

(c) The steam shall be turned off to the tanks when it is anticipated that the process is not required for 24 hours or more. The permittee shall keep adequate records demonstrating compliance with this condition. The records shall include, at a minimum, the following information:

1.) The date and time steam is turned off to the tanks.
2.) The date and time steam is turned on to the tanks.

(d) Emissions shall be minimized by ceasing the introduction of air for tank agitation during start-up, shut down, part loading and unloading, and process disruptions.

(e) Good housekeeping practices shall be followed at all times, including any spills being cleaned up immediately, and any containers of solvent kept closed when not in use.

#007 - The expiration date shown in this permit is for state purposes. For federal enforcement purposes the conditions of this operating permit which pertain to the implementation of RACT regulations shall remain in effect as part of the State Implementation Plan (SIP) until replaced pursuant to 40 CFR 51 and approved by the U.S. Environmental Protection Agency (EPA). The operating permit shall become enforceable by the U.S. EPA upon its approval of the above as a revision to the SIP.

RACT 1 and 2

The facility is subject to a SIP-ed RACT 2 plan as follows:

Name of Source	Permit No.	County	PA Effective Date	EPA Approval Date
Letterkenny Army Depot	28-05002	Franklin	6/1/2018	9/1/2021, 86 FR 48914

This plan supersedes the prior RACT 1 permit (28-02002, attached) approved by the EPA 3/31/2105 (70 FR 16416) except for the following RACT 1 conditions that are included in Group 017 of Section E of the current operating permit:

"*Letterkenny Army Depot - Incorporating by reference Permit No. 28-05002, effective June 1, 2018, as redacted by Pennsylvania, which supersedes the prior RACT Permit No. 28-02002, effective February 3, 2000 except for conditions 5, 6, 7, 8, 9, 10, 11, 12, and 14 which also remain as RACT requirements*." (40 CFR § 52.2064(d)(7))

Recommendations

If a source was previously subject to RACT 2 case-by-case determinations, and that source has not been modified or changed, the owner or operator may, in lieu of doing another full case-by-case proposal for RACT 3 submit a limited analysis, as specified in 25 Pa. Code Section § 129.114(i). Unless otherwise required, this submission does not need to be part of a plan approval or operating permit modification and no fee would be charged.

The case-by-case determination for RACT 3 for this facility is the same as for RACT 2

cc: OnBase

attachments: Letterkenny RACT I permit (28-02002)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHCENTRAL REGION - FIELD OPERATIONS
AIR QUALITY PROGRAM

OPERATING PERMIT

In accordance with provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and after due consideration of an application received under Chapter 127 of the rules and regulations of the Department of Environmental Protection, the Department hereby issues this permit for the operation of the air contamination source described below.

Permit No: 28-02002

Source & Air Cleaning Device: U.S. Depot System

Owner: Department of the Army

Command Activities

Address: Letterkenny Army Depot, SDSLE-ENE

(See Attached)

Chambersburg, PA 17201-4150

Attention: Mr. Randall Quinn

Location: Franklin Street Extended

Chief, Environmental Management Division

Greene Township, Franklin County

This permit is subject to the following conditions:

1. That the source and any associated air cleaning devices are to be:

   a. operated in such a manner as not to cause air pollution;
   b. in compliance with the specifications and conditions of the applicable plan approval issued;
   c. operated and maintained in a manner consistent with good operating and maintenance practices.

2. This permit is valid only for the specific equipment, location and owner named above.

3. See attached

Failure to comply with the conditions placed on this permit is a violation of Section 127.444. Violation of this or any other provision of Article III of the rules and regulations of the Department of Environmental Protection will result in suspension or revocation of this permit and/or prosecution under Section 9 of the Air Pollution Control Act.

Issued: FEB 3 2000

Expires:

Program Manager

Southcentral Region 28-02002
Chambersburg Office
Permits

OPERATING PERMIT

PERMIT NO. 28-02002

DEPARTMENT OF THE ARMY

Sources, Continued

Sources		Activities
164	No. 2 Fuel Oil-Fired Boilers	Stenciling Inks
8	Propane-Fired Boilers	Specialty Coatings
33	Generators	Metal Pretreatment Acid Wash
7	Engine Test Cells	Cleanup Solvents
134	AST Fuel Storage Tanks	
97	UST Fuel Storage Tanks	
24	Paint Booths	
1	Industrial Wastewater Treatment Plant	
1	Photographic/Printing Operations	

All the above surface coating booths use dry filters in the control of particulate matter. The surface coating booths associated with Bldg. No. 350 control VOC emissions through the use of a Regenerative Thermal Oxidizer. Boiler No. 2 in Bldg. No. 349 uses Low No_x burner technology and Boiler No. 3 in Bldg. No. 349 uses Low No_x burner technology with flue gas recirculation.

Conditions, Continued

4. This operating permit constitutes a RACT determination for Volatile Organic Compound (VOC) and Nitrogen Oxide (No_x) emissions as per 25 Pa. Code Sections 129.91 and 129.92.

5. The No_x RACT for the facility is that the emissions will be limited to less than 100 tons per year based on a 12-month rolling total.

6. The VOC RACT for the Industrial Wastewater Treatment Plant is that emissions from this source shall be less than 2.7 tons per year based on a 12-month rolling total.

7. The VOC RACT for clean-up solvents is that emissions from this source shall be less than 2.7 tons per year based on a 12-month rolling total.

8. The VOC RACT for the specialty coatings and stenciling inks is that emissions from these sources shall be less than 2.7 tons per year based on a 12-month rolling total.

9. The VOC RACT for the Photographic/Printing Operations is that emissions from this source shall be less than 2.7 tons per year based on a 12-month rolling total.

10. The VOC RACT for all the boilers, generators, and engine test cells is that emissions from these sources shall be less than 2.7 tons per year based on a 12-month rolling total.

OPERATING PERMIT

PERMIT NO. 28-02002

DEPARTMENT OF THE ARMY

Conditions, Continued

11. The VOC RACT for the above ground and below ground storage tanks is that emissions from these sources shall be less than 2.7 tons per year based on a 12-month rolling total.

12. The VOC RACT for the Metal Pretreatment Acid Wash is that emissions from this source shall be less than 2.7 tons per year based on a 12-month rolling total.

13. The VOC RACT for the facilities paint booths is that all solvent-based coatings, as applied, shall comply with the requirements of 25 Pa. Code Section 129.52(b)(1), or the overall weight of VOCs emitted to the atmosphere shall be reduced through the use of incineration. The percent reduction in emissions shall be in conformance with the requirements of 25 Pa. Code Section 129.52(b)(2), and the percent reduction requirements, shall not exceed the Asea Brown Boveri (ABB) Regenerative Thermal Oxidizer demonstrated control efficiency of 94 percent.

14. Emissions controlled by the Regenerative Thermal Oxidizer shall be incinerated at a minimum temperature of 1,500°F with a minimum retention time of 0.3 seconds. Fluctuations below 1,500°F which occurs during start-ups and shutdowns shall not be lower than 1,450°F for a period of more than five minutes.

15. Annual reports containing, but not limited to, the following data for each surface coating applied within the booths listed above shall be submitted to the York District Supervisor:

    a. Coating identification
    b. Coating use (e.g., extreme performance coating)
    c. Pounds of VOC per gallon coating (minus water)
    d. Coating density
    e. Solvent density
    f. Percent solvents (volume) - (minus EPA exempt solvents)
    g. Percent solids (volume)
    h. Percent water (volume)
    i. Gallons per month of coating used (plus water)
    j. Gallons per month of coating used (minus water)
    k. The type and amount of cleanup solvents utilized
    l. Annual VOC emissions from surface coating operations after control expressed in pounds

    The report for each January 1 through December 31 period is due no later than March 1 of the following year for each operating year authorized by the operating permit or its renewal.

16. Manufacturer's VOC Data Sheets and/or Material Safety Data Sheets for all coatings applied at the facility within the most recent two year period shall be maintained at the facility and be made available to the Department upon request.

17. The permittee shall maintain records in accordance with 25 Pa. Code Section 129.95.

Weaver, William (DEP)

From: Piscioneri, Linda
Sent: Thursday, February 16, 2023 10:04 AM
To: Pelesky, Samuel J CIV USARMY USAMC (USA)
Cc: Bianca, Tom
Subject: RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

Thank you, Sam. The revised RACT III evaluation does appear to incorporate the changes we discussed.
Linda

Linda Piscioneri | Air Quality Permitting
Department of Environmental Protection | Air Quality Program
Southcentral Regional Office
909 Elmerton Ave | Harrisburg PA 17110
Phone: 717.705.4861 | www.dep.pa.gov

From: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil>
Sent: Thursday, February 16, 2023 9:57 AM
To: Piscioneri, Linda <lpiscioner@pa.gov>
Cc: Bianca, Tom <tbianca@pa.gov>; Wynkoop, Harold <hwynkoop@pa.gov>; Fontaine, Kenneth L CIV USARMY AMCOM (USA) <kenneth.l.fontaine.civ@army.mil>; Kindlin, Craig M CIV USARMY USAMC (USA) <craig.m.kindlin.civ@army.mil>
Subject: RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

Linda,

Attached is the revised RACT III Evaluation and Initial Notification Report for Letterkenny Army Depot. Let me know if you have any follow-up questions or comments.

Thank you,

Samuel J. Pelesky
Letterkenny Army Depot
Environmental Office
(717) 267-5591
Samuel.j.pelesky.civ@army.mil

From: Piscioneri, Linda <lpiscioner@pa.gov>
Sent: Friday, February 3, 2023 9:16 AM
To: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil>
Cc: Bianca, Tom <tbianca@pa.gov>; Wynkoop, Harold <hwynkoop@pa.gov>
Subject: [URL Verdict: Unknown][Non-DoD Source] RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

Thank you, Sam. DEP will add the 2.7 tpy emissions limit tosources 401A (OB) and 401B (OD) to the renewal of TV 28-05002.

To follow up on our conversation this morning, in order to complete the RACT 3 analysis for the paint stripping tanks at LEAD (Sources 421 and 423), DEP is requesting statements from Letterkenny that address items (A) to (D) under §129.114(i)(1)(i) to be included as part of the Letterkenny RACT proposal.

Thanks,
Linda

Linda Piscioneri | Air Quality Permitting
Department of Environmental Protection | Air Quality Program
Southcentral Regional Office
909 Elmerton Ave | Harrisburg PA 17110
Phone: 717.705.4861 |Caution-www.dep.pa.gov < Caution-http://www.dep.pa.gov/ >

From: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil>
Sent: Thursday, February 2, 2023 3:16 PM
To: Piscioneri, Linda <lpiscioner@pa.gov>
Cc: Bianca, Tom <tbianca@pa.gov>; Wynkoop, Harold <hwynkoop@pa.gov>
Subject: RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

Linda,

LEAD agrees with the DEP proposals suggested below. LEAD will accept a 2.7 tpy emission limit for sources 401A (OB) and 401B (OD) in the renewed TV operating permit.

Thank you,

Samuel J. Pelesky
Letterkenny Army Depot
Environmental Office
(717) 267-5591
Samuel.j.pelesky.civ@army.mil < Caution-mailto:Samuel.j.pelesky.civ@army.mil >

From: Piscioneri, Linda <lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov > >
Sent: Thursday, February 2, 2023 3:00 PM
To: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil > >
Cc: Bianca, Tom <tbianca@pa.gov < Caution-mailto:tbianca@pa.gov > >; Wynkoop, Harold <hwynkoop@pa.gov < Caution-mailto:hwynkoop@pa.gov > >
Subject: [URL Verdict: Unknown][Non-DoD Source] RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

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Sam,
The VOC emissions from the five sources below are being evaluated. Based on AIMS and the PTE in the renewal, RFD and PA applications, the DEP would be inclined to concur with the RACT 3 exemption for Sources 302, 401C and 422 based on < 1tpy VOC emissions.

DEP would not be inclined to accept exemptions for OB or OD, based both on AIMS reported emissions and on the PTE calculation being limited to 1 hr/day usage. Presumptive RACT would be a better way to go as long as LEAD can accept a 2.7 tpy emission limit for both sources in the renewed TV operating permit.

Please provide an email response on how you would like to proceed.
Linda

ID	Source Name	AIMS VOC Emissions 2021	VOC PTE
302	Static Firing	0 tons	0 tpy* (TV Renewal application 05/2016)
401A	Open Burning/Flash Off of Military	0.1 tons	1.46 tpy*(TV Renewal application 05/2016)
401B	Open Detonation	1.1 tons	1.46 tpy* (TV Renewal application 05/2016)
401C	Flashing Furnace	Not available	0.0057 tpy (RFD 8776, 09/2020)
422	AP Rocket Motor Destruction Facility	Not available	0 tpy (Attach. G of 28-05002J application)

Linda Piscioneri | Air Quality Permitting
Department of Environmental Protection | Air Quality Program
Southcentral Regional Office
909 Elmerton Ave | Harrisburg PA 17110
Phone: 717.705.4861 |Caution-www.dep.pa.gov < Caution-http://www.dep.pa.gov/ >

From: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil > >
Sent: Tuesday, January 24, 2023 12:19 PM
To: Piscioneri, Linda <lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov > >
Cc: Bianca, Tom <tbianca@pa.gov < Caution-mailto:tbianca@pa.gov > >
Subject: RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

Linda,

You are correct that Source ID's 086, 087 and 088 include boilers and heaters with a max firing rate of <10 MMBtu/hr. In fact, there are no boilers or heaters at LEAD with a max firing rate of >10 MMBtu/hr.

Also, I am very close to sending the revised initial notification and evaluation report, but we are taking a deeper look at our OB/OD activity sources. We're trying to determine why those sources were not included in the RACT I (1999 – 2000?) and RACT II (2016) evaluations. We just don't have any documented explanation whether there was an

exemption or some other reason they were excluded. I still believe LEAD would be good with using the Presumptive RACT limitation as the method of compliance for these sources, but I don't want to impose a limitation on ourselves if unnecessary.

Any help would be appreciated, but I guess I might hold off on the revised report until we get everything sorted out.

Thanks,

Samuel J. Pelesky
Letterkenny Army Depot
Environmental Office
(717) 267-5591
Samuel.j.pelesky.civ@army.mil < Caution-mailto:Samuel.j.pelesky.civ@army.mil > < Caution-mailto:Samuel.j.pelesky.civ@army.mil >

From: Piscioneri, Linda <lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov > > >
Sent: Tuesday, January 24, 2023 11:09 AM
To: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil > > >
Cc: Bianca, Tom <tbianca@pa.gov < Caution-mailto:tbianca@pa.gov < Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov > > >
Subject: [URL Verdict: Unknown][Non-DoD Source] RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

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Sam,
Some clarification is needed regarding Source ID's 086, 087 and 088 (the sources that are collections of boilers or heaters). In looking at the LEAD TV permit renewal application for the Section H listing of boilers and heaters in those sources, all of the combustion sources are shown as having a max firing rate of <10 MMBtu/hr. If this is correct, then those three sources should be exempt from RACT 3 requirements due to their small VOC PTE (<1 tpy).

Can you confirm this? Do any of the heaters or boilers grouped together in Sources 086-088 have a max firing rate of >10 MMBtu/hr?

Thank you,

Linda Piscioneri | Air Quality Permitting
Department of Environmental Protection | Air Quality Program
Southcentral Regional Office
909 Elmerton Ave | Harrisburg PA 17110
Phone: 717.705.4861 |Caution-www.dep.pa.gov < Caution-http://www.dep.pa.gov/ >

From: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil > > >
Sent: Friday, January 20, 2023 1:15 PM
To: Piscioneri, Linda <lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov > > >
Subject: RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

Linda,

Yes, on the question regarding the powder coat booth. There are no VOC emissions from the powder coat booth (Source 201).

I will work on revising the report and get an updated copy to you soon, hopefully by early next week.

Thanks,

Samuel J. Pelesky
Letterkenny Army Depot
Environmental Office
(717) 267-5591
Samuel.j.pelesky.civ@army.mil < Caution-mailto:Samuel.j.pelesky.civ@army.mil > < Caution-mailto:Samuel.j.pelesky.civ@army.mil > < Caution-mailto:Samuel.j.pelesky.civ@army.mil >

From: Piscioneri, Linda <lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov > > > >
Sent: Friday, January 20, 2023 9:02 AM
To: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil > > > >
Subject: [URL Verdict: Unknown][Non-DoD Source] RE: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

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Sam,
I have a quick follow-up question. Would Source 201 (powder coating booth) also be an example of a source with no VOC emissions similar to the flame spray booth?
Again, have a great weekend!

Linda Piscioneri | Air Quality Permitting

Department of Environmental Protection | Air Quality Program
Southcentral Regional Office
909 Elmerton Ave | Harrisburg PA 17110
Phone: 717.705.4861 |Caution-www.dep.pa.gov < Caution-http://www.dep.pa.gov/ >

From: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil > > > >
Sent: Thursday, January 19, 2023 3:15 PM
To: Piscioneri, Linda <lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov > > > >
Subject: [External] RE: Letterkenny RACT III Initial Notification: Information Needed

ATTENTION: *This email message is from an external sender. Do not open links or attachments from unknown senders. To report suspicious email, use theReport Phishing button in Outlook. < Caution-https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.oa.pa.gov%2FDocuments%2FCofense-Report-Phishing-User-Guide.pdf&data=05%7C01%7Clpiscioner%40pa.gov%7C14e24e978de346f8d71b08dafa59cf98%7C418e284101284dd59b6c47fc5a9a1bde%7C0%7C0%7C638097560897001132%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=d0Jowa%2BH8XaTqvUKvRtbwP3p6fvCz74c82d0weYc4t4%3D&reserved=0 >*

Linda,

The following are responses to your information requests listed below:

1. Source ID 149, (2) Flame Spray booth can be added to Table 3 and the method of compliance would be N/A or PTE <1 tpy. There are no VOC emissions associated with the flame spray booths.

2. Most of these sources should have listed Presumptive RACT limitation (PRES) for method of compliance, rather than PTE <1 tpy. I think they were overlooked because they were never included in the RACT II analysis. For Source ID's 302 (Static Firing), 401A (Open Burning), and 401B (Open Detonation), the potential to emit is most likely over 1 ton. Source 401B (OD) really shouldn't have been missed considering we've reported over 1 ton of VOC emissions in multiple years. Since all of these noted sources are tracked monthly for 12-month rolling total VOC emissions, LEAD would like to conservatively list Presumptive RACT limitation (PRES) as the method of compliance for each.

What is the best way to make these corrections? Do you just need an updated version of Table 3, or would you prefer a resubmitted report with revisions?

Just let me know.

Thanks,

Samuel J. Pelesky
Letterkenny Army Depot

Environmental Office
(717) 267-5591
Samuel.j.pelesky.civ@army.mil < Caution-mailto:Samuel.j.pelesky.civ@army.mil > < Caution-mailto:Samuel.j.pelesky.civ@army.mil > < Caution-mailto:Samuel.j.pelesky.civ@army.mil > < Caution-mailto:Samuel.j.pelesky.civ@army.mil >

From: Piscioneri, Linda <lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov < Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov %3c Caution-mailto:lpiscioner@pa.gov > > > > >
Sent: Wednesday, January 18, 2023 9:14 AM
To: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil < Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil %3c Caution-mailto:samuel.j.pelesky.civ@army.mil > > > > >
Cc: Bianca, Tom <tbianca@pa.gov < Caution-mailto:tbianca@pa.gov < Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov < Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov < Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov %3c Caution-mailto:tbianca@pa.gov > > > > >; Weaver, William (DEP) <wiweaver@pa.gov < Caution-mailto:wiweaver@pa.gov < Caution-mailto:wiweaver@pa.gov %3c Caution-mailto:wiweaver@pa.gov < Caution-mailto:wiweaver@pa.gov %3c Caution-mailto:wiweaver@pa.gov %3c Caution-mailto:wiweaver@pa.gov < Caution-mailto:wiweaver@pa.gov %3c Caution-mailto:wiweaver@pa.gov %3c Caution-mailto:wiweaver@pa.gov %3c Caution-mailto:wiweaver@pa.gov %3c Caution-mailto:wiweaver@pa.gov %3c Caution-mailto:wiweaver@pa.gov > > > > >
Subject: [URL Verdict: Neutral][Non-DoD Source] Letterkenny RACT III Initial Notification: Information Needed

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Good morning, Sam:
I am reviewing the Letterkenny RACT III evaluation on behalf of the Department and there is a need for additional detail. Referring to sources in Table 3 in Appendix A:

1. Source ID 149, (2) Flame Spray Booth, appears to be missing from the table. Please provide the method of RACT III compliance for this source.
2. A RACT III exemption is noted for Source ID's 302, 401A, 401B, 401C, 419 and 422 based on a PTE of < 1 tpy VOC. Please provide data in support of those PTE values.

This information is needed in order to move forward with the review.

Thank you,

Linda Piscioneri | Air Quality Permitting
Department of Environmental Protection | Air Quality Program
Southcentral Regional Office
909 Elmerton Ave | Harrisburg PA 17110
Phone: 717.705.4861 |Caution-www.dep.pa.gov < Caution-http://www.dep.pa.gov/ >

LETTERKENNY ARMY DEPOT
RACT III EVALUATION AND INITIAL NOTIFICATION

TITLE V OPERATING PERMIT NO. 28-05002

Prepared by:
Samuel J. Pelesky
Physical Scientist
Letterkenny Army Depot
1 Overcash Avenue
Chambersburg, PA 172301
(717) 267-5591
samuel.j.pelesky.civ@army.mil

LETTERKENNY ARMY DEPOT
RACT III EVALUATION AND INITIAL NOTIFICATION

TITLE V OPERATING PERMIT NO. 28-05002

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APPENDICES

REASONABLY AVAILABLE CONTROL TECHNOLOGY III (RACT III) EVALUATION AND INITIAL NOTIFICATION FOR LETTERKENNY ARMY DEPOT

1.0 INTRODUCTION

The Pennsylvania Department of Environmental Protection (PADEP) has adopted additional Reasonably Available Control Technology (RACT) requirements for major sources of emissions of oxides of nitrogen (NOx) and volatile organic compounds (VOCs) that were in existence on or before August 3,2018, to address the Federal requirements for the 2015 8-hour ozone National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA) (42 U.S.C.A. §§ 7401— 7671q). The additional RACT requirements, known as RACT III, were published in the PA Bulletin, Volume 52, No.46, on November 12, 2022. RACT III requires major sources of NOx and VOC emissions in Pennsylvania to review its individual emissions and determine compliance strategies with the new requirements. The new rule as published is contained in Appendix C.

Clean Air Act (CAA) section 172(c)(1) provides that state implementation plans (SIPs) for nonattainment areas must include "reasonably available control measures", including "reasonably available control technology" (RACT), for affected sources of emissions. The United States Environmental Protection Agency (USEPA) defines RACT as "the lowest emission limitation that a particular source is capable of meeting by application of control technology that is reasonably available considering technological and economic feasibility" (44 FR 53761 - Sept 17, 1979). In subsequent Federal register notices, EPA has addressed how states can meet RACT requirements of the Act. Significantly, RACT for a particular industry is determined on a case-by-case basis, considering issues of technological and economic feasibility.

PA Code, Title 25, §121.1 defines RACT to mean "the lowest emission limit for VOCs or NOx that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility". Factors considered in the determination of RACT include commercial availability, technical viability, control efficiency, potential adverse environmental effects, and the economic cost of the control mechanism.

There are three compliance options for RACT III:

- Compliance with presumptive RACT requirements and/or emission limitations
- Facility-wide or system-wide averaging for compliance with presumptive NOx emissions limitations
- Case-by-case RACT determinations

2.0 FACILITY DESCRIPTION

Letterkenny Army Depot (LEAD) is a United States Army facility, located in Chambersburg, Franklin Co., PA. LEAD operates several boilers and paint booths as well as other small

combustion and VOC sources at the facility. Each source included in the Title V Operating Permit 28-05002 was evaluated for RACT III applicability.

Based on a facility-wide PTE evaluation, LEAD has been determined to be a major source of VOC and NOx emissions. A major source of VOC and NOx, per Pennsylvania Code (Pa. Code), Title 25: Environmental Protection, Part I: Department of Environmental Protection, Subpart C: Protection of Natural Resources, Article III: Air Resources, Chapter 121.1: General Provisions – Definitions, is defined as a facility having the potential-to-emit (PTE) greater than or equal to 50 tons per year (TPY) of VOC emissions or 100 TPY of NOx emissions.

3.0 FACILITY INDIVIDUAL SOURCE EVALUATION

Appendix A contains the RACT III Initial Notification template sheets to include tables detailing Source Information (Table 1), Method of RACT III Compliance for NOx Sources (Table 2), and Method of RACT III Compliance for VOC Sources (Table 3).

3.1 Non-Applicability of RACT III for Sources of NOx

LEAD already has an enforceable facility wide emission limit of 100 tons per year NOx placed in the Title V Operating Permit #28-05002. Section E., Group 017, VII., Condition #001 (5)) states "The NOx RACT for the facility is that the emissions will be limited to less than 100 tons per year based on a 12-month rolling total". Therefore, the RACT III requirements specific to NOx do not apply to the facility. Appendix A, Table 2 lists the facilities sources of NOx emissions for reference.

3.2 Non-Applicability of RACT III for Paint Booths/Coating Operation Sources

Per the requirements of Title V Operating Permit #28-05002, Section E, Group 016, LEAD is already complying with RACT regulation 25 Pa Code §§129.52d. Therefore, the RACT III requirements specific to VOC emissions do not apply to the facility's paint booths and coating operations. Appendix A, Table 3 lists the paint/coating booths for reference.

3.3 Presumptive RACT III Sources of VOC Emissions

LEAD has completed a thorough analysis of all VOC emitting sources listed in the facility's Title V Operating Permit #28-05002. Except for the paint stripping tanks (Source IDs 421 & 423), all VOC sources meet an exemption status or are subject to presumptive RACT requirements, as detailed in Appendix A, Table 3. Below is a narrative breakdown for each presumptive RACT source, or group of sources.

The following VOC sources are listed together in Section E, Group 010 (Presumptive RACT Affected Sources Pursuant to § 129.97(c)(2)):

- Source ID 143 – Industrial Wastewater Treatment Plant (IWTP)
- Source ID 144 – Specialty Coatings/Stenciling Inks
- Source ID 145 – Photographic/Printing Operations
- Source ID 148 – Metal Pretreatment Acid Wash
- Source ID 301A – Clean-Up Solvents

Pursuant to the RACT provisions of 129.96 and 129.97, the permittee shall limit volatile organic compound (VOC) emissions from each of the above sources to less than 2.7 tons per year based on a 12-month rolling total. Additionally, the permittee shall install, maintain, and operate each of the above sources in accordance with the manufacturer's specifications and with good operating practices. Each of the above sources is also listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(6), (7), (8), (9), and (12), where a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total is already in place.

The following VOC sources are listed together in Section E, Group 011 (Presumptive RACT Affected Sources Pursuant to § 129.97(c)(3) & (6)):

- Source ID 031 - Johnson Boiler Bldg 1
- Source ID 032 - Johnson Boiler Bldg 1
- Source ID 036 - Johnson Boiler Bldg 3
- Source ID 037 - Johnson Boiler Bldg 3
- Source ID 041 - Smith Boiler Bldg 12
- Source ID 042 - Smith Boiler Bldg 12
- Source ID 46A - C-B Boiler Bldg 37SW
- Source ID 051 - Smith Boiler Bldg 51
- Source ID 052 - York-Shipley Bldg 57
- Source ID 053 - York-Shipley Bldg 57
- Source ID 083 - Smith Boiler Bldg 5316
- Source ID 086 - (39) Boilers 2.5 MMBtu/Hr or Less
- Source ID 087 - (9) Boilers >2.5 and <50 MMBtu/Hr
- Source ID 088 - (328) Propane/Natural Gas Heaters

Pursuant to the RACT provisions of 129.96 and 129.97, the permittee shall install, maintain, and operate each of the above sources in accordance with the manufacturer's specifications and with good operating practices. Additionally, these sources are also listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(10), where a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total is already in place.

The following VOC sources are listed in Section E, Group 012 (Presumptive RACT Affected Sources Pursuant to § 129.97(d):

- Source ID 146 – Emergency CI ICE

Pursuant to the RACT provisions of 129.96 and 129.97, the permittee shall limit the operating hours of each emergency engine to less than 500 hours in a 12-month rolling period, and install, maintain, and operate each of the above sources in accordance with the manufacturer's specifications and with good operating practices. Additionally, this source is also listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(10), where a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total is already in place.

The following VOC sources are listed in Section E, Group 013 (Presumptive RACT Affected Sources Pursuant to § 129.97(d):

- Source ID 147 – (12) Diesel Engine Test Cells

Pursuant to the RACT provisions of 129.96 and 129.97, the permittee shall install, maintain, and operate each of the above sources in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit or other combustion source. Additionally, this source is also listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(10), where a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total is already in place.

The following VOC source is listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(11):

- Source ID 420 - Above Ground Gasoline Storage Tanks >2000 Gallons

The VOC RACT for the above ground and below ground storage tanks is that emissions from these sources shall be less than 2.7 tons per year based on a 12-month rolling total.

The following VOC sources were not included in the original RACT I or RACT II evaluations and therefore not previously subject to RACT requirements:

- Source ID 302 – Static Firing
- Source ID 401A – Open Burning/Flash Off Of Military
- Source ID 401B – Open Detonation
- Source ID 401C – Flashing Furnace
- Source ID 419 – Cold Cleaning Machines
- Source ID 422 – AP Rocket Motor Destruction Facility

LEAD proposes that Source IDs 302, 401C, 419, and 422 be exempt from the RACT requirements with each having a Potential-To-Emit (PTE) of less than 1 ton per year VOC emissions. LEAD also proposes to use the Presumptive RACT limitation as the method of compliance for Source IDs 401A and 401B, with a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total effective immediately.

3.4 Case-by-Case RACT Evaluations

As with the RACT II evaluation, LEAD has identified the Two Paint Stripping Tanks, T1 & T2, in Building 370 (Source ID 421) and the One Paint Stripping Tank in Building 350 (Source ID 423) as unable to comply with the applicable presumptive RACT requirements. During the previous RACT evaluation, LEAD submitted a RACT Analysis report that had been conducted for these sources. The evaluation included analysis of technical and economic feasibility of add-on controls and the feasibility of material substitution. The results found that neither add-on control nor material substitution were feasible options for compliance with RACT regulations. LEAD proposed an alternative RACT consisting of work practice standards and recordkeeping to demonstrate compliance that was accepted by PADEP and incorporated into LEAD's Title V permit. The restrictions are found in Title V Operating Permit #28-05002, Section E, Group 008 (RACT Requirements for the Bldg. 350 and 370 Paint Stripping Tanks Pursuant to § 129.99(d).

LEAD has since added Two Paint Stripping Tanks, T1 & T2, in Building 377 (Source ID 421A), under Plan Approval Permit #28-05002Q. These paint stripping tanks will eventually replace the Bldg. 370 tanks once they are in full operational status, but because the Bldg. 377 tanks were installed after August 3, 2018, the RACT III requirements do not apply to this source. However, a Best Available Technology (BAT) Analysis was completed for the Bldg. 377 paint stripping tank project as part of the plan approval application requirements. Due to the similarities in design, function, and operation of Sources 421, 421A, and 423, LEAD is submitting the 2017 BAT Analysis as a supporting demonstration that add-on controls are not feasible options for LEAD compliance with RACT regulations.

To comply with RACT III Final-form paragraph (1)(i)(A) -(E), LEAD has conducted extensive internet research on abatement systems with associate costs of purchase, installation, and operation and determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available since the BAT Analysis completed in 2017. The BAT analysis, provided as an attachment to this evaluation, specifies a list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)— (3) included in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e). The attached BAT analysis also specifies a summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under §

129.99(d) or as calculated consistent with the EPA Air Pollution Control Cost Manual, 6th Edition, EPA/452/B-02-001, January 2002. Having performed the economic feasibility review, LEAD has demonstrated there has not been any new methodologies or technological advancement in abatement systems since the previous BAT analysis making abatement costs prohibitive. As such, LEAD proposes that the RACT requirements of the current Title V permit meets the requirements of RACT III and remain in place for these sources.

4.0 SUMMARY

LEAD has completed a full analysis of the RACT III requirements against all emissions sources listed in Title V Operating Permit #28-05002. The NOx requirements of RACT III do not apply to the facility as LEAD already has an enforceable facility wide emission limit of 100 tons per year NOx placed in the Title V Operating Permit #28-05002. LEAD already complies with 25 Pa Code §§129.52d, so the requirements of RACT III are not applicable to the facility's paint booths and coating operations. Except for the facility's paint stripping tanks, all other VOC emissions sources are exempt from or already meet the presumptive RACT requirements.

With the concurrence of the PADEP, LEAD believes they are already in full compliance of the RACT III regulations. Other than adding the VOC emission limitations for Source IDs 401A and 401B, the facility feels there is no need for any major modifications to the current Title V Operating Permit, or the upcoming renewal, as most of the presumptive RACT and case-by-case RACT restrictions are currently in place.

Appendix A

RACT III Initial Notification Template Sheets

Appendix A. RACT III Initial Notification Template Sheets, Table 1 - Source Information

Source ID	Source Name	Make	Model	Physical location of a source (i.e, building#, plant#, etc.)	Was this source subject to RACT II?
031	Johnson Boiler Bldg 1			Building 1	Yes
032	Johnson Boiler Bldg 1			Building 1	Yes
036	Johnson Boiler Bldg 3			Building 3	Yes
037	Johnson Boiler Bldg 3			Building 3	Yes
041	Smith Boiler Bldg 12			Building 12	Yes
042	Smith Boiler Bldg 12			Building 12	Yes
46A	C-B Boiler Bldg 37SW			Building 37	Yes
051	Smith Boiler Bldg 51			Building 51	Yes
052	York-Shipley Bldg 57			Building 57	Yes
053	York-Shipley Bldg 57			Building 57	Yes
083	Smith Boiler Bldg 5316			Building 5316	Yes
086	(39) Boilers 2.5 MMBtu/Hr or Less			Various buildings	Yes
087	(9) Boilers >2.5 and <50 MMBtu/Hr			Various buildings	Yes
088	(328) Propane/Natural Gas Heaters			Various buildings	Yes
102B	Coating booth #U8145 in Bldg 57 (Booth 1)			Building 57	No
103B	Coating booth #U8146 in Bldg 57 (Booth 2)			Building 57	No
106	Paint Booth #59, Bldg #350			Building 350	No
107	Paint Booth #60 , Bldg #350			Building 350	No
108	Paint Booth #61 , Bldg #350			Building 350	No
109A	Paint Booth #58, Bldg #350			Building 350	No
111	Paint Booth #3886, Bldg #320			Building 320	No
112	Paint Booth #3880, Bldg #320			Building 320	No
113	Paint Booth #3882, Bldg #320			Building 320	No
114	Paint Booth #3885, Bldg #320			Building 320	No
121	Paint Booth #3881, Bldg #320			Building 320	No
122	Paint Booth #4378, Bldg #320			Building 320	No
123	Paint Booth #200, Bldg #370			Building 370	No
125	Paint Booth #2813, Bldg #370			Building 370	No
126	Paint Booth #4298, Bldg #370			Building 370	No
128	Paint Booth #F4226 (#280), Bldg #37			Building 37	No
131	Paint Booth #R6744 (#468), Bldg #37			Building 37	No
132	Paint Booth #3884, Bldg #320			Building 320	No
137	Paint Booth R8052 (#470), Bldg #37			Building 37	No
140	Paint Booths in Ammo Area			Building 3382	No
142	Paint Booth #3883, Bldg #320			Building 320	No
143	Industrial Waste Water Treatment Plant			Building 360	Yes
144	Specialty Coatings/Stenciling Inks			Various buildings	Yes
145	Photographic/Printing Operations			Various buildings	Yes
146	Emergency CI			Various buildings	Yes
147	(12) Diesel Engine Test Cells			Buildings 37 & 350	Yes
148	Metal Pretreatment Acid Wash			Various buildings	Yes
149	(2) Flame Spray Booths			Building 350	No
200	Paint Booth #4757, Bldg #370			Building 370	No
201	Powder Coating Booth R4247, Bldg 370			Building 370	No
202	Paint Booth #S3599, Bldg #1			Building 1	No
203	Paint Booth #3155, Bldg #5807			Building 5807	No
204	Stand-Alone Paint Booth, Bldg #350			Building 350	No
205	Bldg #320 IR Drying/Coating Booth #4115			Building 320	No
300	Painting Outside Booths			Various areas	No
301A	Clean Up Solvents			Various buildings	Yes
302	Static Firing			OB/OD grounds	No
401A	Opern Burning/Flash Off of Military			OB/OD grounds	No
401B	Open Detonation			OB/OD grounds	No
401C	Flashing Furnace			OB/OD grounds	No
419	Cold Cleaning Machines			Various buildings	No
420	Above Ground Gasoline Storage Tanks >2000 Gallons			Building 3323	Yes
421	Two Paint Stripping Tanks, T1 & T2, Bldg 370			Building 370	Yes
421A	Two Paint Stripping Tanks, T1 & T2, Bldg 377			Building 377	No
422	AP Rocket Motor Destruction Facility			Building 8001	No
423	One Paint Striiping Tank, Bldg 350			Building 350	Yes

Appendix A. RACT III Initial Notification Template Sheets, Table 2 - Method of RACT III Compliance, NOx

Source ID	Source Name	NOx PTE TPY	Exempt from RACT III (yes or no)	How do you intend to comply? (PRES, CbC, FAC or SYS)	Specific citation of rule if presumptive option chosen
031	Johnson Boiler Bldg 1		yes	N/A	***LEAD already has an enforceable facility wide emission limit of 100 tons per year NOx placed in the Title V Operating Permit (#28-05002, Section E., Group 017, VII., Condition #001 (5))**
032	Johnson Boiler Bldg 1		yes	N/A	
036	Johnson Boiler Bldg 3		yes	N/A	
037	Johnson Boiler Bldg 3		yes	N/A	
041	Smith Boiler Bldg 12		yes	N/A	
042	Smith Boiler Bldg 12		yes	N/A	
46A	C-B Boiler Bldg 37SW		yes	N/A	
051	Smith Boiler Bldg 51		yes	N/A	
052	York-Shipley Bldg 57		yes	N/A	
053	York-Shipley Bldg 57		yes	N/A	
083	Smith Boiler Bldg 5316		yes	N/A	
086	(39) Boilers 2.5 MMBtu/Hr or Less		yes	N/A	
087	(9) Boilers >2.5 and <50 MMBtu/Hr		yes	N/A	
088	(328) Propane/Natural Gas Heaters		yes	N/A	
146	Emergency CI		yes	N/A	
147	(12) Diesel Engine Test Cells		yes	N/A	
302	Static Firing		yes	N/A	
401A	Opern Burning/Flash Off of Military		yes	N/A	
401B	Open Detonation		yes	N/A	
401C	Flashing Furnace		yes	N/A	
422	AP Rocket Motor Destruction Facility		yes	N/A	

Source ID	Source Name	VOC PTE TPY	Exempt from RACT III (yes or no)	How do you intend to comply?	Specific citation of rule if presumptive option chosen
031	Johnson Boiler Bldg 1		no	PRES	*LEAD already has an enforceable facility wide emission limit of 2.7 tons per year VOC for all boilers, generators, and engine test cells placed in the Title V Operating Permit (#28-05002, Section E., Group 017, VII., Condition #001 (10))
032	Johnson Boiler Bldg 1		no	PRES	
036	Johnson Boiler Bldg 3		no	PRES	
037	Johnson Boiler Bldg 3		no	PRES	
041	Smith Boiler Bldg 12		no	PRES	
042	Smith Boiler Bldg 12		no	PRES	
46A	C-B Boiler Bldg 37SW		no	PRES	
051	Smith Boiler Bldg 51		no	PRES	
052	York-Shipley Bldg 57		no	PRES	
053	York-Shipley Bldg 57		no	PRES	
083	Smith Boiler Bldg 5316		no	PRES	
086	(39) Boilers 2.5 MMBtu/Hr or Less		no	PRES	
087	(9) Boilers >2.5 and <50 MMBtu/Hr		no	PRES	
088	(328) Propane/Natural Gas Heaters		no	PRES	
102B	Coating booth #U8145 in Bldg 57 (Booth 1)		yes	N/A	25 Pa. Code, §§ 129.52d
103B	Coating booth #U8146 in Bldg 57 (Booth 2)		yes	N/A	25 Pa. Code, §§ 129.52d
106	Paint Booth #59, Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
107	Paint Booth #60 , Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
108	Paint Booth #61 , Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
109A	Paint Booth #58, Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
111	Paint Booth #3886, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
112	Paint Booth #3880, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
113	Paint Booth #3882, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
114	Paint Booth #3885, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
121	Paint Booth #3881, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
122	Paint Booth #4378, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
123	Paint Booth #200, Bldg #370		yes	N/A	25 Pa. Code, §§ 129.52d
125	Paint Booth #2813, Bldg #370		yes	N/A	25 Pa. Code, §§ 129.52d
126	Paint Booth #4298, Bldg #370		yes	N/A	25 Pa. Code, §§ 129.52d
128	Paint Booth #F4226 (#280), Bldg #37		yes	N/A	25 Pa. Code, §§ 129.52d
131	Paint Booth #R6744 (#468), Bldg #37		yes	N/A	25 Pa. Code, §§ 129.52d
132	Paint Booth #3884, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
137	Paint Booth R8052 (#470), Bldg #37		yes	N/A	25 Pa. Code, §§ 129.52d
140	Paint Booths in Ammo Area		yes	N/A	25 Pa. Code, §§ 129.52d
142	Paint Booth #3883, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
143	Industrial Waste Water Treatment Plant		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (6))
144	Specialty Coatings/Stenciling Inks		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (8))
145	Photographic/Printing Operations		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (9))
146	Emergency CI		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (10))
147	(12) Diesel Engine Test Cells		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (10))
148	Metal Pretreatment Acid Wash		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (12))
200	Paint Booth #4757, Bldg #370		yes	N/A	25 Pa. Code, §§ 129.52d
201	Powder Coating Booth R4247, Bldg 370		yes	N/A	25 Pa. Code, §§ 129.52d
202	Paint Booth #S3599, Bldg #1		yes	N/A	25 Pa. Code, §§ 129.52d
203	Paint Booth #3155, Bldg #5807		yes	N/A	25 Pa. Code, §§ 129.52d
204	Stand-Alone Paint Booth, Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
205	Bldg #320 IR Drying/Coating Booth #4115		yes	N/A	25 Pa. Code, §§ 129.52d
300	Painting Outside Booths		yes	N/A	25 Pa. Code, §§ 129.52d
301A	Clean Up Solvents		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (7))
302	Static Firing		yes	PTE <1 tpy	
401A	Opern Burning/Flash Off of Military		no	PRES	
401B	Open Detonation		no	PRES	
401C	Flashing Furnace		yes	PTE < 1tpy	
419	Cold Cleaning Machines		yes	PTE < 1tpy	
420	Above Ground Gasoline Storage Tanks >2000 Gallons		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (11))
421	Two Paint Stripping Tanks, T1 & T2, Bldg 370	19.74	no	CbC	
421A	Two Paint Stripping Tanks, T1 & T2, Bldg 377	15.00	yes	N/A	Source Installed after August 3, 2018
422	AP Rocket Motor Destruction Facility		yes	PTE < 1tpy	
423	One Paint Stripping Tank, Bldg 350	9.90	no	CbC	

Appendix B

2017 BAT Analysis for Building 377 Paint Stripping Tanks

BEST AVAILABLE TECHNOLOGY ANALYSIS
TWO PAINT STRIPPING TANKS IN BUILDING 377

LETTERKENNY ARMY DEPOT

CHAMBERSBURG, PA

March 2015
Updated January 2017

Prepared for:

H.F. Lenz Co.
1407 Scalp Avenue
Johnstown, PA 15904

Prepared by:

Montrose Air Quality Services, LLC
1050 William Pitt Way
Pittsburgh, Pennsylvania 15238

Project Number: 018-RCS-102141

MONTROSE
AIR QUALITY SERVICES

BEST AVAILABLE TECHNOLOGY EVALUATION
FOR STRIPPING TANKS IN BUILDING 377

UPDATED JANUARY 2017

LETTERKENNY ARMY DEPOT
FRANKLIN COUNTY, PENNSYLVANIA

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BEST AVAILABLE TECHNOLOGY EVALUATION
FOR STRIPPING TANKS IN BUILDING 377

UPDATED JANUARY 2017

LETTERKENNY ARMY DEPOT
FRANKLIN COUNTY, PENNSYLVANIA

1. INTRODUCTION

Letterkenny Army Depot (LEAD), located in Franklin County, Pennsylvania, has prepared this updated Best Available Technology (BAT) evaluation for volatile organic compounds (VOCs) for the two (2) proposed paint stripping tanks (T-1 and T-2) located in Building 377.

Figure 1 shows a flow diagram for the stripping tanks in Building 377. An emission capture and exhaust system will be constructed for each tank. The projected potential VOC emissions from the tanks are 15.0 tons/year, and the total exhaust flow rate is 8,000 cfm.

The remainder of this report contains the VOC BAT approach, BAT evaluation (including technical and economic feasibility of control devices), and LEAD's proposed BAT for these stripping tanks.

2. BAT APPROACH

The "top-down" BAT approach, as outlined in the United States Environmental Protection Agency's (USEPA's) "*New Source Review Workshop Manual: Prevention of Significant Deterioration and Non-attainment Area Permitting*," Draft, October 1990 (Workshop Manual), was utilized in this analysis. The steps of the top-down approach are as follows:

Step 1 – Identification of All Control Technologies for the Pollutant
Step 2 – Elimination of Technically Infeasible Options
Step 3 – Ranking Remaining Control Technologies by Control Effectiveness
Step 4 – Economic Evaluation of the Most Effective Controls
Step 5 – Selection of BAT

In Step 1 - Identification of All Control Technologies for the Pollutant, control technologies that are used for VOC emissions are identified in order of control effectiveness, with the most stringent control technology listed first. The BAT evaluation begins with the most stringent control technology. If it is shown that the most stringent control technology is technically or economically infeasible, then the next most stringent control technology is evaluated. This process continues until a control technology cannot be eliminated. Per USEPA's guidance, if the most stringent control technology is deemed feasible, no further analysis is required.

3. TECHNICAL FEASIBILITY OF ADD-ON CONTROLS FOR VOC

Add-on control equipment that has been demonstrated to be effective in reducing VOC emissions, in certain situations, includes:

- Thermal oxidation
- Catalytic oxidation
- Flaring
- Rotary Concentration/Oxidization
- Carbon adsorption
- Gas absorption (Wet Scrubbing)
- Condensation, and
- Biofiltration

The following sections will examine each of these options to determine if they would be technically feasible for the stripping tanks in Building 377 at the LEAD facility.

3.1. Thermal Oxidation

Thermal oxidation refers to the combustion of waste gases to form carbon dioxide and water. This is achieved by heating the waste gases in the presence of oxygen. Typical destruction efficiencies are in the range of 95 to 99%, at a temperature of over 1,400 degrees Fahrenheit (°F) and a residence time of at least 0.5 seconds.

Thermal oxidation is used extensively for the destruction of VOC emissions and is considered a technically feasible method of controlling the VOC emissions from the stripping tanks in Building 377.

3.2. Catalytic Oxidation

Catalytic oxidation is the complete combustion of waste gases through the use of an oxidation catalyst, to form carbon dioxide and water. Oxidation is achieved by heating the waste stream in the presence of oxygen and a catalyst. The temperature range for this type of control is lower than for thermal oxidation, about 650 to 800°F. Destruction efficiencies (DE) of greater than 95% are possible when working optimally.

Catalytic oxidation is considered a technically feasible method of controlling the VOC emissions from the stripping tanks in Building 377.

3.3. Flaring

Flaring is an effective control option for controlling VOC emissions from exhaust streams with a heat content of at least 300 Btu per standard cubic feet (scf). A DE of 95-99% can be achieved with flaring.

The heat content of the exhaust from the stripping tanks is not rich and estimated to be less than one (1) Btu/scf. This is based on Equation 2.16 in Section 3.2, Chapter 2, of the EPA OAQPS Control Cost Manual (6th Ed.), and the following information:

Maximum VOC emission rate	5 lb/hr (assumed instantaneous max.)
Benzyl alcohol emissions	3.33 lb/hr (assumed 2/3 of total)
Benzyl alcohol vapor density	0.16 lb/cf (twice air density)
Benzyl alcohol volume flow	0.35 cfm
Benzyl alcohol heat of combustion	2960 Btu/cf
Ethanolamine emissions	1.66 lb/hr (assumed 1/3 of total)
Ethanolamine vapor density	0.16 lb/cf (twice air density)
Ethanolamine volume flow	0.17 cfm
Ethanolamine heat of combustion	1685 Btu/cf

Therefore, flaring is not considered a technically feasible method of controlling VOC emissions from the stripping tanks.

3.4. Rotary VOC Concentrator with Oxidation

Rotary VOC concentrators are used in applications that involve a combination of high volume of air with low concentration of solvents. The rotary concentrator reduces the solvent laden air flow by a factor of about 10:1, thus minimizing the overall system size and operating costs. VOC concentrators can be combined with any oxidation technology. Rotary VOC concentrators use activated carbon or zeolite for highly effective adsorption, as well as efficient desorption. The adsorption media slowly rotates continuously, with one section of the media used to adsorb the incoming emission stream, while another section is being desorbed by passing heated air through it. This desorbed organic stream is routed to an oxidizer for destruction. An overall DE of 95-99% can be achieved with this technology.

Rotary Concentration/Oxidation is considered a technically feasible method of controlling the VOC emissions from the stripping tanks in Building 377.

3.5. Carbon Adsorption

Activated carbon adsorption is effective in controlling VOC emissions, and is used extensively by various industries. Under optimum conditions, control efficiency can be 95% or greater. Some drawbacks include disposing of or regenerating the spent carbon, the need for a much larger footprint compared to other technologies, and disposal of contaminated liquid wastes.

Despite these drawbacks, activated carbon adsorption is considered a technically feasible control option for controlling VOC emissions from the stripping tanks in Building 377.

3.6. Condensation

Condensation of VOC emissions is effective with low volume, high concentration streams. VOC control efficiencies of 80-95% can be achieved with condensation.

The exhaust from the stripping tanks is both high in volume and low in concentration, which makes it unlikely to be adequately controlled by condensation. However, refrigerated

condensation is considered a technically feasible control option for the stripping tanks in Building 377.

3.7. Wet Scrubbing

Gas absorption of VOC components via wet scrubbing is not generally very effective, unless the volatiles are highly soluble in the scrubbing medium. Benzyl alcohol, the predominant VOC constituent in the exhaust stream, is only partially soluble in water (4 g/100 mL). Also, wet scrubbing creates a contaminated liquid stream, which would require storage, treatment and possible disposal.

For the reasons above, scrubbing is not considered to be technically feasible for the stripping tanks in Building 377.

3.8. Biofiltration

Biofiltration is an air pollution control technology in which off-gases containing biodegradable organic compounds are vented, under controlled temperature and humidity through a special filter material containing microorganisms. As exhaust gases pass through the biofilter, VOC is absorbed on the filter material, and the microorganisms break down the compounds and transform them into CO_2 and water, with efficiency ranging from 80 to 99%.

The predominant VOCs present in the exhaust stream, benzyl alcohol and monoethanolamine, do not appear to be good candidates for this technology, as they are only partially soluble in water. The most important variable affecting bioreactor operations is temperature. Most microorganisms can survive and flourish in a temperature range of 60 to 105^{o}F. Additionally, it is imperative with biofilters that an adequate moisture level be maintained to prevent drying of the bed. Therefore, to avoid freezing in winter, the biofilter components would have to be housed inside a heated building.

Despite these serious drawbacks that indicate biofiltration is not a technically feasible control option for the stripping tanks, an economic evaluation has been conducted.

4. ECONOMIC FEASIBILITY OF ADD-ON CONTROLS

Based on the analysis in Section 3, the VOC control technologies found to be technically feasible for the stripping tanks in Building 377 at the LEAD facility include:

- Thermal Oxidation (both recuperative and regenerative)
- Catalytic Oxidation
- Carbon Adsorption
- Rotary Concentration/Oxidation
- Refrigerated Condensation, and
- Biofiltration

Table 1 shows the ranking and the annual control costs per ton of VOC for all the technically feasible control technologies. As shown in the table, the average annual costs of the technically feasible controls ranged from approximately **$18,000 to $44,500 per ton of VOC removed**. Tables 2 through 9 show the details of the economic evaluation for the technically feasible control options. Table 10 provides an estimate of associated ductwork costs, which would apply to each control option and has been added to the total control option costs.

Control options with the lowest annualized costs are use of a carbon adsorber with on-site regeneration or biofiltration. As noted in section 3.8 above, the constituents in the emissions from the tanks are not ideal candidates for biofiltration, so it is unlikely that a reduction efficiency of 90% is achievable. Other control options do not provide a significant reduction in VOC emissions at increasing costs.

LEAD is of the opinion that the economic evaluation indicates that <u>it is not economically feasible</u> to utilize any of these end-of-pipe control options to reduce VOC emissions from the stripping tanks in Building 377.

5. FEASIBILITY OF MATERIAL SUBSTITUTION

Aside from evaluating the technical and economic feasibility of add-on emission control systems, a BAT analysis should include an examination of the feasibility of reducing emissions through process and/or material changes. The solvent mixture used in the stripping tanks (comprised of two parts Eurostrip 7028 and one part Eurostrip 7031) is 71.4% VOC by weight (or, 6.3 lb/gallon), but does not contain any hazardous air pollutants (HAP).

LEAD is contractually obligated by its customers to use the Eurostrip solvent mixture. Any change in the type of solvent used would require approval by these customers. LEAD has evaluated other paint stripping materials and has not found any substitute that has done an adequate job to meet required specifications. The aluminum and steel parts being stripped at LEAD are coated with well-cured epoxies and polyurethanes, with paint film thicknesses of 20 mils or higher. These types of paints are difficult to remove. Material substitution is therefore not an option.

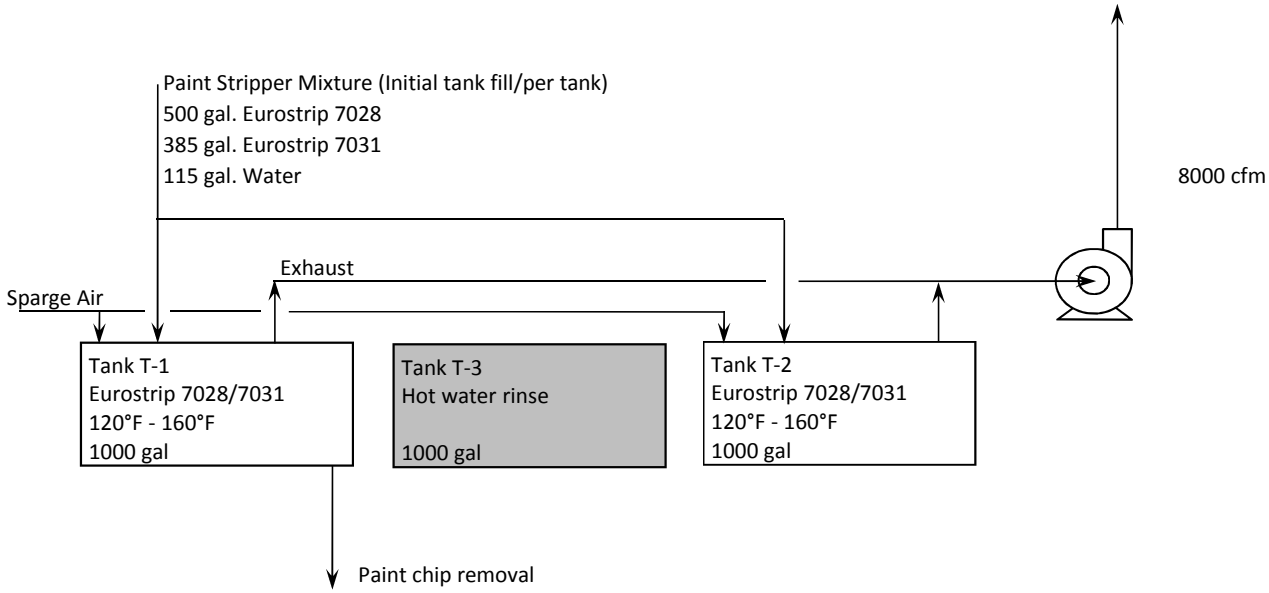
6. PROPOSED BAT FOR THE STRIPPING TANKS IN BUILDING 377

Letterkenny Army Depot proposes that BAT for the stripping tanks in Building 377 is adherence to the following items:

- VOC emissions from the tanks shall not exceed 15.0 tons over any consecutive 12-month period;
- LEAD shall maintain adequate solvent purchase and usage records to demonstrate compliance with the proposed BAT emission limit;
- The tanks will be covered when not in use, to minimize vapor escape;
- The temperature in each tank will be lowered during extended periods of non-use. The operating temperature range on the tanks is 120°F to 160°F. The steam is turned off to the tanks when the production area knows that the process is not required for 24 or more hours, which is true for most weekends. It is estimated that the tank temperature drops to near ambient (approx. 80°F) over 24 to 48 hours without steam;
- Emissions will be minimized by ceasing the introduction of air for tank agitation during start-up, shut-down, parts loading and unloading, and process disruptions; and,
- Good housekeeping practices shall be followed at all times, including any spills being cleaned up immediately, and any containers of solvent kept closed when not in use.

FIGURE

BLDG 377 Paint Strip Tanks



Tank interior dimensions: L 9 ft. 6 in.
W 4 ft.
D 4 ft.

Exhaust hood is located along the 9 ft. 6 in. side opposite the operator position.

MONTROSE AIR QUALITY SERVICES

FLOW DIAGRAM OF BUILDING 377 STRIPPING TANKS
LETTERKENNY ARMY DEPOT, FRANKLIN COUNTY, PA

Figure 1

TABLES

Control Equipment Cost Tables

Table 1. Ranking of Best Available Technology (BAT) Options for Stripping Tanks at Building 377
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

1a. - Ranking of Control Options by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Overall Reduction [1] (%)
1.	Regenerative Thermal Oxidizer	98.0	90.0	88.2
2.	Catalytic Oxidation	98.0	90.0	88.2
3.	Rotary Concentrator/Oxidizer	98.0	90.0	88.2
4.	Recuperative Thermal Oxidizer	98.0	90.0	88.2
5.	Carbon Adsorber (on-site regen.)	95.0	90.0	85.5
6.	Refrigerated Condenser	90.0	90.0	81.0
7.	Biofiltration	90.0	90.0	81.0

1b. - Ranking of Total Annual Control Costs per Ton of VOC Reduced[2]

Ranking	Control Technology	Capital Cost ($)	Annualized [3] Cost ($/year)	VOC Reduction (tons/year)	Avg. Control Cost ($/ton/yr)
1.	Carbon Adsorber (on-site regen.)	416,204	231,080	12.83	18,018
2.	Biofiltration	509,355	233,027	12.15	19,179
3.	Rotary Concentrator/Oxidizer	440,205	241,401	13.23	18,246
4.	Catalytic Oxidation	667,677	295,421	13.23	22,330
5.	Refrigerated Condenser	403,209	335,788	12.15	27,637
6.	Regenerative Thermal Oxidizer	819,903	486,379	13.23	36,763
7.	Recuperative Thermal Oxidizer	572,694	588,841	13.23	44,508

[1] Overall reduction based on product of Control efficiency and Capture efficiency.

[2] Refer to the following Tables 2 through 10 for the derivation of the values used in this table.

[3] Includes control equipment annualized cost plus ductwork/capture equipment annualized cost.

Table 2. Input Parameters for Control Technology Analysis
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

Emission Data

Maximum VOC emissions, tpy	**15.0**	(requested maximum)
Maximum VOC emissions, lb/hr	3.53	
Operating hours per year:	**8,500**	

Collection System Data

	Expected Capture Eff.	Total Expected Air Flow, cfm
Building 377 (two tanks)	**90%**	**8,000**

Control System Data

	Removal Efficiency, %	Heat Recovery, %
Catalytic oxidation	**98**	**50**
Regenerative thermal oxidation (RTO)	**98**	**95**
Regenerative carbon adsorption	**95**	**N/A**
Rotary Concentrator w/Oxidation	**98**	**50**
Biofiltration	**90**	**N/A**
Recuperative Thermal Oxidizer	**98**	**70**
Refrigerated Condenser	**90**	**N/A**

Economic Data (as of Dec 2016)

Operator labor cost, $/hr	**44.00**
Maintenance labor cost, $/hr	**44.00**
Electricity cost, $/kwh	**0.076**
Gas cost, $/mcf	**4.71**
Water cost, $/mgal	**6.000**
Steam cost, $/1000 lbs	**5.67**
Liquid waste disposal, $/gal	**1.52**
Carbon cost, $/lb	**1.48**
Catalyst cost, $/ft3	**650**
Interest rate, %	**8.0**
*Taxes, insurance, admin, % of TC	**4.0**
*Control system life, yrs	**10.0**
*Carbon life, yrs	**5.0**

*Per EPA OAQPS Control Cost Manual, 6th

Table 3. Total Annual Costs - Thermal Incinerator (Recuperative)
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine

INPUT PARAMETERS

Gas flowrate (scfm):	8,000	
Reference temperature (oF):	77	
Inlet gas temperature (oF):	70	
Inlet gas density (lb/scf):	0.0739	air
Primary heat recovery (fraction):	0.70	
Waste gas heat content (BTU/scf):	1	Equation 2.16
Waste gas heat content (BTU/lb):	14	
Gas heat capacity (BTU/lb-oF):	0.4	
Combustion temperature (oF):	1,400	
Preheat temperature (oF):	1001	Equation 2.18
Fuel heat of combustion (BTU/lb):	21,502	methane
Fuel density (lb/ft3):	0.0408	methane

CALCULATED PARAMETERS

Auxiliary Fuel Requirement (lb/min):	5.641	Equation 2.21
(scfm):	138.3	
Total Gas Flowrate (scfm):	8,138	

CALCULATED CAPITAL COSTS

Equipment Costs ($):		
Incinerator:		
@ 0 % heat recovery:	0	Equation 2.29
@ 35 % heat recovery:	0	Equation 2.30
@ 50 % heat recovery:	0	Equation 2.31
@ 70 % heat recovery:	202,707	Equation 2.32
Total Equipment Cost--base:	202,707	
Total Equipment Cost--escalated (A):	301,450	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):	355,711	Table 2.8
Total Capital Investment (TCI = 1.61B):	**572,694**	Table 2.8

ANNUAL COST INPUTS

Operating factor (hr/yr):	8,500	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.5	Table 2.10
Maintenance labor factor (hr/sh):	0.5	Table 2.10
Electricity price ($/kwh):	0.076	
Natural gas price ($/mscf):	4.71	
Annual interest rate (fraction):	0.08	
Control system life (years):	10	
Capital recovery factor:	0.1490	
Taxes, insurance, admin. factor:	0.04	Table 2.10
Pressure drop (in. w.c.):	19.0	

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)	
Operating labor	23,375	
Supervisory labor	3,506	15% of Operator, Table 2.10
Maintenance labor	23,375	
Maintenance materials	23,375	=Maintenance Labor, Table 2.10
Natural gas	332,113	
Electricity	19,480	
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10
Taxes, insurance, administrative	22,908	
Capital recovery	85,348	
Total Annual Cost	**577,659**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All equation and table references are from Section 3.2, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 4. **Total Annual Costs - Thermal Incinerator (Regenerative)**
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1999: 390.6 from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015: 537.0 from *Chemical Engineering* magazine

INPUT PARAMETERS

Exhaust Gas flowrate (scfm):	8,000	
Reference temperature (oF):	77	
Waste gas inlet temperature, Tw_i (oF):	70	
Inlet gas density (lb/scf):	0.07390	air
Primary heat recovery (fraction):	0.85	0.85 or 0.95
Waste gas heat content, annual avg. (BTU/scf):	1.0	Equation 2.16
Waste gas heat content (BTU/lb):	14	
Gas heat capacity (BTU/lb-oF):	0.400	air
Combustion temperature (oF):	1,400	
Temperature leaving heat exchanger, Tw_o (oF):	1201	Equation 2.18
Fuel heat of combustion (BTU/lb):	21,502	methane
Fuel density (lb/ft3):	0.0408	methane

CALCULATED PARAMETERS

Auxiliary Fuel Requirement (Qaf):	(lb/min):	3.368	Equation 2.21
	(scfm):	82.56	
	(mcf/yr):	42,104.3	
Total Maximum Exhaust Gas Flowrate:	(scfm):	8,083	

CALCULATED CAPITAL COSTS

Oxidizer Equipment Cost (EC):	313,915	Equation 2.33
Auxiliary Equipment:		
Total Equipment Cost--base:	313,915	Sum of EC and auxiliary equipment
Total Equipment Cost--escalated (A):	431,573	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):	509,256	Table 2.8
Total Capital Investment (TCI = 1.61B):	**819,903**	Table 2.8

ANNUAL COST INPUTS

Operating factor (hr/yr):	8,500	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	Table 2.10
Maintenance labor factor (hr/sh):	0.50	Table 2.10
Electricity price ($/kwh):	0.076	
Natural gas price ($/mscf):	4.71	
Annual interest rate (fraction):	0.08	
Control system life (years):	10.00	
Capital recovery factor:	0.149	
Taxes, insurance, admin. factor:	0.04	Table 2.10
Pressure drop (in. w.c.):	15.0	Table 2.11
Overhead factor:	0.60	Table 2.10

ANNUAL COSTS

Item	**Cost ($/yr)**	
Operating labor	23,375	
Supervisory labor (15% of operator labor cost)	3,506	Table 2.10
Maintenance labor	23,375	
Maintenance materials (100% of maintenance labor)	23,375	Table 2.10
Natural gas	198,311	
Electricity	15,272	Equation 2.42
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10
Taxes, insurance, administrative	32,796	Table 2.10
Capital recovery (= CRF * TCI)	122,190	Table 2.10
Total Annual Cost	**486,379**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All equation and table references are from Section 3.2, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 5. **Total Annual Costs - Catalytic Oxidizer**
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1988: 342.5 from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015: 537.0 from *Chemical Engineering* magazine

INPUT PARAMETERS			
-- Exhaust Gas flowrate (scfm):		8,000	
-- Reference temperature (oF):		77	
-- Inlet gas temperature (oF):		70	
-- Inlet gas density (lb/scf):		0.0739	air
-- Primary heat recovery (fraction):		**0.70**	
-- Waste gas heat content (BTU/scf):		1.0	Equation 2.16
-- Waste gas heat content (BTU/lb):		13.5	
-- Gas heat capacity (BTU/lb-oF):		0.40	
-- Combustion temperature (oF):		**650**	
-- Preheat temperature (oF):		476	Equation 2.18
-- Fuel heat of combustion (BTU/lb):		21,502	methane
-- Fuel density (lb/ft3):		0.0408	methane
CALCULATED PARAMETERS			
-- Auxiliary Fuel Requirerment:	(Btu/hour):	447,860	Equation 2.21
	(scfm):	7.5	
	(mcf/year):	3,807	
-- Total Maximum Exhaust Gas Flowrate:	(scfm):	8,007	
-- Catalyst Volume (ft3):		15.5	
CALCULATED CAPITAL COSTS			
Equipment Costs ($):			
@ 0 % heat recovery:		0	Equation 2.34
@ 35 % heat recovery:		0	Equation 2.35
@ 50 % heat recovery:		0	Equation 2.36
@ 70 % heat recovery:		207,361	Equation 2.37
Total Equipment Cost--base:		207,361	
Total Equipment Cost--escalated (A):		351,446	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):		414,706	Table 2.8
Total Capital Investment (TCI = 1.61B):		**667,677**	Table 2.8

ANNUAL COST INPUTS		
Operating factor (hr/yr):	8500	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	**0.5**	Table 2.10
Maintenance labor factor (hr/sh):	**0.5**	Table 2.10
Electricity price ($/kwh):	0.076	
Catalyst price ($/ft3):	650	
Natural gas price ($/mscf):	4.71	
Annual interest rate (fraction):	0.08	
Control system life (years):	10	
Catalyst life (years):	5	
Capital recovery factor (system):	0.1490	
Capital recovery factor (catalyst):	0.2505	
Taxes, insurance, admin. factor:	0.04	Table 2.10
Pressure drop (in. w.c.):	21.0	

CALCULATED ANNUAL COSTS		
Item	**Cost ($/yr)**	
Operating labor	23,375	
Supervisory labor	3,506	15% of Operator, Table 2.10
Maintenance labor	23,375	
Maintenance materials	23,375	=Maintenance Labor, Table 2.10
Natural gas	17,930	
Electricity	21,184	
Catalyst replacement	2,727	
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10
Taxes, insurance, administrative	26,707	
Capital recovery	97,881	
Total Annual Cost	**284,239**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All equation and table references are from Section 3.2, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 6. Total Annual Costs - Carbon Adsorber (On-Site Regeneration)
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine

INPUT PARAMETERS

Inlet stream flowrate (acfm):	8,000	
Inlet stream temperature (oF):	70	
Inlet stream pressure (atm):	1	
VOC to be condensed:	Benzyl Alcohol	
Maximum Inlet VOC flowrate (lb/hr):	3.53	
VOC molecular weight (lb/lb-mole):	108	
VOC inlet volume fraction:	2.63E-05	
VOC inlet concentration (ppmv):	26.3	
VOC inlet partial pressure (psia):	0.00039	
Required VOC removal (fraction):	0.95	
Annual VOC inlet (tons):	13.5	Based on 90% capture of source emissions
Adsorption time (hr):	16.0	
Desorption time (hr):	4.0	
Number of adsorbing vessels:	1	Maximum of 100,000 cfm per vessel
Superficial carbon bed velocity (ft/min):	50.0	Normal range is 10 fpm to 100 fpm; picked mid-point
Carbon price ($/lb):	1.48	For fire-proof carbon
Material of construction:	1.3	Table 1.2; Stainless steel 316

CARBON & VESSEL PARAMETERS

Carbon equil. capacity (lb VOC/lb carbon):	0.35	
Carbon working capacity (lb VOC/lb carbon):	0.1750	50% of equilibrium capacity
Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
Total number of vessels:	1	
Carbon requirement, total (lb):	5,000	Equation 1.13 or 1.14, depending if system is continuous or intermittent
Carbon requirement per vessel (lb):	5,000	
Gas flowrate per adsorbing vessel (acfm):	8,000	Vertical vessel, since flow under 9000 cfm
Adsorber vessel diameter (ft):	14.273	Equation 1.18 or 1.21, depending if horizontal or vertical vessel
Adsorber vessel length (ft):	5.042	Equation 1.19 or 1.23, depending if horizontal or vertical vessel
Adsorber vessel surface area (ft2):	546.07	Equation 1.24
Carbon bed thickness (ft):	1.042	Equation 1.31
Total pressure drop across all carbon beds (in. w.c.):	2.204	Equation 1.30
Ductwork friction losses (in. w.c.):	5.227	See box at right
Total system pressure drop (in. w.c.):	7.431	

CALCULATED CAPITAL COSTS

Adsorber vessels	47,478	Equation 1.25
Carbon	7,400	
Other equipment (condenser, decanter, etc.)	62,700	
Auxiliary equipment (condensed liquid tanks)	25,000	See References 2 & 3
Boiler (and associated equip.) for steam regeneration	37,700	See Reference 4
Total equipment cost ($)--base:	96,651	Equation 1.27
Total Equipment Cost - base (adsorber+auxiliary+boiler):	159,351	
Total Equipment Cost--escalated (A):	219,078	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):	258,512	Table 1.3
Total Capital Investment (TCI = 1.61B):	**416,204**	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual):

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}(u/1000)^{1.8}$

D = duct diameter, ft

u = average duct velocity, fpm

Total straight length:	500	ft
Diameter:	1.67	ft
Duct velocity:	3664	fpm
Straight duct loss:	3.85	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$

k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)

u = average duct velocity, fpm

Number of elbows:	5	
Duct velocity:	3664	fpm
Total Elbow loss:	1.37	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 6. Total Annual Costs - Carbon Adsorber (On-Site Regeneration)
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

ANNUAL COST INPUTS

Operating factor (hr/yr):	8500.00	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	**0.50**	Table 1.6
Maintenance labor factor (hr/sh):	**0.50**	Table 1.6
Electricity price ($/kWhr):	0.08	
Recovered VOC value ($/lb):	**0.00**	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	5.67	
Cooling water price ($/1000 gal):	6.00	
Liquid waste disposal ($/gallon):	1.52	See Reference 5; this is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	**0.40**	See Reference 7
Carbon replacement labor ($/lb):	**0.05**	Table 1.6
Overhead rate (fraction):	**0.60**	Table 1.6
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	5.0	
Capital recovery factor (carbon):	0.2505	
Taxes, insurance, admin. factor:	0.04	Table 1.6

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)	
Operating labor	23,375	
Supervisory labor	3,506	
Maintenance labor	23,375	
Maintenance materials	23,375	= Maintenance labor cost
Electricity	7,642	Equations 1.32 and 1.34 (based on energy needed for system fan, bed drying/cooling fan, and the coolir
Steam	536	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	1,945	Equation 1.29
Carbon replacement	2,064	
Liquid waste disposal	14,726	Assume 90% of steam is condensed; this is an added cost that is not addressed in OAQPS manual
Spent carbon disposal	400	Total carbon mass, divided by life, times cost per pound
Overhead	44,179	Table 1.6
Taxes, insurance, administrative	16,648	
Capital recovery	62,027	
Total Annual Cost (without credits)	223,798	
Recovery credits	0	
Total Annual Cost (with credits)	**223,798**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All table and equation references in this spreadsheet pertain to Section 3.1, Chapter 1 of EPA Control Cost Manual, 6th Ed.

Table 7. Total Annual Costs - Rotary Concentrator/Oxidizer
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1996:	381.7	from *Chemical Engineering* maga
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* maga

PARAMETERS	***INPUT***	
Flowrate (cfm)	8,000	
Control device input mass (tons/year)	13.5	
Concentration (avg. ppm)	24.52	
Facility operating schedule (hours/year)	8,500	
Thermal oxidizer temperature (F)	1,400	
Fuel cost, ($/million BTU)	4.71	
Electricity cost, ($/kwhr)	0.076	
Capital recovery factor	0.1490	
Taxes, insurance, admin. factor:	0.04	Table 2.10
UTILITY COST CALCULATIONS		
Heat recovery (%)	50	
Electrical power (kW)	8.7	Equation 2.42, Section 3.2
Fuel usage (Btu/hr)	532,299	Equation 2.21, Section 3.2
Capital Costs		
Equipment cost (EC)	164,701	Durr budgetary costs, 3/15/1996
Total Equipment Cost--escalated (A):	231,711	
Purchased Equipment Cost (B = 1.18A):	273,420	
Total Capital Investment (TCI = 1.61B):	**440,205**	
Annual Operating Costs		
Operator labor	23,375	Table 2.10, Section 3.2
Supervisory labor	3,506	Table 2.10, Section 3.2
Maintenance labor	23,375	Table 2.10, Section 3.2
Maintenance materials	23,375	Table 2.10, Section 3.2
Thermal incinerator fuel cost	21,311	
Electrical cost	7,887	
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10, Section 3.2
Property tax, insurance, administration	17,608	Table 2.10, Section 3.2
Capital recovery cost	65,604	
Total annualized cost ($/year)	**230,219**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Equation and table references are from Section 3.2, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 8. Total Annual Costs - Biofiltration
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 2010:	550.8	from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine

PARAMETERS	***INPUT***
Flowrate (cfm)	8,000
Source emission rate (tons/year)	15.0
Capture efficiency (% wt)	90%
Emissions routed to control device (tons/year)	13.50
Concentration (avg. ppm)	24.52
Facility operating schedule (hours/year)	8,500
Thermal oxidizer temperature (F)	N/A
Fuel cost, ($/million BTU)	N/A
Electricity cost, ($/kwhr)	0.076
Capital recovery factor	0.1490

UTILITY COST CALCULATIONS

Heat recovery (%)	N/A	
Electrical power (kW)	12	vendor estimate (PPC, 2010)**
Fuel usage (Btu/hr)	N/A	

Capital Costs

Equipment cost (EC)	275,000	vendor estimate (PPC, 2010)**
Total Equipment Cost--escalated (A):	268,110	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):	316,370	Table 2.8, Section 3.2
Total Capital Investment (TCI = 1.61B):	**509,355**	Table 2.8, Section 3.2

Annual Operating Costs

Operator labor	23,375	Table 2.10, Section 3.2
Supervisory labor	3,506	Table 2.10, Section 3.2
Maintenance labor	23,375	Table 2.10, Section 3.2
Maintenance materials	23,375	Table 2.10, Section 3.2
Thermal incinerators fuel cost	N/A	
Electrical cost	7,752	
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10, Section 3.2
Property tax, insurance, administration	20,374	Table 2.10, Section 3.2
Capital recovery cost	75,909	
Total annualized cost ($/year)	**221,845**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

** For a 3500 cfm system; from *Solutions to Address VOC Emissions from Acid Wash Primer Wash Usage at Letterkenny Army Depot*, by AMCOM G-4 Analysis Branch, January 2010.

Table 9. Total Annual Costs - Refrigerated Condenser
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine

INPUT PARAMETERS:

Inlet stream flowrate (scfm):		8000
Inlet stream temperature (oF):		70
VOC to be condensed:		Benzyl Alcohol
VOC inlet volume fraction:		0.00003
Required VOC removal (fraction):		0.90
Antoine equation constants for VOC:		
(based on mmHg & degrees C)	A:	7.923
	B:	2060.530
	C:	203.928
VOC heat of condensation (BTU/lb-mole):		14,270
VOC heat capacity (BTU/lb-mole-oF):		30.800
Coolant specific heat (BTU/lb-oF):		0.650
VOC boiling point (oF):		403
VOC critical temperature (oR):		1217
VOC molecular weight (lb/lb-mole):		108.1
VOC condensate density (lb/gal):		8.72
Air heat capacity (BTU/lb-mole-oF):		6.95

DESIGN PARAMETERS:

Outlet VOC partial pressure (mm Hg):	0.002
Condensation temperature, Tc (oF):	14.1
VOC flowrate in (lb-moles/hr):	0.032
VOC flowrate out (lb-moles/hr):	0.003
VOC condensed (lb-moles/hr):	0.029
(lb/hr):	3.1
VOC heat of condensation @ Tc (BTU/lb-mole):	18,913
Enthalpy change, condensed VOC (BTU/hr):	599
Enthalpy change, uncondensed VOC (BTU/hr):	6
Enthalpy change, air (BTU/hr):	475,633
Condenser heat load (BTU/hr):	476,237
Heat transfer coefficient, U (BTU/hr-ft2-oF):	20.00
Log-mean temperature difference (oF):	27.6
Condenser surface area (ft2):	862.0
Coolant flowrate (lb/hr):	29,307
Refrigeration capacity (tons):	39.69
Electricity requirement (kW/ton):	4.7

CAPITAL COSTS

Equipment Costs ($):	
Refrigeration unit/single-stage (< 10 tons):	0
Refrigeration unit/single-stage (> 10 tons):	95,725
Multistage refrigeration unit:	0
VOC condenser:	33,082
Recovery tank:	1,968
Auxiliaries (ductwork, etc.):	
Total equipment cost ($)--base:	130,774
Total Equipment Cost--escalated (A):	196,381
Purchased Equipment Cost (B = 1.18A):	231,729
Total Capital Investment (TCI = 1.74B):	**403,209**

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8500
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kWhr):	0.076
Recovered VOC value ($/lb):	0.00
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.04

ANNUAL COSTS:

Item	Cost ($/yr)
Operating labor	23,375
Supervisory labor	3,506
Maintenance labor	23,375
Maintenance materials	23,375
Electricity	141,760
Overhead	44,179
Taxes, insurance, administrative	16,128
Capital recovery	60,090
Total Annual Cost (without credits)	335,788
Recovery credits	0
Total Annual Cost (with credits)	**335,788**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All equations are from Section 3.1, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 10. Cost Spreadsheet for Straight Ductwork for Routing To Controls
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1993:	359.2	from *Chemical Engineering* magazine	
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine	

INPUT PARAMETERS

Inlet stream flowrate (acfm):	8,000		
Duct velocity (ft/min):	3,664	61.1	ft/sec
Duct length (ft):	500.0		
Material of construction:	Galv. CS sh.		
Insulation thickness (in.): (text input)	1.0		
Duct design:	Circ.-spiral		
Cost equation parameters:	2.560	a:	
	0.937	b:	
Cost equation form:	1		
Control system installation factor:	1.5		
(if no system, enter '0')			
Fan-motor combined efficiency (fraction):	0.60		

DESIGN PARAMETERS

Number of exhaust fans:	1
Duct diameter (in.):	20.0
Pressure drop (in. w.c.):	3.853

CAPITAL COSTS

Equipment Cost ($)--base:	21,197
' ' '--escalated:	31,689
Purchased Equipment Cost ($):	34,224
Total Capital Investment per Exhaust Fan($):	51,337
Overall Total Capital Investment($):	**51,337**

ANNUAL COST INPUTS

Operating factor (hours/year):	8500
Electricity price ($/kWhr):	0.076
Annual interest rate (fractional):	0.08
Ductwork economic life (years):	20
Capital recovery factor (system):	0.1019
Taxes, insurance, admin. factor:	0.04

ANNUAL COSTS

Item	Cost ($/yr)
Electricity	3,900
Taxes, insurance, administrative	2,053
Capital recovery	5,229
Total Annual Cost	**11,182**

Appendix C

RACT III Regulation Posting

RULES AND REGULATIONS

Title 25—ENVIRONMENTAL PROTECTION

ENVIRONMENTAL QUALITY BOARD

[25 PA. CODE CHS. 121 AND 129]

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

The Environmental Quality Board (Board) amends Chapters 121 and 129 (relating to general provisions; and standards for sources) to read as set forth in Annex A. This final-form rulemaking amends Chapter 129 to establish additional presumptive reasonably available control technology (RACT) requirements and RACT emission limitations for certain major stationary sources of oxides of nitrogen (NO_x) and volatile organic compound (VOC) emissions in existence on or before August 3, 2018, to address the Federal requirements for the 2015 8-hour ozone National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA) (42 U.S.C.A. §§ 7401—7671q).

This final-form rulemaking amends Chapter 121 to add terms to and amend existing terms in § 121.1 (relating to definitions) to support these final-form amendments to Chapter 129.

This final-form rulemaking will be submitted to the United States Environmental Protection Agency (EPA) for approval as a revision to the Commonwealth's State Implementation Plan (SIP) following promulgation of this final-form rulemaking.

This final-form rulemaking was adopted by the Board at its meeting on August 9, 2022.

A. *Effective Date*

This final-form rulemaking will be effective upon publication in the *Pennsylvania Bulletin*.

B. *Contact Persons*

For further information, contact Viren Trivedi, Chief, Division of Permits, Bureau of Air Quality, Rachel Carson State Office Building, P.O. Box 8468, Harrisburg, PA 17105-8468, (717) 783-9476; or Jesse C. Walker, Assistant Counsel, Bureau of Regulatory Counsel, Rachel Carson State Office Building, P.O. Box 8464, Harrisburg, PA 17105-8464, (717) 787-7060. Persons with a disability may use the Pennsylvania Hamilton Relay Service, (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This final-form rulemaking is available on the Department of Environmental Protection's (Department) web site at www.dep.pa.gov (select "Public Participation," then "Environmental Quality Board" and then navigate to the Board meeting of August 9, 2022).

C. *Statutory Authority*

This final-form rulemaking is authorized under section 5(a)(1) of the Air Pollution Control Act (APCA) (35 P.S. § 4005(a)(1)), which grants the Board the authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth; and section 5(a)(8) of the APCA, which grants the Board the authority to adopt rules and regulations designed to implement the provisions of the CAA.

D. *Background and Purpose*

This final-form rulemaking establishes §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS) to meet CAA requirements for the control of ground-level ozone. Emissions of NO_x and VOCs are precursors for ground-level ozone formation. Ground-level ozone, a public health and welfare hazard, is not emitted directly to the atmosphere from air contamination sources, but forms from the photochemical reaction between emissions of VOCs and NO_x in the presence of sunlight.

Ground-level ozone is a highly reactive gas which at sufficient concentrations can produce a wide variety of harmful public health and welfare effects. At elevated concentrations, ground-level ozone can adversely affect human and animal health, vegetation, materials, economic values, and personal comfort and well-being. It can cause damage to important food crops, forests, livestock and wildlife. Repeated exposure to ground-level ozone pollution may cause a variety of adverse health effects for both healthy people and those with existing conditions including difficulty in breathing, chest pains, coughing, nausea, throat irritation and congestion. It can worsen bronchitis, heart disease, emphysema and asthma, reduce lung capacity and lead to increased morbidity. Asthma is a significant and growing threat to children and adults. High levels of ground-level ozone also affect animals including pets, livestock and wildlife in ways similarly to humans.

The EPA is responsible for establishing NAAQS, or maximum allowable concentrations in the ambient air, for six criteria air pollutants considered harmful to public health and welfare, including the environment: ground-level ozone; particulate matter; nitrogen dioxide (NO_2); carbon monoxide; sulfur dioxide; and lead. Section 109 of the CAA (42 U.S.C.A. § 7409) established two types of NAAQS: primary standards, which are limits set to protect public health; and secondary standards, which are limits set to protect public welfare and the environment, including protection against visibility impairment and from damage to animals, crops, vegetation and buildings. The EPA established primary and secondary ground-level ozone NAAQS to protect public health and welfare.

On April 30, 1971, the EPA promulgated primary and secondary NAAQS for photochemical oxidants, which include ozone, under section 109 of the CAA. See 36 FR 8186 (April 30, 1971). These were set at an hourly average of 0.08 parts per million (ppm) total photochemical oxidants not to be exceeded more than 1 hour per year. On February 8, 1979, the EPA announced a revision to the then-current 1-hour standard. See 44 FR 8202 (February 8, 1979). The final rule revised the level of the primary 1-hour ozone standard from 0.08 ppm to 0.12 ppm and set the secondary standard identical to the primary standard. This revised 1-hour standard was reaffirmed on March 9, 1993. See 58 FR 13008 (March 9, 1993).

Section 110(a) of the CAA (42 U.S.C.A. § 7410(a)) gives states the primary responsibility for achieving the NAAQS. Section 110(a) of the CAA provides that each state shall adopt and submit to the EPA a plan to implement measures (an SIP) to enforce the NAAQS or a revision to the NAAQS promulgated under section 109(b) of the CAA. An SIP includes the regulatory programs,

actions and commitments a state will carry out to implement its responsibilities under the CAA. Once approved by the EPA, an SIP is legally enforceable under both Federal and state law.

Section 172(c)(1) of the CAA (42 U.S.C.A. § 7502(c)(1)) provides that SIPs for nonattainment areas must include "reasonably available control measures," including RACT, for affected sources of emissions. RACT is defined as the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. See 44 FR 53762 (September 17, 1979). Section 182 of the CAA (42 U.S.C.A. § 7511a) requires that, for areas that exceed the NAAQS for ozone, states shall develop and administer a program that mandates that certain major stationary sources implement RACT. Under sections 182(f)(1) and 184(b)(2) of the CAA (42 U.S.C.A. §§ 7511a(f)(1) and 7511c(b)(2)), these RACT requirements are applicable to all sources in this Commonwealth that emit or have a potential to emit 100 tons per year (TPY) or more of NO_x. Under sections 182(b)(2) and 184(b)(2) of the CAA, these RACT requirements are applicable to all sources in this Commonwealth that emit or have a potential to emit at least 50 TPY of VOCs. Sources that emit or have the potential to emit equal to or greater than these levels are classified as "Title V" facilities or "major" facilities or sources. The owners and operators of these facilities are subject to the permitting requirements of Title V of the CAA, namely sections 501—507 of the CAA (42 U.S.C.A. §§ 7661—7661f). For more detail, see § 121.1 for the regulatory definitions of the terms "major facility," "major NO_x emitting facility," "major VOC emitting facility" and "Title V facility."

For RACT implementation purposes, this entire Commonwealth is treated as a "moderate" ozone nonattainment area, because this Commonwealth is included in the Ozone Transport Region (OTR) established by operation of law under sections 176A and 184 of the CAA (42 U.S.C.A. §§ 7506a and 7511c). Section 184(b) of the CAA addresses provisions for the SIP of a state included in the OTR. Section 184(b)(1)(B) of the CAA requires that states in the OTR, including this Commonwealth, submit an SIP revision requiring implementation of RACT for all major stationary sources of NO_x and VOC emissions in the state and not just for those sources that are located in designated nonattainment areas of the state. The RACT requirements established in this final-form rulemaking apply to the owners and operators of all major facilities or sources in this Commonwealth that emit or have a potential to emit equal to or greater than 100 TPY of NO_x or 50 TPY of VOCs, as required under section 184 of the CAA for states in the OTR. Consequently, the Commonwealth's SIP must include RACT regulations applicable Statewide to the owners and operators of affected major stationary sources of NO_x and VOC emissions. The Commonwealth's RACT regulations under §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs) were implemented Statewide in January 1994 for the 1979 and 1993 1-hour ozone standard. See 24 Pa.B. 467 (January 15, 1994). Additionally, because the five-county Philadelphia area was designated as severe ozone nonattainment for the 1979 1-hour standard, the owners and operators of existing sources of 25 TPY or more of either pollutant in the five-county Philadelphia area were required under section 182(d) of the CAA to implement the RACT requirements in §§ 129.91—129.95. These requirements remain applicable to the owners and operators of these sources of 25 TPY or more in the five-county Philadelphia area.

On July 18, 1997, the EPA concluded that revisions to the then-current 1-hour ozone primary standard to provide increased public health protection were appropriate at this time to protect public health with an adequate margin of safety. Further, the EPA determined that it was appropriate to establish a primary standard of 0.08 ppm averaged over 8 hours. At this time, the EPA also established a secondary standard equal to the primary standard. See 62 FR 38856 (July 18, 1997). Because ozone monitoring data is measured out to three decimal places, the standard effectively became 0.084 ppm because of rounding; areas with ozone levels as high as 0.084 ppm were considered as meeting the 0.08 ppm standard. See 73 FR 16436 (March 27, 2008). In 2004, the EPA designated 37 counties in this Commonwealth as 8-hour ozone nonattainment areas for the 1997 8-hour ozone NAAQS. See 69 FR 23858, 23931 (April 30, 2004).

On March 27, 2008, the EPA lowered the primary and secondary 8-hour ozone standards from 0.08 ppm to 0.075 ppm. See 73 FR 16436 (March 27, 2008). The 2008 8-hour ozone standard is expressed to a level of three decimal places rather than two decimal places as in the 1997 standard. See 72 FR 37818 (July 11, 2007); 73 FR 16436. The EPA made designations for the 2008 8-hour ozone standards on April 30, 2012, with an effective date of July 20, 2012. The EPA designated all or portions of Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Carbon, Chester, Delaware, Fayette, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, Washington and Westmoreland Counties as "marginal" nonattainment for the 2008 8-hour ozone NAAQS, with the rest of this Commonwealth designated unclassifiable/attainment. See 77 FR 30088, 30143 (May 21, 2012).

The Commonwealth's RACT regulations under §§ 129.96—129.100 (relating to additional RACT requirements for major sources of NO_x and VOCs) were implemented in April 2016 for the 1997 and 2008 8-hour ozone standards. See 46 Pa.B. 2036 (April 23, 2016).

On October 26, 2015, the EPA lowered the primary and secondary 8-hour ozone standards from 0.075 ppm to 0.070 ppm. See 80 FR 65292 (October 26, 2015). Like the 2008 8-hour ozone standard, the 2015 8-hour ozone standard is expressed to a level of three decimal places. See 79 FR 75234 (December 17, 2014); 80 FR 65292. The EPA made designations for the 2015 8-hour ozone standards on June 4, 2018, with an effective date of August 3, 2018. On June 4, 2018, the EPA designated Bucks, Chester, Delaware, Montgomery and Philadelphia Counties as "marginal" nonattainment, with the rest of this Commonwealth designated attainment/unclassifiable. See 83 FR 25776, 25828 (June 4, 2018). The Department's preliminary analysis of the 2021 ambient air ozone season monitoring data shows that all ozone samplers in this Commonwealth are monitoring attainment of the 2015 8-hour ozone NAAQS except these two: the Bristol sampler in Bucks County and the Philadelphia Air Management Services Northeast Airport sampler in Philadelphia County; all ozone samplers in this Commonwealth are projected to monitor attainment of the 1997 and 2008 8-hour ozone NAAQS.

The EPA's final rules to implement the 2008 and 2015 8-hour ozone NAAQS require states with areas classified as "moderate" nonattainment or higher to submit a demonstration, as a revision to the SIP, that their current regulations fulfill 8-hour ozone RACT requirements for all

control technique guideline (CTG) categories and all major non-CTG sources. See 80 FR 12264 (March 6, 2015) and 83 FR 62998 (December 6, 2018). This requirement applies to this entire Commonwealth due to its Statewide designation of "moderate" ozone nonattainment as a member of the OTR. Therefore, a re-evaluation of what constitutes RACT for affected sources in this Commonwealth must be fulfilled each time the EPA revises a NAAQS. This was the case in 1997 when the EPA replaced the 1993 1-hour ozone standard with the 8-hour ozone standard and was the case in 2008 and again in 2015 when the EPA lowered the 8-hour ozone standard. State regulations to control emissions of NO_x and VOCs from major stationary sources will be reviewed by the EPA to determine if the provisions meet the RACT requirements of the CAA and its implementing regulations designed to attain and maintain the ozone NAAQS. Therefore, the Commonwealth must submit a SIP revision to demonstrate how it will attain and maintain the 2015 8-hour ozone standard in the nonattainment areas.

The EPA's past implementation of regulations for revised NAAQS ozone standards have required OTR states to submit RACT SIP revisions based on the time frame provided in section 184 of the CAA as measured from the effective date of designations made for those revised NAAQS, rather than from November 15, 1990. This requirement was first codified in 40 CFR 51.916 (relating to what are the requirements for an Ozone Transport Region under the 8-hour NAAQS?) for the 1997 8-hour ozone NAAQS, later codified for the 2008 8-hour ozone NAAQS in 40 CFR 51.1116 (relating to requirements for an Ozone Transport Region) and most recently codified for the 2015 8-hour ozone NAAQS in 40 CFR 51.1316 (relating to requirements for an Ozone Transport Region). Under these provisions, states in the OTR were required to submit SIP revisions addressing the RACT requirements of section 184 of the CAA for the revised 2015 8-hour ozone NAAQS not later than 2 years after the effective date of August 3, 2018, or by August 3, 2020. See 83 FR 25776. The Commonwealth has missed this deadline, but the Department is working to submit the required SIP revision to the EPA as quickly as possible.

To address the Commonwealth's RACT obligations under section 184 of the CAA, the Department conducted a generic RACT analysis to determine if additional NO_x or VOC emissions limitations or controls beyond those established for the 1997 and 2008 8-hour ozone NAAQS under §§ 129.96—129.100 would represent RACT for the 2015 8-hour ozone NAAQS. This generic analysis identified existing affected source categories by size and fuel type; identified available technically and economically feasible control options for NO_x or VOC emissions, or both, for each type of existing source category; estimated emission reduction potential for each control technology; identified costs for technologies, using appropriate updates; and evaluated cost-effectiveness using the guidance provided in the EPA Air Pollution Control Cost Manual, EPA/452/B-02-001, 6th Edition, January 2002, as amended, and as updated in the 7th Edition beginning in 2019, for both uncontrolled and controlled sources (combinations of technologies). After conducting this analysis, the Department determined what constitutes RACT for each affected source category in this Commonwealth.

Based on this analysis, the Board has determined that additional cost-effective controls represent RACT for the 2015 8-hour ozone NAAQS beyond those established for the 1997 and 2008 8-hour ozone NAAQS. The RACT emission limitations and requirements being implemented for the 2015 ozone NAAQS are at least as stringent as the RACT emission limitations and requirements for the 1979, 1997 and 2008 ozone NAAQS. To the extent that a prior RACT emission limitation or requirement established for the 1979, 1997 or 2008 ozone NAAQS is more stringent, the owner and operator of the affected source shall comply with the more stringent emission limitation or requirement. There are ten existing source categories that are affected by this final-form rulemaking: combustion units; municipal solid waste landfills; municipal waste combustors; process heaters; turbines; stationary internal combustion engines; cement kilns; glass melting furnaces; lime kilns; and combustion sources including direct-fired heaters, furnaces or ovens; as well as other existing source categories that are not regulated elsewhere under Chapter 129.

The final-form RACT requirements apply to the owners and operators of subject facilities or sources in this Commonwealth that emit or have a potential to emit 100 TPY or more of NO_x or 50 TPY or more of VOCs, including those located in Bucks, Chester, Delaware, Montgomery and Philadelphia Counties. There are approximately 500 Title V facilities in this Commonwealth under the Department's jurisdiction whose owners and operators may be subject to this final-form rulemaking. The Department preliminarily determined that the owners and operators of approximately 10—30 affected major facilities or sources under the Department's jurisdiction meet the definition of "small business" specified in section 3 of the Regulatory Review Act (71 P.S. § 745.3). The owners and operators of the affected facilities or sources are familiar with the existing requirements for emissions control, recordkeeping and reporting for their entity and have the professional and technical skills needed for compliance with these final-form requirements.

The Board has determined that this final-form rulemaking fulfills the requirements for RACT re-evaluation. As more fully discussed in section E of this preamble, the Board is establishing a compliance option hierarchy whereby the owner or operator of a source or facility that is subject to § 129.111 (relating to applicability) that cannot meet the presumptive RACT requirements and RACT emission limitations under § 129.112 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule) may apply for a facility-wide or system-wide NO_x emissions averaging plan under § 129.113 (relating to facility-wide or system-wide NO_x emissions averaging plan general requirements) or an alternative case-by-case RACT determination under § 129.114 (relating to alternative RACT proposal and petition for alternative compliance schedule). The Board provides the owners and operators of certain affected facilities or sources with a less resource intensive demonstration established under § 129.114(i) of this final-form rulemaking as an alternative to performing a complete case-by-case RACT analysis. This less resource intensive demonstration may be used by an owner or operator of a subject source or facility to demonstrate that the previous case-by-case determination made under §§ 129.96—129.100 (RACT II) remains RACT for the 2015 8-hour ozone standard. For the owners and operators of eligible subject sources, this approach will likely reduce the consulting costs that an owner or operator may choose to incur. Additionally, there is no fee due to the Department to submit an analysis under § 129.114(i).

The Department must ensure that the 1997, 2008 and 2015 8-hour ozone NAAQS are attained and maintained by implementing permanent and Federally enforceable control measures. Reductions in ozone precursor emis-

sions that are achieved following the adoption and implementation of RACT emission control measures for source categories covered by this final-form rulemaking will assist the Commonwealth in making substantial progress in attaining and maintaining the 1997, 2008 and 2015 8-hour ozone NAAQS. The Board has determined that the requirements of this final-form rulemaking are reasonably necessary to attain and maintain the health-based and welfare-based 8-hour ozone NAAQS in this Commonwealth and to satisfy related CAA requirements.

The Department presented the draft final-form Annex A to the Air Quality Technical Advisory Committee on April 7, 2022, and to the Small Business Compliance Advisory Committee on April 27, 2022, and briefed the committees on the comments received on the proposed rulemaking. The Department presented the draft final-form Annex A to the Citizens Advisory Council's (CAC) Policy and Regulatory Oversight Committee on April 14, 2022, and to the CAC on April 19, 2022. At its meeting on May 18, 2022, the CAC concurred with the Department's recommendation to present this final-form rulemaking to the Board for consideration. Advisory committee meetings are advertised and open to the public.

E. *Summary of Final-Form Rulemaking and Changes from Proposed to Final-Form Rulemaking*

§ 121.1. Definitions

This section contains definitions relating to the air quality regulations. This final-form rulemaking amends § 121.1 to add the terms "combustion source" and "natural gas compression and transmission facility fugitive VOC air contamination source" to support the final-form amendments to Chapter 129.

This final-form rulemaking amends the definition of the proposed term "combustion source." The proposed definition of "combustion source" specified under subparagraph (i) that this is a stationary device that combusts solid, liquid or gaseous fuel used to produce heat or energy for industrial, commercial or institutional use by direct heat transfer. Subparagraph (ii) specified that the term does not include brick kilns, cement kilns or lime kilns. This final-form rulemaking amends the term "combustion source" to specify that it is limited to §§ 129.111—129.115 by adding the words "For purposes of §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS):" before subparagraph (i). There are no changes made to subparagraph (i) from the proposed rulemaking to this final-form rulemaking. Subparagraph (ii) is amended from proposed to this final-form rulemaking to exclude three additional source categories: glass melting furnaces; a source listed in § 129.112(g)(2) or (3) (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule); and a source subject to § 129.112(g)(4). These changes are made in response to comments received on the proposed rulemaking.

There are no changes made to the term and definition of "natural gas compression and transmission facility fugitive VOC air contamination source" from the proposed rulemaking to this final-form rulemaking.

This final-form rulemaking amends the definitions of two existing terms in § 121.1. The definition of the term "major NO_x emitting facility" is amended under subparagraph (v) to add the words "For purposes of §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs), twenty-five" before TPY to clarify that for purposes of §§ 129.91—129.95, a major NO_x emitting facility is a facility which emits or has the potential to emit NO_x from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than 25 TPY for a facility located in Bucks, Chester, Delaware, Montgomery or Philadelphia County. The Commonwealth's RACT regulations under §§ 129.91—129.95 were promulgated on January 15, 1994, and applicable Statewide for the 1979 and 1993 1-hour ozone standard. See 24 Pa.B. 467. The definition of this term is further amended to add subparagraph (vi), which states that "For purposes of §§ 129.96—129.100 and 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs; and additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS), one hundred TPY Statewide." Subparagraph (vi) clarifies that for purposes of §§ 129.96—129.100 and 129.111—129.115, a major NO_x emitting facility is a facility which emits or has the potential to emit NO_x from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than 100 TPY and this rate is applicable Statewide. The Commonwealth's RACT regulations under §§ 129.96—129.100 were promulgated on April 23, 2016, and applicable Statewide for the 1997 and 2008 8-hour ozone standards. See 46 Pa.B. 2036. These changes are made in response to comments received on the proposed rulemaking.

Likewise, the definition of the term "major VOC emitting facility" is amended under subparagraph (iv) to add the words "For purposes of §§ 129.91—129.95, twenty-five" before TPY to clarify that for purposes of §§ 129.91—129.95, a major VOC emitting facility is a facility which emits or has the potential to emit VOCs from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than 25 TPY for a facility located in Bucks, Chester, Delaware, Montgomery or Philadelphia County. The definition of this term is further amended to add subparagraph (v), which states that "For purposes of §§ 129.96—129.100 and 129.111—129.115, fifty TPY Statewide." Subparagraph (v) clarifies that for purposes of §§ 129.96—129.100 and 129.111—129.115, a major VOC emitting facility is a facility which emits or has the potential to emit VOCs from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than 50 TPY and this rate is applicable Statewide. These changes are made in response to comments received on the proposed rulemaking.

There are no other changes made to this section from the proposed rulemaking to this final-form rulemaking.

§ 129.111. Applicability

Subsection (a) provides that, except as specified in subsection (c), the NO_x requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a major NO_x emitting facility that commenced operation on or before August 3, 2018, and the VOC requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a major VOC emitting facility that commenced operation on or before August 3, 2018, for which a requirement or emission limitation, or both, has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107. The owner or operator shall identify and list the sources and facilities subject to this subsection as specified in paragraphs (1) and (2) in the written notification required under

§ 129.115(a) (relating to written notification, compliance demonstration and recordkeeping and reporting requirements).

Subsection (a) is amended from the proposed rulemaking to this final-form rulemaking to add the words "that commenced operation on or before August 3, 2018," after "major NO_x emitting facility," delete the words "were in existence" after "major VOC emitting facility that" and add the words "commenced operation" to clarify that construction or installation of the affected emissions unit at the major NO_x emitting facility or at the major VOC emitting facility had been completed and the emissions unit had begun operating on or before August 3, 2018. The date of August 3, 2018, is the effective date of the designations for the 2015 8-hour ozone standards. On June 4, 2018, the EPA designated Bucks, Chester, Delaware, Montgomery and Philadelphia Counties as "marginal" nonattainment, effective August 3, 2018, with the rest of this Commonwealth designated attainment/unclassifiable. See 83 FR 25776, 25828.

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to clarify that the owner or operator shall identify and list in the written notification required under § 129.115(a) the sources and facilities that commenced operation on or before August 3, 2018, for which a requirement or emission limitation has not been established in the specified sections. Proposed paragraph (1) did not include the words "that commenced operation on or before August 3, 2018." Sources and facilities that commenced operation after August 3, 2018, at a major NO_x emitting facility or at a major VOC emitting facility are subject to a best available technology (BAT) analysis and do not need to be included in the written notification required under § 129.115(a).

Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to clarify that the owner or operator shall identify and list in the written notification required under § 129.115(a) the sources and facilities that commenced operation on or before August 3, 2018, and are subject to the specified sections. The specified sections established RACT emission limitations and RACT requirements consistent with the EPA CTGs for the specified categories of sources. The owner or operator of a source or facility that is subject to one of these specified sections shall comply with the applicable RACT requirements and RACT emission limitations and is not subject to the RACT requirements and RACT emission limitations of §§ 129.111—129.115.

Subsection (a) and paragraphs (1) and (2) are further amended from the proposed rulemaking to this final-form rulemaking to delete the group of sections "129.71—129.73" and "129.75" and add the group of sections "129.71—129.75" inclusive of § 129.74 (relating to control of VOC emissions from fiberglass boat manufacturing materials). These sections establish RACT requirements and RACT emission limitations consistent with the recommendations provided by the EPA in the applicable CTG documents. The owners and operators of sources of emissions or facilities that are subject to the requirements of one or more of §§ 129.71—129.75 are not subject to §§ 129.111—129.115 for these sources of emissions or facilities.

The changes to subsection (a) and paragraphs (1) and (2) are made in response to comments received on the proposed rulemaking.

Subsection (b) provides that, except as specified in subsection (c), the NO_x requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a NO_x emitting facility that commenced operation on or before August 3, 2018, and the VOC requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a VOC emitting facility that commenced operation on or before August 3, 2018, when the installation and operation of a new source after August 3, 2018, or a modification or change in operation after August 3, 2018, of a source that commenced operation on or before August 3, 2018, results in the source or facility meeting the definition of a major NO_x emitting facility or a major VOC emitting facility and for which a requirement or an emission limitation, or both, has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107. The owner or operator shall identify and list the sources and facilities subject to this subsection as specified in paragraphs (1) and (2) in the written notification required under § 129.115(a).

Subsection (b) is amended from the proposed rulemaking to this final-form rulemaking to add the words "that commenced operation on or before August 3, 2018," after "NO_x emitting facility" and after "VOC emitting facility," add the words "and operation" after "installation," add the words "after August 3, 2018," after "of a new source" and "change in operation," delete the words "an existing" and insert the word "a" before "source" and delete the word "after" following "source," and add the words "that commenced operation on or before" before the words "August 3, 2018, results in." These amendments clarify that the owner and operator of a source or a facility that is not major on or before August 3, 2018, becomes subject to §§ 129.111—129.115, as applicable, when the installation and operation of a new source after August 3, 2018, or a modification or change in operation after August 3, 2018, of a source that commenced operation on or before August 3, 2018, results in the source or the facility meeting the definition of a major NO_x emitting facility or a major VOC emitting facility. These changes are made in response to comments received on the proposed rulemaking.

Subsection (b) and paragraphs (1) and (2) are amended from the proposed rulemaking to this final-form rulemaking to delete sections "129.71—129.73" and "129.75" and add sections "129.71—129.75" inclusive of § 129.74. These sections establish RACT requirements and RACT emission limitations consistent with the recommendations provided by the EPA in the applicable CTG documents. The owners and operators of sources of emissions or facilities that are subject to the requirements of one or more of §§ 129.71—129.75 are not subject to §§ 129.111—129.115 for these sources of emissions or facilities.

The changes to subsection (b) and paragraphs (1) and (2) are made in response to comments received on the proposed rulemaking.

Subsection (c) establishes that §§ 129.112—129.114 do not apply to the owner and operator of a NO_x air contamination source that has the potential to emit less than 1 TPY of NO_x located at a major NO_x emitting facility subject to subsection (a) or (b), or to the owner and operator of a VOC air contamination source that has the potential to emit less than 1 TPY of VOC located at a major VOC emitting facility subject to subsection (a) or (b). The owner or operator shall identify and list these sources in the written notification required under § 129.115(a).

There are no changes made to subsection (c) from the proposed rulemaking to this final-form rulemaking.

Subsection (d) establishes that, except as specified in subsection (e), this section and §§ 129.112—129.115 do not apply to the owner and operator of a facility that is not a major NO_x emitting facility or a major VOC emitting facility on or before December 31, 2022.

Subsection (d) is amended from the proposed rulemaking to this final-form rulemaking to add the words "except as specified in subsection (e)" and to amend the date of applicability from the date of publication of this final-form rulemaking to the date certain of December 31, 2022.

The amendment of subsection (d) from the proposed rulemaking to this final-form rulemaking with the compliance date certain of December 31, 2022, in place of the proposed compliance date, which was the date of publication of this final-form rulemaking, is made to address the required implementation deadline of January 1, 2023, in the EPA 2015 ozone implementation rule, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. See 40 CFR 51.1312(a)(3)(i) (relating to requirements for reasonably available control technology (RACT) and reasonably available control measures (RACM)); see also 40 CFR 51.1316(b)(3)(1).

Subsection (e) is added to this final-form rulemaking to establish that if the owner and operator of a facility that complied with subsection (d), that is, the facility was not a major NO_x emitting facility or a major VOC facility on or before December 31, 2022, then meets the definition of a major NO_x emitting facility or a major VOC emitting facility after December 31, 2022, the affected owner or operator shall comply with subsection (b) once the facility meets the applicable major facility threshold. Likewise, if the owner or operator of a NO_x emitting facility or a VOC emitting facility that becomes subject to subsection (b) as a result of meeting the definition of a major NO_x emitting facility or major VOC emitting facility on or before December 31, 2022, then falls below the applicable major facility emission threshold on or before December 31, 2022, and then resumes major facility status after December 31, 2022, that owner or operator shall comply with subsection (b) again once the facility meets the applicable major facility threshold and will be subject again to the applicable RACT requirements and RACT emission limitations of §§ 129.111—129.115.

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

Subsection (a) establishes that the owner and operator of a source listed in one or more of subsections (b)—(k) located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall comply with the applicable presumptive RACT requirement or RACT emission limitation, or both, beginning with the specified compliance date in paragraph (1) or (2), unless an alternative compliance schedule is submitted and approved under subsections (n)—(p) or under § 129.114. Paragraph (1) specifies the compliance date of January 1, 2023, for a source subject to § 129.111(a). Paragraph (2) specifies the compliance date of January 1, 2023, or 1 year after the date the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b). The owner or operator shall meet the applicable standards or regulations within the time frame required by standards or regulations even if the permit is not revised to incorporate the standards or regulations within the required time frame.

There are no changes made to subsection (a) from the proposed rulemaking to this final-form rulemaking.

Subsection (b) establishes that the owner and operator of a source listed in this subsection that is located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall comply with the applicable presumptive RACT requirements in paragraph (1) and the recordkeeping and reporting requirements in paragraph (2).

Paragraph (1) specifies that the owner and operator of one or more of the combustion unit or process heater types listed in paragraph (1)(i) and (ii) shall comply with the applicable presumptive RACT requirements for that source, which include, among other things, inspection and adjustment requirements. Paragraph (1)(i) and (ii) are amended from the proposed rulemaking to this final-form rulemaking to add the words "or process heater" after the words "combustion unit." These changes are made in response to comments received on the proposed rulemaking. There are no other changes made to paragraph (1) from the proposed rulemaking to this final-form rulemaking.

Paragraph (2) specifies the applicable recordkeeping and reporting requirements. Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to delete "§ 129.115(e), (f) or (g)" and add "§ 129.115(f) and (i)" to provide the correct cross reference. There are no other changes made to paragraph (2) from the proposed rulemaking to this final-form rulemaking.

Paragraph (3) specifies that compliance with the applicable presumptive RACT requirements in paragraph (1) and recordkeeping and reporting requirements in paragraph (2) assures compliance with the provisions in §§ 129.93(b)(2)—(5) and 129.97(b)(1)—(3) (relating to presumptive RACT emissions limitations; and presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule). There are no changes made to paragraph (3) from the proposed rulemaking to this final-form rulemaking.

Subsection (c) establishes that the owner and operator of a source listed in this subsection located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall comply with the applicable presumptive RACT requirement, which is the installation, maintenance and operation of the source in accordance with the manufacturer's specifications and with good operating practices.

Subsection (c)(8) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "or" and add a comma after the words "thermal oxidizer" and add the words "or flare" after the words "catalytic oxidizer." These changes are made in response to comments received on the proposed rulemaking. There are no other changes made to subsection (c) from the proposed rulemaking to this final-form rulemaking.

Subsection (d) establishes that, except as specified in subsection (c), the owner and operator of a combustion unit, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source located at a major VOC emitting facility subject to § 129.111 shall comply with the specified presumptive RACT requirement, which is the installation, maintenance and operation of the source

in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source. Subsection (d) is amended from the proposed rulemaking to this final-form rulemaking to add the words "glass melting furnace" after lime kiln, add the words "brick kiln, cement kiln, lime kiln, glass melting furnace" after combustion unit, and delete the word "other" in two places. These changes are made in response to comments received on the proposed rulemaking. There are no other changes made to subsection (d) from the proposed rulemaking to this final-form rulemaking.

Subsection (e) establishes that the owner and operator of a municipal solid waste landfill subject to § 129.111 shall comply with the applicable presumptive RACT requirements specified in paragraph (1) or (2).

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to delete the reference to 40 CFR Part 60, Subpart Cc (relating to emission guidelines and compliance times for municipal solid waste landfills) and add the reference to the Federal Plan for Municipal Solid Waste Landfills in 40 CFR Part 62, Subpart OOO (relating to Federal plan requirements for municipal solid waste landfills that commenced construction on or before July 17, 2014 and have not been modified or reconstructed since July 17, 2014). This change is made in response to comments received that the requirements of 40 CFR Part 60, Subpart Cc are superseded by the requirements of 40 CFR Part 62, Subpart OOO. The EPA issued the Federal Plan in 40 CFR Part 62, Subpart OOO, on May 21, 2021, with an effective date of June 21, 2021. See 86 FR 27756 (May 21, 2021).

Proposed paragraph (2), which referenced 40 CFR Part 60, Subpart WWW (relating to standards of performance for municipal solid waste landfills that commenced construction, reconstruction, or modification on or after May 30, 1991, but before July 18, 2014), is deleted in this final-form rulemaking because the requirements of 40 CFR Part 60, Subpart WWW are superseded by the requirements of 40 CFR Part 60, Subpart XXX (relating to standards of performance for municipal solid waste landfills that commenced construction, reconstruction, or modification after July 17, 2014).

The requirements of 40 CFR Part 60, Subpart XXX, were specified in proposed paragraph (3). Proposed paragraph (3) is renumbered to paragraph (2) in this final-form rulemaking.

Subsection (f) establishes that the owner and operator of a municipal waste combustor subject to § 129.111 shall comply with the presumptive RACT emission limitation of 110 parts per million volume dry (ppmvd) NO_x @ 7% oxygen. Proposed subsection (f) specified a presumptive RACT emission limitation of 150 ppmvd NO_x @ 7% oxygen. Subsection (f) is amended from the proposed rulemaking to this final-form rulemaking to delete the emission limitation of 150 ppmvd NO_x @ 7% oxygen and add the emission limitation of 110 ppmvd NO_x @ 7% oxygen. This change is made in response to comments received on the proposed rulemaking and an analysis by the Department showing that the emission limitation of 110 ppmvd NO_x @ 7% oxygen is achievable, cost-effective and constitutes RACT for municipal waste combustors.

Subsection (g) establishes that, except as specified in subsection (c), the owner and operator of a NO_x air contamination source listed in this subsection that is located at a major NO_x emitting facility or a VOC air contamination source listed in this subsection that is located at a major VOC emitting facility subject to § 129.111 may not cause, allow or permit NO_x or VOCs to be emitted from the air contamination source in excess of the applicable presumptive RACT emission limitation specified in paragraphs (1)—(4).

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking. Paragraph (1)(vi), which applies to the owner or operator of a circulating fluidized bed combustion unit with a rated heat input equal to or greater than 250 million Btu/hour and firing waste coal products, is amended to add the words "RACT requirements and" after the word "presumptive." Paragraph (1)(vi) is further amended to add clause (C), which specifies that the owner or operator shall control the NO_x emissions each operating day by operating the installed air pollution control technology and combustion controls at all times consistent with the technological limitations, manufacturer's specifications, good engineering and maintenance practices and good air pollution control practices for controlling emissions. Clause (C) replaces proposed paragraph (1)(viii), which is deleted in this final-form rulemaking. These changes are made in response to comments received on the proposed rulemaking.

There are no changes made to paragraphs (1)(i)—(v) and (vii) from the proposed rulemaking to this final-form rulemaking.

Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to clarify the applicable presumptive RACT emission limitations for combined cycle or combined heat and power combustion turbines and for simple cycle or regenerative cycle combustion turbines based on the Department's review of information provided by commentators during the public comment period as well as the Department's review of available stack test emissions data. Proposed paragraph (2)(i) established the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 brake horsepower (bhp) and less than 180 megawatts (MW). Paragraph (2)(i) is amended in this final-form rulemaking to establish the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp rather than less than 180 MW. Paragraph (2)(i)(A) is amended from the proposed rulemaking to this final-form rulemaking to delete the limitation of 42 ppmvd NO_x @ 15% oxygen and add the limitation of 120 ppmvd NO_x @ 15% oxygen. Paragraph (2)(i)(C) is amended from the proposed rulemaking to this final-form rulemaking to delete the limitation of 96 ppmvd NO_x @ 15% oxygen and add the limitation of 150 ppmvd NO_x @ 15% oxygen.

Paragraph (2)(ii) is amended from the proposed rulemaking to this final-form rulemaking to establish the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 MW. The applicable presumptive RACT emission limitations are established in paragraph (2)(ii)(A)—(D). Clause (A) establishes the limitation of 42 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (B) establishes the limitation of 5 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a

noncommercial gaseous fuel. Clause (C) establishes the limitation of 96 ppmvd NO_x @ 15% oxygen when firing fuel oil. Clause (D) establishes the limitation of 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

Proposed paragraph (2)(ii) is renumbered in this final-form rulemaking to paragraph (2)(iii). There are no other changes made to renumbered paragraph (2)(iii) in this final-form rulemaking.

Proposed paragraph (2)(iii) is renumbered in this final-form rulemaking to paragraph (2)(iv). Renumbered paragraph (2)(iv) is further amended in this final-form rulemaking to establish the applicable presumptive RACT emission limitations for the owner or operator of a simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp, rather than the proposed rated output of less than 3,000 bhp. Subparagraph (iv)(A) is amended from the proposed rulemaking to this final-form rulemaking to delete the limitation of 85 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel and add the limitation of 120 ppmvd NO_x @ 15% oxygen, based on the Department's review of information provided by commentators during the public comment period and the Department's review of available stack test emissions data.

Proposed paragraph (2)(iv) is renumbered in this final-form rulemaking to paragraph (2)(v). Renumbered paragraph (2)(v) is further amended in this final-form rulemaking to establish the applicable presumptive RACT emission limitations for the owner or operator of a simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 4,100 bhp, rather than the proposed rated output of 3,000 bhp, and less than 60,000 bhp.

Proposed paragraph (3) established applicable presumptive RACT emission limitations for the owners or operators of four subcategories of stationary internal combustion engines in subparagraphs (i)—(iv). Subparagraph (iv)(A) is amended from the proposed rulemaking to this final-form rulemaking to establish the applicable presumptive RACT emission limitation for the owner or operator of a rich burn stationary internal combustion engine with a rating equal to or greater than 100 bhp is 2.0 gram NO_x/brake horsepower-hour (bhp-hr) when firing natural gas or a noncommercial gaseous fuel, rather than the proposed limitation of 0.6 gram NO_x/bhp-hr. This change is made in response to comments received on the proposed rulemaking.

There are no changes made to paragraph (3)(i)—(iii) or to subparagraph (iv)(B) from the proposed rulemaking to this final-form rulemaking. There are no changes made to paragraph (4) from the proposed rulemaking to this final-form rulemaking.

Subsection (h) establishes that the owner and operator of a Portland cement kiln subject to § 129.111 shall comply with the applicable presumptive RACT emission limitation in paragraphs (1)—(3).

Subsection (i) establishes that the owner and operator of a glass melting furnace subject to § 129.111 shall comply with the applicable presumptive RACT emission limitation in paragraphs (1)—(5).

Subsection (j) establishes that the owner and operator of a lime kiln subject to § 129.111 shall comply with the applicable presumptive RACT emission limitation of 4.6 pounds of NO_x per ton of lime produced.

There are no changes made to subsections (h)—(j) from the proposed rulemaking to this final-form rulemaking.

Subsection (k) establishes that the owner and operator of a direct-fired heater, furnace, oven or other combustion source with a rated heat input equal to or greater than 20 million Btu/hour subject to § 129.111 shall comply with the applicable presumptive RACT emission limitation of 0.10 lb NO_x/million Btu heat input. Subsection (k) is amended from the proposed rulemaking to this final-form rulemaking to add the category of other combustion source and to remove the proposed requirement that the limitation be complied with on a daily average basis or that compliance be determined through a stack test. These changes are made in response to comments received on the proposed rulemaking.

Subsection (l) provides that the requirements and emission limitations of this section supersede the requirements and emission limitations of a RACT permit issued to the owner or operator of an air contamination source subject to one or more of subsections (b)—(k) prior to November 12, 2022, under §§ 129.91—129.95 or under §§ 129.96—129.100 to control, reduce or minimize NO_x emissions or VOC emissions, or both, from the air contamination source unless the RACT permit contains more stringent requirements or emission limitations, or both. There are no changes made to subsection (l) from the proposed rulemaking to this final-form rulemaking.

Subsection (m) provides that the requirements and emission limitations of this section supersede the requirements and emission limitations of §§ 129.201—129.205, 129.301—129.310, 145.111—145.113 and 145.141—145.146 unless the requirements or emission limitations of §§ 129.201—129.205, 129.301—129.310, 145.111—145.113 or 145.141—145.146 are more stringent. Subsection (m) is amended from the proposed rulemaking to this final-form rulemaking to add §§ 129.301—129.310 (relating to control of NO_x emissions from glass melting furnaces) to the group of regulations whose requirements and emission limitations would be superseded by the requirements and emission limitations of § 129.112 unless the requirements or emission limitations of §§ 129.301—129.310 are more stringent. This change is made in response to comments received on the proposed rulemaking.

Subsection (n) establishes that the owner or operator of a major NO_x emitting facility or a major VOC emitting facility subject to § 129.111 that includes an air contamination source subject to one or more of subsections (b)—(k) that cannot meet the applicable presumptive RACT requirement or RACT emission limitation without installation of an air cleaning device may submit a petition to the Department or appropriate approved local air pollution control agency, in writing or electronically, requesting an alternative compliance schedule in accordance with paragraphs (1) and (2). Subsection (n) is amended from the proposed rulemaking to this final-form rulemaking to add the word "electronically" after the words "in writing."

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "written." The changes to subsection (n) and (n)(1) are made to provide flexibility to the subject owner or operator in how the petition may be submitted.

Paragraph (1)(i) is amended from the proposed rulemaking to this final-form rulemaking to establish that the petition shall be submitted to the Department or appropriate approved local air pollution control agency as soon as possible but not later than December 31, 2022, for a

source subject to § 129.111(a). Proposed paragraph (1)(i) established the due date as 6 months after the date of publication of this final-form rulemaking.

Paragraph (1)(ii) is amended from the proposed rulemaking to this final-form rulemaking to establish that the petition shall be submitted to the Department or appropriate approved local air pollution control agency as soon as possible but not later than December 31, 2022, or not later than 6 months after the date that the source meets the definition of a major NO_x emitting facility or a major VOC emitting facility, whichever is later, for a source subject to § 129.111(b). Proposed paragraph (1)(ii) established the due date as 6 months after the date of publication of this final-form rulemaking or 6 months after the date that the source meets the definition of a major NO_x emitting facility or a major VOC emitting facility, whichever is later.

The changes to the due dates specified in paragraph (1)(i) and (ii) are made to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

Proposed paragraph (2) established that the written petition must include the items specified in subparagraphs (i)—(v). Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "written." The petition may be submitted in writing or electronically as specified in subsection (n). This change provides flexibility to the subject owner or operator in how the petition may be submitted. There are no changes made to subparagraphs (i)—(v) from the proposed rulemaking to this final-form rulemaking.

Subsection (o) provides that the Department or appropriate approved local air pollution control agency will review the timely and complete written petition requesting an alternative compliance schedule submitted in accordance with subsection (n) and approve or deny the petition in writing.

Subsection (p) provides that approval or denial under subsection (o) of the timely and complete petition for an alternative compliance schedule submitted under subsection (n) will be effective on the date the letter of approval or denial of the petition is signed by the authorized representative of the Department or appropriate approved local air pollution control agency.

Subsection (q) provides that the Department will submit each petition for an alternative compliance schedule approved under subsection (o) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

There are no changes made to subsections (o)—(q) from the proposed rulemaking to this final-form rulemaking.

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

Subsection (a) provides that the owner or operator of a major NO_x emitting facility subject to § 129.111 that includes at least one air contamination source subject to a NO_x RACT emission limitation in § 129.112 that cannot meet the applicable NO_x RACT emission limitation may elect to meet the applicable NO_x RACT emission limitation in § 129.112 by averaging NO_x emissions on either a facility-wide or system-wide basis. System-wide emissions averaging must be among sources under common control of the same owner or operator within the same ozone nonattainment area in this Commonwealth. There is no change made to subsection (a) from the proposed rulemaking to this final-form rulemaking.

Subsection (b) provides that the owner or operator of each facility that elects to comply with subsection (a) shall submit a NO_x emissions averaging plan in writing or electronically to the Department or appropriate approved local air pollution control agency as part of an application for an operating permit modification or a plan approval, if otherwise required. Subsection (b) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "written" before the phrase "NO_x emissions averaging plan" and add the words "in writing or electronically" after the phrase "NO_x emissions averaging plan." These changes are made to provide flexibility to the subject owner or operator in how the NO_x emissions averaging plan may be submitted.

The application incorporating the NO_x emissions averaging plan requirements of this section shall be submitted by the applicable date specified in subsection (b)(1) or (2). Proposed paragraph (1) established the due date as the date 6 months after the date of publication of this final-form rulemaking for a source subject to § 129.111(a). Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to establish the due date as December 31, 2022.

Proposed paragraph (2) established the due date as the date 6 months after the date of publication of this final-form rulemaking or 6 months after the date that the source meets the definition of a major NO_x emitting facility, whichever is later, for a source subject to § 129.111(b). Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to establish the due date as December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility, whichever is later.

The changes to the due dates specified in paragraphs (1) and (2) are made to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

Subsection (c) provides that each NO_x air contamination source included in the application for an operating permit modification or a plan approval, if otherwise required, for averaging NO_x emissions on either a facility-wide or system-wide basis submitted under subsection (b) must be an air contamination source subject to a NO_x RACT emission limitation in § 129.112.

Subsection (d) provides that the application for the operating permit modification or the plan approval, if otherwise required, for averaging NO_x emissions on either a facility-wide or system-wide basis submitted under subsection (b) must demonstrate that the aggregate NO_x emissions emitted by the air contamination sources included in the facility-wide or system-wide NO_x emissions averaging plan are not greater than the NO_x emissions that would be emitted by the group of included sources if

each source complied with the applicable NO_x RACT emission limitation in § 129.112 on a source-specific basis.

Subsection (e) provides that the application for the operating permit modification or a plan approval, if otherwise required, specified in subsections (b)—(d) may include facility-wide or system-wide NO_x emissions averaging only for NO_x emitting sources or NO_x emitting facilities that are owned or operated by the applicant.

Subsection (f) provides that the application for the operating permit modification or a plan approval, if otherwise required, specified in subsections (b)—(e) must include the information identified in paragraphs (1)—(3). Paragraph (1) specifies that the application must identify each air contamination source included in the NO_x emissions averaging plan. Paragraph (2) specifies that the application must list each air contamination source's applicable emission limitation in § 129.112. Paragraph (3) specifies that the application must include methods for demonstrating compliance and recordkeeping and reporting requirements in accordance with § 129.115 for each source included in the NO_x emissions plan submitted under subsection (b).

Subsection (g) provides that an air contamination source or facility included in the facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(f) may be included in only one facility-wide or system-wide NO_x emissions averaging plan.

There are no changes made to subsections (c)—(g) from the proposed rulemaking to this final-form rulemaking.

Subsection (h) provides in paragraph (1) that the Department or appropriate approved local air pollution control agency will review the timely and complete NO_x emissions averaging plan submitted in accordance with subsections (b)—(g) and approve, deny or modify the NO_x emissions averaging plan, in writing, as specified in paragraphs (2) and (3). The Department or appropriate approved local air pollution control agency will approve the NO_x emissions averaging plan if the approving authority is satisfied that the NO_x emissions averaging plan complies with the requirements of subsections (b)—(g) and that the proposed NO_x emissions averaging plan is RACT for the air contamination sources. The approving authority will deny or modify the NO_x emissions averaging plan if the proposal does not comply with the requirements of subsections (b)—(g). Paragraphs (1)—(3) are amended from the proposed rulemaking to this final-form rulemaking to delete the words "subsection (b)" and add the words "subsections (b)—(g)" for clarity and completeness.

Subsection (i) provides that the proposed NO_x emissions averaging plan submitted under subsection (b) will be approved, denied or modified under subsection (h) by the Department or appropriate approved local air pollution control agency in accordance with Chapter 127 (relating to construction, modification, reactivation and operation of sources) prior to the owner or operator implementing the NO_x emissions averaging plan. Subsection (i) as amended from the proposed rulemaking to this final-form rulemaking to delete the words "subsection (h) in writing through the issuance of a plan approval or operating permit modification" and add the words "25 Pa. Code Chapter 127 (relating to construction, modification, reactivation and operation of sources)" to provide clarity in how the proposed NO_x emissions averaging plan will be approved, denied or modified.

Subsection (j) provides that the owner or operator of an air contamination source or facility included in the facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(g) shall submit the reports and records specified in subsection (f)(3) to the Department or appropriate approved local air pollution control agency to demonstrate compliance with § 129.115.

Subsection (k) provides that the owner or operator of an air contamination source or facility included in a facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(g) that achieves emission reductions in accordance with other emission limitations required under the APCA or the CAA, or regulations adopted under the APCA or the CAA, that are not NO_x RACT emission limitations may not substitute those emission reductions for the emission reductions required by the facility-wide or system-wide NO_x emissions averaging plan submitted to the Department or appropriate approved local air pollution control agency under subsection (b).

Subsection (l) provides that the owner or operator of an air contamination source subject to a NO_x RACT emission limitation in § 129.112 that is not included in a facility-wide or system-wide NO_x emissions averaging plan submitted under subsection (b) shall operate the source in compliance with the applicable NO_x RACT emission limitation in § 129.112.

Subsection (m) provides that the owner and operator of the air contamination source included in a facility-wide or system-wide NO_x emissions averaging plan submitted under subsection (b) shall be liable for a violation of an applicable NO_x RACT emission limitation at each source included in the NO_x emissions averaging plan regardless of each individual facility's NO_x emission rate.

Subsection (n) provides that the Department will submit each NO_x emissions averaging plan approved under subsection (i) to the Administrator of the EPA for approval as a revision to the SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

There are no changes made to subsections (j)—(n) from the proposed rulemaking to this final-form rulemaking.

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

Subsection (a) provides that the owner or operator of an air contamination source subject to § 129.112 located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 that cannot meet the applicable presumptive RACT requirement or RACT emission limitation of § 129.112 may propose an alternative RACT requirement or RACT emission limitation in accordance with subsection (d).

Subsection (b) provides that the owner or operator of a NO_x air contamination source with a potential emission rate equal to or greater than 5.0 tons of NO_x per year that is not subject to § 129.112 or §§ 129.201—129.205 (relating to additional NO_x requirements) located at a major NO_x emitting facility subject to § 129.111 shall propose a NO_x RACT requirement or RACT emission limitation in accordance with subsection (d).

Subsection (c) provides that the owner or operator of a VOC air contamination source with a potential emission rate equal to or greater than 2.7 tons of VOC per year that is not subject to § 129.112 located at a major VOC

emitting facility subject to § 129.111 shall propose a VOC RACT requirement or VOC RACT emission limitation in accordance with subsection (d).

There are no changes made to subsections (a)—(c) from the proposed rulemaking to this final-form rulemaking.

Subsection (d) provides that the owner or operator proposing an alternative RACT requirement or RACT emission limitation under subsection (a), (b) or (c) shall comply with the requirements in paragraphs (1)—(7). Proposed paragraph (1) established that the subject owner or operator shall submit a written RACT proposal in accordance with the procedures in § 129.92(a)(1)—(5), (7)—(10) and (b) (relating to RACT proposal requirements) to the Department or appropriate approved local air pollution control agency as soon as possible but not later than the date specified in subparagraphs (i) and (ii). Proposed subparagraph (i) specified the date 6 months after the date of publication of this final-form rulemaking, for a source subject to § 129.111(a). Proposed subparagraph (ii) specified the submittal is due not later than the date 6 months after the date of publication of this final-form rulemaking, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to establish that the RACT proposal shall be submitted in writing or electronically. This change provides flexibility to the subject owner or operator in submitting the RACT proposal.

Subparagraph (i) is amended from the proposed rulemaking to this final-form rulemaking to specify December 31, 2022, as the due date for a source subject to § 129.111(a)

Subparagraph (ii) is amended from the proposed rulemaking to this final-form rulemaking to specify the due date is either December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

The changes to the due dates specified in subparagraphs (i) and (ii) are made to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

There are no changes made to paragraphs (2)—(7) from the proposed rulemaking to this final-form rulemaking.

Subsection (e) provides that the Department or appropriate approved local air pollution control agency will review the timely and complete alternative RACT proposal submitted in accordance with subsection (d) and approve, modify or deny in writing the application as specified in paragraphs (1)—(3).

There is no change made to subsection (e) from the proposed rulemaking to this final-form rulemaking.

Subsection (f) provides that the proposed alternative RACT requirement or RACT emission limitation and the implementation schedule submitted under subsection (d) will be approved, denied or modified under subsection (e) by the Department or appropriate approved local air pollution control agency in accordance with Chapter 127 prior to the owner or operator implementing the alternative RACT requirement or RACT emission limitation. Subsection (f) is amended from the proposed rulemaking to this final-form rulemaking to delete the words "subsection (e) in writing through the issuance of a plan approval or operating permit modification" and add the words "25 Pa. Code Chapter 127 (relating to construction, modification, reactivation and operation of sources)" to provide clarity in how the proposed alternative RACT requirement or RACT emission limitation and the implementation schedule will be approved, denied or modified.

Subsection (g) provides that the emission limit and requirements specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (f) supersede the emission limit and requirements in the existing plan approval or operating permit issued to the owner or operator of the source prior to November 12, 2022, on the date specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (f), except to the extent the existing plan approval or operating permit contains more stringent requirements.

Subsection (h) provides that the Department will submit each alternative RACT requirement or RACT emission limitation approved under subsection (f) to the Administrator of the EPA for approval as a revision to the SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

There are no changes made to subsections (g) and (h) from the proposed rulemaking to this final-form rulemaking.

Subsection (i) provides that an owner or operator subject to subsection (a), (b) or (c) and § 129.99 (relating to alternative RACT proposal and petition for alternative compliance schedule) that has not modified or changed a source that commenced operation on or before October 24, 2016, and has not installed and commenced operation of a new source after October 24, 2016, may, in place of the alternative RACT requirement or RACT emission limitation required under subsection (d), submit an analysis, certified by the responsible official, in writing or electronically to the Department or appropriate approved local air pollution control agency on or before December 31, 2022, that demonstrates that compliance with the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate approved local air pollution control agency under § 129.99(e) assures compliance with the provisions in subsections (a)—(c) and (e)—(h), except for sources subject to § 129.112(c)(11) or (i)—(k). Proposed subsection (i) provided that compliance with the requirements in § 129.99(a)—(h) assures compliance with the provisions in subsections (a)—(h), except for sources subject to § 129.112(b)(11), (h)(4) and (5) or (i)—(k). Subsection (i) is amended from the proposed rulemaking to this final-form rulemaking to add the words "subsections (a)—(c) and (e)—(h), except for sources subject to § 129.112(c)(11) or (i)—(k)" after the words "with the provisions in" and deleted the words "subsections (a)—(h), except for sources subject to § 129.112(b)(11), (h)(4) and (5) or (i)—(k)."

Subsection (i) is further amended from the proposed rulemaking to this final-form rulemaking to add paragraphs (1) and (2) to establish the procedures an owner or operator shall follow to submit the analysis required

under subsection (i) if the owner or operator chooses to demonstrate compliance with subsections (a)—(c) and (e)—(h) in accordance with subsection (i). 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 owner or operator 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.

Final-form paragraph (1)(i) specifies that the owner or operator of a subject source or facility 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 information specified in paragraph (1)(i)(A)—(E) in the analysis. Clause (A) specifies 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. Clause (B) specifies a list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)—(3) included in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e). Clause (C) specifies a summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the EPA Air Pollution Control Cost Manual, 6th Edition, EPA/452/B-02-001, January 2002, as amended. Clause (D) specifies a statement that an evaluation of each economic feasibility analysis summarized in clause (C) 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. Clause (E) specifies that the owner or operator shall 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.

Final-form paragraph (1)(ii) specifies that the owner or operator of a subject source or facility 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 information specified in paragraph (1)(ii)(A)—(F) in the analysis. Clauses (A)—(C) are the same as clauses (A)—(C) under paragraph (1)(i). Clause (D) specifies a statement that an evaluation of each economic feasibility analysis summarized in clause (C) 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. Clause (E) specifies that the owner or operator shall include a new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) in accordance with § 129.92(b)(4). Clause (F) specifies that the owner or operator shall 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.

Final-form paragraph (2) establishes procedures in subparagraphs (i)—(iii) that the owner or operator of a subject source or facility 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 follow. Subparagraph (i) requires that the owner or operator perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b). Subparagraph (ii) requires that the owner or operator submit the analyses performed under subparagraph (i) to the Department or appropriate approved local air pollution control agency for review. Subparagraph (iii) requires that the owner or operator 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.

The changes in subsection (i) from the proposed rulemaking to this final-form rulemaking are made in response to concerns and comments submitted by the EPA on the proposed rulemaking. The EPA expressed concerns regarding the need for additional analysis to determine whether the case-by-case determinations made under §§ 129.96—129.100 (RACT II) for the 1997 and 2008 8-hour ozone NAAQS remain RACT for the 2015 8-hour ozone NAAQS under §§ 129.111—129.115 (RACT III).

Subsection (j) is amended from the proposed rulemaking to this final-form rulemaking to provide in paragraphs (1)—(4) that the Department or appropriate approved local air pollution control agency will review the analyses submitted in accordance with subsection (i), solicit public comment on the analyses and the Department's supporting documentation, prepare a summary of the public comments received on the analyses and responses to the comments, and as appropriate, issue the necessary plan approvals and operating permit modifications in conformance with Chapter 127 for the analyses reviewed under paragraph (1).

Final-form subsection (k) provides that the Department will submit the analyses, supporting documentation and summary of public comments and responses described in subsection (j)(2) and (3) as well as the plan approvals and operating permit modifications issued under subsection (j)(4) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP.

Proposed subsection (j) is relettered in this final-form rulemaking as subsection (l) and provides that the owner and operator of a facility proposing to comply with the applicable RACT requirement or RACT emission limitation under subsection (a), (b) or (c) through the installation of an air cleaning device may submit a petition, in writing, requesting an alternative compliance schedule in accordance with paragraphs (1) and (2).

Final-form subsection (l) is further amended to add the words "or electronically" after "in writing." This change provides flexibility to the subject owner or operator in how the petition may be submitted. Final-form subsection (l)(1) is amended to delete the word "written" to coordinate with the addition of "or electronically" in subsection (l). Final-form paragraph (1)(i) is amended from the proposed rulemaking to this final-form rulemaking to specify that the due date is December 31, 2022, for a source subject to § 129.111(a). Final-form paragraph (1)(ii) is amended from the proposed rulemaking to this final-form rulemaking to specify that the due date is December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b). The amendment of final-form paragraphs (1)(i) and (ii) with the compliance date certain of December 31, 2022, in place of the proposed compliance date, which was the date of publication of this final-form rulemaking, is made to address the required deadline of January 1, 2023, in the EPA 2015 ozone implementation rule, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. See 40 CFR 51.1312(a)(3)(i); see also 40 CFR 51.1316(b)(3)(1). Final-form paragraph (2) is amended to delete the word "written" to coordinate with the addition of "or electronically" in subsection (l).

Proposed subsection (k) is relettered in this final-form rulemaking as subsection (m) and provides that the Department or appropriate approved local air pollution control agency will review the timely and complete written petition requesting an alternative compliance schedule submitted in accordance with proposed subsection (j) and approve or deny the petition in writing. Final-form subsection (m) is amended to delete the word "written" and to delete subsection "(j)" and add subsection "(l)."

Proposed subsection (l) is relettered in this final-form rulemaking as subsection (n) and provides that the emission limit and requirements specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under proposed subsection (k), now final-form subsection (m), which supersedes the emission limit and requirements in the existing plan approval or operating permit issued to the owner or operator of the source prior to November 12, 2022, on the date specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under proposed subsection (k), except to the extent the existing plan approval or operating permit contains more stringent requirements. Final-form subsection (n) is amended to delete subsection "(k)" and add subsection "(m)."

Proposed subsection (m) is relettered in this final-form rulemaking as subsection (o) and provides that approval or denial under proposed subsection (k), now final-form subsection (m), of the timely and complete petition for an alternative compliance schedule submitted under proposed subsection (j), now final-form subsection (l), will be effective on the date the letter of approval or denial of the petition is signed by the authorized representative of the Department or appropriate approved local air pollution control agency. Final-form subsection (o) is amended to delete subsection "(k)" and add subsection "(m)" and to delete subsection "(j)" and add subsection "(l)."

Proposed subsection (n) is relettered in this final-form rulemaking as subsection (p) and provides that the Department will submit each petition for an alternative compliance schedule approved under proposed subsection (k), now final-form subsection (m), to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal. Final-form subsection (p) is amended to delete subsection "(k)" and add subsection "(m)."

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

Subsection (a) provides that the owner and operator of an air contamination source subject to this section and § 129.111 shall submit a notification, in writing or electronically, to the appropriate Regional Manager or the appropriate approved local air pollution control agency that proposes how the owner and operator intend to comply with the requirements of this section and §§ 129.111—129.114. Proposed subsection (a) specified that the written notification shall be submitted to the appropriate Regional Manager by the date 6 months after the date of publication of this final-form rulemaking and include the information specified in proposed paragraphs (1)—(6). Subsection (a) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "written" and add a comma and the words "in writing or electronically" after the word "notification." This change provides flexibility to the subject owner or operator in how the notification may be submitted. Subsection (a) is further amended from the proposed rulemaking to this final-form rulemaking to delete the due date of 6 months after the date of publication of this final-form rulemaking and to add the words "or appropriate approved local air pollution control agency" after the words "Regional Manager."

Proposed subsection (a) included paragraphs (1)—(6) that specified the information to be included in the written notification. Proposed paragraph (1) specified that the written notification shall include the air contamination sources identified in § 129.111(a) as either subject to a RACT requirement or RACT emission limitation in §§ 129.112—129.114 or exempted from §§ 129.112—129.114. Subsection (a) is amended from the proposed rulemaking to this final-form rulemaking to add new paragraph (1) to establish the due dates for the notification and renumber proposed paragraphs (1)—(6) as final-form paragraphs (2)—(7). Final-form paragraph (1) specifies that the notification shall be submitted to the appropriate Regional Manager or appropriate approved local air pollution control agency as soon as possible but not later than December 31, 2022, for a source subject to § 129.111(a) and not later than December 31, 2022, or 6 months after the date the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

The due dates specified in final-form paragraph (1) are established to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

Proposed subsection (a)(1) is renumbered as paragraph (2) in this final-form rulemaking. Paragraph (2) specifies that the notification shall identify the air contamination

sources in § 129.111(a) as either subject to a RACT requirement or RACT emission limitation in §§ 129.112—129.114 or exempted from §§ 129.112—129.114.

Subsection (a) is further amended from the proposed rulemaking to this final-form rulemaking to renumber proposed paragraph (2) as final-form paragraph (3) and proposed paragraph (3) as final-form paragraph (4). There are no other changes made to final-form paragraphs (3) and (4).

Proposed subsection (a)(4) is renumbered as paragraph (5) in this final-form rulemaking. Final-form paragraph (5) is further amended to delete the reference to paragraph (1) and add the reference to paragraph (2). Subparagraph (ii) is amended from the proposed rulemaking to this final-form rulemaking to delete the reference to paragraph (1)(i) and add the reference to paragraph (2)(i). Subparagraph (iv) is amended from the proposed rulemaking to this final-form rulemaking to delete the reference to paragraph (1)(ii) and add the reference to paragraph (2)(ii). These changes are made to correct the cross references.

Proposed subsection (a)(5) is renumbered as paragraph (6) in this final-form rulemaking. Final-form paragraph (6) is further amended to delete the reference to paragraph (2) and add the reference to paragraph (3). Subparagraph (ii) is amended from proposed to this final-form rulemaking to delete the reference to paragraph (2)(i) and add the reference to paragraph (3)(i). Subparagraph (iv) is amended from the proposed rulemaking to this final-form rulemaking to delete the reference to paragraph (2)(ii) and add the reference to paragraph (3)(ii). These changes are made to correct the cross references.

Proposed subsection (a)(6) is renumbered as paragraph (7) in this final-form rulemaking. Final-form paragraph (7) is further amended to delete the reference to paragraph (3) and add the reference to paragraph (4). This change is made to correct the cross reference.

Subsection (b) provides that, except as specified in subsection (d), the owner and operator of an air contamination source subject to a NO_x RACT requirement or RACT emission limitation or VOC RACT requirement or RACT emission limitation, or both, listed in § 129.112 shall demonstrate compliance with the applicable RACT requirement or RACT emission limitation by performing the monitoring or testing procedures under paragraphs (1)—(6). Proposed subsection (b) included paragraphs (1)—(5).

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "and" after § 129.112(f), add a comma, and add the words "and direct-fired heaters, furnaces, ovens or other combustion sources subject to § 129.112(k)" after § 129.112(g)(1). These changes are made in response to comments received on the proposed rulemaking.

Paragraph (3) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "rolling." This change is made in response to comments received on the proposed rulemaking.

Proposed paragraph (5) is renumbered as paragraph (6) in this final-form rulemaking. Final-form paragraph (5) specifies that for a direct-fired heater, furnace, oven or other combustion source subject to § 129.112(k) with a continuous emissions monitoring system (CEMS), monitoring and testing shall be performed in accordance with the requirements in Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources), using a daily average. This requirement is added in response to comments received on the proposed rulemaking.

Final-form paragraph (6) is amended to clarify that for an air contamination source without a CEMS, monitoring and testing shall be performed in accordance with an emissions source test approved by the Department or appropriate approved local air pollution control agency that meets the requirements of Chapter 139, Subchapter A. The source test shall be conducted to demonstrate initial compliance and subsequently on a schedule set forth in the applicable permit. Final-form paragraph (6) is amended to delete "a Department approved" and add "approved by the Department or appropriate approved local air pollution control agency." These changes are made to for clarity.

There are no changes made to paragraphs (2) and (4) from the proposed rulemaking to this final-form rulemaking.

Subsection (c) provides that the owner or operator of a combined cycle combustion turbine may comply with the requirements in § 129.112(g)(2)(iii) on a mass-equivalent basis. The actual emissions during the compliance period must be less than the allowable emissions during the compliance period. The allowable emissions are calculated by multiplying actual heat input in million Btu during the compliance period by the applicable factor listed in paragraphs (1)—(4).

Subsection (c) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "combined-cycle" and add the words "combined cycle" before the word "combustion." This amendment is made to delete the hyphen in combined cycle. Subsection (c) is further amended from the proposed rulemaking to this final-form rulemaking to correct the cross-reference from § 129.112(g)(2)(ii) to § 129.112(g)(2)(iii). Paragraphs (1)—(4) are amended from the proposed rulemaking to this final-form rulemaking to correct the specified cross references. The cross reference in paragraph (1) is amended from § 129.112(g)(2)(ii)(A) to § 129.112(g)(2)(iii)(A). The cross reference in paragraph (2) is amended from § 129.112(g)(2)(ii)(B) to § 129.112(g)(2)(iii)(B). The cross reference in paragraph (3) is amended from § 129.112(g)(2)(ii)(C) to § 129.112(g)(2)(iii)(C). The cross reference in paragraph (4) is amended from § 129.112(g)(2)(ii)(D) to § 129.112(g)(2)(iii)(D). These changes are made to coordinate with the changes in § 129.112(g)(2) from the proposed rulemaking to this final-form rulemaking.

Subsection (d) provides that, except as specified in §§ 129.112(n) and 129.114(l), the owner and operator of an air contamination source subject to subsection (b) shall demonstrate compliance with the applicable RACT requirement or RACT emission limitation in accordance with the procedures in subsection (a) not later than the applicable date in paragraphs (1) and (2).

Subsection (d) is amended from the proposed rulemaking to this final-form rulemaking to correct the cross reference from § 129.114(j) to § 129.114(l) to coordinate with the changes made in § 129.114 from the proposed rulemaking to this final-form rulemaking. Subsection (d) is further amended from the proposed rulemaking to this final-form rulemaking to correct the cross reference from subsection (a) to subsection (b).

Subsection (e) provides that an owner or operator of an air contamination source subject to this section and §§ 129.111—129.113 may request a waiver from the

requirement to demonstrate compliance with the applicable emission limitation listed in § 129.112 if the requirements in paragraphs (1)—(4) are met. Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to add the words "or electronically" after the words "in writing." This change is made to provide flexibility to the subject owner or operator in how the request for a waiver may be submitted.

The waiver in paragraph (1) shall be submitted by the applicable date in subparagraph (i) or (ii). Proposed subparagraph (i) established the due date as the date 6 months after the date of publication of this final-form rulemaking for a source subject to § 129.111(a). Subparagraph (i) is amended from the proposed rulemaking to this final-form rulemaking to establish the due date as December 31, 2022, for a source subject to § 129.111(a). Proposed subparagraph (ii) established the due date as the date 6 months after the date of publication of this final-form rulemaking or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b). Subparagraph (ii) is amended from the proposed rulemaking to this final-form rulemaking to establish the due date as December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

The changes to the due dates specified in subparagraph (i) and (ii) are made to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

There are no changes made to paragraphs (2)—(4) from the proposed rulemaking to this final-form rulemaking.

Subsection (f) provides that the owner and operator of an air contamination source subject to this section and §§ 129.111—129.114 shall keep records to demonstrate compliance with §§ 129.111—129.114 and submit reports to the Department in accordance with the applicable regulations in 25 Pa. Code, Part 1, Subpart C, Article III (relating to air resources) and as specified in the operating permit or plan approval for the air contamination source as set forth in paragraphs (1)—(3). Paragraph (3) is amended from the proposed rulemaking to this final-form rulemaking to delete the words "Subpart C, Article III (relating to air resources) regulations" and add the words "applicable regulation" before the words "or as otherwise specified." This amendment is made in response to *Sierra Club v. EPA*, 972 F.3d 290 (3d Cir. 2020) to clarify that the owners and operators are required to comply with existing recordkeeping and reporting requirements, to which the owners and operators are already subject under existing Commonwealth law and as specified in the applicable operating permit or plan approval for the air contamination source. These recordkeeping and reporting requirements were previously approved as revisions to the Commonwealth's SIP. There are no changes made to paragraphs (1) and (2) from the proposed rulemaking to this final-form rulemaking.

Subsection (g) provides that, beginning with the compliance date specified in § 129.112(a), the owner or operator of an air contamination source claiming that the air contamination source is exempt from the applicable NO_x emission rate threshold specified in § 129.114(b) and the requirements of § 129.112 based on the air contamination source's potential to emit shall maintain records that demonstrate to the Department or appropriate approved local air pollution control agency that the air contamination source is not subject to the specified emission rate threshold.

Subsection (h) provides that, beginning with the compliance date specified in § 129.112(a), the owner or operator of an air contamination source claiming that the air contamination source is exempt from the applicable VOC emission rate threshold specified in § 129.114(c) and the requirements of § 129.112 based on the air contamination source's potential to emit shall maintain records that demonstrate to the Department or appropriate approved local air pollution control agency that the air contamination source is not subject to the specified emission rate threshold.

There are no changes made to subsections (g) and (h) from the proposed rulemaking to this final-form rulemaking.

Subsection (i) provides that the owner or operator of a combustion unit or process heater subject to § 129.112(b) shall record each adjustment conducted under the procedures in § 129.112(b). This record must contain, at a minimum, the information specified in paragraphs (1)—(6). Subsection (i) is amended from the proposed rulemaking to this final-form rulemaking to add the words "or process heater" after the word "unit." This change is made for consistency with the corresponding amendments to § 129.112(b). There are no changes made to paragraphs (1)—(6) from the proposed rulemaking to this final-form rulemaking.

Subsection (j) provides that the owner or operator of a Portland cement kiln subject to § 129.112(h) shall maintain a daily operating log for each Portland cement kiln. The record for each kiln must include the information specified in paragraphs (1)—(4).

Subsection (k) provides that the records shall be retained by the owner or operator for 5 years and made available to the Department or appropriate approved local air pollution control agency upon receipt of a written request from the Department or appropriate approved local air pollution control agency.

There are no changes made to subsections (j) and (k) from the proposed rulemaking to this final-form rulemaking.

F. *Summary of Comments and Responses on the Proposed Rulemaking*

General comments

The Board adopted the proposed rulemaking at its meeting on May 19, 2021. The proposed rulemaking was published at 51 Pa.B. 4333 (August 7, 2021). Three public hearings were held by the Department on September 7, 8 and 9, 2021, respectively. A 67-day public comment period closed on October 12, 2021.

Public comments were received from IRRC, the EPA and 25 commentators. Written comments were not received from the Senate or House Environmental Resources and Energy Committees. On November 12, 2021, IRRC submitted comments to the Board. The public comments received by the Board are summarized as follows and are addressed in a comment and response document which is available from the Department.

Public comments received from the EPA, businesses or regulated industries, industry trade associations, a neigh-

boring state and nongovernmental organizations sought further clarification regarding certain provisions of the proposed rulemaking or for the Board to revise provisions of the proposed rulemaking. IRRC and the EPA sought clarification from the Department regarding what additional analysis the Department will require from the owners and operators of subject facilities that seek to rely on previously approved RACT II conditions to meet RACT III for the 2015 8-hour ozone standard and whether this information would be included as part of the regulatory record to ensure compliance with EPA SIP requirements.

In response to comments from IRRC and the EPA, the Board amends § 129.114(i) from the proposed rulemaking to this final-form rulemaking to establish requirements for additional analysis to be included in the RACT III case-by-case evaluations. The Board believes that final-form § 129.114(i) provides the conditions to support those instances where the Department or appropriate approved local air pollution control agency may determine that the previously established RACT II controls and limits remain RACT for the 2015 8-hour ozone NAAQS. Final-form § 129.114(i) addresses the EPA's comment that the source shall not have had any significant changes to operations, emission levels, or other site or source specific factors analyzed during the original determination for that source's RACT II permits. Final-form § 129.114(i) establishes the conditions that an owner or operator subject to final-form § 129.114(a), (b) or (c) and to § 129.99 shall not have modified or changed a source that commenced operation on or before October 24, 2016, and shall not have installed and commenced operation of a new 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 NAAQS were due to the Department or the appropriate approved local air pollution control agency 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).

An owner or operator that is subject to final-form § 129.114(a), (b) or (c) and to § 129.99 and meets the conditions stipulated in final-form § 129.114(i), may, in place of proposing an alternative RACT requirement or RACT emission limitation under final-form § 129.114(d), submit an analysis, certified by the responsible official, in writing or electronically to the Department or appropriate approved local air pollution control agency on or before December 31, 2022, that demonstrates that compliance with the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate approved local air pollution control agency under § 129.99(e) for the 1997 and 2008 8-hour ozone NAAQS remains RACT for purposes of the 2015 8-hour ozone NAAQS under final-form § 129.114(a)—(c) and (e)—(h), except for sources subject to final-form § 129.112(c)(11) or (i)—(k). The excepted sources specified in final-form § 129.112(c)(11) and (i)—(k) are electric arc furnaces (EAF), glass melting furnaces, lime kilns and direct-fired heaters, furnaces, ovens or other combustion sources. These source types did not have presumptive RACT requirements or RACT limitations established under §§ 129.96—129.100 (RACT II). The owners and operators of these source types must comply with the applicable presumptive RACT requirement or RACT limitation, or both, established in § 129.112(c)(11) and (i)—(k). If an owner or operator cannot comply with the applicable requirement or limitation established in § 129.112(c)(11) and (i)—(k), the owner or operator may apply for an alternative RACT requirement or RACT limitation under final-form § 129.114(d).

Final-form § 129.114(i)(1) and (2) address the EPA's comments about "non-controversial sources," that is, sources which were well below the dollar per ton of NO_x or VOC threshold used for the case-by-case RACT II analysis of economic feasibility, as well as the EPA's comments regarding the need for additional case-specific analysis for certain sources or source categories. Final-form § 129.114(i)(1) and (2) establish the process and information needed for the owners and operators of both categories of sources to document for the record that for each source or generic source category, the relevant control technologies and their costs have not changed significantly enough to change the prior RACT II analysis. The Department established 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" for determining if the economic feasibility analyses previously submitted under § 129.99(e) for the 1997 and 2008 8-hour ozone NAAQS should be updated for the 2015 8-hour ozone NAAQS. The NO_x screening level value of $7,500 is twice the amount of the RACT III cost-effectiveness benchmark for presumptive NO_x RACT ($3,750). The RACT III cost-effectiveness benchmark for presumptive VOC RACT, $7,500, is larger in absolute magnitude than the RACT III cost-effectiveness benchmark of $3,750 for presumptive NO_x RACT, therefore the Department set the VOC screening level value at approximately one and one-half times the amount of the VOC RACT III cost-effectiveness benchmark. These screening level values are large enough to ensure that a cost-prohibitive control technology evaluated under § 129.99 with a cost-effectiveness that is equal to or greater than $7,500 per ton of NO_x emissions reduced or $12,000 per ton of VOC emissions reduced is still cost-prohibitive for the purposes of final-form § 129.114 without the need for re-evaluation of economic feasibility. If the cost-prohibitive control technology evaluated under § 129.99 had a cost-effectiveness that is less than $7,500 per ton of NO_x emissions reduced or $12,000 per ton of VOC emissions reduced, then the owner or operator shall re-evaluate the economic feasibility of the control technology to verify that it remains cost-prohibitive for purposes of the 2015 8-hour ozone NAAQS.

Final-form § 129.114(i)(2) provides that the owner or operator of a subject source or facility 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 the submittal of the analysis to the Department or appropriate approved local air pollution control agency shall do the following: perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b); submit the analyses to the Department or appropriate approved local air pollution control agency for review; and 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.

An owner or operator subject to final-form § 129.114(a), (b) or (c) and § 129.99 that has modified or changed a source that commenced operation on or before October 24, 2016, or has installed and commenced operation of a new source after October 24, 2016, shall comply with the requirements of final-form § 129.114(d) and propose an alternative RACT requirement or RACT emission limitation. These owners and operators may not use the

analysis option under final-form § 129.114(i). This includes the owner or operator of a major NO_x emitting facility that is subject to final-form § 129.111 and was subject to §§ 129.96—129.100 (RACT II) and after October 24, 2016, installed a new source with a PTE of equal to or greater than 5 TPY of NO_x that is not subject to § 129.112 or §§ 129.201—129.205 as well as the owner or operator of a major VOC emitting facility that is subject to final-form § 129.111 and was subject to RACT II and after October 24, 2016, installed a new source with a PTE equal to or greater than 2.7 TPY of VOC that is not subject to final-form § 129.112 or has modified equipment (for example, boiler replacement). In this case, a case-by-case RACT analysis shall be performed on the new source or equipment.

In response to IRRC and EPA comments regarding procedures to comply with SIP requirements relating to public participation, the Board has amended final-form § 129.114(j) to provide that the Department or appropriate approved local air pollution control agency will review the analyses submitted under final-form § 129.114(i), solicit public comment on the analyses and supporting documentation, prepare a summary of the public comments and responses to the public comments, and, as appropriate, issue the necessary plan approvals and operating permit modifications in conformance with Chapter 127. The public comment steps for the analyses specified in final-form § 129.114(j)(2) and (3) are provided to satisfy the public participation requirements under section 110 of the CAA and 40 CFR 51.102 (relating to public hearings) for submitting materials to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP under final-form § 129.114(k). If a plan approval or operating permit modification is issued under final-form § 129.114(j)(4), the plan approval or operating permit modification will undergo public comment as part of the issuing process in conformance with Chapter 127.

IRRC and the EPA similarly asked what procedures the Department will follow to satisfy SIP requirements relating to public participation for instances where an owner and operator's previous RACT II determination remains RACT for the 2015 8-hour ozone standard. Final-form § 129.114(k) provides that the Department will submit the analyses, supporting documentation and summary of public comments and responses described in final-form § 129.114(j)(2) and (3) as well as the plan approvals and operating permit modifications issued under final-form § 129.114(j)(4) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. These submissions will include all supporting information necessary for the record to demonstrate that the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate local air pollution control agency under § 129.99(e) (RACT II) assures compliance with the provisions in final-form § 129.114 (a)—(c) and (e)—(h) (RACT III), that there is no further reduction in the emission limitations or tightening of the restrictions that is technically or economically feasible, and that no change has occurred at the source that would call into question whether the emission limitations in the RACT II permit remain RACT for the 2015 8-hour ozone NAAQS. The supporting documentation will include the applicable RACT II determinations, which will be made available to the public during the public comment period described under final-form § 129.114(j) and incorporated as part of the SIP submittal to the EPA.

IRRC and several commentators also raised concerns with the time frame provided for affected owners and operators to comply with this final-form rulemaking and inquired what authority the Department is relying on to extend the compliance date beyond January 1, 2023.

The Board understands the concerns of IRRC and the commentators relating to the time frame for implementation of this final-form rulemaking. However, the implementation date of January 1, 2023, is required by the EPA's 2015 ozone standard implementation rule. See 83 FR 62998 (December 6, 2018); see also 40 CFR 51.1316(b)(3). In this final-form rulemaking, owners and operators are required to submit alternative compliance schedules, averaging plan proposals and case-by-case proposals for alternative RACT requirements and RACT emission limitations to the Department or appropriate approved local air pollution control agency before the implementation date of January 1, 2023. Sources otherwise subject to the presumptive RACT limit and other RACT requirements for certain source categories in this final-form rulemaking will have to plan to begin complying with RACT III on the implementation date. To this end, the Department will be conducting direct outreach to the regulated community well in advance of the January 1, 2023, implementation date due to the short turnaround time between the expected promulgation date of this final-form rulemaking and the implementation date.

While the implementation date of January 1, 2023, is required by the EPA's 2015 8-hour ozone NAAQS implementation rule (40 CFR 51.1316(b)(3)), there are practical timing considerations for the owners and operators of sources that will need to install and operate control technologies to satisfy their applicable RACT III requirements. This includes submission of a plan approval from the owner or operator to the Department or appropriate approved local air pollution control agency, public participation and comment on the proposal as required by law, and ordering and installing the approved control technology as well as the installation of the new control technology or replacement of the existing control technology. Therefore, the requirements for alternative compliance schedules in this final-form rulemaking remain; owners and operators should plan to implement RACT as soon as possible when proposing an alternative compliance plan schedule subject to approval by the Department. Where an alternative compliance schedule, averaging plan proposal or case-by-case proposal is not submitted by the owner or operator to the Department or appropriate approved local air pollution control agency by December 31, 2022, or the owner or operator of the source is not otherwise complying with presumptive RACT III requirements and emissions limitations established for certain source categories on or after the implementation date, the Department will then consider this to be a compliance matter subject to the Department's authority under the APCA (35 P.S. §§ 4001—4015), to issue notices of violation and conduct enforcement, as appropriate. This approach was previously approved for RACT II by the EPA on May 9, 2019 (84 FR 20274).

IRRC and other commentators had several inquiries regarding the Regulatory Analysis Form (RAF) for the proposed rulemaking. First, IRRC and some commentators contend that the RAF and the Technical Support Document (TSD) submitted with the proposed rulemaking underestimate the number of facilities that will have to install additional RACT controls and fail to account for the cost of new equipment that will be required to meet the new limits imposed by the proposed rulemaking. IRRC requested that the Board provide additional documentation and reasoning to justify the $25 million number or revise this estimate accordingly and include these

cost estimates in Section F of the preamble to this final-form rulemaking. IRRC and a commentator suggested that the Department's estimated costs incurred by the affected owners and operators to comply with the proposed rulemaking presented in Question # 19 of the RAF are underestimated as the alternative compliance options will entail legal and consulting services, which would exceed the estimated cost of $4,000—6,000 estimated by the Department. IRRC and some commentators also note that the Department did not account for its costs in having to process additional case-by-case proposals and petitions due to lower presumptive limits proposed for multiple source categories. IRRC also asked for the Department to update Question # 23 of the RAF to accurately account for the actual cost estimates, which are properly calculated under Question # 19 of the RAF.

In response to comments on the RAF from IRRC and others, the Department determined that the owners and operators of approximately 115 engines and turbines would be required to install add-on control technology to meet the presumptive NO_x RACT III emission limitations. Since the publication of the proposed rulemaking, the Department has updated the estimates to reflect that implementation of the final-form control measures could reduce NO_x emissions by as much as 9,800 TPY from engines, turbines and municipal waste combustors and reduce VOC emissions by as much as 825 TPY from engines and turbines. The value of $25 million has been updated to approximately $36.7 million per year and was derived from multiplying the estimated 9,800 TPY of NO_x emission reductions by the NO_x RACT cost-effectiveness threshold of $3,750. The Department does not anticipate any additional costs to the regulated industry to meet the lower VOC standards contained in this final-form rulemaking. Optimization of existing VOC controls should be sufficient to meet the VOC standards in this final-form rulemaking.

There are no changes made to Question # 19 of the RAF in response to comments from IRRC and other commentators that the Department underestimated the costs of compliance. The Board finds that $4,000 to $6,000 is a reasonable estimation of costs that covers public hearings and notifications, including newspaper notices, required for the SIP submittal, as well as application fees. The estimated cost does not include any legal or consultation fees that a company may choose to incur. The cost range provided by the commentator of $4.4 to $8.8 million is based on the assumption that 250—500 facilities will require alternative compliance provisions. The Board finds this to be an overestimation as the owners and operators of less than 200 facilities submitted either averaging plans or case-by-case proposals under RACT II. The Department anticipates that the number of facilities for which an averaging plan or case-by-case proposal will be submitted under RACT III will be less than 200. Further, the Department notes that final-form § 129.114(i) provides owners and operators with the opportunity to submit an analysis, where applicable, demonstrating that RACT II conditions remain RACT for the 2015 8-hour ozone standard. For the owners and operators of eligible subject sources, this administratively efficient and less resource intensive approach than conducting a full case-by-case analysis, will likely reduce consulting costs that an owner or operator may choose to incur.

In response to comments from IRRC and others commenting that the Department did not account for its own costs in having to process additional case-by-case proposals and petitions due to lower presumptive limits proposed for multiple source categories, the Board finds that the Department will not incur any significant additional costs from the implementation of this final-form rulemaking. In the RAF, the Department explains that existing Department staff will be working to review and process alternative compliance schedules, NO_x averaging plans and case-by-case proposals as it did in RACT II; no additional staff will be hired as a result of implementation of this final-form rulemaking. The Board's final-form amendments to § 129.114(i) provide for an administratively efficient and less resource intensive process that it anticipates some affected owners and operators will use to demonstrate that RACT II conditions remain appropriate for RACT III. While this process in final-form § 129.114(i)—(k) is anticipated to save the regulated community costs, the Department will be handling the newspaper publications in these instances, and therefore, incur costs for the required publication of newspaper notices. Accordingly, the Board has revised the RAF based on the Department's estimate of these additional publication and advertising costs.

As previously explained in response to IRRC's request, the total cost to the regulated community in Questions # 19 and # 23 of the RAF have been revised accordingly to approximately $36.7 million per year.

IRRC and a commentator commented that the presumptive limit for glass melting furnaces in § 129.112 will conflict with industry-specific regulations that glass melting furnaces are subject to under §§ 129.301—129.310 (relating to control of NO_x emissions from glass melting furnaces) and that the Department did not provide an explanation in the preamble of the proposed rulemaking as to why these facilities are subject to RACT III when they were not previously subject to RACT II for the 2008 8-hour ozone standard. IRRC and the commentator requested that operational flexibility for start-up, shutdown and idling that exists for glass melting furnaces in the current regulations be added to this final-form rulemaking. IRRC and a commentator also noted that the proposed rulemaking was overdue and urged its final adoption as soon as possible. IRRC and other commentators commented that stricter emission limits be adopted for certain source categories such as steel producing facilities, coal-fired power plants and municipal waste combustors.

In response to comments from IRRC and another commentator regarding the conflict between this rulemaking and the existing requirements in §§ 129.301—129.310, the Department explains that each time the EPA revises a NAAQS under section 109 of the CAA, the Commonwealth is required to meet the applicable RACT obligations for covered sources under sections 182 and 184 of the CAA. The Department has determined that certain provisions, including § 129.303(a) relating to emissions requirements during periods of start-up, shutdown or idling, in the existing glass melting furnace regulations preclude §§ 129.301—129.310 from meeting the presumptive standards in § 129.112(i) for the 2015 8-hour ozone NAAQS because these provisions do not include enforceable emissions limits. See the EPA's Reinstatement of its 2015 Startup, Shutdown and Malfunction (SSM) Policy, available at https://www.epa.gov/air-quality-implementation-plans/emissions-during-periods-startup-shutdown-malfunction-ssm. The EPA's 2015 SSM Policy precludes the type of flexibility sought by IRRC and the commentator. The EPA also expressed concerns regarding the certification of §§ 129.301—129.310 as RACT for the 1997 and 2008 8-hour ozone NAAQS; §§ 129.301—129.310 were not approved as RACT in the Common-

wealth's SIP by the EPA for the 1997 and 2008 8-hour ozone NAAQS. See 76 FR 52283 (August 22, 2011). In response to these comments, the Board has amended final-form § 129.112(m) to reflect that the requirements and emission limitations for glass melting furnaces in § 129.112(i) would supersede existing requirements under §§ 129.301—129.310 unless the requirements or emission limitations of §§ 129.301—129.310 are more stringent.

Owners and operators of a major NO_x emitting facility or a major VOC emitting facility as defined in § 121.1 are subject to RACT III as described in final-form § 129.111. If an owner or operator of a glass melting furnace source cannot meet the presumptive RACT limit in final-form § 129.112(i), then the owner or operator may opt to submit a case-by-case proposal under final-form § 129.114. Certification of final-form § 129.112(i) as RACT for glass melting furnaces for the 2015 8-hour ozone NAAQS will be presumed to certify RACT for glass melting furnaces for the 1997 and 2008 8-hour ozone NAAQS. If an owner or operator cannot meet a presumptive RACT emission limit established under § 129.112(i), the owner or operator may submit a case-by-case proposal for an alternative RACT emission limitation.

In response to comments from IRRC and another commentator that the RACT III rulemaking is overdue and needs to be adopted as soon as possible, the Board acknowledges the comments. The Department has worked diligently to finalize this comprehensive rulemaking as quickly as possible. Litigation over certain aspects of the EPA's approval of certain provisions of the RACT II final-form rulemaking (84 FR 20274; May 9, 2019) in *Sierra Club v. EPA*, 972 F.3d 290 (3d Cir. 2020) has, in part, delayed the RACT III rulemaking.

In response to comments from IRRC and another commentator regarding the stringency of emissions limitations for coal-fired power plants, the Board explains that a coal-fired combustion unit with a rated heat input greater than 250 million Btu/hour, including an electric generating unit (EGU) with selective catalytic reduction (SCR), has no presumptive NO_x RACT requirement or RACT emissions limitation specified in § 129.112. Therefore, § 129.114(a) is not applicable. Owners and operators of these large coal-fired combustion units are required to propose a NO_x RACT requirement or RACT emission limitation under § 129.114(b).

The owners and operators of large coal-fired combustion units that are EGUs equipped with SCR were required to submit an alternative NO_x RACT proposal to satisfy the requirement of § 129.99. See *Sierra Club v. EPA*, 972 F.3d 290 (3d Cir. 2020). Therefore, these owners and operators may submit an analysis under final-form § 129.114(i) to demonstrate that their limitations issued under §§ 129.96—129.100 (RACT II) remain RACT for §§ 129.111—129.115. These analyses received under § 129.114(i) along with supporting documentation will be subject to public comment to meet the Commonwealth's SIP public participation obligations under section 110 of the CAA and 40 CFR 51.102.

§ 129.111. Applicability

IRRC and a commentator commented that the use of "that were in existence on or before August 3, 2018," in proposed subsection (a) is vague and sought clarity. In response to these comments, the Board has amended this final-form rulemaking to provide further clarity. In final-form § 129.111(a) and (b), the words "commenced operation" have replaced "in existence." While "commenced operation" is not defined in § 121.1, the words "commenced operation" are used in the definition of the term "new source" and also widely used in plan approvals issued by the Department's Air Quality Program.

The Board finds that the Department does not intend for the RACT III provisions to be continually reapplied to new sources at major facilities. The intent of the applicability date in § 129.111(a) and (b) is that RACT should be determined once for each existing major facility or source in accordance with the requirements for the applicable 8-hour ozone NAAQS as the major facility or source exists on the applicability date. The applicability date in § 129.111(a) and (b), namely, August 3, 2018, is the effective date of the designations of the nonattainment areas in this Commonwealth for the 2015 8-hour ozone NAAQS. See 83 FR 25776, 25828 (June 4, 2018).

In response to the EPA's suggestion that the scope of applicability of § 129.111(a) be narrowed to exclude new sources at existing major facilities, the Board has amended the language of § 129.111(a)(1) and (2) to clarify that the requirements apply to the owner and operator of major sources and facilities subject to § 129.111(a) that commenced operation on or before August 3, 2018. Installation and operation of a new source after August 3, 2018, at a major facility covered by § 129.111(a) is excluded from being identified and listed in accordance with § 129.111(a)(1) and (2) in the notification required under § 129.115(a). A new source installed after August 3, 2018, or the new major facility that commences operation after August 3, 2018, would instead be subject, at a minimum, to a BAT determination which can be no less stringent than RACT established for the 2015 8-hour ozone NAAQS under §§ 129.111—129.115 (RACT III).

The EPA asked the Department to clarify if new facilities that came into existence after July 20, 2012, are not subject to RACT, or alternatively, whether those new facilities would be subject to a newer RACT standard. In response to the EPA's questions regarding the applicability of RACT to the owners and operators of new [major] facilities that came into existence after July 20, 2012, the applicability date of §§ 129.96—129.100 (RACT II), the Department provides that the owner and operator of a major facility or source that commenced operation after July 20, 2012, but on or before August 3, 2018, would not have been subject to, or evaluated for, RACT for the 1997 and 2008 8-hour ozone NAAQS under §§ 129.96—129.100 (RACT II); rather, the owner and operator of the major facility or source would have been subject, at a minimum, to a BAT determination which could be no less stringent than the RACT II requirements for the 1997 and 2008 8-hour ozone NAAQS. The owner or operator of a major facility or source that commenced operation after July 20, 2012, and is in operation on or before August 3, 2018, would be subject to § 129.111(a) and would be evaluated for and issued an operating permit with the applicable RACT III requirements or emissions limitations, or both, for the 2015 8-hour ozone NAAQS for the major facility or source as it existed on or before August 3, 2018. If the owner or operator of this major facility then installs a new source after August 3, 2018, it is not the Department's intent to require an updated RACT III analysis for the 2015 8-hour ozone NAAQS for the facility, as explained above regarding the scope of applicability of § 129.111(a); rather, the new source would be subject to a BAT determination which can be no less stringent than RACT established for the 2015 8-hour ozone NAAQS under §§ 129.111—129.115 (RACT III).

In response to the EPA's suggestion that the language in § 129.111(b) be clarified, the Board provides that the

owner or operator of a non-major facility that commenced operation after July 20, 2012, and is in operation on or before August 3, 2018, would not have been subject to RACT II under §§ 129.96—129.100 nor would they be subject to § 129.111(a), since the facility is not a major facility. If the owner and operator of a non-major facility that commenced operation on or before August 3, 2018, then installs and commences operation of a new source after August 3, 2018, or makes a modification or change in operation after August 3, 2018, of a source that commenced operation on or before August 3, 2018, to the extent that the source or facility now meets the definition of a major NO_x emitting facility or major VOC emitting facility, this owner and operator is subject to the requirements of § 129.111(b). The owner or operator will be evaluated by the Department for applicable RACT III requirements for the 2015 8-hour ozone NAAQS and be issued an operating permit with the applicable RACT III requirements. Once this source or facility meets major status and has been evaluated for applicable RACT III requirements under §§ 129.111—129.115, installation of a subsequent new source or a subsequent modification or change in operation of an existing source after the date of issuance of the permit would be subject to a BAT analysis which could be no less stringent than the RACT III requirements.

As specified under final-form § 129.111(d), the owner and operator of a facility that commenced operation on or before August 3, 2018, that is not a major NO_x emitting facility or a major VOC emitting facility on or before December 31, 2022, would not be subject to §§ 129.111—129.115, except as specified in final-form § 129.111(e). Final-form § 129.111(e) specifies that if the owner and operator of a facility that complied with § 129.111(d) becomes major after December 31, 2022, the owner and operator of the now-major facility shall comply with § 129.111(b). This requirement precludes the situation in which an owner or operator of a major facility or source that is subject to § 129.111(a), or an owner or operator of a facility or source that is subject to § 129.111(b) that becomes major after August 3, 2018, then falls below the applicable major facility threshold on or before December 31, 2022, from being exempt from §§ 129.111—129.115 if the source or facility becomes major again after December 31, 2022.

The owner and operator of a source or facility that commences operation after August 3, 2018, would not be subject to §§ 129.111—129.115. These owners and operators would be evaluated according to applicable programs such as BAT or new source review. These owners and operators may become subject to future RACT requirements or RACT emission limitations, or both, that are implemented to address a future ground-level ozone NAAQS or revision to an existing ground-level ozone NAAQS. These owners and operators would be evaluated for RACT applicability at that time.

IRRC and a commentator asked the Board to explain in the preamble of this final-form rulemaking how the exemptions in subsection (c) will be implemented for facilities that have the potential to emit less than a certain amount of NO_x or VOCs. In response to these comments, the Board explains that the source exemptions listed in § 129.111(c) are based on potential emissions or potential to emit (PTE). A source that qualifies for an exemption under § 129.111(c) either does not have the physical capability to emit 1 TPY or more of NO_x or VOCs or has a legal restriction that prohibits it from emitting 1 TPY or more of NO_x or VOCs. A change that would allow the source to emit 1 TPY or more of NO_x or VOCs would be a modification subject to BAT requirements. A modification that occurs after December 31, 2022, would not be subject to the RACT requirements and RACT emissions limitations of §§ 129.112—129.115 except as specified in § 129.111(e). The Board notes, however, that this modification may become subject to future RACT requirements or RACT emissions limitations, or both, that are implemented to address a future ground-level ozone NAAQS or revision to an existing ground-level ozone NAAQS. These owners and operators would be evaluated for RACT applicability at that time.

A commentator asked the Board to revise the definitions of "major NO_x emitting facility" and "major VOC emitting facility" to exclude the 25 TPY thresholds for Bucks, Chester, Delaware, Montgomery and Philadelphia Counties consistent with RACT II. In response to the commentator's request, the Department has explained that it intends for the major facility applicability thresholds established for Bucks, Chester, Delaware, Montgomery and Philadelphia Counties under RACT II to also apply for RACT III. Therefore, the Board has revised the definitions of major NO_x emitting facility and major VOC emitting facility in this final-form rulemaking to clarify that the applicability thresholds for Bucks, Chester, Delaware, Montgomery or Philadelphia County for purposes of §§ 129.96—129.100 and 129.111—129.115 are 100 TPY for NO_x emissions and 50 TPY for VOC emissions.

A commentator asked why sources subject to § 129.74 were not excluded from the proposed rulemaking as they were in RACT II. In response, the Board has revised § 129.111(a) and (b) in this final-form rulemaking to include § 129.74 in the list of excepted sections. Section 129.74 implements RACT requirements and RACT emission limitations consistent with the EPA's applicable Control Techniques Guidelines (CTG) (EPA 453/R-08-004, 2008/09 Control Techniques Guidelines for Fiberglass Boat Manufacturing Materials) and sources subject to § 129.74 are exempted from the major source RACT requirements in §§ 129.96—129.100 and §§ 129.111—129.115.

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

Subsection (b)

A commentator commented that proposed § 129.112 did not address the presumptive requirements for process heaters between 20—50 million Btu/hour and asked if it is the Department's intention that these units be subject to case-by-case RACT under RACT III, similar to RACT II.

The Board amends § 129.112(b)(1)(i) and (ii) to add "or process heater."

Subsection (c)

IRRC and a commentator suggested that "flare" be added to the list of equipment that must be installed, operated and maintained in accordance with manufacturer's specifications and with good operating practices under § 129.112(c)(8) if the revision would improve clarity.

The Board amends § 129.112(c)(8) in this final-form rulemaking to add the word "flare."

Some commentators commented that the Board has only adopted "good operating practices" for EAFs and suggested that the Department and the Board should revise the TSD to include an analysis of RACT requirements for EAFs. Another commentator commented that steel producing facilities might improve their air emis-

sions performance through more stringent RACT standards and suggested that the Department consider a meaningful work practices plan to control coke oven emissions from leaking doors, lids, offtake piping and charging of coke oven batteries as well as a leak detection and repair program for VOCs.

In response to comments regarding RACT III requirements for steel producing facilities, the Department explained that it evaluated several EAFs as part of case-by-case determinations for RACT II. The Department determined that no NO_x or VOC emissions control for EAF is technically feasible. This is because EAF do not use combustion and are batch processes. Since there is no combustion, methods used to alter NO_x and VOC emissions cannot be employed as they would for a combustion source. Therefore, the Board has determined that a numerical RACT emissions limitation for either NO_x or VOC emissions from an EAF is not appropriate. The Board finds that the applicable presumptive RACT requirement of "good operating practices" is consistent with previous RACT determinations and is appropriate for EAF in this Commonwealth. Additional information can be found in Section IV(L) of the Department's TSD for this final-form rulemaking.

Due to the nature and complexity of certain sources, such as steel mills and coke ovens, it is not appropriate to establish presumptive RACT requirements or RACT emissions limitations. See 44 FR 53761, 53762-53763 (September 17, 1979); see also 57 FR 18070, 18073—18074 (April 28, 1992). Owners and operators of sources with no presumptive RACT requirements or RACT emissions limitations are required to submit a case-by-case proposal for an alternative RACT requirement or RACT emissions limitation (alternative RACT proposal). If the facility is in Allegheny County, the alternative RACT proposal is submitted to and reviewed by the Allegheny County Health Department (ACHD).

Case-by-case proposals for alternative RACT requirements or RACT emissions limitations submitted to ACHD must be submitted by the Department to the EPA as a SIP revision. These proposals must meet the same requirements and undergo the same SIP review process as alternative RACT proposals submitted to the Department. Additionally, the Department provides support to ACHD during the review of alternative RACT proposals.

Subsection (e)—Municipal Solid Waste Landfills

A commentator requested that proposed § 129.112(e) be amended to reflect recent changes in applicable Federal regulations published in the *Federal Register* on May 21, 2021, effective June 21, 2021, pertaining to the adoption of the Federal Plan for municipal solid waste landfills that commenced construction on or before July 17, 2014, and landfills that are constructed, reconstructed or modified on or after July 18, 2014.

The Board believes that the commentator is referring to the EPA final rule published at 86 FR 27756 on May 21, 2021. The Board has revised final-form § 129.112(e) to incorporate the updated Federal regulations at 40 CFR Part 62, Subpart OOO. The Board notes that § 129.113(e)(2) requires a municipal solid waste landfill constructed, reconstructed or modified on or after July 18, 2014, to comply with the New Source Performance Standards in 40 CFR Part 60, Subpart XXX, which are adopted and incorporated by reference in § 122.3 (relating to adoption of standards).

Subsection (f)—Municipal Waste Combustors

The EPA commented that the prior NO_x emission standard for municipal waste combustors in § 129.97 is proposed to be reduced from 180 ppmvd to 150 ppmvd. The Department's analysis determined that additional controls (for example, selective catalytic reduction/selective non-catalytic reduction (SCR/SNCR)) were technically or economically infeasible, or both. However, the EPA commented that the record does not explain what measures will be necessary for the sources to meet the new limits and does not demonstrate that 150 ppmvd is the lowest rate that is technically and economically feasible. Several of the sources appear to be capable of operating at lower emission rates. The EPA asked that the Department explain what analysis was performed to determine that 150 ppmvd is RACT for these units. Several commentators commented that the Department should set a lower limit for this source category.

The limit for municipal waste combustors in § 129.97 is 180 ppmvd. The Board has revised proposed § 129.112(f) from 150 ppmvd NO_x @ 7% oxygen to a more stringent limit of 110 ppmvd NO_x @ 7% oxygen in this final-form rulemaking based on the Department's review of information provided by commentators during the public comment period as well as the Department's review of available stack test emissions data. The supporting analysis is found in Section IV(E) of the Department's TSD for this final-form rulemaking.

Another commentator commented that the proposed rulemaking establishes no process for considering whether an individual source can achieve a stronger and more protective limit and weakens the standard by allowing the owner or operator of a municipal waste combustor to meet the presumptive limit through facility or system-wide averaging, which the commentator claimed poses a particular threat to environmental justice areas. The commentator requested the Board correct this.

In response to a commentator's request, the Board declines to make any revisions to this final-form rulemaking. The Department explained that it is appropriate to set presumptive RACT requirements and RACT emissions limitations for certain source categories, including municipal waste combustors, in this final-form rulemaking. A presumptive limit is set at a level that, when met, assures that the Commonwealth's RACT obligation under the CAA has been met. See *NRDC v. EPA*, 571 F.3d 1245, 1253—1255 (D.C. Cir. 2009). With respect to the ability for owners and operators to use systemwide NO_x averaging, the Board finds that the Department has adequately explained the ability and limitations for owners and operators to use systemwide averaging in responses to Comments 99 and 100 of the comment and response document. NO_x emissions averaging plans or alternative RACT proposals are submitted to the Department for review and approval, denial or modification in accordance with § 129.113(g) and (i). The NO_x emissions averaging plan or alternative RACT proposal approval or modification and the Department's proposed actions are subject to public review and comment at the State level before being finalized by the Department. If approved and issued by the Department as an operating permit modification, the NO_x emissions averaging plan or alternative RACT proposal must be submitted by the Department to the EPA as a revision to the Commonwealth's SIP. The local county agencies in Allegheny County and Philadelphia County follow a similar process.

Another commentator commented that SNCR control technology cannot be employed at some municipal waste

combustor facilities due to the type of technology employed there and noted that the Department determined that retrofitting with SNCR is economically infeasible. In response, the Board notes that § 129.112(f) has been amended by the Board from the proposed 150 ppmvd NO_x @ 7% oxygen to 110 ppmvd NO_x @ 7% oxygen in this final-form rulemaking. The NO_x emission rate of 110 ppmvd @ 7% oxygen on a 24-hour averaging period for large municipal waste combustors was recommended by the Ozone Transport Commission Stationary Area Sources workgroup in its June 2021 "Municipal Waste Combustor Workgroup Report" and is supported by the Department's cost-effectiveness analysis. If an owner or operator cannot meet the presumptive emission limit, the owner or operator has the option to submit a case-by-case proposal for an alternative RACT emission limitation under § 129.114.

Subsection (g)(1)—Combustion Units or Process Heaters

IRRC and other commentators asked the Board to explain in the preamble of this final-form rulemaking the rationale for using an operating day to measure emission limits for coal-waste plants for an operating day under § 129.112(g)(1)(viii), instead of a 30-day rolling average.

In response, the Board finds that the proposed use of an operating day is appropriate. Based on continuous emissions monitoring data for the years 2018—2020, the Department determined that circulating fluidized bed boilers can meet the presumptive NO_x RACT emissions limitation on a daily basis including periods of start-up, shutdown and low load operation. The owner or operator has the option to submit a case-by-case proposal for an alternative RACT emission limitation under final-form § 129.114 if they believe that the presumptive RACT limitation cannot be met at all times. See Section IV(F) of the Department's TSD for this final-form rulemaking.

A commentator commented that start-up and periods of low load operations should be exempted from the presumptive NO_x RACT requirement for circulating fluidized bed boilers firing primarily coal refuse.

The Board finds that presumptive RACT requirements must be enforceable limits and apply at all times, including periods of start-up, shutdown and low load operation, which is consistent with the EPA's 2015 SSM Policy, available at https://www.epa.gov/air-quality-implementation-plans/emissions-during-periods-startup-shutdown-malfunction-ssm.

Commentators commented that the presumptive NO_x RACT emissions limit for circulating fluidized bed boilers primarily firing anthracite waste such as culm should be the same rate as those primarily firing bituminous waste such as gob.

The Board agrees with the commentators. The RACT emission limitation for a circulating fluidized bed combustion unit with a rated heat input equal to or greater than 250 million Btu/hour firing waste products of coal mining, physical coal cleaning and coal preparation operations that contain coal, matrix material, clay and other organic and inorganic material is 0.16 lb NO_x/million Btu heat input when firing primarily bituminous waste such as gob and 0.16 lb NO_x/million Btu heat input when firing primarily anthracite waste such as culm.

Another commentator commented that the proposed rulemaking should be amended to include a lowered presumptive NO_x emissions limit for coal-fired EGUs without the problematic inlet-temperature loophole from RACT II; and that the Commonwealth's "case-by-case approach" for coal plant NO_x RACT determinations, involving a "top-down analysis," is inappropriate for several reasons. The commentator recommended that the Commonwealth set a new NO_x RACT standard for its coal-fired power plants that incorporates a 0.07 lb NO_x/million Btu emission limit, avoids control inlet temperature-based exemptions, and includes a short term, 24-hour emission limit at least as low as 0.125 lb NO_x/million Btu.

The commentator's suggestion that the Board establish a presumptive RACT limit for coal-fired EGUs is outside the scope of this rulemaking. Nothing in the CAA or regulations thereunder mandates that the Commonwealth establish a presumptive RACT limit for coal-fired power plants as suggested by the commentator. The CAA provides States with "broad authority to determine the methods and particular control strategies they will use to achieve the [CAA] statutory requirements." See *BCCA Appeal Group v. EPA*, 355 F.3d 817, 822 (5th Cir. 2003). The determination of RACT and the corresponding emission rate ensuring the proper application and operation of RACT may vary from source to source due to source configuration, retrofit feasibility, operating procedures, raw materials, and other technical or economic characteristics of a source or group of sources. Memorandum from Roger Strelow, Assistant Administrator for Air and Waste, USEPA, to Regional Administrators I-X, "Guidance for determining Acceptability of SIP Regulations in Non-Attainment Areas" (December 9, 1976) at 2, available at: https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/19761209_strelow_ract.pdf; see also *Nat'l Steel Corp., Great Lakes Steel Div. v. Gorsuch*, 700 F.2d 314, 322—323 (6th Cir. 1983).

For some categories of sources, the EPA has promulgated CTGs and alternative control techniques documents (ACTs) to assist states in determining what control techniques meet the RACT requirement; states may opt to require alternative controls rather than following the CTGs. See *NRDC v. EPA*, 571 F.3d 1245, 1253-1254 (D.C. Cir 2009). The ACTs issued under section 183 of the CAA (42 U.S.C.A. § 7511b), such as the EPA's 1994 Alternative Control Techniques Document for Utility Boilers, do not establish presumptive levels of control. *Id.* Moreover, simply because other states have chosen to establish presumptive RACT limits for their coal-fired EGUs does not mean that the Commonwealth is required to do so or that the limits selected are appropriate. See Memorandum from William T. Harnett, Director, Air Quality Policy Division, USEPA, to Regional Air Division Directors, "RACT Qs & As—Reasonably Available Control Technology (RACT): Questions and Answers" (May 18, 2006), at 1 and 3, available at https://www.epa.gov/sites/default/files/2016-08/documents/ract_and_nsps_1dec1988.pdf (A State may elect to select to establish "beyond-RACT controls" for policy reasons).

Although the Department is under no obligation to establish presumptive RACT requirements and RACT emissions limitations for a specific source category, the Department may do so when the Department determines that a source category contains emission units that are similar enough in nature that the emission units in the source category can be regulated by a consistent emissions limitation or requirement. However, based on the varying sizes, various operating scenarios and conditions, and other varying factors for coal-fired EGUs in this Commonwealth, the Department determined that it is appropriate for owners and operators of large coal-fired combustion units to obtain case-specific RACT determinations. Through these case-by-case submittals, the Department will be reviewing advances in technology. See *NRDC v. EPA*, 71 F.3d 1245 (D.C. Cir 2009). This position is

supported by the EPA at 44 FR 53761, 53762-53763 (September 17, 1979), regarding State Implementation Plans, General Preamble for Proposed Rulemaking on Approval of Plan Revisions for Nonattainment Areas-Supplement (on Control Techniques Guidelines) and at 57 FR 18070, 18073-18074 (April 28, 1992), regarding State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental. See also 57 FR 55620 (November 25, 1992), regarding State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, at page 55624, paragraph 3.4, "VOC and NO_x Emissions."

The Department previously submitted case-by-case submittals under §§ 129.91—129.95 (RACT I) to the EPA to meet the Commonwealth's RACT obligations under the CAA for the 1979 and 1993 1-hour ozone NAAQS. The Department is currently conducting case-by-case determinations under §§ 129.96—129.100 (RACT II) for existing coal-fired combustion units with SCR systems as a result of the United States Court of Appeals for the Third Circuit's decision in *Sierra Club v. EPA*, 972 F.3d 290 (3d Cir 2020). (*Sierra Club*). In *Sierra Club*, the Third Circuit noted that older coal plants may elect to submit source-specific RACT proposals under § 129.99. Id. at 296.

The Department determined that the best method to comply with the Third Circuit's decision in *Sierra Club* is through requiring the owner or operator of each coal-fired combustion unit affected by the Court's decision to submit case-by-case RACT determinations in accordance with the procedures in § 129.92(a)(1)—(5) and (b), which includes a top-down analysis due to variability in operation and control device configuration. A top-down RACT analysis ranks the technically feasible air pollution control technologies from most effective control to least effective control. Each technically feasible air pollution control technology is then analyzed for economic feasibility (cost analysis). The highest ranking technically feasible air pollution control technology that is economically feasible is the air pollution control technology that is selected for installation and operation on the source.

Subsection (g)(2)—Combustion Turbines

IRRC and a commentator asked the Board to explain in the preamble to this final-form rulemaking the rationale for establishing 85 ppmvd NO_x as a presumptive RACT emission limitation under proposed § 129.112(g)(2)(iii)(A) and whether existing technology allows for that level of compliance.

In response to IRRC and the commentator's comment, the Board has amended the source categories for turbines by separating and adding an additional group for turbines in the 1,000 bhp—4,100 bhp size range in this final-form rulemaking. The emission limit of concern is now in final-form § 129.112(g)(2)(iv)(A). The Department explained that in its review of the comments on the proposed rulemaking, it analyzed additional information provided by a turbine manufacturer as well as additional stack test data, and determined that existing technology does not allow for installation of additional control technology and, therefore, does not provide for the level of control proposed by the Board. The Board has revised the presumptive standard in the final-form rulemaking to 120 ppmvd NO_x @ 15% oxygen.

A commentator requested modifying the bhp size range for simple cycle or regenerative cycle combustion turbines in § 129.112(g)(2)(iii) and (iv) from 3,000 bhp to 4,100 bhp to alleviate alternative RACT submittals for the Centaur® 40 4000 rating, which does not have a dry low NO_x combustion control technology option and, therefore, is unable to meet the proposed 42 ppmvd NO_x level.

The Department reviewed the information provided by the commentator regarding the available turbines located in this Commonwealth. The information demonstrated that turbines with a rating less than 4,100 bhp cannot consistently meet the proposed 42 ppmvd NO_x standard. Therefore, the Board has revised proposed § 129.112(g)(2)(iii) in this final-form rulemaking to revise the size ranges for simple cycle or regenerative cycle combustion turbines. The size threshold of 3,000 bhp in proposed § 129.112(g)(2)(iii) for simple cycle or regenerative cycle combustion turbines are amended in this final-form rulemaking to 4,100 bhp. Further, the Board notes that proposed § 129.112(g)(2)(iii) is renumbered as final-form § 129.112(g)(2)(iv).

The Board has renumbered proposed § 129.112(g)(2)(iv) in this final-form rulemaking to § 129.112(g)(2)(v). Renumbered § 129.112(g)(2)(v) is further amended in this final-form rulemaking to establish the applicable presumptive RACT emissions limitations for the owner or operator of a simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 4,100 bhp (rather than the proposed rated output of 3,000 bhp) and less than 60,000 bhp. No changes are made to the applicable presumptive RACT emission limitations from proposed § 129.112(g)(2)(iv)(A)—(D) to final-form § 129.112(g)(2)(v)(A)—(D).

A commentator suggested splitting the source category for § 129.112(g)(2)(i) to add a source category for combined cycle and combined heat and power turbines for equal to and greater than 1,000 bhp to less than 4,100 bhp and modify the current source category to range from greater than 4,100 bhp to less than or equal to 180 MW.

Proposed § 129.112(g)(2)(i) established the applicable presumptive RACT emissions limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 180 MW. The Board has amended § 129.112(g)(2)(i) in this final-form rulemaking to establish the applicable presumptive RACT emissions limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp (rather than less than 180 MW). Section 129.112(g)(2)(i)(A) is amended from the proposed rulemaking to this final-form rulemaking to delete the proposed limitation of 42 ppmvd NO_x @ 15% oxygen and add the limitation of 120 ppmvd NO_x @ 15% oxygen. Section 129.112(g)(2)(i)(C) is amended from the proposed rulemaking to this final-form rulemaking to delete the limitation of 96 ppmvd NO_x @ 15% oxygen and add the limitation of 150 ppmvd NO_x @ 15% oxygen. These limits are consistentwith the presumptive NO_x RACT emission limitations for the simple cycle or regenerative cycle combustion turbines in final-form § 129.112(g)(2)(iv).

The commentator also requested the NO_x emissions level for the newly created category match the level requested for simple cycle turbines in § 129.112(g)(2)(iii) at 150 ppmvd NO_x.

Proposed § 129.112(g)(2)(iii)(A) is amended in this final-form rulemaking to revise the applicable presumptive RACT emission limitation for simple cycle or regenerative cycle combustion turbines when firing natural gas

or a noncommercial gaseous fuel. Based on the Department's review of the information provided by the commentator as well as the Department's review of available stack test emissions data, the Board has revised the presumptive NO_x RACT emissions limitation of 85 ppmvd @ 15% oxygen to 120 ppmvd @ 15% oxygen. Please also see Section IV(G) of the Department's TSD for this final-form rulemaking.

Further, the Board has renumbered proposed § 129.112(g)(2)(iii)(A) in this final-form rulemaking as § 129.112(g)(2)(iv)(A).

Subsection (g)(3)—Stationary Internal Combustion Engines

IRRC and some commentators commented that the proposed rulemaking included a typographical error where it states a lower NO_x limit for rich burn engines of 0.6 gram/bhp-hr (for all engine sizes); the TSD indicates 2.0 gram/bhp-hr for all units regardless of horsepower.

The Board has revised the final-form rulemaking to correct this typographical error. The proposed limit of 0.6 gram NO_x/bhp-hr in § 129.112(g)(3)(iv)(A) has been revised to a limit of 2.0 gram NO_x/bhp-hr.

Subsection (g)(4)—Combustion Unit or Process Heater Firing Multiple Fuels

IRRC and a commentator questioned how the owner or operator of a unit firing multiple fuels can comply with the requirements of § 129.112(g)(4) if beneficially reused process gases are used as fuels. IRRC asked the Board to explain in the preamble to this final-form rulemaking how this provision will be implemented.

In response to IRRC and the commentator's comment, the Department did not have sufficient data for other fuels to determine a presumptive NO_x RACT emission limitation for this source category. Therefore, the owner or operator of a source firing a fuel not covered under the presumptive RACT emission limitations is required to submit a case-by-case proposal for an alternative RACT emissions limitation in accordance with final-form § 129.114(b) or § 129.114(c). The owner or operator may propose a method of compliance similar to the calculation in final-form § 129.112(g)(4)(i) as part of the case-by-case RACT proposal.

Subsection (e)—Glass Melting Furnaces

A commentator stated that RACT III would indirectly revoke important components of the existing glass melting furnace regulations regarding allowable emissions during start-up, shutdown and idling, and the provisions for alternative limits, claiming that the provisions of this final-form rulemaking would effectively impose a zero emissions limit for NO_x during these periods. The commentator commented that the proposed RACT III rulemaking should not override and essentially rescind other currently applicable regulations without recognition and notice of the effect of the proposed rulemaking and without any explanation by the Board as to the rationale and basis for doing so.

Each time the EPA revises a NAAQS under section 109 of the CAA, the Commonwealth is required to meet the applicable RACT requirements for covered sources under sections 182 and 184 of the CAA. These duties are charged to the Department and the Board, respectively, under the APCA. See for example, 35 P.S. §§ 4004, 4004.2 and 4005. The Department determined that certain provisions, including § 129.303(a), in the existing glass melting furnace regulations preclude §§ 129.301—129.310 from meeting the presumptive standards in § 129.112(i) for the 2015 8-hour ozone NAAQS. The EPA also expressed concerns regarding the certification of §§ 129.301—129.310 as RACT for the 1997 and 2008 8-hour ozone NAAQS; §§ 129.301—129.310 were not approved as RACT in the Commonwealth's SIP by the EPA for the 1997 and 2008 8-hour ozone NAAQS. See 76 FR 52283 (August 22, 2011). Under the final-form rulemaking, the owner or operator of a glass melting furnace source that cannot meet the presumptive limit in § 129.112(i) may opt to submit a case-by-case proposal under § 129.114. Certification of § 129.112(i) as RACT for glass melting furnaces for the 2015 8-hour ozone NAAQS will be presumed to certify RACT for glass melting furnaces for the 1997 and 2008 8-hour ozone NAAQS.

RACT requirements and RACT emissions limitations are applicable at all times, including start-up, shutdown and idling. The presumptive NO_x RACT limits for glass melting furnaces are in units of pounds of NO_x per ton of glass pulled. The Board disagrees with the commentator that the presumptive NO_x RACT emissions limitation effectively imposes a zero emissions limit for NO_x during start-up, shutdown and idling. During times when glass is not being pulled, the emissions in terms of pounds of NO_x per ton of glass pulled is undefined, not zero. The RACT limit is therefore only practically applicable at times when glass is being pulled. If an owner or operator cannot meet a presumptive RACT emission limit, the owner or operator may submit a case-by-case proposal for an alternative RACT emission limitation.

RACT emission limitations must be enforceable to be approvable by the EPA as a SIP revision. Exemptions from emission limitations during periods of start-up, shutdown and malfunction (SSM) existed in a number of other States' regulations, some of which exemptions were adopted and approved into those States' SIPs by the EPA many years ago. Court decisions have previously held that under the CAA, these exemptions are not allowed in SIPs. See, for example, *Sierra Club et al. v. Jackson*, No. 3:10-cv-04060—CRB (N.D. Cal.). In response to these court decisions, on June 12, 2015, the EPA published a final rule to restate and update the EPA's SSM Policy applicable to SIPs and to ensure States have plans in place that are fully consistent with the CAA and court decisions concerning emissions during periods of SSM operations. See 80 FR 33840 (June 12, 2015) (2015 SSM Policy final action). The 2015 SSM Policy final action embodies the EPA's updated 2015 SSM Policy as it applies to SIP provisions. The SSM Policy provides guidance to states for compliance with CAA requirements for SIP provisions applicable to excess emissions during SSM events. On October 9, 2020, the EPA issued a memorandum of guidance providing that exemption provisions for SSM may be permissible in SIPs under certain circumstances. On September 30, 2021, the EPA issued a memorandum withdrawing the previous October 9, 2020, guidance and reinstated the agency's prior policy in the 2015 SSM Policy final action that SSM exemptions in SIPs are inconsistent with the CAA.

A commentator also commented that the TSD provided by the Department inaccurately relied on the EPA's Control Cost Manual to estimate the cost of NO_x controls for glass melting furnaces and that the RACT III proposal is essentially silent on the rationale behind the imposition of presumptive RACT for glass melting furnaces.

In response, the Board finds based on explanation from the Department that the EPA Control Cost Manual is an accepted source for the determination of economic feasi-

bility for NO_x control technologies. These determinations of economic feasibility are not dependent on the source type. In this case, presumptive RACT is established as a NO_x emissions limitation and does not mandate an emissions control strategy. For example, oxy-firing can be used to meet presumptive NO_x RACT emissions limitations without the necessity to install particulate emission control technology.

The Department evaluated cost information provided by the commentator, which in part, also relied on the EPA Control Cost Manual. The Department also reviewed the analysis for various emission control scenarios submitted by the commentator for the regional haze four-factor analysis, which is a separate requirement under section 169A of the CAA (42 U.S.C.A. § 7491) and implementing regulations. The Department determined that based on the information provided, the control devices included in the analysis are cost-effective as RACT for the control of NO_x emissions from glass melting furnaces. If an owner or operator cannot meet the presumptive RACT emission limit, the owner or operator may submit a case-by-case proposal for an alternative RACT emission limitation under final-form § 129.114.

Subsection (j)—Lime Kilns

A commentator requested that the Board revise the proposed rulemaking to once again include the specific lb NO_x/hr 30-operating day rolling average numerical limits associated with Graymont's Kiln 6, Kiln 7 and Kiln 8. The commentator noted that substantial system changes would have to occur to incorporate live production data into the well-established CEMS data management system with no environmental benefit.

The Board declines to revise this final-form rulemaking as requested by the commentator and disagrees that substantial changes would be needed to demonstrate compliance with the proposed standard. The amount of lime produced is a known quantity and can be added to the CEMS data management system. According to the Department, the calculation of a lb NO_x per ton of lime produced value is not unnecessarily burdensome.

Subsection (k)—Direct-Fired Heaters, Furnaces and Ovens

A commentator inquired why the new definition "combustion source" was not used in proposed § 129.112(k). The Board agrees with the commentator that the term "combustion source" can be included in § 129.112(k). The term "combustion source" specifically includes sources that produce heat or energy by direct heat transfer. Direct-fired heaters, furnaces and ovens produce heat or energy by direct heat transfer and are combustion sources. In contrast, a "combustion unit" is defined as a stationary equipment used to burn fuel primarily for the purpose of producing power or heat by indirect heat transfer. The Board has amended final-form § 129.112(k) to include the words "or other combustion source" after the words "direct-fired heater, furnace, oven."

IRRC and a commentator commented that the proposed rulemaking applies the same NO_x limit for a direct-fired heater, furnace or oven as the limit for indirect-fired furnaces established under RACT II. The commentator asked for clarification on the basis for this decision. IRRC asked the Board to include the rationale for this standard in the supporting documents and preamble submitted with this final-form rulemaking. The commentator requested that the Department provide additional information to support the proposed presumptive RACT requirement for direct-fired units and suggested that the Department should not require sources to redo case-by-case RACT determinations that were evaluated and approved in RACT II.

In response to the comment, the Board notes that presumptive RACT emissions limitations were not established in RACT II for direct-fired units. Under RACT II, owners and operators of direct-fired units were required to submit a case-by-case proposal for an alternative RACT emission limitation under § 129.99. The addition of presumptive NO_x RACT limitations for direct-fired units in the RACT III rulemaking gives owners and operators more flexibility to comply with RACT requirements and RACT emission limitations. If an owner or operator cannot meet the applicable presumptive RACT emissions limitation under RACT III, the owner or operator may submit a case-by-case proposal under § 129.114(d) for an alternative RACT emission limitation.

The owner or operator may also be able to submit an analysis under § 129.114(i) to the Department or appropriate approved local air pollution control agency to demonstrate that the RACT emission limitation approved under § 129.99(e) (RACT II) remains RACT for RACT III. The process provided under § 129.114(i) for eligible facilities is less resource intensive than preparing a case-by-case proposal under § 129.114(d) for an alternative RACT emission limitation.

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

IRRC and a commentator asked the Board to explain in the preamble of this final-form rulemaking why the ability of an owner or operator to file for an averaging plan under § 129.113 is contingent on one unit not being able to meet the NO_x RACT limit. The commentator noted that facility-wide and system-wide averaging plans should be able to be submitted at the discretion of the owner or operator to provide greater flexibility and still be protective of public health, safety and the environment. IRRC also asked the Board to explain in the preamble of this final-form rulemaking why the ability of an owner or operator to use system-wide averaging is limited to sources located in the same ozone nonattainment area.

The Board disagrees with the commentator that the owner and operator of an affected source may choose the emissions averaging compliance option without requiring the owner or operator to first demonstrate that the applicable presumptive RACT emissions limitation established for a certain source category cannot be met by the individual affected units. The averaging plan is provided as an alternative compliance option to meeting applicable source-specific presumptive RACT NO_x emissions limitations if one or more of the individual affected units cannot meet the applicable presumptive RACT NO_x emissions limitation. If all affected units can individually meet the applicable presumptive RACT NO_x emissions limitations, then no averaging plan is warranted.

System-wide averaging is required to be among sources under common control of the same owner or operator within the same ozone nonattainment area to conform to the CAA and the D.C. Circuit Court of Appeals ruling in *NRDC v. EPA*, 571 F.3d 1245 (D.C. Cir. 2009). See 83 FR 62998, 63007 (December 6, 2018); see also *South Coast Air Quality Management Dist. v. EPA*, 882 F.3d 1138, 1154 (D.C. Cir. 2018). All areas located in unclassifiable/attainment areas in an OTR state are considered to be the same ozone nonattainment area. Allowing system-wide averaging to include units from different ozone

nonattainment areas would have the potential to increase or keep emissions higher in separate maintenance areas for the ozone NAAQS. This would conflict with the anti-backsliding provisions of the CAA. Furthermore, compliance with the applicable presumptive RACT NO_x emissions limitations is the most cost-effective compliance method available to the owner and operator of an affected source. Submission of an averaging plan entails costs for developing the plan and submitting it to the Department.

The EPA commented that proposed § 129.113(n) would add new language that specifies that averaging plans will be submitted to the EPA for approval. The EPA commented that proposed § 129.113(n) appears to be new language added by the Commonwealth to alert source owners and operators using an averaging plan that the averaging plan will be submitted to the EPA for approval. The EPA asked how the Department will determine whether the emissions from the two sources in the averaging plan are less than if both sources complied with presumptive RACT as would be required under proposed § 129.113(d) and also asked whether the demonstration of compliance with this method would be part of a permit and enforceable.

While the EPA references in its comment two sources included in the averaging plan, the Board notes that the averaging plan could include more than two sources.

The final-form rulemaking requires that the aggregate NO_x emissions emitted by the air contamination sources included in the facility-wide or system-wide NO_x emissions averaging plan be less than or equal to the amount of NO_x emissions that would be emitted by the group of included sources if each source complied with the applicable NO_x RACT emissions limitation in § 129.112 on a source-specific basis. This demonstration is done on a mass basis consistent with the appropriate averaging period for each presumptive NO_x emissions limitation. The exact calculations may vary somewhat among the averaging plans, so the final-form rulemaking does not specify the precise details to preserve flexibility in differing circumstances. Each averaging plan will be reviewed by the Department on a case-by-case basis. The provisions of each averaging plan, including terms and conditions regarding compliance, will be included in a plan approval or operating permit. Those terms and conditions will be submitted to the EPA as a SIP revision.

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

The EPA commented that proposed § 129.114(a) seems to not allow coal-fired EGUs to request case-by-case determinations under RACT III because there is no presumptive RACT for this source category in proposed § 129.112. The EPA commented that the Department should clearly notify the public when publicly noticing proposed case-by-case RACT II permits for coal-fired EGUs with SCRs that it intends to use the same limits to satisfy RACT for the 2015 ozone NAAQS and that the RACT II comment period will be the last opportunity to comment on whether the RACT II limits also meet the RACT III requirements.

In response, the Board notes that a coal-fired combustion unit with a rated heat input greater than 250 million Btu/hour, including an EGU with SCR, has no presumptive NO_x RACT requirement or emission limitation specified in § 129.112. Therefore, § 129.114(a) is not applicable. Owners and operators of these large coal-fired combustion units are required to propose a NO_x RACT requirement or RACT emissions limitation under § 129.114(b).

The owners and operators of large coal-fired combustion units that are EGUs equipped with SCR were required to submit an alternative NO_x RACT proposal to satisfy the requirement of § 129.99. Therefore, these owners and operators will also submit an analysis under § 129.114(i) to demonstrate that their limitations issued under §§ 129.96—129.100 (RACT II) remain RACT for §§ 129.111—129.115. These analyses received under § 129.114(i) will be subject to public comment to meet the SIP public participation requirements under section 110 of the CAA and 40 CFR 51.102.

Another commentator commented that any technically feasible reductions would be nominal with high cost-effectiveness values and, as a result, the Department would create a need to process a significant number of alternative RACT petitions and will require significant resources.

The Board notes that presumptive RACT requirements and emission limitations were determined based on the technical and economic feasibility of emission control measures. The Department has developed an accompanying TSD for the source categories included in this final-form rulemaking. The Department expects that many owners and operators will benefit by complying with the presumptive RACT requirements and RACT emission limitations. If an owner or operator cannot meet a presumptive RACT requirement or RACT emissions limitation, the owner or operator may submit a case-by-case proposal for an alternative RACT emission limitation under § 129.114.

A commentator commented that cost-effectiveness values (dollar per ton of pollutant removed) arrived at in the Department's TSD evaluation for presumptive RACT are reasonable and should be used as a standard for case-by-case evaluations of alternative limitations.

The Board concludes it is not appropriate to use the cost-effectiveness dollars as the standard for case-by-case evaluations of alternative limits as recommended by the commentator. The Department explains that compliance costs may vary for each source or facility depending on the source size, type, operational limitations and which control option is selected by the owner and operator of the affected source or facility. The cost-effectiveness benchmarks used in the analysis of presumptive RACT requirements and RACT emissions limitations are not to be taken as absolute cost-effectiveness threshold limits to be applied to case-by-case analyses. The Department believes that it is not appropriate to apply the same cost-effectiveness benchmarks used to determine the presumptive RACT requirements and RACT emissions limitations across all sources undergoing a case-by-case analysis due to these varying factors.

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

IRRC and other commentators commented that proposed § 129.115(b)(4) requires owners and operators of combustion units and process heaters to demonstrate compliance on a daily averaging period, which is a significant tightening of the presumptive limits for combustion units and process heaters when compared to the 30-operating day averaging period under § 129.97(g)(1) (RACT II). IRRC noted that commentators commented that presumptive limits cannot be met using a daily average under certain operating conditions, such as the start-up of a unit. A different commentator requested that the Commonwealth implement more stringent standards and require CEMS on existing emission sources.

The Department evaluated available and relevant continuous emissions monitoring data and determined that certain source categories using a CEMS, including combustion units and process heaters, are capable of meeting the presumptive NO_x RACT emissions limitations on a daily averaging basis. If an owner or operator of a subject source with a CEMS cannot meet the applicable presumptive RACT emissions limitation using a daily averaging basis, the owner or operator has the option to submit a case-by-case proposal for an alternative RACT emissions limitation.

Further, the Department notes that the regulations in §§ 129.96—129.100 (RACT II) established RACT requirements and RACT emission limitations to meet the Commonwealth's RACT obligations under the CAA for the 1997 and 2008 8-hour ozone NAAQS. The 1997 8-hour ozone standard was set at 0.08 ppm and the 2008 8-hour ozone standard was set at 0.075 ppm. The regulations in §§ 129.111—129.115 are designed to achieve and maintain the more stringent 2015 8-hour ozone standard of 0.070 ppm. To meet the Commonwealth's RACT obligations under the CAA for the 2015 8-hour ozone NAAQS, the Department determined that certain source categories should demonstrate compliance with the applicable RACT emissions limitations using a daily averaging period.

RACT implementation regulations and guidance issued by the EPA dictate that the standards and other requirements implemented be both technically and economically feasible. The Department believes that the monitoring, recordkeeping and reporting requirements included in this final-form rulemaking are sufficient to show compliance with the RACT III emissions standards and other requirements. The Board has amended § 129.115(f) from proposed rulemaking to this final-form rulemaking to further clarify that the existing monitoring and recordkeeping and reporting provisions of 25 Pa. Code Part 1, Subpart C, Article III (relating to air resources), apply as well as those provisions specified in the applicable plan approval or operating permit for the source or facility.

The Department explains that the preliminary analysis of the 2021 ambient air ozone season monitoring data shows that all ozone samplers in this Commonwealth are monitoring attainment of the 2015 8-hour ozone NAAQS except the Bristol sampler in Bucks County and the Philadelphia Air Management Services Northeast Airport sampler in Philadelphia County; all ozone samplers in this Commonwealth are projected to monitor attainment of the 2008 and 1997 8-hour ozone NAAQS. Implementing the daily averaging period is therefore appropriate to assist the Commonwealth in achieving and maintaining the 2015 8-hour ozone NAAQS.

The EPA commented that the RACT III proposed regulations have added language requiring the submission of information by every source subject to RACT that appears to address some of the missing information that caused difficulties for both the Department and the EPA in evaluating RACT II permits. For example, proposed § 129.115, entitled "Written notification, compliance demonstration and recordkeeping and reporting requirements," requires that every source subject to RACT notify the state within 6 months of how it is going to comply with the RACT III requirements, and requires these sources to identify those air contamination sources that are [proposed § 129.115(a)(1)(i)] and those air contamination sources that are not [proposed § 129.115(a)(1)(ii)] subject to §§ 129.112—129.114. Proposed § 129.115(a)(4) also requires information on source description and how the owner or operator shall comply with RACT III or the reason a source is exempted from RACT III requirements.

In response to the EPA's comment, the Board notes that the purpose of this notification provision in § 129.115(a) is for the Department to determine which facilities and sources are subject to RACT III requirements, which sources are exempt from RACT III requirements and if the owners and operators are complying with presumptive or case-by-case requirements. This notification is not meant to be a full RACT analysis.

Before an owner or operator of a facility can begin to construct, modify or operate a source, emissions unit or equipment emitting air contaminants in this Commonwealth, the owner or operator is required to obtain prior written approval from the Department's Air Quality Program as specified in § 127.11 (relating to plan approval requirements). Thus, the Department is already aware of new and modified sources that have occurred since the implementation of RACT II due to this requirement for the owner and operator of the facility to obtain prior written approval from the Air Quality Program. Therefore, it is not necessary that the owner or operator submit this specific information as part of the written notification required by § 129.115(a).

G. *Benefits, Costs and Compliance*

Benefits

The Department estimates that implementation of the final-form control measures could reduce NO_x emissions by as much as 9,800 TPY from engines, turbines and municipal waste combustors and VOC emissions by as much as 825 TPY from engines and turbines. These reductions in NO_x and VOC emissions will benefit the health and welfare of the approximately 12.8 million residents and numerous animals, crops, vegetation and natural areas of this Commonwealth by reducing the amount of ground-level ozone air pollution. Reduced ambient concentrations of ground-level ozone reduce the incidences of hospital admissions for respiratory ailments, including asthma, and improve the quality of life for citizens overall. While children, the elderly and those with respiratory problems are most at risk, even healthy individuals may experience increased respiratory ailments and other symptoms when they are exposed to high levels of ambient ground-level ozone while engaged in activities that involve physical exertion.

Implementation of and compliance with the presumptive RACT limitations, RACT control measures and RACT requirements in this final-form rulemaking will allow this Commonwealth to make substantial progress in achieving and maintaining the 1997, 2008 and 2015 8-hour ozone NAAQS Statewide by reducing the levels of NO_x and VOC ozone precursor emissions that contribute to potential nonattainment of the 2015 8-hour ozone NAAQS. As a result, the final-form RACT control measures are reasonably necessary to attain and maintain the health-based and welfare-based 8-hour ozone NAAQS in this Commonwealth and to satisfy related CAA requirements.

The EPA estimated that the monetized health benefits of attaining the 2008 8-hour ozone NAAQS of 0.075 ppm range from $8.3 billion to $18 billion on a National basis by 2020. See Regulatory Impact Analysis; Final National Ambient Air Quality Standard for Ozone (EPA, July 2011). Prorating that benefit to this Commonwealth, based on population, results in a public health benefit of $337 million to $732 million. Similarly, the EPA estimated that the monetized health benefits of attaining the 2015 8-hour ozone NAAQS of 0.070 ppm range from $1.5

billion to $4.5 billion on a National basis by 2025. See Regulatory Impact Analysis of the Final Revisions to the National Ambient Air Quality Standards for Ground-Level Ozone (EPA-452/R-15-007, September 2015). Prorating that benefit to this Commonwealth, based on population, results in a public health benefit of $63 million to $189 million. The Department is not stating that these estimated monetized health benefits would all be the result of implementing the final-form RACT control measures, but the EPA estimates are indicative of the benefits to Commonwealth residents of attaining and maintaining the 1997, 2008 and 2015 8-hour ozone NAAQS through the implementation of control measures to reduce ozone precursor emissions in the aggregate from different source categories.

This final-form rulemaking may create economic opportunities for NO_x and VOC emission control technology innovators, manufacturers and distributors through an increased demand for new or improved air pollution control equipment. In addition, the owners and operators of regulated facilities may be required to install and operate an emissions monitoring system or equipment necessary for an emissions monitoring method to comply with this final-form rulemaking, thereby creating an economic opportunity for the emissions monitoring industry.

Compliance costs

Compliance costs will vary for each facility depending on which compliance option is chosen by the owners and operators of a facility. This final-form rulemaking includes two alternative compliance options: a provision allowing the owner and operator of an affected facility that cannot meet the applicable NO_x RACT or VOC RACT emission limitation to elect to meet the applicable NO_x RACT requirement or NO_x RACT emission limitation in § 129.112 by averaging NO_x emissions on either a facility-wide or system-wide basis as specified in final-form § 129.113; and a provision allowing the affected owner and operator to submit a case-specific RACT proposal for an alternative RACT requirement or RACT emission limitation to the Department for approval as specified in final-form § 129.114.

Under final-form § 129.113, the owner or operator of an affected major NO_x emitting facility that includes an air contamination source subject to a NO_x RACT requirement or emission limitation in § 129.112 that cannot meet the applicable presumptive NO_x RACT requirement or NO_x RACT emission limitation may elect to meet the requirement or emission limitation by averaging NO_x emissions on either a facility-wide or system-wide basis. System-wide emissions averaging must be among sources under common control of the same owner or operator in this Commonwealth and within the same nonattainment area.

Under final-form § 129.114, the owner or operator of an air contamination source that cannot meet the applicable presumptive RACT requirement or RACT emission limitation of § 129.112 may submit an alternative NO_x RACT requirement, NO_x RACT emission limitation, VOC RACT requirement or VOC RACT emission limitation to the Department or approved local air pollution control agency for review.

Further, the Department notes that final-form § 129.114(i) provides owners and operators with the opportunity to submit an analysis, where applicable, demonstrating that RACT II conditions remain RACT for the 2015 8-hour ozone standard. This is an administratively efficient and less resource intensive approach than conducting a full case-by-case analysis for an alternative RACT proposal. For the owners and operators of eligible subject sources, this approach will likely reduce the consulting costs that an owner or operator may choose to incur. Additionally, there is no fee due to the Department to submit an analysis under final-form § 129.114(i).

Under these alternative compliance provisions, the owner or operator is required to demonstrate to the Department's or approved local air pollution control agency's satisfaction that it is economically or technically infeasible to meet the applicable final-form NO_x RACT or VOC RACT emission limitation. The flexibility provided by these alternative compliance provisions may minimize compliance costs to the owner or operator of an affected facility.

The RACT emission limitations and RACT requirements established in this final-form rulemaking do not require the owner or operator of an affected facility to submit an application for amendments to an existing operating permit. These requirements will be incorporated when the permit is renewed if less than 3 years remain in the permit term, as specified under § 127.463(c) (relating to operating permit revisions to incorporate applicable standards). If 3 years or more remain in the permit term, the requirements will be incorporated as applicable requirements in the permit within 18 months of the date of promulgation of this final-form rulemaking, as required under § 127.463(b). Most importantly, § 127.463(e) specifies that "[r]egardless of whether a revision is required under this section, the permittee shall meet the applicable standards or regulations promulgated under the Clean Air Act within the time frame required by standards or regulations." Consequently, upon promulgation as a final-form regulation, §§ 129.111—129.115 will apply to affected owners and operators irrespective of a modification to the operating permit. Therefore, the owner or operator shall comply with the applicable standards or regulations within the time frame specified by the final-form regulation even if the permit is not revised to incorporate the standard or regulation within the specified compliance time frame.

Compliance assistance plan

The Department will continue to educate and assist the public and the regulated community in understanding the requirements and how to comply with them after promulgation of this final-form rulemaking. The Department will also continue to work with the Department's provider of the Small Business Stationary Source Technical and Environmental Compliance Assistance services. These services are currently provided by the Environmental Management Assistance Program (EMAP) of the Pennsylvania Small Business Development Centers. The Department has partnered with EMAP to fulfill the Department's obligation to provide confidential technical and compliance assistance to small businesses as required by the APCA, section 507 of the CAA (42 U.S.C.A. § 7661f) and as authorized by the Small Business and Household Pollution Prevention Program Act (35 P.S. §§ 6029.201—6029.209).

In addition to providing one-on-one consulting assistance and onsite assessments, EMAP also operates a toll-free phone line to field questions from small businesses, as well as businesses wishing to start up in, or relocate to, this Commonwealth. EMAP operates and maintains a resource-rich environmental assistance web site and distributes an electronic newsletter to educate and inform small businesses about a variety of environmental compliance issues.

Due to the implementation date of January 1, 2023, required by the EPA's 2015 ozone standard implementation rule (see 83 FR 62998 (December 6, 2018); see also 40 CFR 51.1316(b)(3)), the Department will be conducting direct outreach to the regulated community well in advance of the January 1, 2023, implementation date due to the short turnaround time between the expected promulgation date of this final-form rulemaking and the implementation date.

Paperwork requirements

The recordkeeping and reporting requirements for owners and operators of subject sources under this final-form rulemaking are minimal because the records required align with the records already required to be kept for emission inventory purposes and for other Federal and State requirements. To minimize the burden of these requirements, the Department allows electronic submission of most planning, reporting and recordkeeping forms required by this final-form rulemaking.

H. *Pollution Prevention*

The Pollution Prevention Act of 1990 (42 U.S.C.A. §§ 13101—13109) established a National policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. The Department encourages pollution prevention, which is the reduction or elimination of pollution at its source, through the installation and operation of add-on air pollution controls, the substitution of environmentally friendly materials, more efficient use of raw materials and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance. Implementation of the final-form RACT requirements will allow the Department and approved local air pollution control agencies to maintain or further reduce the amounts of NO_x and VOC emissions from the regulated sources in this Commonwealth, sustain the gains made in healthful air quality by reducing the ambient concentrations of ground-level ozone air pollution formed from the emissions of NO_x and VOC and ensure continued protection of the environment and the public health and welfare of the citizens of this Commonwealth.

I. *Sunset Review*

This Board is not establishing a sunset date for this final-form rulemaking because it is needed for the Department to carry out its statutory authority. The Department will closely monitor the effectiveness of this final-form rulemaking and recommend updates to the Board as necessary.

J. *Regulatory Review*

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on July 14, 2021, the Department submitted a copy of the notice of proposed rulemaking, published at 51 Pa.B. 4333, to IRRC and the Chairpersons of the House and Senate Environmental Resources and Energy Committees.

Under section 5(c) of the Regulatory Review Act, IRRC and the House and Senate Committees were provided with copies of the comments received during the public comment period, as well as other documents when requested. In preparing this final-form rulemaking, the Department has considered all comments from IRRC, the House and Senate Committees and the public.

Under section 5.1(j.2) of the Regulatory Review Act (71 P.S. § 745.5a(j.2)), on September 14, 2022, this final-form rulemaking was deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on September 15, 2022, and approved this final-form rulemaking.

K. *Findings of the Board*

The Board finds that:

(1) Public notice of proposed rulemaking was given under sections 201 and 202 of the act of July 31, 1968 (P.L. 769, No. 240) (45 P.S. §§ 1201 and 1202), known as the Commonwealth Documents Law, and regulations promulgated thereunder at 1 Pa. Code §§ 7.1 and 7.2 (relating to notice of proposed rulemaking required; and adoption of regulations).

(2) At least a 60-day public comment period was provided as required by law and all comments were considered.

(3) This final-form rulemaking does not enlarge the purpose of the proposed rulemaking published at 51 Pa.B. 4333.

(4) These regulations are reasonably necessary and appropriate for administration and enforcement of the authorizing acts identified in section C of this order.

(5) These regulations are reasonably necessary to attain and maintain the ozone NAAQS and to satisfy related CAA requirements.

L. *Order of the Board*

The Board, acting under the authorizing statutes, orders that:

(a) The regulations of the Department, 25 Pa. Code Chapters 121 and 129, are amended by amending § 121.1 and adding §§ 129.111—129.115 to read as set forth in Annex A, with ellipses referring to the existing text of the regulations.

(b) The Chairperson of the Board shall submit this final-form rulemaking to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form, as required by law.

(c) The Chairperson of the Board shall submit this final-form rulemaking to IRRC and the House and Senate Committees as required by the Regulatory Review Act (71 P.S. §§ 745.1—745.14).

(d) The Chairperson of the Board shall certify this final-form rulemaking and deposit it with the Legislative Reference Bureau as required by law.

(e) This final-form rulemaking will be submitted to the EPA as a revision to the Commonwealth's SIP.

(f) This final-form rulemaking shall take effect immediately upon publication in the *Pennsylvania Bulletin*.

RAMEZ ZIADEH, P.E.,
Acting Chairperson

(*Editor's Note*: See 52 Pa.B. 6282 (October 1, 2022) for IRRC's approval order.)

Fiscal Note: Fiscal Note 7-561 remains valid for the final adoption of the subject regulations.

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE III. AIR RESOURCES

CHAPTER 121. GENERAL PROVISIONS

§ 121.1. Definitions.

The definitions in section 3 of the act (35 P.S. § 4003) apply to this article. In addition, the following words and terms, when used in this article, have the following meanings, unless the context clearly indicates otherwise:

* * * * *

Combustion efficiency—A measure of the extent of a combustion reaction, abbreviated C. E. and computed as follows:

$$C.E. = \frac{[CO_2]}{[CO_2] + [CO]} \times 100\%$$

where: $[CO_2]$ = concentration of carbon dioxide and
$[CO]$ = concentration of carbon monoxide

Combustion source—For purposes of §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS):

(i) A stationary device that combusts solid, liquid or gaseous fuel used to produce heat or energy for industrial, commercial or institutional use by direct heat transfer.

(ii) The term does not include:

(A) Brick kilns.

(B) Cement kilns.

(C) Lime kilns.

(D) Glass melting furnaces.

(E) A source listed in § 129.112(g)(2) or (3) (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule).

(F) A source subject to § 129.112(g)(4).

Combustion unit—A stationary equipment used to burn fuel primarily for the purpose of producing power or heat by indirect heat transfer.

* * * * *

Major NO_x emitting facility—A facility which emits or has the potential to emit NO_x from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than one of the following:

(i) Ten TPY in an ozone nonattainment area designated as extreme under section 182(e) and (f) of the Clean Air Act (42 U.S.C.A. § 7511a(e) and (f)).

(ii) Twenty-five TPY in an ozone nonattainment area designated as severe under section 182(d) and (f) of the Clean Air Act.

(iii) Fifty TPY in an area designated as serious under section 182(c) and (f) of the Clean Air Act.

(iv) One hundred TPY in an area included in an ozone transport region established under section 184 of the Clean Air Act (42 U.S.C.A. § 7511c).

(v) For purposes of §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs), twenty-five TPY and is located in Bucks, Chester, Delaware, Montgomery or Philadelphia County.

(vi) For purposes of §§ 129.96—129.100 and 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs, one hundred TPY statewide.

Major VOC emitting facility—A facility which emits or has the potential to emit VOCs from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than one of the following:

(i) Ten TPY in an ozone nonattainment area designated as extreme under section 182(e) of the Clean Air Act.

(ii) Twenty-five TPY in an ozone nonattainment area designated as severe under section 182(d) of the Clean Air Act.

(iii) Fifty TPY in an area included in an ozone transport region established under section 184 of the Clean Air Act.

(iv) For purposes of §§ 129.91—129.95, twenty-five TPY and is located in Bucks, Chester, Delaware, Montgomery or Philadelphia County.

(v) For purposes of §§ 129.96—129.100 and 129.111—129.115, fifty TPY statewide.

* * * * *

Natural-finish hardwood plywood panel—A panel on which the original grain pattern is enhanced by an essentially transparent finish frequently supplemented by filler and toner.

Natural gas compression and transmission facility fugitive VOC air contamination source—The group of fugitive-VOC-emitting components associated with an individual stationary source. Both of the following apply:

(i) The group of fugitive-VOC-emitting components is considered an individual VOC-emitting source.

(ii) Fugitive VOC emissions from the group of fugitive-VOC-emitting components are not aggregated with the VOC emissions from the associated individual stationary source.

Necessary preconstruction approvals or permits—Those permits or approvals required under the Clean Air Act or the act and regulations adopted under the acts, which are part of the applicable SIP.

* * * * *

CHAPTER 129. STANDARDS FOR SOURCES

ADDITIONAL RACT REQUIREMENTS FOR MAJOR SOURCES OF NO_x AND VOCs FOR THE 2015 OZONE NAAQS

§ 129.111. Applicability.

(a) Except as specified in subsection (c), the NO_x requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a major NO_x emitting facility that commenced operation on or before August 3, 2018, and the VOC requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a major VOC emitting facility that commenced operation on or before August 3, 2018, for which a requirement or emission limitation, or both, has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and

129.101—129.107. The owner or operator shall identify and list the sources and facilities subject to this subsection in the written notification required under § 129.115(a) (relating to written notification, compliance demonstration and recordkeeping and reporting requirements) as follows:

(1) The sources and facilities that commenced operation on or before August 3, 2018, for which a requirement or emission limitation has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107.

(2) The sources and facilities that commenced operation on or before August 3, 2018, and are subject to §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107.

(b) Except as specified in subsection (c), the NO_x requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a NO_x emitting facility that commenced operation on or before August 3, 2018, and the VOC requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a VOC emitting facility that commenced operation on or before August 3, 2018, when the installation and operation of a new source after August 3, 2018, or a modification or change in operation after August 3, 2018, of a source that commenced operation on or before August 3, 2018, results in the source or facility meeting the definition of a major NO_x emitting facility or a major VOC emitting facility and for which a requirement or an emission limitation, or both, has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107. The owner or operator shall identify and list the sources and facilities subject to this subsection in the written notification required under § 129.115(a) as follows:

(1) The sources and facilities for which a requirement or emission limitation has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107.

(2) The sources and facilities subject to §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107.

(c) Sections 129.112—129.114 do not apply to the owner and operator of a NO_x air contamination source that has the potential to emit less than 1 TPY of NO_x located at a major NO_x emitting facility subject to subsection (a) or (b) or a VOC air contamination source that has the potential to emit less than 1 TPY of VOC located at a major VOC emitting facility subject to subsection (a) or (b). The owner or operator shall identify and list these sources in the written notification required under § 129.115(a).

(d) Except as specified in subsection (e), this section and §§ 129.112—129.115 do not apply to the owner and operator of a facility that commenced operation on or before August 3, 2018, that is not a major NO_x emitting facility or a major VOC emitting facility on or before December 31, 2022.

(e) If the owner and operator of a facility that complied with subsection (d) meets the definition of a major NO_x emitting facility or a major VOC emitting facility after December 31, 2022, then the owner and operator shall comply with subsection (b).

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

(a) The owner and operator of a source listed in one or more of subsections (b)—(k) located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 (relating to applicability) shall comply with the applicable presumptive RACT requirement or RACT emission limitation, or both, beginning with the specified compliance date as follows, unless an alternative compliance schedule is submitted and approved under subsections (n)—(p) or § 129.114 (relating to alternative RACT proposal and petition for alternative compliance schedule):

(1) January 1, 2023, for a source subject to § 129.111(a).

(2) January 1, 2023, or 1 year after the date the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(b) The owner and operator of a source listed in this subsection that is located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall comply with the applicable presumptive RACT requirements in paragraph (1) and recordkeeping and reporting requirements in paragraph (2).

(1) The owner or operator of a:

(i) Combustion unit or process heater with a rated heat input equal to or greater than 20 million Btu/hour and less than 50 million Btu/hour shall conduct a biennial tune-up in accordance with the procedures in 40 CFR 63.11223 (relating to how do I demonstrate continuous compliance with the work practice and management practice standards?).

(A) Each biennial tune-up shall occur not less than 3 months and not more than 24 months after the date of the previous tune-up.

(B) The biennial tune-up must include, at a minimum, the following:

(I) Inspection and cleaning or replacement of fuel-burning equipment, including the burners and components, as necessary, for proper operation as specified by the manufacturer.

(II) Inspection of the flame pattern and adjustment of the burner, as necessary, to optimize the flame pattern to minimize total emissions of NO_x and, to the extent possible, emissions of CO.

(III) Inspection and adjustment, as necessary, of the air-to-fuel ratio control system to ensure proper calibration and operation as specified by the manufacturer.

(ii) Combustion unit or process heater with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up shall conduct a tune-up of the boiler one time in each 5-year calendar period in accordance with the following:

(A) Each tune-up shall occur not less than 3 months and not more than 60 months after the date of the previous tune-up.

(B) The tune-up must include, at a minimum, the following:

(I) Inspection and cleaning or replacement of fuel-burning equipment, including the burners and components, as necessary, for proper operation as specified by the manufacturer.

(II) Inspection of the flame pattern and adjustment of the burner, as necessary, to optimize the flame pattern to minimize total emissions of NO_x and, to the extent possible, emissions of CO.

(III) Inspection and adjustment, as necessary, of the air-to-fuel ratio control system to ensure proper calibration and operation as specified by the manufacturer.

(2) The applicable recordkeeping and reporting requirements of § 129.115(f) and (i) (relating to written notification, compliance demonstration and recordkeeping and reporting requirements).

(3) Compliance with the applicable presumptive RACT requirements in paragraph (1) and recordkeeping and reporting requirements in paragraph (2) assures compliance with the provisions in §§ 129.93(b)(2), (3), (4) and (5) and 129.97(b)(1), (2) and (3) (relating to presumptive RACT emissions limitations; and presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule).

(c) The owner and operator of a source listed in this subsection that is located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices:

(1) A NO_x air contamination source that has the potential to emit less than 5 TPY of NO_x.

(2) A VOC air contamination source that has the potential to emit less than 2.7 TPY of VOC.

(3) A natural gas compression and transmission facility fugitive VOC air contamination source that has the potential to emit less than 2.7 TPY of VOC.

(4) A boiler or other combustion source with an individual rated gross heat input less than 20 million Btu/hour.

(5) A combustion turbine with a rated output less than 1,000 bhp.

(6) A lean burn stationary internal combustion engine rated at less than 500 bhp (gross).

(7) A rich burn stationary internal combustion engine rated at less than 100 bhp (gross).

(8) An incinerator, thermal oxidizer, catalytic oxidizer or flare used primarily for air pollution control.

(9) A fuel-burning unit with an annual capacity factor of less than 5%.

(i) For a combustion unit, the annual capacity factor is the ratio of the unit's heat input (in million Btu or equivalent units of measure) to the unit's maximum rated hourly heat input rate (in million Btu/hour or equivalent units of measure) multiplied by 8,760 hours during a period of 12 consecutive calendar months.

(ii) For an electric generating unit, the annual capacity factor is the ratio of the unit's actual electric output (expressed in MWe/hr) to the unit's nameplate capacity (or maximum observed hourly gross load (in MWe/hr) if greater than the nameplate capacity) multiplied by 8,760 hours during a period of 12 consecutive calendar months.

(iii) For any other unit, the annual capacity factor is the ratio of the unit's actual operating level to the unit's potential operating level during a period of 12 consecutive calendar months.

(10) An emergency standby engine operating less than 500 hours in a 12-month rolling period.

(11) An electric arc furnace.

(d) Except as specified in subsection (c), the owner and operator of a combustion unit, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source located at a major VOC emitting facility subject to § 129.111 shall install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source.

(e) The owner and operator of a municipal solid waste landfill subject to § 129.111 shall comply with the following applicable presumptive RACT requirements. The owner or operator of a:

(1) Municipal solid waste landfill constructed, reconstructed or modified on or before July 17, 2014, that has not been modified or reconstructed since July 17, 2014, shall comply with the Federal plan for municipal solid waste landfills in 40 CFR Part 62, Subpart OOO (relating to federal plan requirements for municipal solid waste landfills that commenced construction on or before July 17, 2014 and have not been modified or reconstructed since July 17, 2014).

(2) Municipal solid waste landfill constructed, reconstructed or modified on or after July 18, 2014, shall comply with the New Source Performance Standards in 40 CFR Part 60, Subpart XXX (relating to standards of performance for municipal solid waste landfills that commenced construction, reconstruction, or modification after July 17, 2014), which are adopted and incorporated by reference in § 122.3 (relating to adoption of standards).

(f) The owner and operator of a municipal waste combustor subject to § 129.111 shall comply with the presumptive RACT emission limitation of 110 ppmvd NO_x @ 7% oxygen.

(g) Except as specified in subsection (c), the owner and operator of a NO_x air contamination source listed in this subsection that is located at a major NO_x emitting facility or a VOC air contamination source listed in this subsection that is located at a major VOC emitting facility subject to § 129.111 may not cause, allow or permit NO_x or VOCs to be emitted from the air contamination source in excess of the applicable presumptive RACT emission limitation specified in the following paragraphs:

(1) The owner or operator of:

(i) A natural gas-fired, propane-fired or liquid petroleum gas-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.10 lb NO_x/million Btu heat input.

(ii) A distillate oil-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.12 lb NO_x/million Btu heat input.

(iii) A residual oil-fired or other liquid fuel-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.20 lb NO_x/million Btu heat input.

(iv) A refinery gas-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.25 lb NO_x/million Btu heat input.

(v) A coal-fired combustion unit with a rated heat input equal to or greater than 50 million Btu/hour and less than 250 million Btu/hour shall comply with 0.45 lb NO_x/million Btu heat input.

(vi) A circulating fluidized bed combustion unit firing waste products of coal mining, physical coal cleaning and coal preparation operations that contain coal, matrix material, clay and other organic and inorganic material with a rated heat input equal to or greater than 250 million Btu/hour shall comply with the following presumptive RACT requirements and RACT emission limitations as applicable:

(A) 0.16 lb NO_x/million Btu heat input when firing primarily bituminous waste such as gob.

(B) 0.16 lb NO_x/million Btu heat input when firing primarily anthracite waste such as culm.

(C) Control the NO_x emissions each operating day by operating the installed air pollution control technology and combustion controls at all times consistent with the technological limitations, manufacturer's specifications, good engineering and maintenance practices and good air pollution control practices for controlling emissions.

(vii) A solid fuel-fired combustion unit that is not a coal-fired combustion unit with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.25 lb NO_x/million Btu heat input.

(2) The owner or operator of a:

(i) Combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 120 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 5 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 150 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(ii) Combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 MW shall comply with the following presumptive RACT emission limitations as applicable:

(A) 42 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 5 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 96 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(iii) Combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW shall comply with the following presumptive RACT emission limitations as applicable:

(A) 4 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 2 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 8 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 2 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(iv) Simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 120 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 9 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 150 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(v) Simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 60,000 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 42 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 9 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 96 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(3) The owner or operator of a:

(i) Lean burn stationary internal combustion engine with a rating equal to or greater than 500 bhp and less than 3,500 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 3.0 grams NO_x/bhp-hr when firing natural gas or a noncommercial gaseous fuel.

(B) 0.5 gram VOC/bhp-hr excluding formaldehyde when firing natural gas or a noncommercial gaseous fuel, liquid fuel or dual-fuel.

(ii) Lean burn stationary internal combustion engine with a rating equal to or greater than 3,500 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 0.6 gram NO_x/bhp-hr when firing natural gas or a noncommercial gaseous fuel.

(B) 0.5 gram VOC/bhp-hr excluding formaldehyde when firing natural gas or a noncommercial gaseous fuel, liquid fuel or dual-fuel.

(iii) Stationary internal combustion engine with a rating equal to or greater than 500 bhp shall comply with 1.6 grams NO_x/bhp-hr when firing liquid fuel or dual-fuel.

(iv) Rich burn stationary internal combustion engine with a rating equal to or greater than 100 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 2.0 gram NO_x/bhp-hr when firing natural gas or a noncommercial gaseous fuel.

(B) 0.5 gram VOC/bhp-hr when firing natural gas or a noncommercial gaseous fuel.

(4) Except as specified in subparagraph (ii), the owner or operator of a unit firing multiple fuels shall comply with:

(i) The applicable RACT multiple fuel emission limit determined on a total heat input fuel weighted basis in accordance with the following:

(A) Using the following equation:

$$E_{HIweighted} = \frac{\sum_{i=1}^{n} E_i HI_i}{\sum_{i=1}^{n} HI_i}$$

Where:

$E_{HIweighted}$ = The heat input fuel weighted multiple fuel emission rate or emission limitation for the compliance period, expressed in units of measure consistent with the units of measure for the emission limitation.

E_i = The emission rate or emission limit for fuel i during the compliance period, expressed in units of measure consistent with the units of measure for the emission limitation.

HI_i = The total heat input for fuel i during the compliance period.

n = The number of different fuels used during the compliance period.

(B) Excluding a fuel representing less than 2% of the unit's annual fuel consumption on a heat input basis when determining the applicable RACT multiple fuel emission limit calculated in accordance with clause (A).

(ii) The determination in subparagraph (i) does not apply to a stationary internal combustion engine that is subject to the RACT emission limits in paragraph (3).

(h) The owner and operator of a Portland cement kiln subject to § 129.111 shall comply with the following presumptive RACT emission limitations as applicable:

(1) 3.88 pounds of NO_x per ton of clinker produced for a long wet-process cement kiln as defined in § 145.142 (relating to definitions).

(2) 3.0 pounds of NO_x per ton of clinker produced for a long dry-process cement kiln as defined in § 145.142.

(3) 2.30 pounds of NO_x per ton of clinker produced for:

(i) A preheater cement kiln as defined in § 145.142.

(ii) A precalciner cement kiln as defined in § 145.142.

(i) The owner and operator of a glass melting furnace subject to § 129.111 shall comply with the following presumptive RACT emission limitations as applicable:

(1) 4.0 pounds of NO_x per ton of glass pulled for container glass furnaces.

(2) 7.0 pounds of NO_x per ton of glass pulled for pressed or blown glass furnaces.

(3) 4.0 pounds of NO_x per ton of glass pulled for fiberglass furnaces.

(4) 7.0 pounds of NO_x per ton of glass pulled for flat glass furnaces.

(5) 6.0 pounds of NO_x per ton of glass pulled for all other glass melting furnaces.

(j) The owner and operator of a lime kiln subject to § 129.111 shall comply with the presumptive RACT emission limitation of 4.6 pounds of NO_x per ton of lime produced.

(k) The owner and operator of a direct-fired heater, furnace, oven or other combustion source with a rated heat input equal to or greater than 20 million Btu/hour subject to § 129.111 shall comply with the presumptive RACT emission limitation of 0.10 lb NO_x/million Btu heat input.

(l) The requirements and emission limitations of this section supersede the requirements and emission limitations of a RACT permit issued to the owner or operator of an air contamination source subject to one or more of subsections (b)—(k) prior to November 12, 2022, under §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs) or under §§ 129.96—129.100 (relating to additional RACT requirements for major sources of NO_x and VOCs) to control, reduce or minimize NO_x emissions or VOC emissions, or both, from the air contamination source unless the permit contains more stringent requirements or emission limitations, or both.

(m) The requirements and emission limitations of this section supersede the requirements and emission limitations of §§ 129.201—129.205, 129.301—129.310, 145.111—145.113 and 145.141—145.146 unless the requirements or emission limitations of §§ 129.201—129.205, §§ 129.301—129.310, §§ 145.111—145.113 or §§ 145.141—145.146 are more stringent.

(n) The owner or operator of a major NO_x emitting facility or a major VOC emitting facility subject to § 129.111 that includes an air contamination source subject to one or more of subsections (b)—(k) that cannot meet the applicable presumptive RACT requirement or RACT emission limitation without installation of an air cleaning device may submit a petition, in writing or electronically, requesting an alternative compliance schedule in accordance with the following:

(1) The petition shall be submitted to the Department or appropriate approved local air pollution control agency as soon as possible but not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or a major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) The petition must include:

(i) A description, including make, model and location, of each affected source subject to a RACT requirement or a RACT emission limitation in one or more of subsections (b)—(k).

(ii) A description of the proposed air cleaning device to be installed.

(iii) A schedule containing proposed interim dates for completing each phase of the required work to install the air cleaning device described in subparagraph (ii).

(iv) A proposed interim emission limitation that will be imposed on the affected source until compliance is achieved with the applicable RACT requirement or RACT emission limitation.

(v) A proposed final compliance date that is as soon as possible but not later than 3 years after the written

approval of the petition by the Department or the appropriate approved local air pollution control agency. The approved petition shall be incorporated in an applicable operating permit or plan approval.

(o) The Department or appropriate approved local air pollution control agency will review the timely and complete written petition requesting an alternative compliance schedule submitted in accordance with subsection (n) and approve or deny the petition in writing.

(p) Approval or denial under subsection (o) of the timely and complete petition for an alternative compliance schedule submitted under subsection (n) will be effective on the date the letter of approval or denial of the petition is signed by the authorized representative of the Department or appropriate approved local air pollution control agency.

(q) The Department will submit each petition for an alternative compliance schedule approved under subsection (o) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

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

(a) The owner or operator of a major NO_x emitting facility subject to § 129.111 (relating to applicability) that includes at least one air contamination source subject to a NO_x RACT emission limitation in § 129.112 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule) that cannot meet the applicable NO_x RACT emission limitation may elect to meet the applicable NO_x RACT emission limitation in § 129.112 by averaging NO_x emissions on either a facility-wide or system-wide basis. System-wide emissions averaging must be among sources under common control of the same owner or operator within the same ozone nonattainment area in this Commonwealth.

(b) The owner or operator of each facility that elects to comply with subsection (a) shall submit a NO_x emissions averaging plan in writing or electronically to the Department or appropriate approved local air pollution control agency as part of an application for an operating permit modification or a plan approval, if otherwise required. The application incorporating the requirements of this section shall be submitted by the applicable date as follows:

(1) December 31, 2022, for a source subject to § 129.111(a).

(2) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility, whichever is later, for a source subject to § 129.111(b).

(c) Each NO_x air contamination source included in the application for an operating permit modification or a plan approval, if otherwise required, for averaging NO_x emissions on either a facility-wide or system-wide basis submitted under subsection (b) must be an air contamination source subject to a NO_x RACT emission limitation in § 129.112.

(d) The application for the operating permit modification or the plan approval, if otherwise required, for averaging NO_x emissions on either a facility-wide or system-wide basis submitted under subsection (b) must demonstrate that the aggregate NO_x emissions emitted by the air contamination sources included in the facility-wide or system-wide NO_x emissions averaging plan are not greater than the NO_x emissions that would be emitted by the group of included sources if each source complied with the applicable NO_x RACT emission limitation in § 129.112 on a source-specific basis.

(e) The application for the operating permit modification or a plan approval, if otherwise required, specified in subsections (b)—(d) may include facility-wide or system-wide NO_x emissions averaging only for NO_x emitting sources or NO_x emitting facilities that are owned or operated by the applicant.

(f) The application for the operating permit modification or a plan approval, if otherwise required, specified in subsections (b)—(e) must include the following information:

(1) Identification of each air contamination source included in the NO_x emissions averaging plan.

(2) Each air contamination source's applicable emission limitation in § 129.112.

(3) Methods for demonstrating compliance and recordkeeping and reporting requirements in accordance with § 129.115 (relating to written notification, compliance demonstration and recordkeeping and reporting requirements) for each source included in the NO_x emissions averaging plan submitted under subsection (b).

(g) An air contamination source or facility included in the facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(f) may be included in only one facility-wide or system-wide NO_x emissions averaging plan.

(h) The Department or appropriate approved local air pollution control agency will:

(1) Review the timely and complete NO_x emissions averaging plan submitted in accordance with subsections (b)—(g).

(2) Approve the NO_x emissions averaging plan submitted under subsection (b), in writing, if the Department or appropriate approved local air pollution control agency is satisfied that the NO_x emissions averaging plan complies with the requirements of subsections (b)—(g) and that the proposed NO_x emissions averaging plan is RACT for the air contamination sources.

(3) Deny or modify the NO_x emissions averaging plan submitted under subsection (b), in writing, if the proposal does not comply with the requirements of subsections (b)—(g).

(i) The proposed NO_x emissions averaging plan submitted under subsection (b) will be approved, denied or modified under subsection (h) by the Department or appropriate approved local air pollution control agency in accordance with Chapter 127 (relating to construction, modification, reactivation and operation of sources) prior to the owner or operator implementing the NO_x emissions averaging plan.

(j) The owner or operator of an air contamination source or facility included in the facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(g) shall submit the reportsand records specified in subsection (f)(3) to the Department or appropriate approved local air pollution control agency to demonstrate compliance with § 129.115.

(k) The owner or operator of an air contamination source or facility included in a facility-wide or system-wide NO_x emissions averaging plan submitted in accord-

ance with subsections (b)—(g) that achieves emission reductions in accordance with other emission limitations required under the act or the Clean Air Act, or regulations adopted under the act or the Clean Air Act, that are not NO_x RACT emission limitations may not substitute those emission reductions for the emission reductions required by the facility-wide or system-wide NO_x emissions averaging plan submitted to the Department or appropriate approved local air pollution control agency under subsection (b).

(l) The owner or operator of an air contamination source subject to a NO_x RACT emission limitation in § 129.112 that is not included in a facility-wide or system-wide NO_x emissions averaging plan submitted under subsection (b) shall operate the source in compliance with the applicable NO_x RACT emission limitation in § 129.112.

(m) The owner and operator of the air contamination sources included in a facility-wide or system-wide NO_x emissions averaging plan submitted under subsection (b) shall be liable for a violation of an applicable NO_x RACT emission limitation at each source included in the NO_x emissions averaging plan regardless of each individual facility's NO_x emission rate.

(n) The Department will submit each NO_x emissions averaging plan approved under subsection (i) to the Administrator of the EPA for approval as a revision to the SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

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

(a) The owner or operator of an air contamination source subject to § 129.112 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule) located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 (relating to applicability) that cannot meet the applicable presumptive RACT requirement or RACT emission limitation of § 129.112 may propose an alternative RACT requirement or RACT emission limitation in accordance with subsection (d).

(b) The owner or operator of a NO_x air contamination source with a potential emission rate equal to or greater than 5.0 tons of NO_x per year that is not subject to § 129.112 or §§ 129.201—129.205 (relating to additional NO_x requirements) located at a major NO_x emitting facility subject to § 129.111 shall propose a NO_x RACT requirement or RACT emission limitation in accordance with subsection (d).

(c) The owner or operator of a VOC air contamination source with a potential emission rate equal to or greater than 2.7 tons of VOC per year that is not subject to § 129.112 located at a major VOC emitting facility subject to § 129.111 shall propose a VOC RACT requirement or RACT emission limitation in accordance with subsection (d).

(d) The owner or operator proposing an alternative RACT requirement or RACT emission limitation under subsection (a), (b) or (c) shall:

(1) Submit a RACT proposal in writing or electronically in accordance with the procedures in § 129.92(a)(1)—(5), (7)—(10) and (b) (relating to RACT proposal requirements) to the Department or appropriate approved local air pollution control agency as soon as possible but not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) Be in receipt of an approval issued by the Department or appropriate approved local air pollution control agency in writing through a plan approval or operating permit modification for a RACT proposal submitted under paragraph (1)(ii) prior to the installation, modification or change in the operation of the existing air contamination source that will result in the source or facility meeting the definition of a major NO_x emitting facility or major VOC emitting facility.

(3) Include in the RACT proposal the proposed alternative NO_x RACT requirement or RACT emission limitation or VOC RACT requirement or RACT emission limitation developed in accordance with the procedures in § 129.92(a)(1)—(5) and (b).

(4) Include in the RACT proposal a schedule for completing implementation of the RACT requirement or RACT emission limitation as soon as possible but not later than:

(i) November 12, 2023, for a source subject to § 129.111(a).

(ii) November 12, 2023, or 1 year after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(5) Include interim dates in the schedule required under paragraph (4) for the:

(i) Issuance of purchase orders.

(ii) Start and completion of process, technology and control technology changes.

(iii) Completion of compliance testing.

(6) Include in the RACT proposal methods for demonstrating compliance and recordkeeping and reporting requirements in accordance with § 129.115 (relating to written notification, compliance demonstration and recordkeeping and reporting requirements) for each air contamination source included in the RACT proposal.

(7) Demonstrate to the satisfaction of the Department or the appropriate approved local air pollution control agency that the proposed requirement or RACT emission limitation is RACT for the air contamination source.

(e) The Department or appropriate approved local air pollution control agency will:

(1) Review the timely and complete alternative RACT proposal submitted in accordance with subsection (d).

(2) Approve the alternative RACT proposal submitted under subsection (d), in writing, if the Department or appropriate approved local air pollution control agency is satisfied that the alternative RACT proposal complies with the requirements of subsection (d) and that the proposed alternative requirement or RACT emission limitation is RACT for the air contamination source.

(3) Deny or modify the alternative RACT proposal submitted under subsection (d), in writing, if the proposal does not comply with the requirements of subsection (d).

(f) The proposed alternative RACT requirement or RACT emission limitation and the implementation schedule submitted under subsection (d) will be approved,

denied or modified under subsection (e) by the Department or appropriate approved local air pollution control agency in accordance with Chapter 127 (relating to construction, modification, reactivation and operation of sources) prior to the owner or operator implementing the alternative RACT requirement or RACT emission limitation.

(g) The emission limit and requirements specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (f) supersede the emission limit and requirements in the existing plan approval or operating permit issued to the owner or operator of the source prior to November 12, 2022, on the date specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (f), except to the extent the existing plan approval or operating permit contains more stringent requirements.

(h) The Department will submit each alternative RACT requirement or RACT emission limitation approved under subsection (f) to the Administrator of the EPA for approval as a revision to the SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

(i) An owner or operator subject to subsection (a), (b) or (c) and § 129.99 that has not modified or changed a source that commenced operation on or before October 24, 2016, and has not installed and commenced operation of a new source after October 24, 2016, may, in place of the alternative RACT requirement or RACT emission limitation required under subsection (d), submit an analysis, certified by the responsible official, in writing or electronically to the Department or appropriate approved local air pollution control agency on or before December 31, 2022, that demonstrates that compliance with the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate approved local air pollution control agency under § 129.99(e) (relating to alternative RACT proposal and petition for alternative compliance schedule) assures compliance with the provisions in subsections (a)—(c) and (e)—(h), except for sources subject to § 129.112(c)(11) or (i)—(k).

(1) The owner or operator of a subject source or facility 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:

(i) 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) 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.

(B) A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)—(3) included in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e).

(C) A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the "EPA Air Pollution Control Cost Manual" (6th Edition), EPA/452/B-02-001, January 2002, as amended.

(D) A statement that an evaluation of each economic feasibility analysis summarized in clause (C) 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.

(E) Additional information requested by the Department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.

(ii) Less than $7,500 per ton of NOX emissions reduced or $12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

(A) 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.

(B) A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)—(3) in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e).

(C) A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the "EPA Air Pollution Control Cost Manual" (6th Edition), EPA/452/B-02-001, January 2002, as amended.

(D) A statement that an evaluation of each economic feasibility analysis summarized in clause (C) 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.

(E) A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) in accordance with § 129.92(b)(4).

(F) Additional information requested by the Department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.

(2) The owner or operator of a subject source or facility 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:

(i) Perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b).

(ii) Submit the analyses performed under subparagraph (i) to the Department or appropriate approved local air pollution control agency for review.

(iii) 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.

(j) The Department or appropriate approved local air pollution control agency will:

(1) Review the analyses submitted in accordance with subsection (i).

(2) Publish notice in the *Pennsylvania Bulletin* and newspapers of general circulation for a minimum 30-day public comment period and an opportunity for a public hearing for the analyses submitted under subsection (i) and supporting documentation.

(3) Prepare a summary of the public comments received on the analyses and responses to the comments.

(4) As appropriate, issue the necessary plan approvals and operating permit modifications in conformance with Chapter 127 for the analyses reviewed under paragraph (1).

(k) The Department will submit the following information to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP.

(1) The analyses, supporting documentation and summary of public comments and responses described in subsection (j)(2) and (3).

(2) The plan approvals and operating permit modifications issued under subsection (j)(4).

(l) The owner and operator of a facility proposing to comply with the applicable RACT requirement or RACT emission limitation under subsection (a), (b) or (c) through the installation of an air cleaning device may submit a petition, in writing or electronically, requesting an alternative compliance schedule in accordance with the following:

(1) The petition requesting an alternative compliance schedule shall be submitted to the Department or appropriate approved local air pollution control agency as soon as possible but not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) The petition must include:

(i) A description, including make, model and location, of each air contamination source subject to a RACT requirement or RACT emission limitation in one or more of subsections (a)—(c).

(ii) A description of the proposed air cleaning device to be installed.

(iii) A schedule containing proposed interim dates for completing each phase of the required work to install the air cleaning device described in subparagraph (ii).

(iv) A proposed interim emission limitation that will be imposed on the affected air contamination source until compliance is achieved with the applicable RACT requirement or RACT emission limitation.

(v) A proposed final compliance date that is as soon as possible but not later than 3 years after the approval of the petition by the Department or the appropriate approved local air pollution control agency. If the petition is for the replacement of an existing source, the final compliance date will be determined on a case-by-case basis. The approved petition shall be incorporated in an applicable operating permit or plan approval.

(m) The Department or appropriate approved local air pollution control agency will review the timely and complete petition requesting an alternative compliance schedule submitted in accordance with subsection (l) and approve or deny the petition in writing.

(n) The emission limit and requirements specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (m) supersede the emission limit and requirements in the existing plan approval or operating permit issued to the owner or operator of the source prior to November 12, 2022, on the date specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (m), except to the extent the existing plan approval or operating permit contains more stringent requirements.

(o) Approval or denial under subsection (m) of the timely and complete petition for an alternative compliance schedule submitted under subsection (l) will be effective on the date the letter of approval or denial of the petition is signed by the authorized representative of the Department or appropriate approved local air pollution control agency.

(p) The Department will submit each petition for an alternative compliance schedule approved under subsection (m) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

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

(a) The owner and operator of an air contamination source subject to this section and § 129.111 (relating to applicability) shall submit a notification, in writing or electronically, to the appropriate Regional Manager or the appropriate approved local air pollution control agency that proposes how the owner and operator intend to comply with the requirements of this section and §§ 129.111—129.114.

(1) The notification shall be submitted to the appropriate Regional Manager or appropriate approved local air pollution control agency as soon as possible but not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) This notification shall identify the air contamination sources in § 129.111(a) as one of the following:

(i) Subject to a RACT requirement or RACT emission limitation in §§ 129.112—129.114.

(ii) Exempted from §§ 129.112—129.114.

(3) The air contamination sources identified in § 129.111(b) as one of the following:

(i) Subject to a RACT requirement or RACT emission limitation in §§ 129.112—129.114.

(ii) Exempted from §§ 129.112—129.114.

(4) The air contamination sources identified in § 129.111(c) that have a potential to emit less than 1 TPY of NO_x located at a major NO_x emitting facility subject to § 129.111(a) or (b) or a VOC air contamination source that has the potential to emit less than 1 TPY of VOC located at a major VOC emitting facility subject to § 129.111(a) or (b).

(5) The following information for each air contamination source listed in paragraph (2):

(i) A description, including make, model and location, of each source.

(ii) The applicable RACT requirement or RACT emission limitation, or both, in §§ 129.112—129.114 for each source listed in accordance with paragraph (2)(i).

(iii) How the owner or operator shall comply with subparagraph (ii) for each source listed in subparagraph (i).

(iv) The reason why the source is exempt from the RACT requirements and RACT emission limitations in §§ 129.112—129.114 for each source listed in accordance with paragraph (2)(ii).

(6) The following information for each air contamination source listed in paragraph (3):

(i) A description, including make, model and location, of each source.

(ii) The applicable RACT requirement or RACT emission limitation, or both, in §§ 129.112—129.114 for each source listed in paragraph (3)(i).

(iii) How the owner or operator shall comply with subparagraph (ii) for each source listed in subparagraph (i).

(iv) The reason why the source is exempt from the RACT requirements and RACT emission limitations in §§ 129.112—129.114 for each source listed in accordance with paragraph (3)(ii).

(7) The following information for each air contamination source listed in paragraph (4):

(i) A description, including make, model and location, of each source.

(ii) Information sufficient to demonstrate that the source has a potential to emit less than 1 TPY of NO_x or 1 TPY of VOC, as applicable.

(b) Except as specified in subsection (d), the owner and operator of an air contamination source subject to a NO_x RACT requirement or RACT emission limitation or VOC RACT requirement or RACT emission limitation, or both, listed in § 129.112 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule) shall demonstrate compliance with the applicable RACT requirement or RACT emission limitation by performing the following monitoring or testing procedures:

(1) For an air contamination source with a CEMS, monitoring and testing in accordance with the requirements of Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources) using a 30-operating day rolling average, except for municipal waste combustors subject to § 129.112(f), combustion units or process heaters subject to § 129.112(g)(1) and direct-fired heaters, furnaces, ovens or other combustion sources subject to § 129.112(k).

(i) A 30-operating day rolling average emission rate for each applicable RACT emission limitation shall be calculated for an affected air contamination source for each consecutive operating day.

(ii) Each 30-operating day rolling average emission rate for an affected air contamination source must include the emissions that occur during the entire operating day, including emissions from start-ups, shutdowns and malfunctions.

(2) For a Portland cement kiln with a CEMS, monitoring of clinker production rates in accordance with 40 CFR 63.1350(d) (relating to monitoring requirements).

(3) For a municipal waste combustor with a CEMS, monitoring and testing in accordance with the requirements in Chapter 139, Subchapter C, using a daily average. The daily average will be considered valid if it contains at least 18 valid hourly averages reported at any time during the calendar day as required in the quality assurance section of the continuous source monitoring manual.

(4) For a combustion unit or process heater subject to § 129.112(g)(1) with a CEMS, monitoring and testing in accordance with the requirements in Chapter 139, Subchapter C, using a daily average.

(i) The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day.

(ii) The daily average for the source shall include all emissions that occur during the entire day.

(5) For a direct-fired heater, furnace, oven or other combustion source subject to § 129.112(k) with a CEMS, monitoring and testing in accordance with the requirements in Chapter 139, Subchapter C, using a daily average.

(6) For an air contamination source without a CEMS, monitoring and testing in accordance with an emissions source test approved by the Department or appropriate approved local air pollution control agency that meets the requirements of Chapter 139, Subchapter A (relating to sampling and testing methods and procedures). The source test shall be conducted to demonstrate initial compliance and subsequently on a schedule set forth in the applicable permit.

(c) The owner or operator of a combined cycle combustion turbine may comply with the requirements in § 129.112(g)(2)(iii) on a mass-equivalent basis. The actual emissions during the compliance period must be less than the allowable emissions during the compliance period. The allowable emissions are calculated by multiplying actual heat input in million Btu during the compliance period by the following:

(1) 0.015 lb NO_x/million Btu for sources subject to § 129.112(g)(2)(iii)(A).

(2) 0.031 lb NO_x/million Btu for sources subject to § 129.112(g)(2)(iii)(B).

(3) 0.014 lb VOC/million Btu for sources subject to § 129.112(g)(2)(iii)(C).

(4) 0.030 lb VOC/million Btu for sources subject to § 129.112(g)(2)(iii)(D).

(d) Except as specified in § 129.112(n) and § 129.114(l) (relating to alternative RACT proposal and petition for alternative compliance schedule), the owner and operator of an air contamination source subject to subsection (b) shall demonstrate compliance with the applicable RACT requirement or RACT emission limitation in accordance with the procedures in subsection (a) not later than:

(1) January 1, 2023, for a source subject to § 129.111(a) (relating to applicability).

(2) January 1, 2023, or 1 year after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(e) An owner or operator of an air contamination source subject to this section and §§ 129.111, 129.112 and 129.113 (relating to facility-wide or system-wide NO_x emissions averaging plan general requirements) may request a waiver from the requirement to demonstrate compliance with the applicable emission limitation listed in § 129.112 if the following requirements are met:

(1) The request for a waiver is submitted, in writing or electronically, to the Department or appropriate approved local air pollution control agency not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) The request for a waiver demonstrates that a Department-approved emissions source test was performed in accordance with the requirements of Chapter 139, Subchapter A on or after:

(i) November 12, 2021, for a source subject to § 129.111(a).

(ii) November 12, 2021, or within 12 months prior to the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(3) The request for a waiver demonstrates to the satisfaction of the Department or appropriate approved local air pollution control agency that the test results show that the source's rate of emissions is in compliance with the source's applicable NO_x emission limitation or VOC emission limitation.

(4) The Department or appropriate approved local air pollution control agency approves, in writing, the request for a waiver.

(f) The owner and operator of an air contamination source subject to this section and §§ 129.111—129.114 shall keep records to demonstrate compliance with §§ 129.111—129.114 and submit reports to the Department or appropriate approved local air pollution control agency in accordance with the applicable regulations in 25 Pa. Code, Part I, Subpart C, Article III (relating to air resources) and as specified in the operating permit or plan approval for the air contamination source as follows:

(1) The records shall include sufficient data and calculations to demonstrate that the requirements of §§ 129.111—129.114 are met.

(2) Data or information required to determine compliance shall be recorded and maintained in a time frame consistent with the averaging period of the requirement.

(3) The records necessary to determine compliance shall be reported to the Department or appropriate approved local air pollution control agency on a schedule specified in the applicable regulation or as otherwise specified in the operating permit or plan approval for the air contamination source.

(g) Beginning with the compliance date specified in § 129.112(a), the owner or operator of an air contamination source claiming that the air contamination source is exempt from the applicable NO_x emission rate threshold specified in § 129.114(b) and the requirements of § 129.112 based on the air contamination source's potential to emit shall maintain records that demonstrate to the Department or appropriate approved local air pollution control agency that the air contamination source is not subject to the specified emission rate threshold.

(h) Beginning with the compliance date specified in § 129.112(a), the owner or operator of an air contamination source claiming that the air contamination source is exempt from the applicable VOC emission rate threshold specified in § 129.114(c) and the requirements of § 129.112 based on the air contamination source's potential to emit shall maintain records that demonstrate to the Department or appropriate approved local air pollution control agency that the air contamination source is not subject to the specified emission rate threshold.

(i) The owner or operator of a combustion unit or process heater subject to § 129.112(b) shall record each adjustment conducted under the procedures in § 129.112(b). This record must contain, at a minimum:

(1) The date of the tuning procedure.

(2) The name of the service company and the technician performing the procedure.

(3) The final operating rate or load.

(4) The final NO_x and CO emission rates.

(5) The final excess oxygen rate.

(6) Other information required by the applicable operating permit.

(j) The owner or operator of a Portland cement kiln subject to § 129.112(h) shall maintain a daily operating log for each Portland cement kiln. The record for each kiln must include:

(1) The total hours of operation.

(2) The type and quantity of fuel used.

(3) The quantity of clinker produced.

(4) The date, time and duration of a start-up, shutdown or malfunction of a Portland cement kiln or emissions monitoring system.

(k) The records shall be retained by the owner or operator for 5 years and made available to the Department or appropriate approved local air pollution control agency upon receipt of a written request from the Department or appropriate approved local air pollution control agency.

[Pa.B. Doc. No. 22-1735. Filed for public inspection November 11, 2022, 9:00 a.m.]

Weaver, William (DEP)

From: Pelesky, Samuel J CIV USARMY USAMC (USA) <samuel.j.pelesky.civ@army.mil>
Sent: Monday, December 19, 2022 10:48 AM
To: Weaver, William (DEP)
Cc: Matty, Kelley; Millward, Mark; Pipta, III, John; Kindlin, Craig M CIV USARMY USAMC (USA)
Subject: Letterkenny [External] RACT III Evaluation and Initial Notification
Attachments: RACT III Evaluation and Initial Notification.pdf

Dear Mr. Weaver,

Attached is Letterkenny Army Depot's evaluation and initial notification report for the recent RACT III regulations. Upon receipt of this e-mail, please send a brief reply to acknowledge receipt. A hard copy of this report will not be sent unless requested by your office. Feel free to contact me with any questions or requests for additional information.

Thank you,

Samuel J. Pelesky
Letterkenny Army Depot
Environmental Office
(717) 267-5591
Samuel.j.pelesky.civ@army.mil

LETTERKENNY ARMY DEPOT
RACT III EVALUATION AND INITIAL NOTIFICATION

TITLE V OPERATING PERMIT NO. 28-05002

December 2022

Prepared by:
Samuel J. Pelesky
Physical Scientist
Letterkenny Army Depot
1 Overcash Avenue
Chambersburg, PA 172301
(717) 267-5591
samuel.j.pelesky.civ@army.mil

LETTERKENNY ARMY DEPOT
RACT III EVALUATION AND INITIAL NOTIFICATION

TITLE V OPERATING PERMIT NO. 28-05002

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APPENDICES

REASONABLY AVAILABLE CONTROL TECHNOLOGY III (RACT III) EVALUATION AND INITIAL NOTIFICATION FOR LETTERKENNY ARMY DEPOT

1.0 INTRODUCTION

The Pennsylvania Department of Environmental Protection (PADEP) has adopted additional Reasonably Available Control Technology (RACT) requirements for major sources of emissions of oxides of nitrogen (NOx) and volatile organic compounds (VOCs) that were in existence on or before August 3,2018, to address the Federal requirements for the 2015 8-hour ozone National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA) (42 U.S.C.A. §§ 7401—7671q). The additional RACT requirements, known as RACT III, were published in the PA Bulletin, Volume 52, No.46, on November 12, 2022. RACT III requires major sources of NOx and VOC emissions in Pennsylvania to review its individual emissions and determine compliance strategies with the new requirements. The new rule as published is contained in Appendix C.

Clean Air Act (CAA) section 172(c)(1) provides that state implementation plans (SIPs) for nonattainment areas must include "reasonably available control measures", including "reasonably available control technology" (RACT), for affected sources of emissions. The United States Environmental Protection Agency (USEPA) defines RACT as "the lowest emission limitation that a particular source is capable of meeting by application of control technology that is reasonably available considering technological and economic feasibility" (44 FR 53761 - Sept 17, 1979). In subsequent Federal register notices, EPA has addressed how states can meet RACT requirements of the Act. Significantly, RACT for a particular industry is determined on a case-by-case basis, considering issues of technological and economic feasibility.

PA Code, Title 25, §121.1 defines RACT to mean "the lowest emission limit for VOCs or NOx that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility". Factors considered in the determination of RACT include commercial availability, technical viability, control efficiency, potential adverse environmental effects, and the economic cost of the control mechanism.

There are three compliance options for RACT III:

- Compliance with presumptive RACT requirements and/or emission limitations
- Facility-wide or system-wide averaging for compliance with presumptive NOx emissions limitations
- Case-by-case RACT determinations

2.0 FACILITY DESCRIPTION

Letterkenny Army Depot (LEAD) is a United States Army facility, located in Chambersburg, Franklin Co., PA. LEAD operates several boilers and paint booths as well as other small

combustion and VOC sources at the facility. Each source included in the Title V Operating Permit 28-05002 was evaluated for RACT III applicability.

Based on a facility-wide PTE evaluation, LEAD has been determined to be a major source of VOC and NOx emissions. A major source of VOC and NOx, per Pennsylvania Code (Pa. Code), Title 25: environmental Protection, Part I: Department of Environmental Protection, Subpart C: Protection of Natural Resources, Article III: Air Resources, Chapter 121.1: General Provisions – Definitions, is defined as a facility having the potential-to-emit (PTE) greater than or equal to 50 tons per year (TPY) of VOC emissions or 100 TPY of NOx emissions.

3.0 FACILITY INDIVIDUAL SOURCE EVALUATION

Appendix A contains the RACT II Initial Notification template sheets to include tables detailing Source Information (Table 1), Method of RACT III Compliance for NOx Sources (Table 2), and Method of RACT III Compliance for VOC Sources (Table 3).

3.1 Non-Applicability of RACT III for Sources of NOx

LEAD already has an enforceable facility wide emission limit of 100 tons per year NOx placed in the Title V Operating Permit #28-05002. Section E., Group 017, VII., Condition #001 (5)) states "The NOx RACT for the facility is that the emissions will be limited to less than 100 tons per year based on a 12-month rolling total". Therefore, the RACT III requirements specific to NOx do not apply to the facility. Appendix A, Table 2 lists the facilities sources of NOx emissions for reference.

3.2 Non-Applicability of RACT III for Paint Booths/Coating Operation Sources

Per the requirements of Title V Operating Permit #28-05002, Section E, Group 016, LEAD is already complying with RACT regulation 25 Pa Code §§129.52d. Therefore, the RACT III requirements specific to VOC emissions do not apply to the facility's paint booths and coating operations. Appendix A, Table 3 lists the paint/coating booths for reference.

3.3 Presumptive RACT III Sources of VOC Emissions

LEAD has completed a thorough analysis of all VOC emitting sources listed in the facility's Title V Operating Permit #28-05002. Except for the paint stripping tanks (Source IDs 421 & 423), all VOC sources meet an exemption status or are already subject to presumptive RACT requirements, as detailed in Appendix A, Table 3. Below is a narrative breakdown for each presumptive RACT source, or group of sources.

The following VOC sources are listed together in Section E, Group 010 (Presumptive RACT Affected Sources Pursuant to § 129.97(c)(2)):

- Source ID 143 – Industrial Wastewater Treatment Plant (IWTP)
- Source ID 144 – Specialty Coatings/Stenciling Inks
- Source ID 145 – Photographic/Printing Operations
- Source ID 148 – Metal Pretreatment Acid Wash
- Source ID 301A – Clean-Up Solvents

Pursuant to the RACT provisions of 129.96 and 129.97, the permittee shall limit volatile organic compound (VOC) emissions from each of the above sources to less than 2.7 tons per year based on a 12-month rolling total. Additionally, the permittee shall install, maintain, and operate each of the above sources in accordance with the manufacturer's specifications and with good operating practices. Each of the above sources is also listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(6), (7), (8), (9), and (12), where a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total is already in place.

The following VOC sources are listed together in Section E, Group 011 (Presumptive RACT Affected Sources Pursuant to § 129.97(c)(3) & (6)):

- Source ID 031 - Johnson Boiler Bldg 1
- Source ID 032 - Johnson Boiler Bldg 1
- Source ID 036 - Johnson Boiler Bldg 3
- Source ID 037 - Johnson Boiler Bldg 3
- Source ID 041 - Smith Boiler Bldg 12
- Source ID 042 - Smith Boiler Bldg 12
- Source ID 46A - C-B Boiler Bldg 37SW
- Source ID 051 - Smith Boiler Bldg 51
- Source ID 052 - York-Shipley Bldg 57
- Source ID 053 - York-Shipley Bldg 57
- Source ID 083 - Smith Boiler Bldg 5316
- Source ID 086 - (39) Boilers 2.5 MMBtu/Hr or Less
- Source ID 087 - (9) Boilers >2.5 and <50 MMBtu/Hr
- Source ID 088 - (328) Propane/Natural Gas Heaters

Pursuant to the RACT provisions of 129.96 and 129.97, the permittee shall install, maintain, and operate each of the above sources in accordance with the manufacturer's specifications and with good operating practices. Additionally, these sources are also listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(10), where a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total is already in place.

The following VOC sources are listed in Section E, Group 012 (Presumptive RACT Affected Sources Pursuant to § 129.97(d):

- Source ID 146 – Emergency CI ICE

Pursuant to the RACT provisions of 129.96 and 129.97, the permittee shall limit the operating hours of each emergency engine to less than 500 hours in a 12-month rolling period, and install, maintain, and operate each of the above sources in accordance with the manufacturer's specifications and with good operating practices. Additionally, this source is also listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(10), where a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total is already in place.

The following VOC sources are listed in Section E, Group 013 (Presumptive RACT Affected Sources Pursuant to § 129.97(d):

- Source ID 147 – (12) Diesel Engine Test Cells

Pursuant to the RACT provisions of 129.96 and 129.97, the permittee shall install, maintain, and operate each of the above sources in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit or other combustion source. Additionally, this source is also listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(10), where a VOC emission limitation of 2.7 tons per year based on a 12-month rolling total is already in place.

The following VOC source is listed in Section E, Group 017 (RACT 1 Requirements, transferred from RACT OP 28-02002 issued on February 3, 2000), Condition #001(11):

- Source ID 420 - Above Ground Gasoline Storage Tanks >2000 Gallons

The VOC RACT for the above ground and below ground storage tanks is that emissions from these sources shall be less than 2.7 tons per year based on a 12-month rolling total

3.4 Case-by-Case RACT Evaluations

As with the RACT II evaluation, LEAD has identified the Two Paint Stripping Tanks, T1 & T2, in Building 370 (Source ID 421) and the One Paint Stripping Tank in Building 350 (Source ID 423) as unable to comply with the applicable presumptive RACT requirements. During the previous RACT evaluation, LEAD submitted a RACT Analysis report that had been conducted for these sources. The evaluation included analysis of technical and economic feasibility of add-on controls and the feasibility of material substitution. The results found that neither add-on control nor material substitution were feasible options for compliance with RACT regulations.

LEAD proposed an alternative RACT consisting of work practice standards and recordkeeping to demonstrate compliance that was accepted by PADEP and incorporated into LEAD's Title V permit. The restrictions are found in Title V Operating Permit #28-05002, Section E, Group 008 (RACT Requirements for the Bldg. 350 and 370 Paint Stripping Tanks Pursuant to § 129.99(d).

LEAD has since added Two Paint Stripping Tanks, T1 & T2, in Building 377 (Source ID 421A), under Plan Approval Permit #28-05002Q. These paint stripping tanks will eventually replace the Bldg. 370 tanks once they are in full operational status, but because the Bldg. 377 tanks were installed after August 3, 2018, the RACT III requirements do not apply to this source. However, a Best Available Technology (BAT) Analysis was completed for the Bldg. 377 paint stripping tank project as part of the plan approval application requirements. Due to the similarities in design, function, and operation of Sources 421, 421A, and 423, LEAD is submitting the 2017 BAT Analysis as a supporting demonstration that add-on controls are not feasible options for LEAD compliance with RACT regulations. LEAD proposes that the RACT requirements of the current Title V permit meets the requirements of RACT III and remain in place for these sources.

4.0 SUMMARY

LEAD has completed a full analysis of the RACT III requirements against all emissions sources listed in Title V Operating Permit #28-05002. The NOx requirements of RACT III do not apply to the facility as LEAD already has an enforceable facility wide emission limit of 100 tons per year NOx placed in the Title V Operating Permit #28-05002. LEAD already complies with 25 Pa Code §§129.52d, so the requirements of RACT III are not applicable to the facility's paint booths and coating operations. Except for the facility's paint stripping tanks, all other VOC emissions sources are exempt from RACT III requirements due to a PTE of <1 TPY, or already meet the presumptive RACT requirements.

With the concurrence of the PADEP, LEAD believes they are already in full compliance of the RACT III regulations. The facility feels there is no need for any major modifications to the current Title V Operating Permit, or the upcoming renewal, as all the presumptive RACT and case-by-case RACT restrictions are currently in place.

Appendix A

RACT III Initial Notification Template Sheets

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CHAPTER 129. STANDARDS FOR SOURCES ADDITIONAL RACT REQUIREMENTS FOR MAJOR SOURCES OF NOx AND VOCs FOR THE 2015 OZONE NAAQS

Written notification, 25 Pa. Code §§129.111 and 129.115(a)

25 Pa. Code Sections 129.111 and129.115(a) require that the owner and operator of an air contamination source subject to the final-form RACT III regulations submit a notification describing how you intend to comply with the final-form RACT III requirements, and other information spelled out in subsection 129.115(a). The owner or operator may use this template to notify DEP. Notification must be submitted in writing or electronically to the appropriate Regional Manager located at the appropriate DEP regional office. In addition to the notification required by §§ 129.111 and 129.115(a), you also need to submit an applicable analysis or RACT determination as per § 129.114(a) or (i).

Is the facility major for NOx?	**Yes ☒ No ☐**
Is the facility major for VOC?	**Yes ☒ No ☐**

FACILITY INFORMATION						
Facility Name	Letterkenny Army Depot					
Permit Number	28-05002	**PF ID if known** 23-1357141-1				
Address Line1	1 Overcash Avenue					
Address Line2	Environmental Office (Bldg. 14)					
City	Chambersburg	**State**	PA	**Zip**	17201	
Municipality	Letterkenny/Greene Twps.	**County**	Franklin			

OWNER INFORMATION					
Owner	USARMY Letterkenny Army Depot				
Address Line1	AMLD-EN				
Address Line2	Environmental Office (Bldg. 14)				
City	Chambersburg	**State**	PA	**Zip**	17201
Email		Phone	(717) 267 - 8111		

CONTACT INFORMATION					
Permit Contact Name	Samuel J. Pelesky				
Permit Contact Title	Physical Scientist				
Address Line	Environmental Office (Bldg. 14)				
City	Chambersburg	**State**	PA	**Zip**	17201
Email	samuel.j.pelesky.civ@army.mil			Phone	(717) 267-5591

Source ID	Source Name	Make	Model	Physical location of a source (i.e, building#, plant#, etc.)	Was this source subject to RACT II?
031	Johnson Boiler Bldg 1			Building 1	Yes
032	Johnson Boiler Bldg 1			Building 1	Yes
036	Johnson Boiler Bldg 3			Building 3	Yes
037	Johnson Boiler Bldg 3			Building 3	Yes
041	Smith Boiler Bldg 12			Building 12	Yes
042	Smith Boiler Bldg 12			Building 12	Yes
46A	C-B Boiler Bldg 37SW			Building 37	Yes
051	Smith Boiler Bldg 51			Building 51	Yes
052	York-Shipley Bldg 57			Building 57	Yes
053	York-Shipley Bldg 57			Building 57	Yes
083	Smith Boiler Bldg 5316			Building 5316	Yes
086	(39) Boilers 2.5 MMBtu/Hr or Less			Various buildings	Yes
087	(9) Boilers >2.5 and <50 MMBtu/Hr			Various buildings	Yes
088	(328) Propane/Natural Gas Heaters			Various buildings	Yes
102B	Coating booth #U8145 in Bldg 57 (Booth 1)			Building 57	No
103B	Coating booth #U8146 in Bldg 57 (Booth 2)			Building 57	No
106	Paint Booth #59, Bldg #350			Building 350	No
107	Paint Booth #60 , Bldg #350			Building 350	No
108	Paint Booth #61 , Bldg #350			Building 350	No
109A	Paint Booth #58, Bldg #350			Building 350	No
111	Paint Booth #3886, Bldg #320			Building 320	No
112	Paint Booth #3880, Bldg #320			Building 320	No
113	Paint Booth #3882, Bldg #320			Building 320	No
114	Paint Booth #3885, Bldg #320			Building 320	No
121	Paint Booth #3881, Bldg #320			Building 320	No
122	Paint Booth #4378, Bldg #320			Building 320	No
123	Paint Booth #200, Bldg #370			Building 370	No
125	Paint Booth #2813, Bldg #370			Building 370	No
126	Paint Booth #4298, Bldg #370			Building 370	No
128	Paint Booth #F4226 (#280), Bldg #37			Building 37	No
131	Paint Booth #R6744 (#468), Bldg #37			Building 37	No
132	Paint Booth #3884, Bldg #320			Building 320	No
137	Paint Booth R8052 (#470), Bldg #37			Building 37	No
140	Paint Booths in Ammo Area			Building 3382	No
142	Paint Booth #3883, Bldg #320			Building 320	No
143	Industrial Waste Water Treatment Plant			Building 360	Yes
144	Specialty Coatings/Stenciling Inks			Various buildings	Yes
145	Photographic/Printing Operations			Various buildings	Yes
146	Emergency CI			Various buildings	Yes
147	(12) Diesel Engine Test Cells			Buildings 37 & 350	Yes
148	Metal Pretreatment Acid Wash			Various buildings	Yes
149	(2) Flame Spray Booths			Building 350	No
200	Paint Booth #4757, Bldg #370			Building 370	No
201	Powder Coating Booth R4247, Bldg 370			Building 370	No
202	Paint Booth #S3599, Bldg #1			Building 1	No
203	Paint Booth #3155, Bldg #5807			Building 5807	No
204	Stand-Alone Paint Booth, Bldg #350			Building 350	No
205	Bldg #320 IR Drying/Coating Booth #4115			Building 320	No
300	Painting Outside Booths			Various areas	No
301A	Clean Up Solvents			Various buildings	Yes
302	Static Firing			OB/OD grounds	No
401A	Opern Burning/Flash Off of Military			OB/OD grounds	No
401B	Open Detonation			OB/OD grounds	No
401C	Flashing Furnace			OB/OD grounds	No
419	Cold Cleaning Machines			Various buildings	No
420	Above Ground Gasoline Storage Tanks >2000 Gallons			Building 3323	Yes
421	Two Paint Stripping Tanks, T1 & T2, Bldg 370			Building 370	Yes
421A	Two Paint Stripping Tanks, T1 & T2, Bldg 377			Building 377	No
422	AP Rocket Motor Destruction Facility			Building 8001	No
423	One Paint Striiping Tank, Bldg 350			Building 350	Yes

Appendix A. RACT III Initial Notification Template Sheets, Table 2 - Method of RACT III Compliance, NOx

Source ID	Source Name	NOx PTE TPY	Exempt from RACT III (yes or no)	How do you intend to comply? (PRES, CbC, FAC or SYS)	Specific citation of rule if presumptive option chosen
031	Johnson Boiler Bldg 1		yes	N/A	***LEAD already has an enforceable facility wide emission limit of 100 tons per year NOx placed in the Title V Operating Permit (#28-05002, Section E., Group 017, VII., Condition #001 (5))**
032	Johnson Boiler Bldg 1		yes	N/A	
036	Johnson Boiler Bldg 3		yes	N/A	
037	Johnson Boiler Bldg 3		yes	N/A	
041	Smith Boiler Bldg 12		yes	N/A	
042	Smith Boiler Bldg 12		yes	N/A	
46A	C-B Boiler Bldg 37SW		yes	N/A	
051	Smith Boiler Bldg 51		yes	N/A	
052	York-Shipley Bldg 57		yes	N/A	
053	York-Shipley Bldg 57		yes	N/A	
083	Smith Boiler Bldg 5316		yes	N/A	
086	(39) Boilers 2.5 MMBtu/Hr or Less		yes	N/A	
087	(9) Boilers >2.5 and <50 MMBtu/Hr		yes	N/A	
088	(328) Propane/Natural Gas Heaters		yes	N/A	
146	Emergency CI		yes	N/A	
147	(12) Diesel Engine Test Cells		yes	N/A	
302	Static Firing		yes	N/A	
401A	Opern Burning/Flash Off of Military		yes	N/A	
401B	Open Detonation		yes	N/A	
401C	Flashing Furnace		yes	N/A	
422	AP Rocket Motor Destruction Facility		yes	N/A	

Source ID	Source Name	VOC PTE TPY	Exempt from RACT III (yes or no)	How do you intend to comply?	Specific citation of rule if presumptive option chosen
031	Johnson Boiler Bldg 1		no	PRES	*LEAD already has an enforceable facility wide emission limit of 2.7 tons per year VOC for all boilers, generators, and engine test cells placed in the Title V Operating Permit (#28-05002, Section E., Group 017, VII., Condition #001 (10))
032	Johnson Boiler Bldg 1		no	PRES	
036	Johnson Boiler Bldg 3		no	PRES	
037	Johnson Boiler Bldg 3		no	PRES	
041	Smith Boiler Bldg 12		no	PRES	
042	Smith Boiler Bldg 12		no	PRES	
46A	C-B Boiler Bldg 37SW		no	PRES	
051	Smith Boiler Bldg 51		no	PRES	
052	York-Shipley Bldg 57		no	PRES	
053	York-Shipley Bldg 57		no	PRES	
083	Smith Boiler Bldg 5316		no	PRES	
086	(39) Boilers 2.5 MMBtu/Hr or Less		no	PRES	
087	(9) Boilers >2.5 and <50 MMBtu/Hr		no	PRES	
088	(328) Propane/Natural Gas Heaters		no	PRES	
102B	Coating booth #U8145 in Bldg 57 (Booth 1)		yes	N/A	25 Pa. Code, §§ 129.52d
103B	Coating booth #U8146 in Bldg 57 (Booth 2)		yes	N/A	25 Pa. Code, §§ 129.52d
106	Paint Booth #59, Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
107	Paint Booth #60 , Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
108	Paint Booth #61 , Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
109A	Paint Booth #58, Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
111	Paint Booth #3886, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
112	Paint Booth #3880, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
113	Paint Booth #3882, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
114	Paint Booth #3885, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
121	Paint Booth #3881, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
122	Paint Booth #4378, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
123	Paint Booth #200, Bldg #370		yes	N/A	25 Pa. Code, §§ 129.52d
125	Paint Booth #2813, Bldg #370		yes	N/A	25 Pa. Code, §§ 129.52d
126	Paint Booth #4298, Bldg #370		yes	N/A	25 Pa. Code, §§ 129.52d
128	Paint Booth #F4226 (#280), Bldg #37		yes	N/A	25 Pa. Code, §§ 129.52d
131	Paint Booth #R6744 (#468), Bldg #37		yes	N/A	25 Pa. Code, §§ 129.52d
132	Paint Booth #3884, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
137	Paint Booth R8052 (#470), Bldg #37		yes	N/A	25 Pa. Code, §§ 129.52d
140	Paint Booths in Ammo Area		yes	N/A	25 Pa. Code, §§ 129.52d
142	Paint Booth #3883, Bldg #320		yes	N/A	25 Pa. Code, §§ 129.52d
143	Industrial Waste Water Treatment Plant		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (6))
144	Specialty Coatings/Stenciling Inks		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (8))
145	Photographic/Printing Operations		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (9))
146	Emergency CI		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (10))
147	(12) Diesel Engine Test Cells		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (10))
148	Metal Pretreatment Acid Wash		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (12))
200	Paint Booth #4757, Bldg #370		yes	N/A	25 Pa. Code, §§ 129.52d
201	Powder Coating Booth R4247, Bldg 370		yes	N/A	25 Pa. Code, §§ 129.52d
202	Paint Booth #S3599, Bldg #1		yes	N/A	25 Pa. Code, §§ 129.52d
203	Paint Booth #3155, Bldg #5807		yes	N/A	25 Pa. Code, §§ 129.52d
204	Stand-Alone Paint Booth, Bldg #350		yes	N/A	25 Pa. Code, §§ 129.52d
205	Bldg #320 IR Drying/Coating Booth #4115		yes	N/A	25 Pa. Code, §§ 129.52d
300	Painting Outside Booths		yes	N/A	25 Pa. Code, §§ 129.52d
301A	Clean Up Solvents		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (7))
302	Static Firing		yes	PTE <1 tpy	
401A	Open Burning/Flash Off of Military		yes	PTE <1 tpy	
401B	Open Detonation		yes	PTE <1 tpy	
401C	Flashing Furnace		yes	PTE <1 tpy	
419	Cold Cleaning Machines		yes	PTE <1 tpy	
420	Above Ground Gasoline Storage Tanks >2000 Gallons		no	PRES	(#28-05002, Section E., Group 017, VII., Condition #001 (11))
421	Two Paint Stripping Tanks, T1 & T2, Bldg 370	19.74	no	CbC	
421A	Two Paint Stripping Tanks, T1 & T2, Bldg 377	15.00	yes	N/A	Source Installed after August 3, 2018
422	AP Rocket Motor Destruction Facility		yes	PTE <1 tpy	
423	One Paint Stripping Tank, Bldg 350	9.90	no	CbC	

Appendix B

2017 BAT Analysis for Building 377 Paint Stripping Tanks

BEST AVAILABLE TECHNOLOGY ANALYSIS
TWO PAINT STRIPPING TANKS IN BUILDING 377

LETTERKENNY ARMY DEPOT

CHAMBERSBURG, PA

March 2015
Updated January 2017

Prepared for:

H.F. Lenz Co.
1407 Scalp Avenue
Johnstown, PA 15904

Prepared by:

Montrose Air Quality Services, LLC
1050 William Pitt Way
Pittsburgh, Pennsylvania 15238

Project Number: 018-RCS-102141

MONTROSE
AIR QUALITY SERVICES

BEST AVAILABLE TECHNOLOGY EVALUATION
FOR STRIPPING TANKS IN BUILDING 377

UPDATED JANUARY 2017

LETTERKENNY ARMY DEPOT
FRANKLIN COUNTY, PENNSYLVANIA

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BEST AVAILABLE TECHNOLOGY EVALUATION
FOR STRIPPING TANKS IN BUILDING 377

UPDATED JANUARY 2017

LETTERKENNY ARMY DEPOT
FRANKLIN COUNTY, PENNSYLVANIA

1. INTRODUCTION

Letterkenny Army Depot (LEAD), located in Franklin County, Pennsylvania, has prepared this updated Best Available Technology (BAT) evaluation for volatile organic compounds (VOCs) for the two (2) proposed paint stripping tanks (T-1 and T-2) located in Building 377.

Figure 1 shows a flow diagram for the stripping tanks in Building 377. An emission capture and exhaust system will be constructed for each tank. The projected potential VOC emissions from the tanks are 15.0 tons/year, and the total exhaust flow rate is 8,000 cfm.

The remainder of this report contains the VOC BAT approach, BAT evaluation (including technical and economic feasibility of control devices), and LEAD's proposed BAT for these stripping tanks.

2. BAT APPROACH

The "top-down" BAT approach, as outlined in the United States Environmental Protection Agency's (USEPA's) "*New Source Review Workshop Manual: Prevention of Significant Deterioration and Non-attainment Area Permitting*," Draft, October 1990 (Workshop Manual), was utilized in this analysis. The steps of the top-down approach are as follows:

Step 1 – Identification of All Control Technologies for the Pollutant
Step 2 – Elimination of Technically Infeasible Options
Step 3 – Ranking Remaining Control Technologies by Control Effectiveness
Step 4 – Economic Evaluation of the Most Effective Controls
Step 5 – Selection of BAT

In Step 1 - Identification of All Control Technologies for the Pollutant, control technologies that are used for VOC emissions are identified in order of control effectiveness, with the most stringent control technology listed first. The BAT evaluation begins with the most stringent control technology. If it is shown that the most stringent control technology is technically or economically infeasible, then the next most stringent control technology is evaluated. This process continues until a control technology cannot be eliminated. Per USEPA's guidance, if the most stringent control technology is deemed feasible, no further analysis is required.

3. TECHNICAL FEASIBILITY OF ADD-ON CONTROLS FOR VOC

Add-on control equipment that has been demonstrated to be effective in reducing VOC emissions, in certain situations, includes:

- Thermal oxidation
- Catalytic oxidation
- Flaring
- Rotary Concentration/Oxidization
- Carbon adsorption
- Gas absorption (Wet Scrubbing)
- Condensation, and
- Biofiltration

The following sections will examine each of these options to determine if they would be technically feasible for the stripping tanks in Building 377 at the LEAD facility.

3.1. Thermal Oxidation

Thermal oxidation refers to the combustion of waste gases to form carbon dioxide and water. This is achieved by heating the waste gases in the presence of oxygen. Typical destruction efficiencies are in the range of 95 to 99%, at a temperature of over 1,400 degrees Fahrenheit (°F) and a residence time of at least 0.5 seconds.

Thermal oxidation is used extensively for the destruction of VOC emissions and is considered a technically feasible method of controlling the VOC emissions from the stripping tanks in Building 377.

3.2. Catalytic Oxidation

Catalytic oxidation is the complete combustion of waste gases through the use of an oxidation catalyst, to form carbon dioxide and water. Oxidation is achieved by heating the waste stream in the presence of oxygen and a catalyst. The temperature range for this type of control is lower than for thermal oxidation, about 650 to 800°F. Destruction efficiencies (DE) of greater than 95% are possible when working optimally.

Catalytic oxidation is considered a technically feasible method of controlling the VOC emissions from the stripping tanks in Building 377.

3.3. Flaring

Flaring is an effective control option for controlling VOC emissions from exhaust streams with a heat content of at least 300 Btu per standard cubic feet (scf). A DE of 95-99% can be achieved with flaring.

The heat content of the exhaust from the stripping tanks is not rich and estimated to be less than one (1) Btu/scf. This is based on Equation 2.16 in Section 3.2, Chapter 2, of the EPA OAQPS Control Cost Manual (6th Ed.), and the following information:

Maximum VOC emission rate	5 lb/hr (assumed instantaneous max.)
Benzyl alcohol emissions	3.33 lb/hr (assumed 2/3 of total)
Benzyl alcohol vapor density	0.16 lb/cf (twice air density)
Benzyl alcohol volume flow	0.35 cfm
Benzyl alcohol heat of combustion	2960 Btu/cf
Ethanolamine emissions	1.66 lb/hr (assumed 1/3 of total)
Ethanolamine vapor density	0.16 lb/cf (twice air density)
Ethanolamine volume flow	0.17 cfm
Ethanolamine heat of combustion	1685 Btu/cf

Therefore, flaring is not considered a technically feasible method of controlling VOC emissions from the stripping tanks.

3.4. Rotary VOC Concentrator with Oxidation

Rotary VOC concentrators are used in applications that involve a combination of high volume of air with low concentration of solvents. The rotary concentrator reduces the solvent laden air flow by a factor of about 10:1, thus minimizing the overall system size and operating costs. VOC concentrators can be combined with any oxidation technology. Rotary VOC concentrators use activated carbon or zeolite for highly effective adsorption, as well as efficient desorption. The adsorption media slowly rotates continuously, with one section of the media used to adsorb the incoming emission stream, while another section is being desorbed by passing heated air through it. This desorbed organic stream is routed to an oxidizer for destruction. An overall DE of 95-99% can be achieved with this technology.

Rotary Concentration/Oxidation is considered a technically feasible method of controlling the VOC emissions from the stripping tanks in Building 377.

3.5. Carbon Adsorption

Activated carbon adsorption is effective in controlling VOC emissions, and is used extensively by various industries. Under optimum conditions, control efficiency can be 95% or greater. Some drawbacks include disposing of or regenerating the spent carbon, the need for a much larger footprint compared to other technologies, and disposal of contaminated liquid wastes.

Despite these drawbacks, activated carbon adsorption is considered a technically feasible control option for controlling VOC emissions from the stripping tanks in Building 377.

3.6. Condensation

Condensation of VOC emissions is effective with low volume, high concentration streams. VOC control efficiencies of 80-95% can be achieved with condensation.

The exhaust from the stripping tanks is both high in volume and low in concentration, which makes it unlikely to be adequately controlled by condensation. However, refrigerated

condensation is considered a technically feasible control option for the stripping tanks in Building 377.

3.7. Wet Scrubbing

Gas absorption of VOC components via wet scrubbing is not generally very effective, unless the volatiles are highly soluble in the scrubbing medium. Benzyl alcohol, the predominant VOC constituent in the exhaust stream, is only partially soluble in water (4 g/100 mL). Also, wet scrubbing creates a contaminated liquid stream, which would require storage, treatment and possible disposal.

For the reasons above, scrubbing is not considered to be technically feasible for the stripping tanks in Building 377.

3.8. Biofiltration

Biofiltration is an air pollution control technology in which off-gases containing biodegradable organic compounds are vented, under controlled temperature and humidity through a special filter material containing microorganisms. As exhaust gases pass through the biofilter, VOC is absorbed on the filter material, and the microorganisms break down the compounds and transform them into CO_2 and water, with efficiency ranging from 80 to 99%.

The predominant VOCs present in the exhaust stream, benzyl alcohol and monoethanolamine, do not appear to be good candidates for this technology, as they are only partially soluble in water. The most important variable affecting bioreactor operations is temperature. Most microorganisms can survive and flourish in a temperature range of 60 to 105^{o}F. Additionally, it is imperative with biofilters that an adequate moisture level be maintained to prevent drying of the bed. Therefore, to avoid freezing in winter, the biofilter components would have to be housed inside a heated building.

Despite these serious drawbacks that indicate biofiltration is not a technically feasible control option for the stripping tanks, an economic evaluation has been conducted.

4. ECONOMIC FEASIBILITY OF ADD-ON CONTROLS

Based on the analysis in Section 3, the VOC control technologies found to be technically feasible for the stripping tanks in Building 377 at the LEAD facility include:

- Thermal Oxidation (both recuperative and regenerative)
- Catalytic Oxidation
- Carbon Adsorption
- Rotary Concentration/Oxidation
- Refrigerated Condensation, and
- Biofiltration

Table 1 shows the ranking and the annual control costs per ton of VOC for all the technically feasible control technologies. As shown in the table, the average annual costs of the technically feasible controls ranged from approximately **$18,000 to $44,500 per ton of VOC removed**. Tables 2 through 9 show the details of the economic evaluation for the technically feasible control options. Table 10 provides an estimate of associated ductwork costs, which would apply to each control option and has been added to the total control option costs.

Control options with the lowest annualized costs are use of a carbon adsorber with on-site regeneration or biofiltration. As noted in section 3.8 above, the constituents in the emissions from the tanks are not ideal candidates for biofiltration, so it is unlikely that a reduction efficiency of 90% is achievable. Other control options do not provide a significant reduction in VOC emissions at increasing costs.

LEAD is of the opinion that the economic evaluation indicates that <u>it is not economically feasible</u> to utilize any of these end-of-pipe control options to reduce VOC emissions from the stripping tanks in Building 377.

5. FEASIBILITY OF MATERIAL SUBSTITUTION

Aside from evaluating the technical and economic feasibility of add-on emission control systems, a BAT analysis should include an examination of the feasibility of reducing emissions through process and/or material changes. The solvent mixture used in the stripping tanks (comprised of two parts Eurostrip 7028 and one part Eurostrip 7031) is 71.4% VOC by weight (or, 6.3 lb/gallon), but does not contain any hazardous air pollutants (HAP).

LEAD is contractually obligated by its customers to use the Eurostrip solvent mixture. Any change in the type of solvent used would require approval by these customers. LEAD has evaluated other paint stripping materials and has not found any substitute that has done an adequate job to meet required specifications. The aluminum and steel parts being stripped at LEAD are coated with well-cured epoxies and polyurethanes, with paint film thicknesses of 20 mils or higher. These types of paints are difficult to remove. Material substitution is therefore not an option.

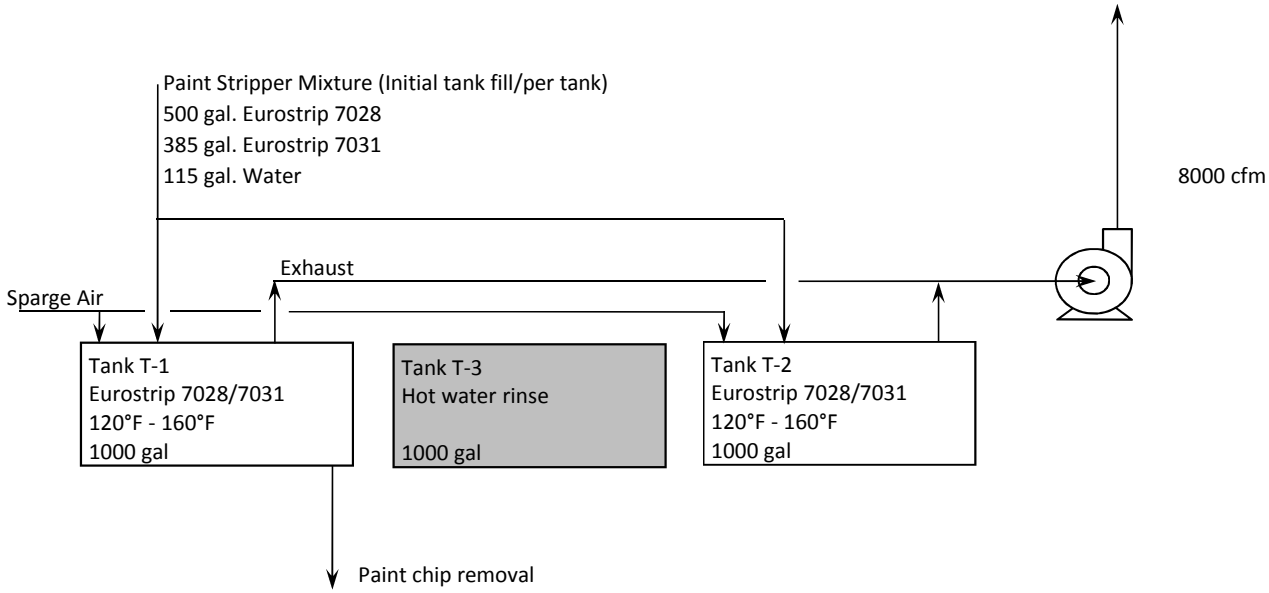
6. PROPOSED BAT FOR THE STRIPPING TANKS IN BUILDING 377

Letterkenny Army Depot proposes that BAT for the stripping tanks in Building 377 is adherence to the following items:

- VOC emissions from the tanks shall not exceed 15.0 tons over any consecutive 12-month period;
- LEAD shall maintain adequate solvent purchase and usage records to demonstrate compliance with the proposed BAT emission limit;
- The tanks will be covered when not in use, to minimize vapor escape;
- The temperature in each tank will be lowered during extended periods of non-use. The operating temperature range on the tanks is 120°F to 160°F. The steam is turned off to the tanks when the production area knows that the process is not required for 24 or more hours, which is true for most weekends. It is estimated that the tank temperature drops to near ambient (approx. 80°F) over 24 to 48 hours without steam;
- Emissions will be minimized by ceasing the introduction of air for tank agitation during start-up, shut-down, parts loading and unloading, and process disruptions; and,
- Good housekeeping practices shall be followed at all times, including any spills being cleaned up immediately, and any containers of solvent kept closed when not in use.

FIGURE

BLDG 377 Paint Strip Tanks



Tank interior dimensions: L 9 ft. 6 in.
W 4 ft.
D 4 ft.

Exhaust hood is located along the 9 ft. 6 in. side opposite the operator position.

MONTROSE AIR QUALITY SERVICES

FLOW DIAGRAM OF BUILDING 377 STRIPPING TANKS
LETTERKENNY ARMY DEPOT, FRANKLIN COUNTY, PA

Figure 1

TABLES

Control Equipment Cost Tables

Table 1. Ranking of Best Available Technology (BAT) Options for Stripping Tanks at Building 377
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

1a. - Ranking of Control Options by Reduction Efficiency

Ranking	Control Technology	Control Efficiency (%)	Capture Efficiency (%)	Overall Reduction [1] (%)
1.	Regenerative Thermal Oxidizer	98.0	90.0	88.2
2.	Catalytic Oxidation	98.0	90.0	88.2
3.	Rotary Concentrator/Oxidizer	98.0	90.0	88.2
4.	Recuperative Thermal Oxidizer	98.0	90.0	88.2
5.	Carbon Adsorber (on-site regen.)	95.0	90.0	85.5
6.	Refrigerated Condenser	90.0	90.0	81.0
7.	Biofiltration	90.0	90.0	81.0

1b. - Ranking of Total Annual Control Costs per Ton of VOC Reduced[2]

Ranking	Control Technology	Capital Cost ($)	Annualized [3] Cost ($/year)	VOC Reduction (tons/year)	Avg. Control Cost ($/ton/yr)
1.	Carbon Adsorber (on-site regen.)	416,204	231,080	12.83	18,018
2.	Biofiltration	509,355	233,027	12.15	19,179
3.	Rotary Concentrator/Oxidizer	440,205	241,401	13.23	18,246
4.	Catalytic Oxidation	667,677	295,421	13.23	22,330
5.	Refrigerated Condenser	403,209	335,788	12.15	27,637
6.	Regenerative Thermal Oxidizer	819,903	486,379	13.23	36,763
7.	Recuperative Thermal Oxidizer	572,694	588,841	13.23	44,508

[1] Overall reduction based on product of Control efficiency and Capture efficiency.

[2] Refer to the following Tables 2 through 10 for the derivation of the values used in this table.

[3] Includes control equipment annualized cost plus ductwork/capture equipment annualized cost.

Table 2. Input Parameters for Control Technology Analysis
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

Emission Data

Maximum VOC emissions, tpy	**15.0**	(requested maximum)
Maximum VOC emissions, lb/hr	3.53	
Operating hours per year:	**8,500**	

Collection System Data

	Expected Capture Eff.	Total Expected Air Flow, cfm
Building 377 (two tanks)	**90%**	**8,000**

Control System Data

	Removal Efficiency, %	Heat Recovery, %
Catalytic oxidation	**98**	**50**
Regenerative thermal oxidation (RTO)	**98**	**95**
Regenerative carbon adsorption	**95**	**N/A**
Rotary Concentrator w/Oxidation	**98**	**50**
Biofiltration	**90**	**N/A**
Recuperative Thermal Oxidizer	**98**	**70**
Refrigerated Condenser	**90**	**N/A**

Economic Data (as of Dec 2016)

Operator labor cost, $/hr	**44.00**
Maintenance labor cost, $/hr	**44.00**
Electricity cost, $/kwh	**0.076**
Gas cost, $/mcf	**4.71**
Water cost, $/mgal	**6.000**
Steam cost, $/1000 lbs	**5.67**
Liquid waste disposal, $/gal	**1.52**
Carbon cost, $/lb	**1.48**
Catalyst cost, $/ft3	**650**
Interest rate, %	**8.0**
*Taxes, insurance, admin, % of TC	**4.0**
*Control system life, yrs	**10.0**
*Carbon life, yrs	**5.0**

*Per EPA OAQPS Control Cost Manual, 6th

Table 3. Total Annual Costs - Thermal Incinerator (Recuperative)
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1994:	361.1	from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine

INPUT PARAMETERS

Gas flowrate (scfm):	8,000	
Reference temperature (oF):	77	
Inlet gas temperature (oF):	70	
Inlet gas density (lb/scf):	0.0739	air
Primary heat recovery (fraction):	0.70	
Waste gas heat content (BTU/scf):	1	Equation 2.16
Waste gas heat content (BTU/lb):	14	
Gas heat capacity (BTU/lb-oF):	0.4	
Combustion temperature (oF):	1,400	
Preheat temperature (oF):	1001	Equation 2.18
Fuel heat of combustion (BTU/lb):	21,502	methane
Fuel density (lb/ft3):	0.0408	methane

CALCULATED PARAMETERS

Auxiliary Fuel Requirement (lb/min):	5.641	Equation 2.21
(scfm):	138.3	
Total Gas Flowrate (scfm):	8,138	

CALCULATED CAPITAL COSTS

Equipment Costs ($):		
Incinerator:		
@ 0 % heat recovery:	0	Equation 2.29
@ 35 % heat recovery:	0	Equation 2.30
@ 50 % heat recovery:	0	Equation 2.31
@ 70 % heat recovery:	202,707	Equation 2.32
Total Equipment Cost--base:	202,707	
Total Equipment Cost--escalated (A):	301,450	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):	355,711	Table 2.8
Total Capital Investment (TCI = 1.61B):	**572,694**	Table 2.8

ANNUAL COST INPUTS

Operating factor (hr/yr):	8,500	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.5	Table 2.10
Maintenance labor factor (hr/sh):	0.5	Table 2.10
Electricity price ($/kwh):	0.076	
Natural gas price ($/mscf):	4.71	
Annual interest rate (fraction):	0.08	
Control system life (years):	10	
Capital recovery factor:	0.1490	
Taxes, insurance, admin. factor:	0.04	Table 2.10
Pressure drop (in. w.c.):	19.0	

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)	
Operating labor	23,375	
Supervisory labor	3,506	15% of Operator, Table 2.10
Maintenance labor	23,375	
Maintenance materials	23,375	=Maintenance Labor, Table 2.10
Natural gas	332,113	
Electricity	19,480	
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10
Taxes, insurance, administrative	22,908	
Capital recovery	85,348	
Total Annual Cost	**577,659**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All equation and table references are from Section 3.2, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 4. **Total Annual Costs - Thermal Incinerator (Regenerative)**
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1999: 390.6 from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015: 537.0 from *Chemical Engineering* magazine

INPUT PARAMETERS

Exhaust Gas flowrate (scfm):	8,000	
Reference temperature (oF):	77	
Waste gas inlet temperature, Tw_i (oF):	70	
Inlet gas density (lb/scf):	0.07390	air
Primary heat recovery (fraction):	0.85	0.85 or 0.95
Waste gas heat content, annual avg. (BTU/scf):	1.0	Equation 2.16
Waste gas heat content (BTU/lb):	14	
Gas heat capacity (BTU/lb-oF):	0.400	air
Combustion temperature (oF):	1,400	
Temperature leaving heat exchanger, Tw_o (oF):	1201	Equation 2.18
Fuel heat of combustion (BTU/lb):	21,502	methane
Fuel density (lb/ft3):	0.0408	methane

CALCULATED PARAMETERS

Auxiliary Fuel Requirement (Qaf):	(lb/min):	3.368	Equation 2.21
	(scfm):	82.56	
	(mcf/yr):	42,104.3	
Total Maximum Exhaust Gas Flowrate:	(scfm):	8,083	

CALCULATED CAPITAL COSTS

Oxidizer Equipment Cost (EC):	313,915	Equation 2.33
Auxiliary Equipment:		
Total Equipment Cost--base:	313,915	Sum of EC and auxiliary equipment
Total Equipment Cost--escalated (A):	431,573	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):	509,256	Table 2.8
Total Capital Investment (TCI = 1.61B):	**819,903**	Table 2.8

ANNUAL COST INPUTS

Operating factor (hr/yr):	8,500	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	0.50	Table 2.10
Maintenance labor factor (hr/sh):	0.50	Table 2.10
Electricity price ($/kwh):	0.076	
Natural gas price ($/mscf):	4.71	
Annual interest rate (fraction):	0.08	
Control system life (years):	10.00	
Capital recovery factor:	0.149	
Taxes, insurance, admin. factor:	0.04	Table 2.10
Pressure drop (in. w.c.):	15.0	Table 2.11
Overhead factor:	0.60	Table 2.10

ANNUAL COSTS

Item	**Cost ($/yr)**	
Operating labor	23,375	
Supervisory labor (15% of operator labor cost)	3,506	Table 2.10
Maintenance labor	23,375	
Maintenance materials (100% of maintenance labor)	23,375	Table 2.10
Natural gas	198,311	
Electricity	15,272	Equation 2.42
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10
Taxes, insurance, administrative	32,796	Table 2.10
Capital recovery (= CRF * TCI)	122,190	Table 2.10
Total Annual Cost	**486,379**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All equation and table references are from Section 3.2, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 5. **Total Annual Costs - Catalytic Oxidizer**
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1988: 342.5 from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015: 537.0 from *Chemical Engineering* magazine

INPUT PARAMETERS			
-- Exhaust Gas flowrate (scfm):		8,000	
-- Reference temperature (oF):		77	
-- Inlet gas temperature (oF):		70	
-- Inlet gas density (lb/scf):		0.0739	air
-- Primary heat recovery (fraction):		**0.70**	
-- Waste gas heat content (BTU/scf):		1.0	Equation 2.16
-- Waste gas heat content (BTU/lb):		13.5	
-- Gas heat capacity (BTU/lb-oF):		0.40	
-- Combustion temperature (oF):		**650**	
-- Preheat temperature (oF):		476	Equation 2.18
-- Fuel heat of combustion (BTU/lb):		21,502	methane
-- Fuel density (lb/ft3):		0.0408	methane
CALCULATED PARAMETERS			
-- Auxiliary Fuel Requirerment:	(Btu/hour):	447,860	Equation 2.21
	(scfm):	7.5	
	(mcf/year):	3,807	
-- Total Maximum Exhaust Gas Flowrate:	(scfm):	8,007	
-- Catalyst Volume (ft3):		15.5	
CALCULATED CAPITAL COSTS			
Equipment Costs ($):			
@ 0 % heat recovery:		0	Equation 2.34
@ 35 % heat recovery:		0	Equation 2.35
@ 50 % heat recovery:		0	Equation 2.36
@ 70 % heat recovery:		207,361	Equation 2.37
Total Equipment Cost--base:		207,361	
Total Equipment Cost--escalated (A):		351,446	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):		414,706	Table 2.8
Total Capital Investment (TCI = 1.61B):		**667,677**	Table 2.8

ANNUAL COST INPUTS		
Operating factor (hr/yr):	8500	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	**0.5**	Table 2.10
Maintenance labor factor (hr/sh):	**0.5**	Table 2.10
Electricity price ($/kwh):	0.076	
Catalyst price ($/ft3):	650	
Natural gas price ($/mscf):	4.71	
Annual interest rate (fraction):	0.08	
Control system life (years):	10	
Catalyst life (years):	5	
Capital recovery factor (system):	0.1490	
Capital recovery factor (catalyst):	0.2505	
Taxes, insurance, admin. factor:	0.04	Table 2.10
Pressure drop (in. w.c.):	21.0	

CALCULATED ANNUAL COSTS		
Item	**Cost ($/yr)**	
Operating labor	23,375	
Supervisory labor	3,506	15% of Operator, Table 2.10
Maintenance labor	23,375	
Maintenance materials	23,375	=Maintenance Labor, Table 2.10
Natural gas	17,930	
Electricity	21,184	
Catalyst replacement	2,727	
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10
Taxes, insurance, administrative	26,707	
Capital recovery	97,881	
Total Annual Cost	**284,239**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All equation and table references are from Section 3.2, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 6. Total Annual Costs - Carbon Adsorber (On-Site Regeneration)
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1999:	390.6	from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine

INPUT PARAMETERS

Inlet stream flowrate (acfm):	8,000	
Inlet stream temperature (oF):	70	
Inlet stream pressure (atm):	1	
VOC to be condensed:	Benzyl Alcohol	
Maximum Inlet VOC flowrate (lb/hr):	3.53	
VOC molecular weight (lb/lb-mole):	108	
VOC inlet volume fraction:	2.63E-05	
VOC inlet concentration (ppmv):	26.3	
VOC inlet partial pressure (psia):	0.00039	
Required VOC removal (fraction):	0.95	
Annual VOC inlet (tons):	13.5	Based on 90% capture of source emissions
Adsorption time (hr):	16.0	
Desorption time (hr):	4.0	
Number of adsorbing vessels:	1	Maximum of 100,000 cfm per vessel
Superficial carbon bed velocity (ft/min):	50.0	Normal range is 10 fpm to 100 fpm; picked mid-point
Carbon price ($/lb):	1.48	For fire-proof carbon
Material of construction:	1.3	Table 1.2; Stainless steel 316

CARBON & VESSEL PARAMETERS

Carbon equil. capacity (lb VOC/lb carbon):	0.35	
Carbon working capacity (lb VOC/lb carbon):	0.1750	50% of equilibrium capacity
Number of desorbing vessels:	0	Intermittent system; will desorb at end of day
Total number of vessels:	1	
Carbon requirement, total (lb):	5,000	Equation 1.13 or 1.14, depending if system is continuous or intermittent
Carbon requirement per vessel (lb):	5,000	
Gas flowrate per adsorbing vessel (acfm):	8,000	Vertical vessel, since flow under 9000 cfm
Adsorber vessel diameter (ft):	14.273	Equation 1.18 or 1.21, depending if horizontal or vertical vessel
Adsorber vessel length (ft):	5.042	Equation 1.19 or 1.23, depending if horizontal or vertical vessel
Adsorber vessel surface area (ft2):	546.07	Equation 1.24
Carbon bed thickness (ft):	1.042	Equation 1.31
Total pressure drop across all carbon beds (in. w.c.):	2.204	Equation 1.30
Ductwork friction losses (in. w.c.):	5.227	See box at right
Total system pressure drop (in. w.c.):	7.431	

CALCULATED CAPITAL COSTS

Adsorber vessels	47,478	Equation 1.25
Carbon	7,400	
Other equipment (condenser, decanter, etc.)	62,700	
Auxiliary equipment (condensed liquid tanks)	25,000	See References 2 & 3
Boiler (and associated equip.) for steam regeneration	37,700	See Reference 4
Total equipment cost ($)--base:	96,651	Equation 1.27
Total Equipment Cost - base (adsorber+auxiliary+boiler):	159,351	
Total Equipment Cost--escalated (A):	219,078	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):	258,512	Table 1.3
Total Capital Investment (TCI = 1.61B):	**416,204**	Table 1.3

Ductwork losses (from Section 2, Chapter 1 of OAQPS Manual):

1. Loss per 100 ft of straight duct = $(0.136)(1/D)^{1.18}(u/1000)^{1.8}$

D = duct diameter, ft

u = average duct velocity, fpm

Total straight length:	500	ft
Diameter:	1.67	ft
Duct velocity:	3664	fpm
Straight duct loss:	3.85	in. w.c.

2. Elbow friction loss = $(k)(u/4016)^2$

k = 0.33 (from Table 1.7, assuming radius of curvature = 1.5)

u = average duct velocity, fpm

Number of elbows:	5	
Duct velocity:	3664	fpm
Total Elbow loss:	1.37	in. w.c.

Total Ductwork Loss = duct loss + elbow loss

Table 6. Total Annual Costs - Carbon Adsorber (On-Site Regeneration)
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

ANNUAL COST INPUTS

Operating factor (hr/yr):	8500.00	
Operating labor rate ($/hr):	44.00	
Maintenance labor rate ($/hr):	44.00	
Operating labor factor (hr/sh):	**0.50**	Table 1.6
Maintenance labor factor (hr/sh):	**0.50**	Table 1.6
Electricity price ($/kWhr):	0.08	
Recovered VOC value ($/lb):	**0.00**	Not re-sellable, due to mixture of different types of solvents
Steam price ($/1000 lb):	5.67	
Cooling water price ($/1000 gal):	6.00	
Liquid waste disposal ($/gallon):	1.52	See Reference 5; this is added cost that is not addressed in OAQPS manual
Spent carbon disposal ($/lb):	**0.40**	See Reference 7
Carbon replacement labor ($/lb):	**0.05**	Table 1.6
Overhead rate (fraction):	**0.60**	Table 1.6
Annual interest rate (fraction):	0.080	
Control system life (years):	10	
Capital recovery factor (system):	0.1490	
Carbon life (years):	5.0	
Capital recovery factor (carbon):	0.2505	
Taxes, insurance, admin. factor:	0.04	Table 1.6

CALCULATED ANNUAL COSTS

Item	Cost ($/yr)	
Operating labor	23,375	
Supervisory labor	3,506	
Maintenance labor	23,375	
Maintenance materials	23,375	= Maintenance labor cost
Electricity	7,642	Equations 1.32 and 1.34 (based on energy needed for system fan, bed drying/cooling fan, and the coolir
Steam	536	Based on 3.5 lbs steam per lb of VOC (per OAQPS)
Cooling water	1,945	Equation 1.29
Carbon replacement	2,064	
Liquid waste disposal	14,726	Assume 90% of steam is condensed; this is an added cost that is not addressed in OAQPS manual
Spent carbon disposal	400	Total carbon mass, divided by life, times cost per pound
Overhead	44,179	Table 1.6
Taxes, insurance, administrative	16,648	
Capital recovery	62,027	
Total Annual Cost (without credits)	223,798	
Recovery credits	0	
Total Annual Cost (with credits)	**223,798**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All table and equation references in this spreadsheet pertain to Section 3.1, Chapter 1 of EPA Control Cost Manual, 6th Ed.

Table 7. Total Annual Costs - Rotary Concentrator/Oxidizer
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1996:	381.7	from *Chemical Engineering* maga
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* maga

PARAMETERS	***INPUT***	
Flowrate (cfm)	8,000	
Control device input mass (tons/year)	13.5	
Concentration (avg. ppm)	24.52	
Facility operating schedule (hours/year)	8,500	
Thermal oxidizer temperature (F)	1,400	
Fuel cost, ($/million BTU)	4.71	
Electricity cost, ($/kwhr)	0.076	
Capital recovery factor	0.1490	
Taxes, insurance, admin. factor:	0.04	Table 2.10
UTILITY COST CALCULATIONS		
Heat recovery (%)	50	
Electrical power (kW)	8.7	Equation 2.42, Section 3.2
Fuel usage (Btu/hr)	532,299	Equation 2.21, Section 3.2
Capital Costs		
Equipment cost (EC)	164,701	Durr budgetary costs, 3/15/1996
Total Equipment Cost--escalated (A):	231,711	
Purchased Equipment Cost (B = 1.18A):	273,420	
Total Capital Investment (TCI = 1.61B):	**440,205**	
Annual Operating Costs		
Operator labor	23,375	Table 2.10, Section 3.2
Supervisory labor	3,506	Table 2.10, Section 3.2
Maintenance labor	23,375	Table 2.10, Section 3.2
Maintenance materials	23,375	Table 2.10, Section 3.2
Thermal incinerator fuel cost	21,311	
Electrical cost	7,887	
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10, Section 3.2
Property tax, insurance, administration	17,608	Table 2.10, Section 3.2
Capital recovery cost	65,604	
Total annualized cost ($/year)	**230,219**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

Equation and table references are from Section 3.2, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 8. Total Annual Costs - Biofiltration
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 2010:	550.8	from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine

PARAMETERS	***INPUT***
Flowrate (cfm)	8,000
Source emission rate (tons/year)	15.0
Capture efficiency (% wt)	90%
Emissions routed to control device (tons/year)	13.50
Concentration (avg. ppm)	24.52
Facility operating schedule (hours/year)	8,500
Thermal oxidizer temperature (F)	N/A
Fuel cost, ($/million BTU)	N/A
Electricity cost, ($/kwhr)	0.076
Capital recovery factor	0.1490

UTILITY COST CALCULATIONS

Heat recovery (%)	N/A	
Electrical power (kW)	12	vendor estimate (PPC, 2010)**
Fuel usage (Btu/hr)	N/A	

Capital Costs

Equipment cost (EC)	275,000	vendor estimate (PPC, 2010)**
Total Equipment Cost--escalated (A):	268,110	ratio of CEPCI factors
Purchased Equipment Cost (B = 1.18A):	316,370	Table 2.8, Section 3.2
Total Capital Investment (TCI = 1.61B):	**509,355**	Table 2.8, Section 3.2

Annual Operating Costs

Operator labor	23,375	Table 2.10, Section 3.2
Supervisory labor	3,506	Table 2.10, Section 3.2
Maintenance labor	23,375	Table 2.10, Section 3.2
Maintenance materials	23,375	Table 2.10, Section 3.2
Thermal incinerators fuel cost	N/A	
Electrical cost	7,752	
Overhead (60% of labor & maintenance costs)	44,179	Table 2.10, Section 3.2
Property tax, insurance, administration	20,374	Table 2.10, Section 3.2
Capital recovery cost	75,909	
Total annualized cost ($/year)	**221,845**	

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

** For a 3500 cfm system; from *Solutions to Address VOC Emissions from Acid Wash Primer Wash Usage at Letterkenny Army Depot*, by AMCOM G-4 Analysis Branch, January 2010.

Table 9. Total Annual Costs - Refrigerated Condenser
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1990:	357.6	from *Chemical Engineering* magazine
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine

INPUT PARAMETERS:

Inlet stream flowrate (scfm):		8000
Inlet stream temperature (oF):		70
VOC to be condensed:		Benzyl Alcohol
VOC inlet volume fraction:		0.00003
Required VOC removal (fraction):		0.90
Antoine equation constants for VOC:		
(based on mmHg & degrees C)	A:	7.923
	B:	2060.530
	C:	203.928
VOC heat of condensation (BTU/lb-mole):		14,270
VOC heat capacity (BTU/lb-mole-oF):		30.800
Coolant specific heat (BTU/lb-oF):		0.650
VOC boiling point (oF):		403
VOC critical temperature (oR):		1217
VOC molecular weight (lb/lb-mole):		108.1
VOC condensate density (lb/gal):		8.72
Air heat capacity (BTU/lb-mole-oF):		6.95

DESIGN PARAMETERS:

Outlet VOC partial pressure (mm Hg):	0.002
Condensation temperature, Tc (oF):	14.1
VOC flowrate in (lb-moles/hr):	0.032
VOC flowrate out (lb-moles/hr):	0.003
VOC condensed (lb-moles/hr):	0.029
(lb/hr):	3.1
VOC heat of condensation @ Tc (BTU/lb-mole):	18,913
Enthalpy change, condensed VOC (BTU/hr):	599
Enthalpy change, uncondensed VOC (BTU/hr):	6
Enthalpy change, air (BTU/hr):	475,633
Condenser heat load (BTU/hr):	476,237
Heat transfer coefficient, U (BTU/hr-ft2-oF):	20.00
Log-mean temperature difference (oF):	27.6
Condenser surface area (ft2):	862.0
Coolant flowrate (lb/hr):	29,307
Refrigeration capacity (tons):	39.69
Electricity requirement (kW/ton):	4.7

CAPITAL COSTS

Equipment Costs ($):	
Refrigeration unit/single-stage (< 10 tons):	0
Refrigeration unit/single-stage (> 10 tons):	95,725
Multistage refrigeration unit:	0
VOC condenser:	33,082
Recovery tank:	1,968
Auxiliaries (ductwork, etc.):	
Total equipment cost ($)--base:	130,774
Total Equipment Cost--escalated (A):	196,381
Purchased Equipment Cost (B = 1.18A):	231,729
Total Capital Investment (TCI = 1.74B):	**403,209**

ANNUAL COST INPUTS:

Operating factor (hr/yr):	8500
Operating labor rate ($/hr):	44.00
Maintenance labor rate ($/hr):	44.00
Operating labor factor (hr/sh):	0.50
Maintenance labor factor (hr/sh):	0.50
Electricity price ($/kWhr):	0.076
Recovered VOC value ($/lb):	0.00
Annual interest rate (fraction):	0.08
Control system life (years):	10
Capital recovery factor:	0.1490
Taxes, insurance, admin. factor:	0.04

ANNUAL COSTS:

Item	Cost ($/yr)
Operating labor	23,375
Supervisory labor	3,506
Maintenance labor	23,375
Maintenance materials	23,375
Electricity	141,760
Overhead	44,179
Taxes, insurance, administrative	16,128
Capital recovery	60,090
Total Annual Cost (without credits)	335,788
Recovery credits	0
Total Annual Cost (with credits)	**335,788**

* CEPCI is Chemical Engineering Plant Cost Index, published by *Chemical Engineering* magazine

All equations are from Section 3.1, Chapter 2, EPA OAQPS Control Cost Manual, 6th Ed.

Table 10. Cost Spreadsheet for Straight Ductwork for Routing To Controls
Update January 2017
Letterkenny Army Depot (LEAD), Franklin County, PA

SOURCE: Building 377 Stripping Tanks

* CEPCI at reference date, 1993:	359.2	from *Chemical Engineering* magazine	
Most recent CEPCI, Dec 2015:	537.0	from *Chemical Engineering* magazine	

INPUT PARAMETERS

Inlet stream flowrate (acfm):	8,000		
Duct velocity (ft/min):	3,664	61.1	ft/sec
Duct length (ft):	500.0		
Material of construction:	Galv. CS sh.		
Insulation thickness (in.): (text input)	1.0		
Duct design:	Circ.-spiral		
Cost equation parameters:	2.560	a:	
	0.937	b:	
Cost equation form:	1		
Control system installation factor:	1.5		
(if no system, enter '0')			
Fan-motor combined efficiency (fraction):	0.60		

DESIGN PARAMETERS

Number of exhaust fans:	1
Duct diameter (in.):	20.0
Pressure drop (in. w.c.):	3.853

CAPITAL COSTS

Equipment Cost ($)--base:	21,197
' ' '--escalated:	31,689
Purchased Equipment Cost ($):	34,224
Total Capital Investment per Exhaust Fan($):	51,337
Overall Total Capital Investment($):	**51,337**

ANNUAL COST INPUTS

Operating factor (hours/year):	8500
Electricity price ($/kWhr):	0.076
Annual interest rate (fractional):	0.08
Ductwork economic life (years):	20
Capital recovery factor (system):	0.1019
Taxes, insurance, admin. factor:	0.04

ANNUAL COSTS

Item	Cost ($/yr)
Electricity	3,900
Taxes, insurance, administrative	2,053
Capital recovery	5,229
Total Annual Cost	**11,182**

Appendix C

RACT III Regulation Posting

RULES AND REGULATIONS

Title 25—ENVIRONMENTAL PROTECTION

ENVIRONMENTAL QUALITY BOARD

[25 PA. CODE CHS. 121 AND 129]

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

The Environmental Quality Board (Board) amends Chapters 121 and 129 (relating to general provisions; and standards for sources) to read as set forth in Annex A. This final-form rulemaking amends Chapter 129 to establish additional presumptive reasonably available control technology (RACT) requirements and RACT emission limitations for certain major stationary sources of oxides of nitrogen (NO_x) and volatile organic compound (VOC) emissions in existence on or before August 3, 2018, to address the Federal requirements for the 2015 8-hour ozone National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA) (42 U.S.C.A. §§ 7401—7671q).

This final-form rulemaking amends Chapter 121 to add terms to and amend existing terms in § 121.1 (relating to definitions) to support these final-form amendments to Chapter 129.

This final-form rulemaking will be submitted to the United States Environmental Protection Agency (EPA) for approval as a revision to the Commonwealth's State Implementation Plan (SIP) following promulgation of this final-form rulemaking.

This final-form rulemaking was adopted by the Board at its meeting on August 9, 2022.

A. *Effective Date*

This final-form rulemaking will be effective upon publication in the *Pennsylvania Bulletin*.

B. *Contact Persons*

For further information, contact Viren Trivedi, Chief, Division of Permits, Bureau of Air Quality, Rachel Carson State Office Building, P.O. Box 8468, Harrisburg, PA 17105-8468, (717) 783-9476; or Jesse C. Walker, Assistant Counsel, Bureau of Regulatory Counsel, Rachel Carson State Office Building, P.O. Box 8464, Harrisburg, PA 17105-8464, (717) 787-7060. Persons with a disability may use the Pennsylvania Hamilton Relay Service, (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This final-form rulemaking is available on the Department of Environmental Protection's (Department) web site at www.dep.pa.gov (select "Public Participation," then "Environmental Quality Board" and then navigate to the Board meeting of August 9, 2022).

C. *Statutory Authority*

This final-form rulemaking is authorized under section 5(a)(1) of the Air Pollution Control Act (APCA) (35 P.S. § 4005(a)(1)), which grants the Board the authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth; and section 5(a)(8) of the APCA, which grants the Board the authority to adopt rules and regulations designed to implement the provisions of the CAA.

D. *Background and Purpose*

This final-form rulemaking establishes §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS) to meet CAA requirements for the control of ground-level ozone. Emissions of NO_x and VOCs are precursors for ground-level ozone formation. Ground-level ozone, a public health and welfare hazard, is not emitted directly to the atmosphere from air contamination sources, but forms from the photochemical reaction between emissions of VOCs and NO_x in the presence of sunlight.

Ground-level ozone is a highly reactive gas which at sufficient concentrations can produce a wide variety of harmful public health and welfare effects. At elevated concentrations, ground-level ozone can adversely affect human and animal health, vegetation, materials, economic values, and personal comfort and well-being. It can cause damage to important food crops, forests, livestock and wildlife. Repeated exposure to ground-level ozone pollution may cause a variety of adverse health effects for both healthy people and those with existing conditions including difficulty in breathing, chest pains, coughing, nausea, throat irritation and congestion. It can worsen bronchitis, heart disease, emphysema and asthma, reduce lung capacity and lead to increased morbidity. Asthma is a significant and growing threat to children and adults. High levels of ground-level ozone also affect animals including pets, livestock and wildlife in ways similarly to humans.

The EPA is responsible for establishing NAAQS, or maximum allowable concentrations in the ambient air, for six criteria air pollutants considered harmful to public health and welfare, including the environment: ground-level ozone; particulate matter; nitrogen dioxide (NO_2); carbon monoxide; sulfur dioxide; and lead. Section 109 of the CAA (42 U.S.C.A. § 7409) established two types of NAAQS: primary standards, which are limits set to protect public health; and secondary standards, which are limits set to protect public welfare and the environment, including protection against visibility impairment and from damage to animals, crops, vegetation and buildings. The EPA established primary and secondary ground-level ozone NAAQS to protect public health and welfare.

On April 30, 1971, the EPA promulgated primary and secondary NAAQS for photochemical oxidants, which include ozone, under section 109 of the CAA. See 36 FR 8186 (April 30, 1971). These were set at an hourly average of 0.08 parts per million (ppm) total photochemical oxidants not to be exceeded more than 1 hour per year. On February 8, 1979, the EPA announced a revision to the then-current 1-hour standard. See 44 FR 8202 (February 8, 1979). The final rule revised the level of the primary 1-hour ozone standard from 0.08 ppm to 0.12 ppm and set the secondary standard identical to the primary standard. This revised 1-hour standard was reaffirmed on March 9, 1993. See 58 FR 13008 (March 9, 1993).

Section 110(a) of the CAA (42 U.S.C.A. § 7410(a)) gives states the primary responsibility for achieving the NAAQS. Section 110(a) of the CAA provides that each state shall adopt and submit to the EPA a plan to implement measures (an SIP) to enforce the NAAQS or a revision to the NAAQS promulgated under section 109(b) of the CAA. An SIP includes the regulatory programs,

actions and commitments a state will carry out to implement its responsibilities under the CAA. Once approved by the EPA, an SIP is legally enforceable under both Federal and state law.

Section 172(c)(1) of the CAA (42 U.S.C.A. § 7502(c)(1)) provides that SIPs for nonattainment areas must include "reasonably available control measures," including RACT, for affected sources of emissions. RACT is defined as the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. See 44 FR 53762 (September 17, 1979). Section 182 of the CAA (42 U.S.C.A. § 7511a) requires that, for areas that exceed the NAAQS for ozone, states shall develop and administer a program that mandates that certain major stationary sources implement RACT. Under sections 182(f)(1) and 184(b)(2) of the CAA (42 U.S.C.A. §§ 7511a(f)(1) and 7511c(b)(2)), these RACT requirements are applicable to all sources in this Commonwealth that emit or have a potential to emit 100 tons per year (TPY) or more of NO_x. Under sections 182(b)(2) and 184(b)(2) of the CAA, these RACT requirements are applicable to all sources in this Commonwealth that emit or have a potential to emit at least 50 TPY of VOCs. Sources that emit or have the potential to emit equal to or greater than these levels are classified as "Title V" facilities or "major" facilities or sources. The owners and operators of these facilities are subject to the permitting requirements of Title V of the CAA, namely sections 501—507 of the CAA (42 U.S.C.A. §§ 7661—7661f). For more detail, see § 121.1 for the regulatory definitions of the terms "major facility," "major NO_x emitting facility," "major VOC emitting facility" and "Title V facility."

For RACT implementation purposes, this entire Commonwealth is treated as a "moderate" ozone nonattainment area, because this Commonwealth is included in the Ozone Transport Region (OTR) established by operation of law under sections 176A and 184 of the CAA (42 U.S.C.A. §§ 7506a and 7511c). Section 184(b) of the CAA addresses provisions for the SIP of a state included in the OTR. Section 184(b)(1)(B) of the CAA requires that states in the OTR, including this Commonwealth, submit an SIP revision requiring implementation of RACT for all major stationary sources of NO_x and VOC emissions in the state and not just for those sources that are located in designated nonattainment areas of the state. The RACT requirements established in this final-form rulemaking apply to the owners and operators of all major facilities or sources in this Commonwealth that emit or have a potential to emit equal to or greater than 100 TPY of NO_x or 50 TPY of VOCs, as required under section 184 of the CAA for states in the OTR. Consequently, the Commonwealth's SIP must include RACT regulations applicable Statewide to the owners and operators of affected major stationary sources of NO_x and VOC emissions. The Commonwealth's RACT regulations under §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs) were implemented Statewide in January 1994 for the 1979 and 1993 1-hour ozone standard. See 24 Pa.B. 467 (January 15, 1994). Additionally, because the five-county Philadelphia area was designated as severe ozone nonattainment for the 1979 1-hour standard, the owners and operators of existing sources of 25 TPY or more of either pollutant in the five-county Philadelphia area were required under section 182(d) of the CAA to implement the RACT requirements in §§ 129.91—129.95. These requirements remain applicable to the owners and operators of these sources of 25 TPY or more in the five-county Philadelphia area.

On July 18, 1997, the EPA concluded that revisions to the then-current 1-hour ozone primary standard to provide increased public health protection were appropriate at this time to protect public health with an adequate margin of safety. Further, the EPA determined that it was appropriate to establish a primary standard of 0.08 ppm averaged over 8 hours. At this time, the EPA also established a secondary standard equal to the primary standard. See 62 FR 38856 (July 18, 1997). Because ozone monitoring data is measured out to three decimal places, the standard effectively became 0.084 ppm because of rounding; areas with ozone levels as high as 0.084 ppm were considered as meeting the 0.08 ppm standard. See 73 FR 16436 (March 27, 2008). In 2004, the EPA designated 37 counties in this Commonwealth as 8-hour ozone nonattainment areas for the 1997 8-hour ozone NAAQS. See 69 FR 23858, 23931 (April 30, 2004).

On March 27, 2008, the EPA lowered the primary and secondary 8-hour ozone standards from 0.08 ppm to 0.075 ppm. See 73 FR 16436 (March 27, 2008). The 2008 8-hour ozone standard is expressed to a level of three decimal places rather than two decimal places as in the 1997 standard. See 72 FR 37818 (July 11, 2007); 73 FR 16436. The EPA made designations for the 2008 8-hour ozone standards on April 30, 2012, with an effective date of July 20, 2012. The EPA designated all or portions of Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Carbon, Chester, Delaware, Fayette, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, Washington and Westmoreland Counties as "marginal" nonattainment for the 2008 8-hour ozone NAAQS, with the rest of this Commonwealth designated unclassifiable/attainment. See 77 FR 30088, 30143 (May 21, 2012).

The Commonwealth's RACT regulations under §§ 129.96—129.100 (relating to additional RACT requirements for major sources of NO_x and VOCs) were implemented in April 2016 for the 1997 and 2008 8-hour ozone standards. See 46 Pa.B. 2036 (April 23, 2016).

On October 26, 2015, the EPA lowered the primary and secondary 8-hour ozone standards from 0.075 ppm to 0.070 ppm. See 80 FR 65292 (October 26, 2015). Like the 2008 8-hour ozone standard, the 2015 8-hour ozone standard is expressed to a level of three decimal places. See 79 FR 75234 (December 17, 2014); 80 FR 65292. The EPA made designations for the 2015 8-hour ozone standards on June 4, 2018, with an effective date of August 3, 2018. On June 4, 2018, the EPA designated Bucks, Chester, Delaware, Montgomery and Philadelphia Counties as "marginal" nonattainment, with the rest of this Commonwealth designated attainment/unclassifiable. See 83 FR 25776, 25828 (June 4, 2018). The Department's preliminary analysis of the 2021 ambient air ozone season monitoring data shows that all ozone samplers in this Commonwealth are monitoring attainment of the 2015 8-hour ozone NAAQS except these two: the Bristol sampler in Bucks County and the Philadelphia Air Management Services Northeast Airport sampler in Philadelphia County; all ozone samplers in this Commonwealth are projected to monitor attainment of the 1997 and 2008 8-hour ozone NAAQS.

The EPA's final rules to implement the 2008 and 2015 8-hour ozone NAAQS require states with areas classified as "moderate" nonattainment or higher to submit a demonstration, as a revision to the SIP, that their current regulations fulfill 8-hour ozone RACT requirements for all

control technique guideline (CTG) categories and all major non-CTG sources. See 80 FR 12264 (March 6, 2015) and 83 FR 62998 (December 6, 2018). This requirement applies to this entire Commonwealth due to its Statewide designation of "moderate" ozone nonattainment as a member of the OTR. Therefore, a re-evaluation of what constitutes RACT for affected sources in this Commonwealth must be fulfilled each time the EPA revises a NAAQS. This was the case in 1997 when the EPA replaced the 1993 1-hour ozone standard with the 8-hour ozone standard and was the case in 2008 and again in 2015 when the EPA lowered the 8-hour ozone standard. State regulations to control emissions of NO_x and VOCs from major stationary sources will be reviewed by the EPA to determine if the provisions meet the RACT requirements of the CAA and its implementing regulations designed to attain and maintain the ozone NAAQS. Therefore, the Commonwealth must submit a SIP revision to demonstrate how it will attain and maintain the 2015 8-hour ozone standard in the nonattainment areas.

The EPA's past implementation of regulations for revised NAAQS ozone standards have required OTR states to submit RACT SIP revisions based on the time frame provided in section 184 of the CAA as measured from the effective date of designations made for those revised NAAQS, rather than from November 15, 1990. This requirement was first codified in 40 CFR 51.916 (relating to what are the requirements for an Ozone Transport Region under the 8-hour NAAQS?) for the 1997 8-hour ozone NAAQS, later codified for the 2008 8-hour ozone NAAQS in 40 CFR 51.1116 (relating to requirements for an Ozone Transport Region) and most recently codified for the 2015 8-hour ozone NAAQS in 40 CFR 51.1316 (relating to requirements for an Ozone Transport Region). Under these provisions, states in the OTR were required to submit SIP revisions addressing the RACT requirements of section 184 of the CAA for the revised 2015 8-hour ozone NAAQS not later than 2 years after the effective date of August 3, 2018, or by August 3, 2020. See 83 FR 25776. The Commonwealth has missed this deadline, but the Department is working to submit the required SIP revision to the EPA as quickly as possible.

To address the Commonwealth's RACT obligations under section 184 of the CAA, the Department conducted a generic RACT analysis to determine if additional NO_x or VOC emissions limitations or controls beyond those established for the 1997 and 2008 8-hour ozone NAAQS under §§ 129.96—129.100 would represent RACT for the 2015 8-hour ozone NAAQS. This generic analysis identified existing affected source categories by size and fuel type; identified available technically and economically feasible control options for NO_x or VOC emissions, or both, for each type of existing source category; estimated emission reduction potential for each control technology; identified costs for technologies, using appropriate updates; and evaluated cost-effectiveness using the guidance provided in the EPA Air Pollution Control Cost Manual, EPA/452/B-02-001, 6th Edition, January 2002, as amended, and as updated in the 7th Edition beginning in 2019, for both uncontrolled and controlled sources (combinations of technologies). After conducting this analysis, the Department determined what constitutes RACT for each affected source category in this Commonwealth.

Based on this analysis, the Board has determined that additional cost-effective controls represent RACT for the 2015 8-hour ozone NAAQS beyond those established for the 1997 and 2008 8-hour ozone NAAQS. The RACT emission limitations and requirements being implemented for the 2015 ozone NAAQS are at least as stringent as the RACT emission limitations and requirements for the 1979, 1997 and 2008 ozone NAAQS. To the extent that a prior RACT emission limitation or requirement established for the 1979, 1997 or 2008 ozone NAAQS is more stringent, the owner and operator of the affected source shall comply with the more stringent emission limitation or requirement. There are ten existing source categories that are affected by this final-form rulemaking: combustion units; municipal solid waste landfills; municipal waste combustors; process heaters; turbines; stationary internal combustion engines; cement kilns; glass melting furnaces; lime kilns; and combustion sources including direct-fired heaters, furnaces or ovens; as well as other existing source categories that are not regulated elsewhere under Chapter 129.

The final-form RACT requirements apply to the owners and operators of subject facilities or sources in this Commonwealth that emit or have a potential to emit 100 TPY or more of NO_x or 50 TPY or more of VOCs, including those located in Bucks, Chester, Delaware, Montgomery and Philadelphia Counties. There are approximately 500 Title V facilities in this Commonwealth under the Department's jurisdiction whose owners and operators may be subject to this final-form rulemaking. The Department preliminarily determined that the owners and operators of approximately 10—30 affected major facilities or sources under the Department's jurisdiction meet the definition of "small business" specified in section 3 of the Regulatory Review Act (71 P.S. § 745.3). The owners and operators of the affected facilities or sources are familiar with the existing requirements for emissions control, recordkeeping and reporting for their entity and have the professional and technical skills needed for compliance with these final-form requirements.

The Board has determined that this final-form rulemaking fulfills the requirements for RACT re-evaluation. As more fully discussed in section E of this preamble, the Board is establishing a compliance option hierarchy whereby the owner or operator of a source or facility that is subject to § 129.111 (relating to applicability) that cannot meet the presumptive RACT requirements and RACT emission limitations under § 129.112 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule) may apply for a facility-wide or system-wide NO_x emissions averaging plan under § 129.113 (relating to facility-wide or system-wide NO_x emissions averaging plan general requirements) or an alternative case-by-case RACT determination under § 129.114 (relating to alternative RACT proposal and petition for alternative compliance schedule). The Board provides the owners and operators of certain affected facilities or sources with a less resource intensive demonstration established under § 129.114(i) of this final-form rulemaking as an alternative to performing a complete case-by-case RACT analysis. This less resource intensive demonstration may be used by an owner or operator of a subject source or facility to demonstrate that the previous case-by-case determination made under §§ 129.96—129.100 (RACT II) remains RACT for the 2015 8-hour ozone standard. For the owners and operators of eligible subject sources, this approach will likely reduce the consulting costs that an owner or operator may choose to incur. Additionally, there is no fee due to the Department to submit an analysis under § 129.114(i).

The Department must ensure that the 1997, 2008 and 2015 8-hour ozone NAAQS are attained and maintained by implementing permanent and Federally enforceable control measures. Reductions in ozone precursor emis-

sions that are achieved following the adoption and implementation of RACT emission control measures for source categories covered by this final-form rulemaking will assist the Commonwealth in making substantial progress in attaining and maintaining the 1997, 2008 and 2015 8-hour ozone NAAQS. The Board has determined that the requirements of this final-form rulemaking are reasonably necessary to attain and maintain the health-based and welfare-based 8-hour ozone NAAQS in this Commonwealth and to satisfy related CAA requirements.

The Department presented the draft final-form Annex A to the Air Quality Technical Advisory Committee on April 7, 2022, and to the Small Business Compliance Advisory Committee on April 27, 2022, and briefed the committees on the comments received on the proposed rulemaking. The Department presented the draft final-form Annex A to the Citizens Advisory Council's (CAC) Policy and Regulatory Oversight Committee on April 14, 2022, and to the CAC on April 19, 2022. At its meeting on May 18, 2022, the CAC concurred with the Department's recommendation to present this final-form rulemaking to the Board for consideration. Advisory committee meetings are advertised and open to the public.

E. *Summary of Final-Form Rulemaking and Changes from Proposed to Final-Form Rulemaking*

§ 121.1. Definitions

This section contains definitions relating to the air quality regulations. This final-form rulemaking amends § 121.1 to add the terms "combustion source" and "natural gas compression and transmission facility fugitive VOC air contamination source" to support the final-form amendments to Chapter 129.

This final-form rulemaking amends the definition of the proposed term "combustion source." The proposed definition of "combustion source" specified under subparagraph (i) that this is a stationary device that combusts solid, liquid or gaseous fuel used to produce heat or energy for industrial, commercial or institutional use by direct heat transfer. Subparagraph (ii) specified that the term does not include brick kilns, cement kilns or lime kilns. This final-form rulemaking amends the term "combustion source" to specify that it is limited to §§ 129.111—129.115 by adding the words "For purposes of §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS):" before subparagraph (i). There are no changes made to subparagraph (i) from the proposed rulemaking to this final-form rulemaking. Subparagraph (ii) is amended from proposed to this final-form rulemaking to exclude three additional source categories: glass melting furnaces; a source listed in § 129.112(g)(2) or (3) (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule); and a source subject to § 129.112(g)(4). These changes are made in response to comments received on the proposed rulemaking.

There are no changes made to the term and definition of "natural gas compression and transmission facility fugitive VOC air contamination source" from the proposed rulemaking to this final-form rulemaking.

This final-form rulemaking amends the definitions of two existing terms in § 121.1. The definition of the term "major NO_x emitting facility" is amended under subparagraph (v) to add the words "For purposes of §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs), twenty-five" before TPY to clarify that for purposes of §§ 129.91—129.95, a major NO_x emitting facility is a facility which emits or has the potential to emit NO_x from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than 25 TPY for a facility located in Bucks, Chester, Delaware, Montgomery or Philadelphia County. The Commonwealth's RACT regulations under §§ 129.91—129.95 were promulgated on January 15, 1994, and applicable Statewide for the 1979 and 1993 1-hour ozone standard. See 24 Pa.B. 467. The definition of this term is further amended to add subparagraph (vi), which states that "For purposes of §§ 129.96—129.100 and 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs; and additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS), one hundred TPY Statewide." Subparagraph (vi) clarifies that for purposes of §§ 129.96—129.100 and 129.111—129.115, a major NO_x emitting facility is a facility which emits or has the potential to emit NO_x from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than 100 TPY and this rate is applicable Statewide. The Commonwealth's RACT regulations under §§ 129.96—129.100 were promulgated on April 23, 2016, and applicable Statewide for the 1997 and 2008 8-hour ozone standards. See 46 Pa.B. 2036. These changes are made in response to comments received on the proposed rulemaking.

Likewise, the definition of the term "major VOC emitting facility" is amended under subparagraph (iv) to add the words "For purposes of §§ 129.91—129.95, twenty-five" before TPY to clarify that for purposes of §§ 129.91—129.95, a major VOC emitting facility is a facility which emits or has the potential to emit VOCs from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than 25 TPY for a facility located in Bucks, Chester, Delaware, Montgomery or Philadelphia County. The definition of this term is further amended to add subparagraph (v), which states that "For purposes of §§ 129.96—129.100 and 129.111—129.115, fifty TPY Statewide." Subparagraph (v) clarifies that for purposes of §§ 129.96—129.100 and 129.111—129.115, a major VOC emitting facility is a facility which emits or has the potential to emit VOCs from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than 50 TPY and this rate is applicable Statewide. These changes are made in response to comments received on the proposed rulemaking.

There are no other changes made to this section from the proposed rulemaking to this final-form rulemaking.

§ 129.111. Applicability

Subsection (a) provides that, except as specified in subsection (c), the NO_x requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a major NO_x emitting facility that commenced operation on or before August 3, 2018, and the VOC requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a major VOC emitting facility that commenced operation on or before August 3, 2018, for which a requirement or emission limitation, or both, has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107. The owner or operator shall identify and list the sources and facilities subject to this subsection as specified in paragraphs (1) and (2) in the written notification required under

§ 129.115(a) (relating to written notification, compliance demonstration and recordkeeping and reporting requirements).

Subsection (a) is amended from the proposed rulemaking to this final-form rulemaking to add the words "that commenced operation on or before August 3, 2018," after "major NO_x emitting facility," delete the words "were in existence" after "major VOC emitting facility that" and add the words "commenced operation" to clarify that construction or installation of the affected emissions unit at the major NO_x emitting facility or at the major VOC emitting facility had been completed and the emissions unit had begun operating on or before August 3, 2018. The date of August 3, 2018, is the effective date of the designations for the 2015 8-hour ozone standards. On June 4, 2018, the EPA designated Bucks, Chester, Delaware, Montgomery and Philadelphia Counties as "marginal" nonattainment, effective August 3, 2018, with the rest of this Commonwealth designated attainment/unclassifiable. See 83 FR 25776, 25828.

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to clarify that the owner or operator shall identify and list in the written notification required under § 129.115(a) the sources and facilities that commenced operation on or before August 3, 2018, for which a requirement or emission limitation has not been established in the specified sections. Proposed paragraph (1) did not include the words "that commenced operation on or before August 3, 2018." Sources and facilities that commenced operation after August 3, 2018, at a major NO_x emitting facility or at a major VOC emitting facility are subject to a best available technology (BAT) analysis and do not need to be included in the written notification required under § 129.115(a).

Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to clarify that the owner or operator shall identify and list in the written notification required under § 129.115(a) the sources and facilities that commenced operation on or before August 3, 2018, and are subject to the specified sections. The specified sections established RACT emission limitations and RACT requirements consistent with the EPA CTGs for the specified categories of sources. The owner or operator of a source or facility that is subject to one of these specified sections shall comply with the applicable RACT requirements and RACT emission limitations and is not subject to the RACT requirements and RACT emission limitations of §§ 129.111—129.115.

Subsection (a) and paragraphs (1) and (2) are further amended from the proposed rulemaking to this final-form rulemaking to delete the group of sections "129.71—129.73" and "129.75" and add the group of sections "129.71—129.75" inclusive of § 129.74 (relating to control of VOC emissions from fiberglass boat manufacturing materials). These sections establish RACT requirements and RACT emission limitations consistent with the recommendations provided by the EPA in the applicable CTG documents. The owners and operators of sources of emissions or facilities that are subject to the requirements of one or more of §§ 129.71—129.75 are not subject to §§ 129.111—129.115 for these sources of emissions or facilities.

The changes to subsection (a) and paragraphs (1) and (2) are made in response to comments received on the proposed rulemaking.

Subsection (b) provides that, except as specified in subsection (c), the NO_x requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a NO_x emitting facility that commenced operation on or before August 3, 2018, and the VOC requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a VOC emitting facility that commenced operation on or before August 3, 2018, when the installation and operation of a new source after August 3, 2018, or a modification or change in operation after August 3, 2018, of a source that commenced operation on or before August 3, 2018, results in the source or facility meeting the definition of a major NO_x emitting facility or a major VOC emitting facility and for which a requirement or an emission limitation, or both, has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107. The owner or operator shall identify and list the sources and facilities subject to this subsection as specified in paragraphs (1) and (2) in the written notification required under § 129.115(a).

Subsection (b) is amended from the proposed rulemaking to this final-form rulemaking to add the words "that commenced operation on or before August 3, 2018," after "NO_x emitting facility" and after "VOC emitting facility," add the words "and operation" after "installation," add the words "after August 3, 2018," after "of a new source" and "change in operation," delete the words "an existing" and insert the word "a" before "source" and delete the word "after" following "source," and add the words "that commenced operation on or before" before the words "August 3, 2018, results in." These amendments clarify that the owner and operator of a source or a facility that is not major on or before August 3, 2018, becomes subject to §§ 129.111—129.115, as applicable, when the installation and operation of a new source after August 3, 2018, or a modification or change in operation after August 3, 2018, of a source that commenced operation on or before August 3, 2018, results in the source or the facility meeting the definition of a major NO_x emitting facility or a major VOC emitting facility. These changes are made in response to comments received on the proposed rulemaking.

Subsection (b) and paragraphs (1) and (2) are amended from the proposed rulemaking to this final-form rulemaking to delete sections "129.71—129.73" and "129.75" and add sections "129.71—129.75" inclusive of § 129.74. These sections establish RACT requirements and RACT emission limitations consistent with the recommendations provided by the EPA in the applicable CTG documents. The owners and operators of sources of emissions or facilities that are subject to the requirements of one or more of §§ 129.71—129.75 are not subject to §§ 129.111—129.115 for these sources of emissions or facilities.

The changes to subsection (b) and paragraphs (1) and (2) are made in response to comments received on the proposed rulemaking.

Subsection (c) establishes that §§ 129.112—129.114 do not apply to the owner and operator of a NO_x air contamination source that has the potential to emit less than 1 TPY of NO_x located at a major NO_x emitting facility subject to subsection (a) or (b), or to the owner and operator of a VOC air contamination source that has the potential to emit less than 1 TPY of VOC located at a major VOC emitting facility subject to subsection (a) or (b). The owner or operator shall identify and list these sources in the written notification required under § 129.115(a).

There are no changes made to subsection (c) from the proposed rulemaking to this final-form rulemaking.

Subsection (d) establishes that, except as specified in subsection (e), this section and §§ 129.112—129.115 do not apply to the owner and operator of a facility that is not a major NO_x emitting facility or a major VOC emitting facility on or before December 31, 2022.

Subsection (d) is amended from the proposed rulemaking to this final-form rulemaking to add the words "except as specified in subsection (e)" and to amend the date of applicability from the date of publication of this final-form rulemaking to the date certain of December 31, 2022.

The amendment of subsection (d) from the proposed rulemaking to this final-form rulemaking with the compliance date certain of December 31, 2022, in place of the proposed compliance date, which was the date of publication of this final-form rulemaking, is made to address the required implementation deadline of January 1, 2023, in the EPA 2015 ozone implementation rule, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. See 40 CFR 51.1312(a)(3)(i) (relating to requirements for reasonably available control technology (RACT) and reasonably available control measures (RACM)); see also 40 CFR 51.1316(b)(3)(1).

Subsection (e) is added to this final-form rulemaking to establish that if the owner and operator of a facility that complied with subsection (d), that is, the facility was not a major NO_x emitting facility or a major VOC facility on or before December 31, 2022, then meets the definition of a major NO_x emitting facility or a major VOC emitting facility after December 31, 2022, the affected owner or operator shall comply with subsection (b) once the facility meets the applicable major facility threshold. Likewise, if the owner or operator of a NO_x emitting facility or a VOC emitting facility that becomes subject to subsection (b) as a result of meeting the definition of a major NO_x emitting facility or major VOC emitting facility on or before December 31, 2022, then falls below the applicable major facility emission threshold on or before December 31, 2022, and then resumes major facility status after December 31, 2022, that owner or operator shall comply with subsection (b) again once the facility meets the applicable major facility threshold and will be subject again to the applicable RACT requirements and RACT emission limitations of §§ 129.111—129.115.

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

Subsection (a) establishes that the owner and operator of a source listed in one or more of subsections (b)—(k) located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall comply with the applicable presumptive RACT requirement or RACT emission limitation, or both, beginning with the specified compliance date in paragraph (1) or (2), unless an alternative compliance schedule is submitted and approved under subsections (n)—(p) or under § 129.114. Paragraph (1) specifies the compliance date of January 1, 2023, for a source subject to § 129.111(a). Paragraph (2) specifies the compliance date of January 1, 2023, or 1 year after the date the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b). The owner or operator shall meet the applicable standards or regulations within the time frame required by standards or regulations even if the permit is not revised to incorporate the standards or regulations within the required time frame.

There are no changes made to subsection (a) from the proposed rulemaking to this final-form rulemaking.

Subsection (b) establishes that the owner and operator of a source listed in this subsection that is located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall comply with the applicable presumptive RACT requirements in paragraph (1) and the recordkeeping and reporting requirements in paragraph (2).

Paragraph (1) specifies that the owner and operator of one or more of the combustion unit or process heater types listed in paragraph (1)(i) and (ii) shall comply with the applicable presumptive RACT requirements for that source, which include, among other things, inspection and adjustment requirements. Paragraph (1)(i) and (ii) are amended from the proposed rulemaking to this final-form rulemaking to add the words "or process heater" after the words "combustion unit." These changes are made in response to comments received on the proposed rulemaking. There are no other changes made to paragraph (1) from the proposed rulemaking to this final-form rulemaking.

Paragraph (2) specifies the applicable recordkeeping and reporting requirements. Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to delete "§ 129.115(e), (f) or (g)" and add "§ 129.115(f) and (i)" to provide the correct cross reference. There are no other changes made to paragraph (2) from the proposed rulemaking to this final-form rulemaking.

Paragraph (3) specifies that compliance with the applicable presumptive RACT requirements in paragraph (1) and recordkeeping and reporting requirements in paragraph (2) assures compliance with the provisions in §§ 129.93(b)(2)—(5) and 129.97(b)(1)—(3) (relating to presumptive RACT emissions limitations; and presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule). There are no changes made to paragraph (3) from the proposed rulemaking to this final-form rulemaking.

Subsection (c) establishes that the owner and operator of a source listed in this subsection located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall comply with the applicable presumptive RACT requirement, which is the installation, maintenance and operation of the source in accordance with the manufacturer's specifications and with good operating practices.

Subsection (c)(8) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "or" and add a comma after the words "thermal oxidizer" and add the words "or flare" after the words "catalytic oxidizer." These changes are made in response to comments received on the proposed rulemaking. There are no other changes made to subsection (c) from the proposed rulemaking to this final-form rulemaking.

Subsection (d) establishes that, except as specified in subsection (c), the owner and operator of a combustion unit, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source located at a major VOC emitting facility subject to § 129.111 shall comply with the specified presumptive RACT requirement, which is the installation, maintenance and operation of the source

in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source. Subsection (d) is amended from the proposed rulemaking to this final-form rulemaking to add the words "glass melting furnace" after lime kiln, add the words "brick kiln, cement kiln, lime kiln, glass melting furnace" after combustion unit, and delete the word "other" in two places. These changes are made in response to comments received on the proposed rulemaking. There are no other changes made to subsection (d) from the proposed rulemaking to this final-form rulemaking.

Subsection (e) establishes that the owner and operator of a municipal solid waste landfill subject to § 129.111 shall comply with the applicable presumptive RACT requirements specified in paragraph (1) or (2).

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to delete the reference to 40 CFR Part 60, Subpart Cc (relating to emission guidelines and compliance times for municipal solid waste landfills) and add the reference to the Federal Plan for Municipal Solid Waste Landfills in 40 CFR Part 62, Subpart OOO (relating to Federal plan requirements for municipal solid waste landfills that commenced construction on or before July 17, 2014 and have not been modified or reconstructed since July 17, 2014). This change is made in response to comments received that the requirements of 40 CFR Part 60, Subpart Cc are superseded by the requirements of 40 CFR Part 62, Subpart OOO. The EPA issued the Federal Plan in 40 CFR Part 62, Subpart OOO, on May 21, 2021, with an effective date of June 21, 2021. See 86 FR 27756 (May 21, 2021).

Proposed paragraph (2), which referenced 40 CFR Part 60, Subpart WWW (relating to standards of performance for municipal solid waste landfills that commenced construction, reconstruction, or modification on or after May 30, 1991, but before July 18, 2014), is deleted in this final-form rulemaking because the requirements of 40 CFR Part 60, Subpart WWW are superseded by the requirements of 40 CFR Part 60, Subpart XXX (relating to standards of performance for municipal solid waste landfills that commenced construction, reconstruction, or modification after July 17, 2014).

The requirements of 40 CFR Part 60, Subpart XXX, were specified in proposed paragraph (3). Proposed paragraph (3) is renumbered to paragraph (2) in this final-form rulemaking.

Subsection (f) establishes that the owner and operator of a municipal waste combustor subject to § 129.111 shall comply with the presumptive RACT emission limitation of 110 parts per million volume dry (ppmvd) NO_x @ 7% oxygen. Proposed subsection (f) specified a presumptive RACT emission limitation of 150 ppmvd NO_x @ 7% oxygen. Subsection (f) is amended from the proposed rulemaking to this final-form rulemaking to delete the emission limitation of 150 ppmvd NO_x @ 7% oxygen and add the emission limitation of 110 ppmvd NO_x @ 7% oxygen. This change is made in response to comments received on the proposed rulemaking and an analysis by the Department showing that the emission limitation of 110 ppmvd NO_x @ 7% oxygen is achievable, cost-effective and constitutes RACT for municipal waste combustors.

Subsection (g) establishes that, except as specified in subsection (c), the owner and operator of a NO_x air contamination source listed in this subsection that is located at a major NO_x emitting facility or a VOC air contamination source listed in this subsection that is located at a major VOC emitting facility subject to § 129.111 may not cause, allow or permit NO_x or VOCs to be emitted from the air contamination source in excess of the applicable presumptive RACT emission limitation specified in paragraphs (1)—(4).

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking. Paragraph (1)(vi), which applies to the owner or operator of a circulating fluidized bed combustion unit with a rated heat input equal to or greater than 250 million Btu/hour and firing waste coal products, is amended to add the words "RACT requirements and" after the word "presumptive." Paragraph (1)(vi) is further amended to add clause (C), which specifies that the owner or operator shall control the NO_x emissions each operating day by operating the installed air pollution control technology and combustion controls at all times consistent with the technological limitations, manufacturer's specifications, good engineering and maintenance practices and good air pollution control practices for controlling emissions. Clause (C) replaces proposed paragraph (1)(viii), which is deleted in this final-form rulemaking. These changes are made in response to comments received on the proposed rulemaking.

There are no changes made to paragraphs (1)(i)—(v) and (vii) from the proposed rulemaking to this final-form rulemaking.

Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to clarify the applicable presumptive RACT emission limitations for combined cycle or combined heat and power combustion turbines and for simple cycle or regenerative cycle combustion turbines based on the Department's review of information provided by commentators during the public comment period as well as the Department's review of available stack test emissions data. Proposed paragraph (2)(i) established the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 brake horsepower (bhp) and less than 180 megawatts (MW). Paragraph (2)(i) is amended in this final-form rulemaking to establish the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp rather than less than 180 MW. Paragraph (2)(i)(A) is amended from the proposed rulemaking to this final-form rulemaking to delete the limitation of 42 ppmvd NO_x @ 15% oxygen and add the limitation of 120 ppmvd NO_x @ 15% oxygen. Paragraph (2)(i)(C) is amended from the proposed rulemaking to this final-form rulemaking to delete the limitation of 96 ppmvd NO_x @ 15% oxygen and add the limitation of 150 ppmvd NO_x @ 15% oxygen.

Paragraph (2)(ii) is amended from the proposed rulemaking to this final-form rulemaking to establish the applicable presumptive RACT emission limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 MW. The applicable presumptive RACT emission limitations are established in paragraph (2)(ii)(A)—(D). Clause (A) establishes the limitation of 42 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel. Clause (B) establishes the limitation of 5 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a

noncommercial gaseous fuel. Clause (C) establishes the limitation of 96 ppmvd NO_x @ 15% oxygen when firing fuel oil. Clause (D) establishes the limitation of 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

Proposed paragraph (2)(ii) is renumbered in this final-form rulemaking to paragraph (2)(iii). There are no other changes made to renumbered paragraph (2)(iii) in this final-form rulemaking.

Proposed paragraph (2)(iii) is renumbered in this final-form rulemaking to paragraph (2)(iv). Renumbered paragraph (2)(iv) is further amended in this final-form rulemaking to establish the applicable presumptive RACT emission limitations for the owner or operator of a simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp, rather than the proposed rated output of less than 3,000 bhp. Subparagraph (iv)(A) is amended from the proposed rulemaking to this final-form rulemaking to delete the limitation of 85 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel and add the limitation of 120 ppmvd NO_x @ 15% oxygen, based on the Department's review of information provided by commentators during the public comment period and the Department's review of available stack test emissions data.

Proposed paragraph (2)(iv) is renumbered in this final-form rulemaking to paragraph (2)(v). Renumbered paragraph (2)(v) is further amended in this final-form rulemaking to establish the applicable presumptive RACT emission limitations for the owner or operator of a simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 4,100 bhp, rather than the proposed rated output of 3,000 bhp, and less than 60,000 bhp.

Proposed paragraph (3) established applicable presumptive RACT emission limitations for the owners or operators of four subcategories of stationary internal combustion engines in subparagraphs (i)—(iv). Subparagraph (iv)(A) is amended from the proposed rulemaking to this final-form rulemaking to establish the applicable presumptive RACT emission limitation for the owner or operator of a rich burn stationary internal combustion engine with a rating equal to or greater than 100 bhp is 2.0 gram NO_x/brake horsepower-hour (bhp-hr) when firing natural gas or a noncommercial gaseous fuel, rather than the proposed limitation of 0.6 gram NO_x/bhp-hr. This change is made in response to comments received on the proposed rulemaking.

There are no changes made to paragraph (3)(i)—(iii) or to subparagraph (iv)(B) from the proposed rulemaking to this final-form rulemaking. There are no changes made to paragraph (4) from the proposed rulemaking to this final-form rulemaking.

Subsection (h) establishes that the owner and operator of a Portland cement kiln subject to § 129.111 shall comply with the applicable presumptive RACT emission limitation in paragraphs (1)—(3).

Subsection (i) establishes that the owner and operator of a glass melting furnace subject to § 129.111 shall comply with the applicable presumptive RACT emission limitation in paragraphs (1)—(5).

Subsection (j) establishes that the owner and operator of a lime kiln subject to § 129.111 shall comply with the applicable presumptive RACT emission limitation of 4.6 pounds of NO_x per ton of lime produced.

There are no changes made to subsections (h)—(j) from the proposed rulemaking to this final-form rulemaking.

Subsection (k) establishes that the owner and operator of a direct-fired heater, furnace, oven or other combustion source with a rated heat input equal to or greater than 20 million Btu/hour subject to § 129.111 shall comply with the applicable presumptive RACT emission limitation of 0.10 lb NO_x/million Btu heat input. Subsection (k) is amended from the proposed rulemaking to this final-form rulemaking to add the category of other combustion source and to remove the proposed requirement that the limitation be complied with on a daily average basis or that compliance be determined through a stack test. These changes are made in response to comments received on the proposed rulemaking.

Subsection (l) provides that the requirements and emission limitations of this section supersede the requirements and emission limitations of a RACT permit issued to the owner or operator of an air contamination source subject to one or more of subsections (b)—(k) prior to November 12, 2022, under §§ 129.91—129.95 or under §§ 129.96—129.100 to control, reduce or minimize NO_x emissions or VOC emissions, or both, from the air contamination source unless the RACT permit contains more stringent requirements or emission limitations, or both. There are no changes made to subsection (l) from the proposed rulemaking to this final-form rulemaking.

Subsection (m) provides that the requirements and emission limitations of this section supersede the requirements and emission limitations of §§ 129.201—129.205, 129.301—129.310, 145.111—145.113 and 145.141—145.146 unless the requirements or emission limitations of §§ 129.201—129.205, 129.301—129.310, 145.111—145.113 or 145.141—145.146 are more stringent. Subsection (m) is amended from the proposed rulemaking to this final-form rulemaking to add §§ 129.301—129.310 (relating to control of NO_x emissions from glass melting furnaces) to the group of regulations whose requirements and emission limitations would be superseded by the requirements and emission limitations of § 129.112 unless the requirements or emission limitations of §§ 129.301—129.310 are more stringent. This change is made in response to comments received on the proposed rulemaking.

Subsection (n) establishes that the owner or operator of a major NO_x emitting facility or a major VOC emitting facility subject to § 129.111 that includes an air contamination source subject to one or more of subsections (b)—(k) that cannot meet the applicable presumptive RACT requirement or RACT emission limitation without installation of an air cleaning device may submit a petition to the Department or appropriate approved local air pollution control agency, in writing or electronically, requesting an alternative compliance schedule in accordance with paragraphs (1) and (2). Subsection (n) is amended from the proposed rulemaking to this final-form rulemaking to add the word "electronically" after the words "in writing."

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "written." The changes to subsection (n) and (n)(1) are made to provide flexibility to the subject owner or operator in how the petition may be submitted.

Paragraph (1)(i) is amended from the proposed rulemaking to this final-form rulemaking to establish that the petition shall be submitted to the Department or appropriate approved local air pollution control agency as soon as possible but not later than December 31, 2022, for a

source subject to § 129.111(a). Proposed paragraph (1)(i) established the due date as 6 months after the date of publication of this final-form rulemaking.

Paragraph (1)(ii) is amended from the proposed rulemaking to this final-form rulemaking to establish that the petition shall be submitted to the Department or appropriate approved local air pollution control agency as soon as possible but not later than December 31, 2022, or not later than 6 months after the date that the source meets the definition of a major NO_x emitting facility or a major VOC emitting facility, whichever is later, for a source subject to § 129.111(b). Proposed paragraph (1)(ii) established the due date as 6 months after the date of publication of this final-form rulemaking or 6 months after the date that the source meets the definition of a major NO_x emitting facility or a major VOC emitting facility, whichever is later.

The changes to the due dates specified in paragraph (1)(i) and (ii) are made to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

Proposed paragraph (2) established that the written petition must include the items specified in subparagraphs (i)—(v). Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "written." The petition may be submitted in writing or electronically as specified in subsection (n). This change provides flexibility to the subject owner or operator in how the petition may be submitted. There are no changes made to subparagraphs (i)—(v) from the proposed rulemaking to this final-form rulemaking.

Subsection (o) provides that the Department or appropriate approved local air pollution control agency will review the timely and complete written petition requesting an alternative compliance schedule submitted in accordance with subsection (n) and approve or deny the petition in writing.

Subsection (p) provides that approval or denial under subsection (o) of the timely and complete petition for an alternative compliance schedule submitted under subsection (n) will be effective on the date the letter of approval or denial of the petition is signed by the authorized representative of the Department or appropriate approved local air pollution control agency.

Subsection (q) provides that the Department will submit each petition for an alternative compliance schedule approved under subsection (o) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

There are no changes made to subsections (o)—(q) from the proposed rulemaking to this final-form rulemaking.

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

Subsection (a) provides that the owner or operator of a major NO_x emitting facility subject to § 129.111 that includes at least one air contamination source subject to a NO_x RACT emission limitation in § 129.112 that cannot meet the applicable NO_x RACT emission limitation may elect to meet the applicable NO_x RACT emission limitation in § 129.112 by averaging NO_x emissions on either a facility-wide or system-wide basis. System-wide emissions averaging must be among sources under common control of the same owner or operator within the same ozone nonattainment area in this Commonwealth. There is no change made to subsection (a) from the proposed rulemaking to this final-form rulemaking.

Subsection (b) provides that the owner or operator of each facility that elects to comply with subsection (a) shall submit a NO_x emissions averaging plan in writing or electronically to the Department or appropriate approved local air pollution control agency as part of an application for an operating permit modification or a plan approval, if otherwise required. Subsection (b) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "written" before the phrase "NO_x emissions averaging plan" and add the words "in writing or electronically" after the phrase "NO_x emissions averaging plan." These changes are made to provide flexibility to the subject owner or operator in how the NO_x emissions averaging plan may be submitted.

The application incorporating the NO_x emissions averaging plan requirements of this section shall be submitted by the applicable date specified in subsection (b)(1) or (2). Proposed paragraph (1) established the due date as the date 6 months after the date of publication of this final-form rulemaking for a source subject to § 129.111(a). Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to establish the due date as December 31, 2022.

Proposed paragraph (2) established the due date as the date 6 months after the date of publication of this final-form rulemaking or 6 months after the date that the source meets the definition of a major NO_x emitting facility, whichever is later, for a source subject to § 129.111(b). Paragraph (2) is amended from the proposed rulemaking to this final-form rulemaking to establish the due date as December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility, whichever is later.

The changes to the due dates specified in paragraphs (1) and (2) are made to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

Subsection (c) provides that each NO_x air contamination source included in the application for an operating permit modification or a plan approval, if otherwise required, for averaging NO_x emissions on either a facility-wide or system-wide basis submitted under subsection (b) must be an air contamination source subject to a NO_x RACT emission limitation in § 129.112.

Subsection (d) provides that the application for the operating permit modification or the plan approval, if otherwise required, for averaging NO_x emissions on either a facility-wide or system-wide basis submitted under subsection (b) must demonstrate that the aggregate NO_x emissions emitted by the air contamination sources included in the facility-wide or system-wide NO_x emissions averaging plan are not greater than the NO_x emissions that would be emitted by the group of included sources if

each source complied with the applicable NO_x RACT emission limitation in § 129.112 on a source-specific basis.

Subsection (e) provides that the application for the operating permit modification or a plan approval, if otherwise required, specified in subsections (b)—(d) may include facility-wide or system-wide NO_x emissions averaging only for NO_x emitting sources or NO_x emitting facilities that are owned or operated by the applicant.

Subsection (f) provides that the application for the operating permit modification or a plan approval, if otherwise required, specified in subsections (b)—(e) must include the information identified in paragraphs (1)—(3). Paragraph (1) specifies that the application must identify each air contamination source included in the NO_x emissions averaging plan. Paragraph (2) specifies that the application must list each air contamination source's applicable emission limitation in § 129.112. Paragraph (3) specifies that the application must include methods for demonstrating compliance and recordkeeping and reporting requirements in accordance with § 129.115 for each source included in the NO_x emissions plan submitted under subsection (b).

Subsection (g) provides that an air contamination source or facility included in the facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(f) may be included in only one facility-wide or system-wide NO_x emissions averaging plan.

There are no changes made to subsections (c)—(g) from the proposed rulemaking to this final-form rulemaking.

Subsection (h) provides in paragraph (1) that the Department or appropriate approved local air pollution control agency will review the timely and complete NO_x emissions averaging plan submitted in accordance with subsections (b)—(g) and approve, deny or modify the NO_x emissions averaging plan, in writing, as specified in paragraphs (2) and (3). The Department or appropriate approved local air pollution control agency will approve the NO_x emissions averaging plan if the approving authority is satisfied that the NO_x emissions averaging plan complies with the requirements of subsections (b)—(g) and that the proposed NO_x emissions averaging plan is RACT for the air contamination sources. The approving authority will deny or modify the NO_x emissions averaging plan if the proposal does not comply with the requirements of subsections (b)—(g). Paragraphs (1)—(3) are amended from the proposed rulemaking to this final-form rulemaking to delete the words "subsection (b)" and add the words "subsections (b)—(g)" for clarity and completeness.

Subsection (i) provides that the proposed NO_x emissions averaging plan submitted under subsection (b) will be approved, denied or modified under subsection (h) by the Department or appropriate approved local air pollution control agency in accordance with Chapter 127 (relating to construction, modification, reactivation and operation of sources) prior to the owner or operator implementing the NO_x emissions averaging plan. Subsection (i) as amended from the proposed rulemaking to this final-form rulemaking to delete the words "subsection (h) in writing through the issuance of a plan approval or operating permit modification" and add the words "25 Pa. Code Chapter 127 (relating to construction, modification, reactivation and operation of sources)" to provide clarity in how the proposed NO_x emissions averaging plan will be approved, denied or modified.

Subsection (j) provides that the owner or operator of an air contamination source or facility included in the facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(g) shall submit the reports and records specified in subsection (f)(3) to the Department or appropriate approved local air pollution control agency to demonstrate compliance with § 129.115.

Subsection (k) provides that the owner or operator of an air contamination source or facility included in a facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(g) that achieves emission reductions in accordance with other emission limitations required under the APCA or the CAA, or regulations adopted under the APCA or the CAA, that are not NO_x RACT emission limitations may not substitute those emission reductions for the emission reductions required by the facility-wide or system-wide NO_x emissions averaging plan submitted to the Department or appropriate approved local air pollution control agency under subsection (b).

Subsection (l) provides that the owner or operator of an air contamination source subject to a NO_x RACT emission limitation in § 129.112 that is not included in a facility-wide or system-wide NO_x emissions averaging plan submitted under subsection (b) shall operate the source in compliance with the applicable NO_x RACT emission limitation in § 129.112.

Subsection (m) provides that the owner and operator of the air contamination source included in a facility-wide or system-wide NO_x emissions averaging plan submitted under subsection (b) shall be liable for a violation of an applicable NO_x RACT emission limitation at each source included in the NO_x emissions averaging plan regardless of each individual facility's NO_x emission rate.

Subsection (n) provides that the Department will submit each NO_x emissions averaging plan approved under subsection (i) to the Administrator of the EPA for approval as a revision to the SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

There are no changes made to subsections (j)—(n) from the proposed rulemaking to this final-form rulemaking.

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

Subsection (a) provides that the owner or operator of an air contamination source subject to § 129.112 located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 that cannot meet the applicable presumptive RACT requirement or RACT emission limitation of § 129.112 may propose an alternative RACT requirement or RACT emission limitation in accordance with subsection (d).

Subsection (b) provides that the owner or operator of a NO_x air contamination source with a potential emission rate equal to or greater than 5.0 tons of NO_x per year that is not subject to § 129.112 or §§ 129.201—129.205 (relating to additional NO_x requirements) located at a major NO_x emitting facility subject to § 129.111 shall propose a NO_x RACT requirement or RACT emission limitation in accordance with subsection (d).

Subsection (c) provides that the owner or operator of a VOC air contamination source with a potential emission rate equal to or greater than 2.7 tons of VOC per year that is not subject to § 129.112 located at a major VOC

emitting facility subject to § 129.111 shall propose a VOC RACT requirement or VOC RACT emission limitation in accordance with subsection (d).

There are no changes made to subsections (a)—(c) from the proposed rulemaking to this final-form rulemaking.

Subsection (d) provides that the owner or operator proposing an alternative RACT requirement or RACT emission limitation under subsection (a), (b) or (c) shall comply with the requirements in paragraphs (1)—(7). Proposed paragraph (1) established that the subject owner or operator shall submit a written RACT proposal in accordance with the procedures in § 129.92(a)(1)—(5), (7)—(10) and (b) (relating to RACT proposal requirements) to the Department or appropriate approved local air pollution control agency as soon as possible but not later than the date specified in subparagraphs (i) and (ii). Proposed subparagraph (i) specified the date 6 months after the date of publication of this final-form rulemaking, for a source subject to § 129.111(a). Proposed subparagraph (ii) specified the submittal is due not later than the date 6 months after the date of publication of this final-form rulemaking, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to establish that the RACT proposal shall be submitted in writing or electronically. This change provides flexibility to the subject owner or operator in submitting the RACT proposal.

Subparagraph (i) is amended from the proposed rulemaking to this final-form rulemaking to specify December 31, 2022, as the due date for a source subject to § 129.111(a)

Subparagraph (ii) is amended from the proposed rulemaking to this final-form rulemaking to specify the due date is either December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

The changes to the due dates specified in subparagraphs (i) and (ii) are made to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

There are no changes made to paragraphs (2)—(7) from the proposed rulemaking to this final-form rulemaking.

Subsection (e) provides that the Department or appropriate approved local air pollution control agency will review the timely and complete alternative RACT proposal submitted in accordance with subsection (d) and approve, modify or deny in writing the application as specified in paragraphs (1)—(3).

There is no change made to subsection (e) from the proposed rulemaking to this final-form rulemaking.

Subsection (f) provides that the proposed alternative RACT requirement or RACT emission limitation and the implementation schedule submitted under subsection (d) will be approved, denied or modified under subsection (e) by the Department or appropriate approved local air pollution control agency in accordance with Chapter 127 prior to the owner or operator implementing the alternative RACT requirement or RACT emission limitation. Subsection (f) is amended from the proposed rulemaking to this final-form rulemaking to delete the words "subsection (e) in writing through the issuance of a plan approval or operating permit modification" and add the words "25 Pa. Code Chapter 127 (relating to construction, modification, reactivation and operation of sources)" to provide clarity in how the proposed alternative RACT requirement or RACT emission limitation and the implementation schedule will be approved, denied or modified.

Subsection (g) provides that the emission limit and requirements specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (f) supersede the emission limit and requirements in the existing plan approval or operating permit issued to the owner or operator of the source prior to November 12, 2022, on the date specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (f), except to the extent the existing plan approval or operating permit contains more stringent requirements.

Subsection (h) provides that the Department will submit each alternative RACT requirement or RACT emission limitation approved under subsection (f) to the Administrator of the EPA for approval as a revision to the SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

There are no changes made to subsections (g) and (h) from the proposed rulemaking to this final-form rulemaking.

Subsection (i) provides that an owner or operator subject to subsection (a), (b) or (c) and § 129.99 (relating to alternative RACT proposal and petition for alternative compliance schedule) that has not modified or changed a source that commenced operation on or before October 24, 2016, and has not installed and commenced operation of a new source after October 24, 2016, may, in place of the alternative RACT requirement or RACT emission limitation required under subsection (d), submit an analysis, certified by the responsible official, in writing or electronically to the Department or appropriate approved local air pollution control agency on or before December 31, 2022, that demonstrates that compliance with the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate approved local air pollution control agency under § 129.99(e) assures compliance with the provisions in subsections (a)—(c) and (e)—(h), except for sources subject to § 129.112(c)(11) or (i)—(k). Proposed subsection (i) provided that compliance with the requirements in § 129.99(a)—(h) assures compliance with the provisions in subsections (a)—(h), except for sources subject to § 129.112(b)(11), (h)(4) and (5) or (i)—(k). Subsection (i) is amended from the proposed rulemaking to this final-form rulemaking to add the words "subsections (a)—(c) and (e)—(h), except for sources subject to § 129.112(c)(11) or (i)—(k)" after the words "with the provisions in" and deleted the words "subsections (a)—(h), except for sources subject to § 129.112(b)(11), (h)(4) and (5) or (i)—(k)."

Subsection (i) is further amended from the proposed rulemaking to this final-form rulemaking to add paragraphs (1) and (2) to establish the procedures an owner or operator shall follow to submit the analysis required

under subsection (i) if the owner or operator chooses to demonstrate compliance with subsections (a)—(c) and (e)—(h) in accordance with subsection (i). 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 owner or operator 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.

Final-form paragraph (1)(i) specifies that the owner or operator of a subject source or facility 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 information specified in paragraph (1)(i)(A)—(E) in the analysis. Clause (A) specifies 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. Clause (B) specifies a list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)—(3) included in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e). Clause (C) specifies a summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the EPA Air Pollution Control Cost Manual, 6th Edition, EPA/452/B-02-001, January 2002, as amended. Clause (D) specifies a statement that an evaluation of each economic feasibility analysis summarized in clause (C) 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. Clause (E) specifies that the owner or operator shall 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.

Final-form paragraph (1)(ii) specifies that the owner or operator of a subject source or facility 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 information specified in paragraph (1)(ii)(A)—(F) in the analysis. Clauses (A)—(C) are the same as clauses (A)—(C) under paragraph (1)(i). Clause (D) specifies a statement that an evaluation of each economic feasibility analysis summarized in clause (C) 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. Clause (E) specifies that the owner or operator shall include a new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) in accordance with § 129.92(b)(4). Clause (F) specifies that the owner or operator shall 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.

Final-form paragraph (2) establishes procedures in subparagraphs (i)—(iii) that the owner or operator of a subject source or facility 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 follow. Subparagraph (i) requires that the owner or operator perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b). Subparagraph (ii) requires that the owner or operator submit the analyses performed under subparagraph (i) to the Department or appropriate approved local air pollution control agency for review. Subparagraph (iii) requires that the owner or operator 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.

The changes in subsection (i) from the proposed rulemaking to this final-form rulemaking are made in response to concerns and comments submitted by the EPA on the proposed rulemaking. The EPA expressed concerns regarding the need for additional analysis to determine whether the case-by-case determinations made under §§ 129.96—129.100 (RACT II) for the 1997 and 2008 8-hour ozone NAAQS remain RACT for the 2015 8-hour ozone NAAQS under §§ 129.111—129.115 (RACT III).

Subsection (j) is amended from the proposed rulemaking to this final-form rulemaking to provide in paragraphs (1)—(4) that the Department or appropriate approved local air pollution control agency will review the analyses submitted in accordance with subsection (i), solicit public comment on the analyses and the Department's supporting documentation, prepare a summary of the public comments received on the analyses and responses to the comments, and as appropriate, issue the necessary plan approvals and operating permit modifications in conformance with Chapter 127 for the analyses reviewed under paragraph (1).

Final-form subsection (k) provides that the Department will submit the analyses, supporting documentation and summary of public comments and responses described in subsection (j)(2) and (3) as well as the plan approvals and operating permit modifications issued under subsection (j)(4) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP.

Proposed subsection (j) is relettered in this final-form rulemaking as subsection (l) and provides that the owner and operator of a facility proposing to comply with the applicable RACT requirement or RACT emission limitation under subsection (a), (b) or (c) through the installation of an air cleaning device may submit a petition, in writing, requesting an alternative compliance schedule in accordance with paragraphs (1) and (2).

Final-form subsection (l) is further amended to add the words "or electronically" after "in writing." This change provides flexibility to the subject owner or operator in how the petition may be submitted. Final-form subsection (l)(1) is amended to delete the word "written" to coordinate with the addition of "or electronically" in subsection (l). Final-form paragraph (1)(i) is amended from the proposed rulemaking to this final-form rulemaking to specify that the due date is December 31, 2022, for a source subject to § 129.111(a). Final-form paragraph (1)(ii) is amended from the proposed rulemaking to this final-form rulemaking to specify that the due date is December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b). The amendment of final-form paragraphs (1)(i) and (ii) with the compliance date certain of December 31, 2022, in place of the proposed compliance date, which was the date of publication of this final-form rulemaking, is made to address the required deadline of January 1, 2023, in the EPA 2015 ozone implementation rule, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. See 40 CFR 51.1312(a)(3)(i); see also 40 CFR 51.1316(b)(3)(1). Final-form paragraph (2) is amended to delete the word "written" to coordinate with the addition of "or electronically" in subsection (l).

Proposed subsection (k) is relettered in this final-form rulemaking as subsection (m) and provides that the Department or appropriate approved local air pollution control agency will review the timely and complete written petition requesting an alternative compliance schedule submitted in accordance with proposed subsection (j) and approve or deny the petition in writing. Final-form subsection (m) is amended to delete the word "written" and to delete subsection "(j)" and add subsection "(l)."

Proposed subsection (l) is relettered in this final-form rulemaking as subsection (n) and provides that the emission limit and requirements specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under proposed subsection (k), now final-form subsection (m), which supersedes the emission limit and requirements in the existing plan approval or operating permit issued to the owner or operator of the source prior to November 12, 2022, on the date specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under proposed subsection (k), except to the extent the existing plan approval or operating permit contains more stringent requirements. Final-form subsection (n) is amended to delete subsection "(k)" and add subsection "(m)."

Proposed subsection (m) is relettered in this final-form rulemaking as subsection (o) and provides that approval or denial under proposed subsection (k), now final-form subsection (m), of the timely and complete petition for an alternative compliance schedule submitted under proposed subsection (j), now final-form subsection (l), will be effective on the date the letter of approval or denial of the petition is signed by the authorized representative of the Department or appropriate approved local air pollution control agency. Final-form subsection (o) is amended to delete subsection "(k)" and add subsection "(m)" and to delete subsection "(j)" and add subsection "(l)."

Proposed subsection (n) is relettered in this final-form rulemaking as subsection (p) and provides that the Department will submit each petition for an alternative compliance schedule approved under proposed subsection (k), now final-form subsection (m), to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal. Final-form subsection (p) is amended to delete subsection "(k)" and add subsection "(m)."

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

Subsection (a) provides that the owner and operator of an air contamination source subject to this section and § 129.111 shall submit a notification, in writing or electronically, to the appropriate Regional Manager or the appropriate approved local air pollution control agency that proposes how the owner and operator intend to comply with the requirements of this section and §§ 129.111—129.114. Proposed subsection (a) specified that the written notification shall be submitted to the appropriate Regional Manager by the date 6 months after the date of publication of this final-form rulemaking and include the information specified in proposed paragraphs (1)—(6). Subsection (a) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "written" and add a comma and the words "in writing or electronically" after the word "notification." This change provides flexibility to the subject owner or operator in how the notification may be submitted. Subsection (a) is further amended from the proposed rulemaking to this final-form rulemaking to delete the due date of 6 months after the date of publication of this final-form rulemaking and to add the words "or appropriate approved local air pollution control agency" after the words "Regional Manager."

Proposed subsection (a) included paragraphs (1)—(6) that specified the information to be included in the written notification. Proposed paragraph (1) specified that the written notification shall include the air contamination sources identified in § 129.111(a) as either subject to a RACT requirement or RACT emission limitation in §§ 129.112—129.114 or exempted from §§ 129.112—129.114. Subsection (a) is amended from the proposed rulemaking to this final-form rulemaking to add new paragraph (1) to establish the due dates for the notification and renumber proposed paragraphs (1)—(6) as final-form paragraphs (2)—(7). Final-form paragraph (1) specifies that the notification shall be submitted to the appropriate Regional Manager or appropriate approved local air pollution control agency as soon as possible but not later than December 31, 2022, for a source subject to § 129.111(a) and not later than December 31, 2022, or 6 months after the date the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

The due dates specified in final-form paragraph (1) are established to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

Proposed subsection (a)(1) is renumbered as paragraph (2) in this final-form rulemaking. Paragraph (2) specifies that the notification shall identify the air contamination

sources in § 129.111(a) as either subject to a RACT requirement or RACT emission limitation in §§ 129.112—129.114 or exempted from §§ 129.112—129.114.

Subsection (a) is further amended from the proposed rulemaking to this final-form rulemaking to renumber proposed paragraph (2) as final-form paragraph (3) and proposed paragraph (3) as final-form paragraph (4). There are no other changes made to final-form paragraphs (3) and (4).

Proposed subsection (a)(4) is renumbered as paragraph (5) in this final-form rulemaking. Final-form paragraph (5) is further amended to delete the reference to paragraph (1) and add the reference to paragraph (2). Subparagraph (ii) is amended from the proposed rulemaking to this final-form rulemaking to delete the reference to paragraph (1)(i) and add the reference to paragraph (2)(i). Subparagraph (iv) is amended from the proposed rulemaking to this final-form rulemaking to delete the reference to paragraph (1)(ii) and add the reference to paragraph (2)(ii). These changes are made to correct the cross references.

Proposed subsection (a)(5) is renumbered as paragraph (6) in this final-form rulemaking. Final-form paragraph (6) is further amended to delete the reference to paragraph (2) and add the reference to paragraph (3). Subparagraph (ii) is amended from proposed to this final-form rulemaking to delete the reference to paragraph (2)(i) and add the reference to paragraph (3)(i). Subparagraph (iv) is amended from the proposed rulemaking to this final-form rulemaking to delete the reference to paragraph (2)(ii) and add the reference to paragraph (3)(ii). These changes are made to correct the cross references.

Proposed subsection (a)(6) is renumbered as paragraph (7) in this final-form rulemaking. Final-form paragraph (7) is further amended to delete the reference to paragraph (3) and add the reference to paragraph (4). This change is made to correct the cross reference.

Subsection (b) provides that, except as specified in subsection (d), the owner and operator of an air contamination source subject to a NO_x RACT requirement or RACT emission limitation or VOC RACT requirement or RACT emission limitation, or both, listed in § 129.112 shall demonstrate compliance with the applicable RACT requirement or RACT emission limitation by performing the monitoring or testing procedures under paragraphs (1)—(6). Proposed subsection (b) included paragraphs (1)—(5).

Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "and" after § 129.112(f), add a comma, and add the words "and direct-fired heaters, furnaces, ovens or other combustion sources subject to § 129.112(k)" after § 129.112(g)(1). These changes are made in response to comments received on the proposed rulemaking.

Paragraph (3) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "rolling." This change is made in response to comments received on the proposed rulemaking.

Proposed paragraph (5) is renumbered as paragraph (6) in this final-form rulemaking. Final-form paragraph (5) specifies that for a direct-fired heater, furnace, oven or other combustion source subject to § 129.112(k) with a continuous emissions monitoring system (CEMS), monitoring and testing shall be performed in accordance with the requirements in Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources), using a daily average. This requirement is added in response to comments received on the proposed rulemaking.

Final-form paragraph (6) is amended to clarify that for an air contamination source without a CEMS, monitoring and testing shall be performed in accordance with an emissions source test approved by the Department or appropriate approved local air pollution control agency that meets the requirements of Chapter 139, Subchapter A. The source test shall be conducted to demonstrate initial compliance and subsequently on a schedule set forth in the applicable permit. Final-form paragraph (6) is amended to delete "a Department approved" and add "approved by the Department or appropriate approved local air pollution control agency." These changes are made to for clarity.

There are no changes made to paragraphs (2) and (4) from the proposed rulemaking to this final-form rulemaking.

Subsection (c) provides that the owner or operator of a combined cycle combustion turbine may comply with the requirements in § 129.112(g)(2)(iii) on a mass-equivalent basis. The actual emissions during the compliance period must be less than the allowable emissions during the compliance period. The allowable emissions are calculated by multiplying actual heat input in million Btu during the compliance period by the applicable factor listed in paragraphs (1)—(4).

Subsection (c) is amended from the proposed rulemaking to this final-form rulemaking to delete the word "combined-cycle" and add the words "combined cycle" before the word "combustion." This amendment is made to delete the hyphen in combined cycle. Subsection (c) is further amended from the proposed rulemaking to this final-form rulemaking to correct the cross-reference from § 129.112(g)(2)(ii) to § 129.112(g)(2)(iii). Paragraphs (1)—(4) are amended from the proposed rulemaking to this final-form rulemaking to correct the specified cross references. The cross reference in paragraph (1) is amended from § 129.112(g)(2)(ii)(A) to § 129.112(g)(2)(iii)(A). The cross reference in paragraph (2) is amended from § 129.112(g)(2)(ii)(B) to § 129.112(g)(2)(iii)(B). The cross reference in paragraph (3) is amended from § 129.112(g)(2)(ii)(C) to § 129.112(g)(2)(iii)(C). The cross reference in paragraph (4) is amended from § 129.112(g)(2)(ii)(D) to § 129.112(g)(2)(iii)(D). These changes are made to coordinate with the changes in § 129.112(g)(2) from the proposed rulemaking to this final-form rulemaking.

Subsection (d) provides that, except as specified in §§ 129.112(n) and 129.114(l), the owner and operator of an air contamination source subject to subsection (b) shall demonstrate compliance with the applicable RACT requirement or RACT emission limitation in accordance with the procedures in subsection (a) not later than the applicable date in paragraphs (1) and (2).

Subsection (d) is amended from the proposed rulemaking to this final-form rulemaking to correct the cross reference from § 129.114(j) to § 129.114(l) to coordinate with the changes made in § 129.114 from the proposed rulemaking to this final-form rulemaking. Subsection (d) is further amended from the proposed rulemaking to this final-form rulemaking to correct the cross reference from subsection (a) to subsection (b).

Subsection (e) provides that an owner or operator of an air contamination source subject to this section and §§ 129.111—129.113 may request a waiver from the

requirement to demonstrate compliance with the applicable emission limitation listed in § 129.112 if the requirements in paragraphs (1)—(4) are met. Paragraph (1) is amended from the proposed rulemaking to this final-form rulemaking to add the words "or electronically" after the words "in writing." This change is made to provide flexibility to the subject owner or operator in how the request for a waiver may be submitted.

The waiver in paragraph (1) shall be submitted by the applicable date in subparagraph (i) or (ii). Proposed subparagraph (i) established the due date as the date 6 months after the date of publication of this final-form rulemaking for a source subject to § 129.111(a). Subparagraph (i) is amended from the proposed rulemaking to this final-form rulemaking to establish the due date as December 31, 2022, for a source subject to § 129.111(a). Proposed subparagraph (ii) established the due date as the date 6 months after the date of publication of this final-form rulemaking or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b). Subparagraph (ii) is amended from the proposed rulemaking to this final-form rulemaking to establish the due date as December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

The changes to the due dates specified in subparagraph (i) and (ii) are made to accommodate the length of time for this final-form rulemaking to move through the regulatory development process and meet the implementation deadline of January 1, 2023, for states to implement the RACT requirements and RACT emission limitations to address the 2015 8-hour ozone NAAQS. This final-form rulemaking is expected to be published in the *Pennsylvania Bulletin* prior to the end of 2022.

There are no changes made to paragraphs (2)—(4) from the proposed rulemaking to this final-form rulemaking.

Subsection (f) provides that the owner and operator of an air contamination source subject to this section and §§ 129.111—129.114 shall keep records to demonstrate compliance with §§ 129.111—129.114 and submit reports to the Department in accordance with the applicable regulations in 25 Pa. Code, Part 1, Subpart C, Article III (relating to air resources) and as specified in the operating permit or plan approval for the air contamination source as set forth in paragraphs (1)—(3). Paragraph (3) is amended from the proposed rulemaking to this final-form rulemaking to delete the words "Subpart C, Article III (relating to air resources) regulations" and add the words "applicable regulation" before the words "or as otherwise specified." This amendment is made in response to *Sierra Club v. EPA*, 972 F.3d 290 (3d Cir. 2020) to clarify that the owners and operators are required to comply with existing recordkeeping and reporting requirements, to which the owners and operators are already subject under existing Commonwealth law and as specified in the applicable operating permit or plan approval for the air contamination source. These recordkeeping and reporting requirements were previously approved as revisions to the Commonwealth's SIP. There are no changes made to paragraphs (1) and (2) from the proposed rulemaking to this final-form rulemaking.

Subsection (g) provides that, beginning with the compliance date specified in § 129.112(a), the owner or operator of an air contamination source claiming that the air contamination source is exempt from the applicable NO_x emission rate threshold specified in § 129.114(b) and the requirements of § 129.112 based on the air contamination source's potential to emit shall maintain records that demonstrate to the Department or appropriate approved local air pollution control agency that the air contamination source is not subject to the specified emission rate threshold.

Subsection (h) provides that, beginning with the compliance date specified in § 129.112(a), the owner or operator of an air contamination source claiming that the air contamination source is exempt from the applicable VOC emission rate threshold specified in § 129.114(c) and the requirements of § 129.112 based on the air contamination source's potential to emit shall maintain records that demonstrate to the Department or appropriate approved local air pollution control agency that the air contamination source is not subject to the specified emission rate threshold.

There are no changes made to subsections (g) and (h) from the proposed rulemaking to this final-form rulemaking.

Subsection (i) provides that the owner or operator of a combustion unit or process heater subject to § 129.112(b) shall record each adjustment conducted under the procedures in § 129.112(b). This record must contain, at a minimum, the information specified in paragraphs (1)—(6). Subsection (i) is amended from the proposed rulemaking to this final-form rulemaking to add the words "or process heater" after the word "unit." This change is made for consistency with the corresponding amendments to § 129.112(b). There are no changes made to paragraphs (1)—(6) from the proposed rulemaking to this final-form rulemaking.

Subsection (j) provides that the owner or operator of a Portland cement kiln subject to § 129.112(h) shall maintain a daily operating log for each Portland cement kiln. The record for each kiln must include the information specified in paragraphs (1)—(4).

Subsection (k) provides that the records shall be retained by the owner or operator for 5 years and made available to the Department or appropriate approved local air pollution control agency upon receipt of a written request from the Department or appropriate approved local air pollution control agency.

There are no changes made to subsections (j) and (k) from the proposed rulemaking to this final-form rulemaking.

F. *Summary of Comments and Responses on the Proposed Rulemaking*

General comments

The Board adopted the proposed rulemaking at its meeting on May 19, 2021. The proposed rulemaking was published at 51 Pa.B. 4333 (August 7, 2021). Three public hearings were held by the Department on September 7, 8 and 9, 2021, respectively. A 67-day public comment period closed on October 12, 2021.

Public comments were received from IRRC, the EPA and 25 commentators. Written comments were not received from the Senate or House Environmental Resources and Energy Committees. On November 12, 2021, IRRC submitted comments to the Board. The public comments received by the Board are summarized as follows and are addressed in a comment and response document which is available from the Department.

Public comments received from the EPA, businesses or regulated industries, industry trade associations, a neigh-

boring state and nongovernmental organizations sought further clarification regarding certain provisions of the proposed rulemaking or for the Board to revise provisions of the proposed rulemaking. IRRC and the EPA sought clarification from the Department regarding what additional analysis the Department will require from the owners and operators of subject facilities that seek to rely on previously approved RACT II conditions to meet RACT III for the 2015 8-hour ozone standard and whether this information would be included as part of the regulatory record to ensure compliance with EPA SIP requirements.

In response to comments from IRRC and the EPA, the Board amends § 129.114(i) from the proposed rulemaking to this final-form rulemaking to establish requirements for additional analysis to be included in the RACT III case-by-case evaluations. The Board believes that final-form § 129.114(i) provides the conditions to support those instances where the Department or appropriate approved local air pollution control agency may determine that the previously established RACT II controls and limits remain RACT for the 2015 8-hour ozone NAAQS. Final-form § 129.114(i) addresses the EPA's comment that the source shall not have had any significant changes to operations, emission levels, or other site or source specific factors analyzed during the original determination for that source's RACT II permits. Final-form § 129.114(i) establishes the conditions that an owner or operator subject to final-form § 129.114(a), (b) or (c) and to § 129.99 shall not have modified or changed a source that commenced operation on or before October 24, 2016, and shall not have installed and commenced operation of a new 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 NAAQS were due to the Department or the appropriate approved local air pollution control agency 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).

An owner or operator that is subject to final-form § 129.114(a), (b) or (c) and to § 129.99 and meets the conditions stipulated in final-form § 129.114(i), may, in place of proposing an alternative RACT requirement or RACT emission limitation under final-form § 129.114(d), submit an analysis, certified by the responsible official, in writing or electronically to the Department or appropriate approved local air pollution control agency on or before December 31, 2022, that demonstrates that compliance with the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate approved local air pollution control agency under § 129.99(e) for the 1997 and 2008 8-hour ozone NAAQS remains RACT for purposes of the 2015 8-hour ozone NAAQS under final-form § 129.114(a)—(c) and (e)—(h), except for sources subject to final-form § 129.112(c)(11) or (i)—(k). The excepted sources specified in final-form § 129.112(c)(11) and (i)—(k) are electric arc furnaces (EAF), glass melting furnaces, lime kilns and direct-fired heaters, furnaces, ovens or other combustion sources. These source types did not have presumptive RACT requirements or RACT limitations established under §§ 129.96—129.100 (RACT II). The owners and operators of these source types must comply with the applicable presumptive RACT requirement or RACT limitation, or both, established in § 129.112(c)(11) and (i)—(k). If an owner or operator cannot comply with the applicable requirement or limitation established in § 129.112(c)(11) and (i)—(k), the owner or operator may apply for an alternative RACT requirement or RACT limitation under final-form § 129.114(d).

Final-form § 129.114(i)(1) and (2) address the EPA's comments about "non-controversial sources," that is, sources which were well below the dollar per ton of NO_x or VOC threshold used for the case-by-case RACT II analysis of economic feasibility, as well as the EPA's comments regarding the need for additional case-specific analysis for certain sources or source categories. Final-form § 129.114(i)(1) and (2) establish the process and information needed for the owners and operators of both categories of sources to document for the record that for each source or generic source category, the relevant control technologies and their costs have not changed significantly enough to change the prior RACT II analysis. The Department established 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" for determining if the economic feasibility analyses previously submitted under § 129.99(e) for the 1997 and 2008 8-hour ozone NAAQS should be updated for the 2015 8-hour ozone NAAQS. The NO_x screening level value of $7,500 is twice the amount of the RACT III cost-effectiveness benchmark for presumptive NO_x RACT ($3,750). The RACT III cost-effectiveness benchmark for presumptive VOC RACT, $7,500, is larger in absolute magnitude than the RACT III cost-effectiveness benchmark of $3,750 for presumptive NO_x RACT, therefore the Department set the VOC screening level value at approximately one and one-half times the amount of the VOC RACT III cost-effectiveness benchmark. These screening level values are large enough to ensure that a cost-prohibitive control technology evaluated under § 129.99 with a cost-effectiveness that is equal to or greater than $7,500 per ton of NO_x emissions reduced or $12,000 per ton of VOC emissions reduced is still cost-prohibitive for the purposes of final-form § 129.114 without the need for re-evaluation of economic feasibility. If the cost-prohibitive control technology evaluated under § 129.99 had a cost-effectiveness that is less than $7,500 per ton of NO_x emissions reduced or $12,000 per ton of VOC emissions reduced, then the owner or operator shall re-evaluate the economic feasibility of the control technology to verify that it remains cost-prohibitive for purposes of the 2015 8-hour ozone NAAQS.

Final-form § 129.114(i)(2) provides that the owner or operator of a subject source or facility 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 the submittal of the analysis to the Department or appropriate approved local air pollution control agency shall do the following: perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b); submit the analyses to the Department or appropriate approved local air pollution control agency for review; and 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.

An owner or operator subject to final-form § 129.114(a), (b) or (c) and § 129.99 that has modified or changed a source that commenced operation on or before October 24, 2016, or has installed and commenced operation of a new source after October 24, 2016, shall comply with the requirements of final-form § 129.114(d) and propose an alternative RACT requirement or RACT emission limitation. These owners and operators may not use the

analysis option under final-form § 129.114(i). This includes the owner or operator of a major NO_x emitting facility that is subject to final-form § 129.111 and was subject to §§ 129.96—129.100 (RACT II) and after October 24, 2016, installed a new source with a PTE of equal to or greater than 5 TPY of NO_x that is not subject to § 129.112 or §§ 129.201—129.205 as well as the owner or operator of a major VOC emitting facility that is subject to final-form § 129.111 and was subject to RACT II and after October 24, 2016, installed a new source with a PTE equal to or greater than 2.7 TPY of VOC that is not subject to final-form § 129.112 or has modified equipment (for example, boiler replacement). In this case, a case-by-case RACT analysis shall be performed on the new source or equipment.

In response to IRRC and EPA comments regarding procedures to comply with SIP requirements relating to public participation, the Board has amended final-form § 129.114(j) to provide that the Department or appropriate approved local air pollution control agency will review the analyses submitted under final-form § 129.114(i), solicit public comment on the analyses and supporting documentation, prepare a summary of the public comments and responses to the public comments, and, as appropriate, issue the necessary plan approvals and operating permit modifications in conformance with Chapter 127. The public comment steps for the analyses specified in final-form § 129.114(j)(2) and (3) are provided to satisfy the public participation requirements under section 110 of the CAA and 40 CFR 51.102 (relating to public hearings) for submitting materials to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP under final-form § 129.114(k). If a plan approval or operating permit modification is issued under final-form § 129.114(j)(4), the plan approval or operating permit modification will undergo public comment as part of the issuing process in conformance with Chapter 127.

IRRC and the EPA similarly asked what procedures the Department will follow to satisfy SIP requirements relating to public participation for instances where an owner and operator's previous RACT II determination remains RACT for the 2015 8-hour ozone standard. Final-form § 129.114(k) provides that the Department will submit the analyses, supporting documentation and summary of public comments and responses described in final-form § 129.114(j)(2) and (3) as well as the plan approvals and operating permit modifications issued under final-form § 129.114(j)(4) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. These submissions will include all supporting information necessary for the record to demonstrate that the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate local air pollution control agency under § 129.99(e) (RACT II) assures compliance with the provisions in final-form § 129.114 (a)—(c) and (e)—(h) (RACT III), that there is no further reduction in the emission limitations or tightening of the restrictions that is technically or economically feasible, and that no change has occurred at the source that would call into question whether the emission limitations in the RACT II permit remain RACT for the 2015 8-hour ozone NAAQS. The supporting documentation will include the applicable RACT II determinations, which will be made available to the public during the public comment period described under final-form § 129.114(j) and incorporated as part of the SIP submittal to the EPA.

IRRC and several commentators also raised concerns with the time frame provided for affected owners and operators to comply with this final-form rulemaking and inquired what authority the Department is relying on to extend the compliance date beyond January 1, 2023.

The Board understands the concerns of IRRC and the commentators relating to the time frame for implementation of this final-form rulemaking. However, the implementation date of January 1, 2023, is required by the EPA's 2015 ozone standard implementation rule. See 83 FR 62998 (December 6, 2018); see also 40 CFR 51.1316(b)(3). In this final-form rulemaking, owners and operators are required to submit alternative compliance schedules, averaging plan proposals and case-by-case proposals for alternative RACT requirements and RACT emission limitations to the Department or appropriate approved local air pollution control agency before the implementation date of January 1, 2023. Sources otherwise subject to the presumptive RACT limit and other RACT requirements for certain source categories in this final-form rulemaking will have to plan to begin complying with RACT III on the implementation date. To this end, the Department will be conducting direct outreach to the regulated community well in advance of the January 1, 2023, implementation date due to the short turnaround time between the expected promulgation date of this final-form rulemaking and the implementation date.

While the implementation date of January 1, 2023, is required by the EPA's 2015 8-hour ozone NAAQS implementation rule (40 CFR 51.1316(b)(3)), there are practical timing considerations for the owners and operators of sources that will need to install and operate control technologies to satisfy their applicable RACT III requirements. This includes submission of a plan approval from the owner or operator to the Department or appropriate approved local air pollution control agency, public participation and comment on the proposal as required by law, and ordering and installing the approved control technology as well as the installation of the new control technology or replacement of the existing control technology. Therefore, the requirements for alternative compliance schedules in this final-form rulemaking remain; owners and operators should plan to implement RACT as soon as possible when proposing an alternative compliance plan schedule subject to approval by the Department. Where an alternative compliance schedule, averaging plan proposal or case-by-case proposal is not submitted by the owner or operator to the Department or appropriate approved local air pollution control agency by December 31, 2022, or the owner or operator of the source is not otherwise complying with presumptive RACT III requirements and emissions limitations established for certain source categories on or after the implementation date, the Department will then consider this to be a compliance matter subject to the Department's authority under the APCA (35 P.S. §§ 4001—4015), to issue notices of violation and conduct enforcement, as appropriate. This approach was previously approved for RACT II by the EPA on May 9, 2019 (84 FR 20274).

IRRC and other commentators had several inquiries regarding the Regulatory Analysis Form (RAF) for the proposed rulemaking. First, IRRC and some commentators contend that the RAF and the Technical Support Document (TSD) submitted with the proposed rulemaking underestimate the number of facilities that will have to install additional RACT controls and fail to account for the cost of new equipment that will be required to meet the new limits imposed by the proposed rulemaking. IRRC requested that the Board provide additional documentation and reasoning to justify the $25 million number or revise this estimate accordingly and include these

cost estimates in Section F of the preamble to this final-form rulemaking. IRRC and a commentator suggested that the Department's estimated costs incurred by the affected owners and operators to comply with the proposed rulemaking presented in Question # 19 of the RAF are underestimated as the alternative compliance options will entail legal and consulting services, which would exceed the estimated cost of $4,000—6,000 estimated by the Department. IRRC and some commentators also note that the Department did not account for its costs in having to process additional case-by-case proposals and petitions due to lower presumptive limits proposed for multiple source categories. IRRC also asked for the Department to update Question # 23 of the RAF to accurately account for the actual cost estimates, which are properly calculated under Question # 19 of the RAF.

In response to comments on the RAF from IRRC and others, the Department determined that the owners and operators of approximately 115 engines and turbines would be required to install add-on control technology to meet the presumptive NO_x RACT III emission limitations. Since the publication of the proposed rulemaking, the Department has updated the estimates to reflect that implementation of the final-form control measures could reduce NO_x emissions by as much as 9,800 TPY from engines, turbines and municipal waste combustors and reduce VOC emissions by as much as 825 TPY from engines and turbines. The value of $25 million has been updated to approximately $36.7 million per year and was derived from multiplying the estimated 9,800 TPY of NO_x emission reductions by the NO_x RACT cost-effectiveness threshold of $3,750. The Department does not anticipate any additional costs to the regulated industry to meet the lower VOC standards contained in this final-form rulemaking. Optimization of existing VOC controls should be sufficient to meet the VOC standards in this final-form rulemaking.

There are no changes made to Question # 19 of the RAF in response to comments from IRRC and other commentators that the Department underestimated the costs of compliance. The Board finds that $4,000 to $6,000 is a reasonable estimation of costs that covers public hearings and notifications, including newspaper notices, required for the SIP submittal, as well as application fees. The estimated cost does not include any legal or consultation fees that a company may choose to incur. The cost range provided by the commentator of $4.4 to $8.8 million is based on the assumption that 250—500 facilities will require alternative compliance provisions. The Board finds this to be an overestimation as the owners and operators of less than 200 facilities submitted either averaging plans or case-by-case proposals under RACT II. The Department anticipates that the number of facilities for which an averaging plan or case-by-case proposal will be submitted under RACT III will be less than 200. Further, the Department notes that final-form § 129.114(i) provides owners and operators with the opportunity to submit an analysis, where applicable, demonstrating that RACT II conditions remain RACT for the 2015 8-hour ozone standard. For the owners and operators of eligible subject sources, this administratively efficient and less resource intensive approach than conducting a full case-by-case analysis, will likely reduce consulting costs that an owner or operator may choose to incur.

In response to comments from IRRC and others commenting that the Department did not account for its own costs in having to process additional case-by-case proposals and petitions due to lower presumptive limits proposed for multiple source categories, the Board finds that the Department will not incur any significant additional costs from the implementation of this final-form rulemaking. In the RAF, the Department explains that existing Department staff will be working to review and process alternative compliance schedules, NO_x averaging plans and case-by-case proposals as it did in RACT II; no additional staff will be hired as a result of implementation of this final-form rulemaking. The Board's final-form amendments to § 129.114(i) provide for an administratively efficient and less resource intensive process that it anticipates some affected owners and operators will use to demonstrate that RACT II conditions remain appropriate for RACT III. While this process in final-form § 129.114(i)—(k) is anticipated to save the regulated community costs, the Department will be handling the newspaper publications in these instances, and therefore, incur costs for the required publication of newspaper notices. Accordingly, the Board has revised the RAF based on the Department's estimate of these additional publication and advertising costs.

As previously explained in response to IRRC's request, the total cost to the regulated community in Questions # 19 and # 23 of the RAF have been revised accordingly to approximately $36.7 million per year.

IRRC and a commentator commented that the presumptive limit for glass melting furnaces in § 129.112 will conflict with industry-specific regulations that glass melting furnaces are subject to under §§ 129.301—129.310 (relating to control of NO_x emissions from glass melting furnaces) and that the Department did not provide an explanation in the preamble of the proposed rulemaking as to why these facilities are subject to RACT III when they were not previously subject to RACT II for the 2008 8-hour ozone standard. IRRC and the commentator requested that operational flexibility for start-up, shutdown and idling that exists for glass melting furnaces in the current regulations be added to this final-form rulemaking. IRRC and a commentator also noted that the proposed rulemaking was overdue and urged its final adoption as soon as possible. IRRC and other commentators commented that stricter emission limits be adopted for certain source categories such as steel producing facilities, coal-fired power plants and municipal waste combustors.

In response to comments from IRRC and another commentator regarding the conflict between this rulemaking and the existing requirements in §§ 129.301—129.310, the Department explains that each time the EPA revises a NAAQS under section 109 of the CAA, the Commonwealth is required to meet the applicable RACT obligations for covered sources under sections 182 and 184 of the CAA. The Department has determined that certain provisions, including § 129.303(a) relating to emissions requirements during periods of start-up, shutdown or idling, in the existing glass melting furnace regulations preclude §§ 129.301—129.310 from meeting the presumptive standards in § 129.112(i) for the 2015 8-hour ozone NAAQS because these provisions do not include enforceable emissions limits. See the EPA's Reinstatement of its 2015 Startup, Shutdown and Malfunction (SSM) Policy, available at https://www.epa.gov/air-quality-implementation-plans/emissions-during-periods-startup-shutdown-malfunction-ssm. The EPA's 2015 SSM Policy precludes the type of flexibility sought by IRRC and the commentator. The EPA also expressed concerns regarding the certification of §§ 129.301—129.310 as RACT for the 1997 and 2008 8-hour ozone NAAQS; §§ 129.301—129.310 were not approved as RACT in the Common-

wealth's SIP by the EPA for the 1997 and 2008 8-hour ozone NAAQS. See 76 FR 52283 (August 22, 2011). In response to these comments, the Board has amended final-form § 129.112(m) to reflect that the requirements and emission limitations for glass melting furnaces in § 129.112(i) would supersede existing requirements under §§ 129.301—129.310 unless the requirements or emission limitations of §§ 129.301—129.310 are more stringent.

Owners and operators of a major NO_x emitting facility or a major VOC emitting facility as defined in § 121.1 are subject to RACT III as described in final-form § 129.111. If an owner or operator of a glass melting furnace source cannot meet the presumptive RACT limit in final-form § 129.112(i), then the owner or operator may opt to submit a case-by-case proposal under final-form § 129.114. Certification of final-form § 129.112(i) as RACT for glass melting furnaces for the 2015 8-hour ozone NAAQS will be presumed to certify RACT for glass melting furnaces for the 1997 and 2008 8-hour ozone NAAQS. If an owner or operator cannot meet a presumptive RACT emission limit established under § 129.112(i), the owner or operator may submit a case-by-case proposal for an alternative RACT emission limitation.

In response to comments from IRRC and another commentator that the RACT III rulemaking is overdue and needs to be adopted as soon as possible, the Board acknowledges the comments. The Department has worked diligently to finalize this comprehensive rulemaking as quickly as possible. Litigation over certain aspects of the EPA's approval of certain provisions of the RACT II final-form rulemaking (84 FR 20274; May 9, 2019) in *Sierra Club v. EPA*, 972 F.3d 290 (3d Cir. 2020) has, in part, delayed the RACT III rulemaking.

In response to comments from IRRC and another commentator regarding the stringency of emissions limitations for coal-fired power plants, the Board explains that a coal-fired combustion unit with a rated heat input greater than 250 million Btu/hour, including an electric generating unit (EGU) with selective catalytic reduction (SCR), has no presumptive NO_x RACT requirement or RACT emissions limitation specified in § 129.112. Therefore, § 129.114(a) is not applicable. Owners and operators of these large coal-fired combustion units are required to propose a NO_x RACT requirement or RACT emission limitation under § 129.114(b).

The owners and operators of large coal-fired combustion units that are EGUs equipped with SCR were required to submit an alternative NO_x RACT proposal to satisfy the requirement of § 129.99. See *Sierra Club v. EPA*, 972 F.3d 290 (3d Cir. 2020). Therefore, these owners and operators may submit an analysis under final-form § 129.114(i) to demonstrate that their limitations issued under §§ 129.96—129.100 (RACT II) remain RACT for §§ 129.111—129.115. These analyses received under § 129.114(i) along with supporting documentation will be subject to public comment to meet the Commonwealth's SIP public participation obligations under section 110 of the CAA and 40 CFR 51.102.

§ 129.111. Applicability

IRRC and a commentator commented that the use of "that were in existence on or before August 3, 2018," in proposed subsection (a) is vague and sought clarity. In response to these comments, the Board has amended this final-form rulemaking to provide further clarity. In final-form § 129.111(a) and (b), the words "commenced operation" have replaced "in existence." While "commenced operation" is not defined in § 121.1, the words "commenced operation" are used in the definition of the term "new source" and also widely used in plan approvals issued by the Department's Air Quality Program.

The Board finds that the Department does not intend for the RACT III provisions to be continually reapplied to new sources at major facilities. The intent of the applicability date in § 129.111(a) and (b) is that RACT should be determined once for each existing major facility or source in accordance with the requirements for the applicable 8-hour ozone NAAQS as the major facility or source exists on the applicability date. The applicability date in § 129.111(a) and (b), namely, August 3, 2018, is the effective date of the designations of the nonattainment areas in this Commonwealth for the 2015 8-hour ozone NAAQS. See 83 FR 25776, 25828 (June 4, 2018).

In response to the EPA's suggestion that the scope of applicability of § 129.111(a) be narrowed to exclude new sources at existing major facilities, the Board has amended the language of § 129.111(a)(1) and (2) to clarify that the requirements apply to the owner and operator of major sources and facilities subject to § 129.111(a) that commenced operation on or before August 3, 2018. Installation and operation of a new source after August 3, 2018, at a major facility covered by § 129.111(a) is excluded from being identified and listed in accordance with § 129.111(a)(1) and (2) in the notification required under § 129.115(a). A new source installed after August 3, 2018, or the new major facility that commences operation after August 3, 2018, would instead be subject, at a minimum, to a BAT determination which can be no less stringent than RACT established for the 2015 8-hour ozone NAAQS under §§ 129.111—129.115 (RACT III).

The EPA asked the Department to clarify if new facilities that came into existence after July 20, 2012, are not subject to RACT, or alternatively, whether those new facilities would be subject to a newer RACT standard. In response to the EPA's questions regarding the applicability of RACT to the owners and operators of new [major] facilities that came into existence after July 20, 2012, the applicability date of §§ 129.96—129.100 (RACT II), the Department provides that the owner and operator of a major facility or source that commenced operation after July 20, 2012, but on or before August 3, 2018, would not have been subject to, or evaluated for, RACT for the 1997 and 2008 8-hour ozone NAAQS under §§ 129.96—129.100 (RACT II); rather, the owner and operator of the major facility or source would have been subject, at a minimum, to a BAT determination which could be no less stringent than the RACT II requirements for the 1997 and 2008 8-hour ozone NAAQS. The owner or operator of a major facility or source that commenced operation after July 20, 2012, and is in operation on or before August 3, 2018, would be subject to § 129.111(a) and would be evaluated for and issued an operating permit with the applicable RACT III requirements or emissions limitations, or both, for the 2015 8-hour ozone NAAQS for the major facility or source as it existed on or before August 3, 2018. If the owner or operator of this major facility then installs a new source after August 3, 2018, it is not the Department's intent to require an updated RACT III analysis for the 2015 8-hour ozone NAAQS for the facility, as explained above regarding the scope of applicability of § 129.111(a); rather, the new source would be subject to a BAT determination which can be no less stringent than RACT established for the 2015 8-hour ozone NAAQS under §§ 129.111—129.115 (RACT III).

In response to the EPA's suggestion that the language in § 129.111(b) be clarified, the Board provides that the

owner or operator of a non-major facility that commenced operation after July 20, 2012, and is in operation on or before August 3, 2018, would not have been subject to RACT II under §§ 129.96—129.100 nor would they be subject to § 129.111(a), since the facility is not a major facility. If the owner and operator of a non-major facility that commenced operation on or before August 3, 2018, then installs and commences operation of a new source after August 3, 2018, or makes a modification or change in operation after August 3, 2018, of a source that commenced operation on or before August 3, 2018, to the extent that the source or facility now meets the definition of a major NO_x emitting facility or major VOC emitting facility, this owner and operator is subject to the requirements of § 129.111(b). The owner or operator will be evaluated by the Department for applicable RACT III requirements for the 2015 8-hour ozone NAAQS and be issued an operating permit with the applicable RACT III requirements. Once this source or facility meets major status and has been evaluated for applicable RACT III requirements under §§ 129.111—129.115, installation of a subsequent new source or a subsequent modification or change in operation of an existing source after the date of issuance of the permit would be subject to a BAT analysis which could be no less stringent than the RACT III requirements.

As specified under final-form § 129.111(d), the owner and operator of a facility that commenced operation on or before August 3, 2018, that is not a major NO_x emitting facility or a major VOC emitting facility on or before December 31, 2022, would not be subject to §§ 129.111—129.115, except as specified in final-form § 129.111(e). Final-form § 129.111(e) specifies that if the owner and operator of a facility that complied with § 129.111(d) becomes major after December 31, 2022, the owner and operator of the now-major facility shall comply with § 129.111(b). This requirement precludes the situation in which an owner or operator of a major facility or source that is subject to § 129.111(a), or an owner or operator of a facility or source that is subject to § 129.111(b) that becomes major after August 3, 2018, then falls below the applicable major facility threshold on or before December 31, 2022, from being exempt from §§ 129.111—129.115 if the source or facility becomes major again after December 31, 2022.

The owner and operator of a source or facility that commences operation after August 3, 2018, would not be subject to §§ 129.111—129.115. These owners and operators would be evaluated according to applicable programs such as BAT or new source review. These owners and operators may become subject to future RACT requirements or RACT emission limitations, or both, that are implemented to address a future ground-level ozone NAAQS or revision to an existing ground-level ozone NAAQS. These owners and operators would be evaluated for RACT applicability at that time.

IRRC and a commentator asked the Board to explain in the preamble of this final-form rulemaking how the exemptions in subsection (c) will be implemented for facilities that have the potential to emit less than a certain amount of NO_x or VOCs. In response to these comments, the Board explains that the source exemptions listed in § 129.111(c) are based on potential emissions or potential to emit (PTE). A source that qualifies for an exemption under § 129.111(c) either does not have the physical capability to emit 1 TPY or more of NO_x or VOCs or has a legal restriction that prohibits it from emitting 1 TPY or more of NO_x or VOCs. A change that would allow the source to emit 1 TPY or more of NO_x or VOCs would be a modification subject to BAT requirements. A modification that occurs after December 31, 2022, would not be subject to the RACT requirements and RACT emissions limitations of §§ 129.112—129.115 except as specified in § 129.111(e). The Board notes, however, that this modification may become subject to future RACT requirements or RACT emissions limitations, or both, that are implemented to address a future ground-level ozone NAAQS or revision to an existing ground-level ozone NAAQS. These owners and operators would be evaluated for RACT applicability at that time.

A commentator asked the Board to revise the definitions of "major NO_x emitting facility" and "major VOC emitting facility" to exclude the 25 TPY thresholds for Bucks, Chester, Delaware, Montgomery and Philadelphia Counties consistent with RACT II. In response to the commentator's request, the Department has explained that it intends for the major facility applicability thresholds established for Bucks, Chester, Delaware, Montgomery and Philadelphia Counties under RACT II to also apply for RACT III. Therefore, the Board has revised the definitions of major NO_x emitting facility and major VOC emitting facility in this final-form rulemaking to clarify that the applicability thresholds for Bucks, Chester, Delaware, Montgomery or Philadelphia County for purposes of §§ 129.96—129.100 and 129.111—129.115 are 100 TPY for NO_x emissions and 50 TPY for VOC emissions.

A commentator asked why sources subject to § 129.74 were not excluded from the proposed rulemaking as they were in RACT II. In response, the Board has revised § 129.111(a) and (b) in this final-form rulemaking to include § 129.74 in the list of excepted sections. Section 129.74 implements RACT requirements and RACT emission limitations consistent with the EPA's applicable Control Techniques Guidelines (CTG) (EPA 453/R-08-004, 2008/09 Control Techniques Guidelines for Fiberglass Boat Manufacturing Materials) and sources subject to § 129.74 are exempted from the major source RACT requirements in §§ 129.96—129.100 and §§ 129.111—129.115.

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

Subsection (b)

A commentator commented that proposed § 129.112 did not address the presumptive requirements for process heaters between 20—50 million Btu/hour and asked if it is the Department's intention that these units be subject to case-by-case RACT under RACT III, similar to RACT II.

The Board amends § 129.112(b)(1)(i) and (ii) to add "or process heater."

Subsection (c)

IRRC and a commentator suggested that "flare" be added to the list of equipment that must be installed, operated and maintained in accordance with manufacturer's specifications and with good operating practices under § 129.112(c)(8) if the revision would improve clarity.

The Board amends § 129.112(c)(8) in this final-form rulemaking to add the word "flare."

Some commentators commented that the Board has only adopted "good operating practices" for EAFs and suggested that the Department and the Board should revise the TSD to include an analysis of RACT requirements for EAFs. Another commentator commented that steel producing facilities might improve their air emis-

sions performance through more stringent RACT standards and suggested that the Department consider a meaningful work practices plan to control coke oven emissions from leaking doors, lids, offtake piping and charging of coke oven batteries as well as a leak detection and repair program for VOCs.

In response to comments regarding RACT III requirements for steel producing facilities, the Department explained that it evaluated several EAFs as part of case-by-case determinations for RACT II. The Department determined that no NO_x or VOC emissions control for EAF is technically feasible. This is because EAF do not use combustion and are batch processes. Since there is no combustion, methods used to alter NO_x and VOC emissions cannot be employed as they would for a combustion source. Therefore, the Board has determined that a numerical RACT emissions limitation for either NO_x or VOC emissions from an EAF is not appropriate. The Board finds that the applicable presumptive RACT requirement of "good operating practices" is consistent with previous RACT determinations and is appropriate for EAF in this Commonwealth. Additional information can be found in Section IV(L) of the Department's TSD for this final-form rulemaking.

Due to the nature and complexity of certain sources, such as steel mills and coke ovens, it is not appropriate to establish presumptive RACT requirements or RACT emissions limitations. See 44 FR 53761, 53762-53763 (September 17, 1979); see also 57 FR 18070, 18073—18074 (April 28, 1992). Owners and operators of sources with no presumptive RACT requirements or RACT emissions limitations are required to submit a case-by-case proposal for an alternative RACT requirement or RACT emissions limitation (alternative RACT proposal). If the facility is in Allegheny County, the alternative RACT proposal is submitted to and reviewed by the Allegheny County Health Department (ACHD).

Case-by-case proposals for alternative RACT requirements or RACT emissions limitations submitted to ACHD must be submitted by the Department to the EPA as a SIP revision. These proposals must meet the same requirements and undergo the same SIP review process as alternative RACT proposals submitted to the Department. Additionally, the Department provides support to ACHD during the review of alternative RACT proposals.

Subsection (e)—Municipal Solid Waste Landfills

A commentator requested that proposed § 129.112(e) be amended to reflect recent changes in applicable Federal regulations published in the *Federal Register* on May 21, 2021, effective June 21, 2021, pertaining to the adoption of the Federal Plan for municipal solid waste landfills that commenced construction on or before July 17, 2014, and landfills that are constructed, reconstructed or modified on or after July 18, 2014.

The Board believes that the commentator is referring to the EPA final rule published at 86 FR 27756 on May 21, 2021. The Board has revised final-form § 129.112(e) to incorporate the updated Federal regulations at 40 CFR Part 62, Subpart OOO. The Board notes that § 129.113(e)(2) requires a municipal solid waste landfill constructed, reconstructed or modified on or after July 18, 2014, to comply with the New Source Performance Standards in 40 CFR Part 60, Subpart XXX, which are adopted and incorporated by reference in § 122.3 (relating to adoption of standards).

Subsection (f)—Municipal Waste Combustors

The EPA commented that the prior NO_x emission standard for municipal waste combustors in § 129.97 is proposed to be reduced from 180 ppmvd to 150 ppmvd. The Department's analysis determined that additional controls (for example, selective catalytic reduction/selective non-catalytic reduction (SCR/SNCR)) were technically or economically infeasible, or both. However, the EPA commented that the record does not explain what measures will be necessary for the sources to meet the new limits and does not demonstrate that 150 ppmvd is the lowest rate that is technically and economically feasible. Several of the sources appear to be capable of operating at lower emission rates. The EPA asked that the Department explain what analysis was performed to determine that 150 ppmvd is RACT for these units. Several commentators commented that the Department should set a lower limit for this source category.

The limit for municipal waste combustors in § 129.97 is 180 ppmvd. The Board has revised proposed § 129.112(f) from 150 ppmvd NO_x @ 7% oxygen to a more stringent limit of 110 ppmvd NO_x @ 7% oxygen in this final-form rulemaking based on the Department's review of information provided by commentators during the public comment period as well as the Department's review of available stack test emissions data. The supporting analysis is found in Section IV(E) of the Department's TSD for this final-form rulemaking.

Another commentator commented that the proposed rulemaking establishes no process for considering whether an individual source can achieve a stronger and more protective limit and weakens the standard by allowing the owner or operator of a municipal waste combustor to meet the presumptive limit through facility or system-wide averaging, which the commentator claimed poses a particular threat to environmental justice areas. The commentator requested the Board correct this.

In response to a commentator's request, the Board declines to make any revisions to this final-form rulemaking. The Department explained that it is appropriate to set presumptive RACT requirements and RACT emissions limitations for certain source categories, including municipal waste combustors, in this final-form rulemaking. A presumptive limit is set at a level that, when met, assures that the Commonwealth's RACT obligation under the CAA has been met. See *NRDC v. EPA*, 571 F.3d 1245, 1253—1255 (D.C. Cir. 2009). With respect to the ability for owners and operators to use systemwide NO_x averaging, the Board finds that the Department has adequately explained the ability and limitations for owners and operators to use systemwide averaging in responses to Comments 99 and 100 of the comment and response document. NO_x emissions averaging plans or alternative RACT proposals are submitted to the Department for review and approval, denial or modification in accordance with § 129.113(g) and (i). The NO_x emissions averaging plan or alternative RACT proposal approval or modification and the Department's proposed actions are subject to public review and comment at the State level before being finalized by the Department. If approved and issued by the Department as an operating permit modification, the NO_x emissions averaging plan or alternative RACT proposal must be submitted by the Department to the EPA as a revision to the Commonwealth's SIP. The local county agencies in Allegheny County and Philadelphia County follow a similar process.

Another commentator commented that SNCR control technology cannot be employed at some municipal waste

combustor facilities due to the type of technology employed there and noted that the Department determined that retrofitting with SNCR is economically infeasible. In response, the Board notes that § 129.112(f) has been amended by the Board from the proposed 150 ppmvd NO_x @ 7% oxygen to 110 ppmvd NO_x @ 7% oxygen in this final-form rulemaking. The NO_x emission rate of 110 ppmvd @ 7% oxygen on a 24-hour averaging period for large municipal waste combustors was recommended by the Ozone Transport Commission Stationary Area Sources workgroup in its June 2021 "Municipal Waste Combustor Workgroup Report" and is supported by the Department's cost-effectiveness analysis. If an owner or operator cannot meet the presumptive emission limit, the owner or operator has the option to submit a case-by-case proposal for an alternative RACT emission limitation under § 129.114.

Subsection (g)(1)—Combustion Units or Process Heaters

IRRC and other commentators asked the Board to explain in the preamble of this final-form rulemaking the rationale for using an operating day to measure emission limits for coal-waste plants for an operating day under § 129.112(g)(1)(viii), instead of a 30-day rolling average.

In response, the Board finds that the proposed use of an operating day is appropriate. Based on continuous emissions monitoring data for the years 2018—2020, the Department determined that circulating fluidized bed boilers can meet the presumptive NO_x RACT emissions limitation on a daily basis including periods of start-up, shutdown and low load operation. The owner or operator has the option to submit a case-by-case proposal for an alternative RACT emission limitation under final-form § 129.114 if they believe that the presumptive RACT limitation cannot be met at all times. See Section IV(F) of the Department's TSD for this final-form rulemaking.

A commentator commented that start-up and periods of low load operations should be exempted from the presumptive NO_x RACT requirement for circulating fluidized bed boilers firing primarily coal refuse.

The Board finds that presumptive RACT requirements must be enforceable limits and apply at all times, including periods of start-up, shutdown and low load operation, which is consistent with the EPA's 2015 SSM Policy, available at https://www.epa.gov/air-quality-implementation-plans/emissions-during-periods-startup-shutdown-malfunction-ssm.

Commentators commented that the presumptive NO_x RACT emissions limit for circulating fluidized bed boilers primarily firing anthracite waste such as culm should be the same rate as those primarily firing bituminous waste such as gob.

The Board agrees with the commentators. The RACT emission limitation for a circulating fluidized bed combustion unit with a rated heat input equal to or greater than 250 million Btu/hour firing waste products of coal mining, physical coal cleaning and coal preparation operations that contain coal, matrix material, clay and other organic and inorganic material is 0.16 lb NO_x/million Btu heat input when firing primarily bituminous waste such as gob and 0.16 lb NO_x/million Btu heat input when firing primarily anthracite waste such as culm.

Another commentator commented that the proposed rulemaking should be amended to include a lowered presumptive NO_x emissions limit for coal-fired EGUs without the problematic inlet-temperature loophole from RACT II; and that the Commonwealth's "case-by-case approach" for coal plant NO_x RACT determinations, involving a "top-down analysis," is inappropriate for several reasons. The commentator recommended that the Commonwealth set a new NO_x RACT standard for its coal-fired power plants that incorporates a 0.07 lb NO_x/million Btu emission limit, avoids control inlet temperature-based exemptions, and includes a short term, 24-hour emission limit at least as low as 0.125 lb NO_x/million Btu.

The commentator's suggestion that the Board establish a presumptive RACT limit for coal-fired EGUs is outside the scope of this rulemaking. Nothing in the CAA or regulations thereunder mandates that the Commonwealth establish a presumptive RACT limit for coal-fired power plants as suggested by the commentator. The CAA provides States with "broad authority to determine the methods and particular control strategies they will use to achieve the [CAA] statutory requirements." See *BCCA Appeal Group v. EPA*, 355 F.3d 817, 822 (5th Cir. 2003). The determination of RACT and the corresponding emission rate ensuring the proper application and operation of RACT may vary from source to source due to source configuration, retrofit feasibility, operating procedures, raw materials, and other technical or economic characteristics of a source or group of sources. Memorandum from Roger Strelow, Assistant Administrator for Air and Waste, USEPA, to Regional Administrators I-X, "Guidance for determining Acceptability of SIP Regulations in Non-Attainment Areas" (December 9, 1976) at 2, available at: https://www3.epa.gov/ttn/naaqs/aqmguide/collection/cp2/19761209_strelow_ract.pdf; see also *Nat'l Steel Corp., Great Lakes Steel Div. v. Gorsuch*, 700 F.2d 314, 322—323 (6th Cir. 1983).

For some categories of sources, the EPA has promulgated CTGs and alternative control techniques documents (ACTs) to assist states in determining what control techniques meet the RACT requirement; states may opt to require alternative controls rather than following the CTGs. See *NRDC v. EPA*, 571 F.3d 1245, 1253-1254 (D.C. Cir 2009). The ACTs issued under section 183 of the CAA (42 U.S.C.A. § 7511b), such as the EPA's 1994 Alternative Control Techniques Document for Utility Boilers, do not establish presumptive levels of control. *Id.* Moreover, simply because other states have chosen to establish presumptive RACT limits for their coal-fired EGUs does not mean that the Commonwealth is required to do so or that the limits selected are appropriate. See Memorandum from William T. Harnett, Director, Air Quality Policy Division, USEPA, to Regional Air Division Directors, "RACT Qs & As—Reasonably Available Control Technology (RACT): Questions and Answers" (May 18, 2006), at 1 and 3, available at https://www.epa.gov/sites/default/files/2016-08/documents/ract_and_nsps_1dec1988.pdf (A State may elect to select to establish "beyond-RACT controls" for policy reasons).

Although the Department is under no obligation to establish presumptive RACT requirements and RACT emissions limitations for a specific source category, the Department may do so when the Department determines that a source category contains emission units that are similar enough in nature that the emission units in the source category can be regulated by a consistent emissions limitation or requirement. However, based on the varying sizes, various operating scenarios and conditions, and other varying factors for coal-fired EGUs in this Commonwealth, the Department determined that it is appropriate for owners and operators of large coal-fired combustion units to obtain case-specific RACT determinations. Through these case-by-case submittals, the Department will be reviewing advances in technology. See *NRDC v. EPA*, 71 F.3d 1245 (D.C. Cir 2009). This position is

supported by the EPA at 44 FR 53761, 53762-53763 (September 17, 1979), regarding State Implementation Plans, General Preamble for Proposed Rulemaking on Approval of Plan Revisions for Nonattainment Areas-Supplement (on Control Techniques Guidelines) and at 57 FR 18070, 18073-18074 (April 28, 1992), regarding State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental. See also 57 FR 55620 (November 25, 1992), regarding State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, at page 55624, paragraph 3.4, "VOC and NO_x Emissions."

The Department previously submitted case-by-case submittals under §§ 129.91—129.95 (RACT I) to the EPA to meet the Commonwealth's RACT obligations under the CAA for the 1979 and 1993 1-hour ozone NAAQS. The Department is currently conducting case-by-case determinations under §§ 129.96—129.100 (RACT II) for existing coal-fired combustion units with SCR systems as a result of the United States Court of Appeals for the Third Circuit's decision in *Sierra Club v. EPA*, 972 F.3d 290 (3d Cir 2020). (*Sierra Club*). In *Sierra Club*, the Third Circuit noted that older coal plants may elect to submit source-specific RACT proposals under § 129.99. Id. at 296.

The Department determined that the best method to comply with the Third Circuit's decision in *Sierra Club* is through requiring the owner or operator of each coal-fired combustion unit affected by the Court's decision to submit case-by-case RACT determinations in accordance with the procedures in § 129.92(a)(1)—(5) and (b), which includes a top-down analysis due to variability in operation and control device configuration. A top-down RACT analysis ranks the technically feasible air pollution control technologies from most effective control to least effective control. Each technically feasible air pollution control technology is then analyzed for economic feasibility (cost analysis). The highest ranking technically feasible air pollution control technology that is economically feasible is the air pollution control technology that is selected for installation and operation on the source.

Subsection (g)(2)—Combustion Turbines

IRRC and a commentator asked the Board to explain in the preamble to this final-form rulemaking the rationale for establishing 85 ppmvd NO_x as a presumptive RACT emission limitation under proposed § 129.112(g)(2)(iii)(A) and whether existing technology allows for that level of compliance.

In response to IRRC and the commentator's comment, the Board has amended the source categories for turbines by separating and adding an additional group for turbines in the 1,000 bhp—4,100 bhp size range in this final-form rulemaking. The emission limit of concern is now in final-form § 129.112(g)(2)(iv)(A). The Department explained that in its review of the comments on the proposed rulemaking, it analyzed additional information provided by a turbine manufacturer as well as additional stack test data, and determined that existing technology does not allow for installation of additional control technology and, therefore, does not provide for the level of control proposed by the Board. The Board has revised the presumptive standard in the final-form rulemaking to 120 ppmvd NO_x @ 15% oxygen.

A commentator requested modifying the bhp size range for simple cycle or regenerative cycle combustion turbines in § 129.112(g)(2)(iii) and (iv) from 3,000 bhp to 4,100 bhp to alleviate alternative RACT submittals for the Centaur® 40 4000 rating, which does not have a dry low NO_x combustion control technology option and, therefore, is unable to meet the proposed 42 ppmvd NO_x level.

The Department reviewed the information provided by the commentator regarding the available turbines located in this Commonwealth. The information demonstrated that turbines with a rating less than 4,100 bhp cannot consistently meet the proposed 42 ppmvd NO_x standard. Therefore, the Board has revised proposed § 129.112(g)(2)(iii) in this final-form rulemaking to revise the size ranges for simple cycle or regenerative cycle combustion turbines. The size threshold of 3,000 bhp in proposed § 129.112(g)(2)(iii) for simple cycle or regenerative cycle combustion turbines are amended in this final-form rulemaking to 4,100 bhp. Further, the Board notes that proposed § 129.112(g)(2)(iii) is renumbered as final-form § 129.112(g)(2)(iv).

The Board has renumbered proposed § 129.112(g)(2)(iv) in this final-form rulemaking to § 129.112(g)(2)(v). Renumbered § 129.112(g)(2)(v) is further amended in this final-form rulemaking to establish the applicable presumptive RACT emissions limitations for the owner or operator of a simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 4,100 bhp (rather than the proposed rated output of 3,000 bhp) and less than 60,000 bhp. No changes are made to the applicable presumptive RACT emission limitations from proposed § 129.112(g)(2)(iv)(A)—(D) to final-form § 129.112(g)(2)(v)(A)—(D).

A commentator suggested splitting the source category for § 129.112(g)(2)(i) to add a source category for combined cycle and combined heat and power turbines for equal to and greater than 1,000 bhp to less than 4,100 bhp and modify the current source category to range from greater than 4,100 bhp to less than or equal to 180 MW.

Proposed § 129.112(g)(2)(i) established the applicable presumptive RACT emissions limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 180 MW. The Board has amended § 129.112(g)(2)(i) in this final-form rulemaking to establish the applicable presumptive RACT emissions limitations for the owner or operator of a combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp (rather than less than 180 MW). Section 129.112(g)(2)(i)(A) is amended from the proposed rulemaking to this final-form rulemaking to delete the proposed limitation of 42 ppmvd NO_x @ 15% oxygen and add the limitation of 120 ppmvd NO_x @ 15% oxygen. Section 129.112(g)(2)(i)(C) is amended from the proposed rulemaking to this final-form rulemaking to delete the limitation of 96 ppmvd NO_x @ 15% oxygen and add the limitation of 150 ppmvd NO_x @ 15% oxygen. These limits are consistentwith the presumptive NO_x RACT emission limitations for the simple cycle or regenerative cycle combustion turbines in final-form § 129.112(g)(2)(iv).

The commentator also requested the NO_x emissions level for the newly created category match the level requested for simple cycle turbines in § 129.112(g)(2)(iii) at 150 ppmvd NO_x.

Proposed § 129.112(g)(2)(iii)(A) is amended in this final-form rulemaking to revise the applicable presumptive RACT emission limitation for simple cycle or regenerative cycle combustion turbines when firing natural gas

or a noncommercial gaseous fuel. Based on the Department's review of the information provided by the commentator as well as the Department's review of available stack test emissions data, the Board has revised the presumptive NO_x RACT emissions limitation of 85 ppmvd @ 15% oxygen to 120 ppmvd @ 15% oxygen. Please also see Section IV(G) of the Department's TSD for this final-form rulemaking.

Further, the Board has renumbered proposed § 129.112(g)(2)(iii)(A) in this final-form rulemaking as § 129.112(g)(2)(iv)(A).

Subsection (g)(3)—Stationary Internal Combustion Engines

IRRC and some commentators commented that the proposed rulemaking included a typographical error where it states a lower NO_x limit for rich burn engines of 0.6 gram/bhp-hr (for all engine sizes); the TSD indicates 2.0 gram/bhp-hr for all units regardless of horsepower.

The Board has revised the final-form rulemaking to correct this typographical error. The proposed limit of 0.6 gram NO_x/bhp-hr in § 129.112(g)(3)(iv)(A) has been revised to a limit of 2.0 gram NO_x/bhp-hr.

Subsection (g)(4)—Combustion Unit or Process Heater Firing Multiple Fuels

IRRC and a commentator questioned how the owner or operator of a unit firing multiple fuels can comply with the requirements of § 129.112(g)(4) if beneficially reused process gases are used as fuels. IRRC asked the Board to explain in the preamble to this final-form rulemaking how this provision will be implemented.

In response to IRRC and the commentator's comment, the Department did not have sufficient data for other fuels to determine a presumptive NO_x RACT emission limitation for this source category. Therefore, the owner or operator of a source firing a fuel not covered under the presumptive RACT emission limitations is required to submit a case-by-case proposal for an alternative RACT emissions limitation in accordance with final-form § 129.114(b) or § 129.114(c). The owner or operator may propose a method of compliance similar to the calculation in final-form § 129.112(g)(4)(i) as part of the case-by-case RACT proposal.

Subsection (e)—Glass Melting Furnaces

A commentator stated that RACT III would indirectly revoke important components of the existing glass melting furnace regulations regarding allowable emissions during start-up, shutdown and idling, and the provisions for alternative limits, claiming that the provisions of this final-form rulemaking would effectively impose a zero emissions limit for NO_x during these periods. The commentator commented that the proposed RACT III rulemaking should not override and essentially rescind other currently applicable regulations without recognition and notice of the effect of the proposed rulemaking and without any explanation by the Board as to the rationale and basis for doing so.

Each time the EPA revises a NAAQS under section 109 of the CAA, the Commonwealth is required to meet the applicable RACT requirements for covered sources under sections 182 and 184 of the CAA. These duties are charged to the Department and the Board, respectively, under the APCA. See for example, 35 P.S. §§ 4004, 4004.2 and 4005. The Department determined that certain provisions, including § 129.303(a), in the existing glass melting furnace regulations preclude §§ 129.301—129.310 from meeting the presumptive standards in § 129.112(i) for the 2015 8-hour ozone NAAQS. The EPA also expressed concerns regarding the certification of §§ 129.301—129.310 as RACT for the 1997 and 2008 8-hour ozone NAAQS; §§ 129.301—129.310 were not approved as RACT in the Commonwealth's SIP by the EPA for the 1997 and 2008 8-hour ozone NAAQS. See 76 FR 52283 (August 22, 2011). Under the final-form rulemaking, the owner or operator of a glass melting furnace source that cannot meet the presumptive limit in § 129.112(i) may opt to submit a case-by-case proposal under § 129.114. Certification of § 129.112(i) as RACT for glass melting furnaces for the 2015 8-hour ozone NAAQS will be presumed to certify RACT for glass melting furnaces for the 1997 and 2008 8-hour ozone NAAQS.

RACT requirements and RACT emissions limitations are applicable at all times, including start-up, shutdown and idling. The presumptive NO_x RACT limits for glass melting furnaces are in units of pounds of NO_x per ton of glass pulled. The Board disagrees with the commentator that the presumptive NO_x RACT emissions limitation effectively imposes a zero emissions limit for NO_x during start-up, shutdown and idling. During times when glass is not being pulled, the emissions in terms of pounds of NO_x per ton of glass pulled is undefined, not zero. The RACT limit is therefore only practically applicable at times when glass is being pulled. If an owner or operator cannot meet a presumptive RACT emission limit, the owner or operator may submit a case-by-case proposal for an alternative RACT emission limitation.

RACT emission limitations must be enforceable to be approvable by the EPA as a SIP revision. Exemptions from emission limitations during periods of start-up, shutdown and malfunction (SSM) existed in a number of other States' regulations, some of which exemptions were adopted and approved into those States' SIPs by the EPA many years ago. Court decisions have previously held that under the CAA, these exemptions are not allowed in SIPs. See, for example, *Sierra Club et al. v. Jackson*, No. 3:10-cv-04060—CRB (N.D. Cal.). In response to these court decisions, on June 12, 2015, the EPA published a final rule to restate and update the EPA's SSM Policy applicable to SIPs and to ensure States have plans in place that are fully consistent with the CAA and court decisions concerning emissions during periods of SSM operations. See 80 FR 33840 (June 12, 2015) (2015 SSM Policy final action). The 2015 SSM Policy final action embodies the EPA's updated 2015 SSM Policy as it applies to SIP provisions. The SSM Policy provides guidance to states for compliance with CAA requirements for SIP provisions applicable to excess emissions during SSM events. On October 9, 2020, the EPA issued a memorandum of guidance providing that exemption provisions for SSM may be permissible in SIPs under certain circumstances. On September 30, 2021, the EPA issued a memorandum withdrawing the previous October 9, 2020, guidance and reinstated the agency's prior policy in the 2015 SSM Policy final action that SSM exemptions in SIPs are inconsistent with the CAA.

A commentator also commented that the TSD provided by the Department inaccurately relied on the EPA's Control Cost Manual to estimate the cost of NO_x controls for glass melting furnaces and that the RACT III proposal is essentially silent on the rationale behind the imposition of presumptive RACT for glass melting furnaces.

In response, the Board finds based on explanation from the Department that the EPA Control Cost Manual is an accepted source for the determination of economic feasi-

bility for NO_x control technologies. These determinations of economic feasibility are not dependent on the source type. In this case, presumptive RACT is established as a NO_x emissions limitation and does not mandate an emissions control strategy. For example, oxy-firing can be used to meet presumptive NO_x RACT emissions limitations without the necessity to install particulate emission control technology.

The Department evaluated cost information provided by the commentator, which in part, also relied on the EPA Control Cost Manual. The Department also reviewed the analysis for various emission control scenarios submitted by the commentator for the regional haze four-factor analysis, which is a separate requirement under section 169A of the CAA (42 U.S.C.A. § 7491) and implementing regulations. The Department determined that based on the information provided, the control devices included in the analysis are cost-effective as RACT for the control of NO_x emissions from glass melting furnaces. If an owner or operator cannot meet the presumptive RACT emission limit, the owner or operator may submit a case-by-case proposal for an alternative RACT emission limitation under final-form § 129.114.

Subsection (j)—Lime Kilns

A commentator requested that the Board revise the proposed rulemaking to once again include the specific lb NO_x/hr 30-operating day rolling average numerical limits associated with Graymont's Kiln 6, Kiln 7 and Kiln 8. The commentator noted that substantial system changes would have to occur to incorporate live production data into the well-established CEMS data management system with no environmental benefit.

The Board declines to revise this final-form rulemaking as requested by the commentator and disagrees that substantial changes would be needed to demonstrate compliance with the proposed standard. The amount of lime produced is a known quantity and can be added to the CEMS data management system. According to the Department, the calculation of a lb NO_x per ton of lime produced value is not unnecessarily burdensome.

Subsection (k)—Direct-Fired Heaters, Furnaces and Ovens

A commentator inquired why the new definition "combustion source" was not used in proposed § 129.112(k). The Board agrees with the commentator that the term "combustion source" can be included in § 129.112(k). The term "combustion source" specifically includes sources that produce heat or energy by direct heat transfer. Direct-fired heaters, furnaces and ovens produce heat or energy by direct heat transfer and are combustion sources. In contrast, a "combustion unit" is defined as a stationary equipment used to burn fuel primarily for the purpose of producing power or heat by indirect heat transfer. The Board has amended final-form § 129.112(k) to include the words "or other combustion source" after the words "direct-fired heater, furnace, oven."

IRRC and a commentator commented that the proposed rulemaking applies the same NO_x limit for a direct-fired heater, furnace or oven as the limit for indirect-fired furnaces established under RACT II. The commentator asked for clarification on the basis for this decision. IRRC asked the Board to include the rationale for this standard in the supporting documents and preamble submitted with this final-form rulemaking. The commentator requested that the Department provide additional information to support the proposed presumptive RACT requirement for direct-fired units and suggested that the Department should not require sources to redo case-by-case RACT determinations that were evaluated and approved in RACT II.

In response to the comment, the Board notes that presumptive RACT emissions limitations were not established in RACT II for direct-fired units. Under RACT II, owners and operators of direct-fired units were required to submit a case-by-case proposal for an alternative RACT emission limitation under § 129.99. The addition of presumptive NO_x RACT limitations for direct-fired units in the RACT III rulemaking gives owners and operators more flexibility to comply with RACT requirements and RACT emission limitations. If an owner or operator cannot meet the applicable presumptive RACT emissions limitation under RACT III, the owner or operator may submit a case-by-case proposal under § 129.114(d) for an alternative RACT emission limitation.

The owner or operator may also be able to submit an analysis under § 129.114(i) to the Department or appropriate approved local air pollution control agency to demonstrate that the RACT emission limitation approved under § 129.99(e) (RACT II) remains RACT for RACT III. The process provided under § 129.114(i) for eligible facilities is less resource intensive than preparing a case-by-case proposal under § 129.114(d) for an alternative RACT emission limitation.

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

IRRC and a commentator asked the Board to explain in the preamble of this final-form rulemaking why the ability of an owner or operator to file for an averaging plan under § 129.113 is contingent on one unit not being able to meet the NO_x RACT limit. The commentator noted that facility-wide and system-wide averaging plans should be able to be submitted at the discretion of the owner or operator to provide greater flexibility and still be protective of public health, safety and the environment. IRRC also asked the Board to explain in the preamble of this final-form rulemaking why the ability of an owner or operator to use system-wide averaging is limited to sources located in the same ozone nonattainment area.

The Board disagrees with the commentator that the owner and operator of an affected source may choose the emissions averaging compliance option without requiring the owner or operator to first demonstrate that the applicable presumptive RACT emissions limitation established for a certain source category cannot be met by the individual affected units. The averaging plan is provided as an alternative compliance option to meeting applicable source-specific presumptive RACT NO_x emissions limitations if one or more of the individual affected units cannot meet the applicable presumptive RACT NO_x emissions limitation. If all affected units can individually meet the applicable presumptive RACT NO_x emissions limitations, then no averaging plan is warranted.

System-wide averaging is required to be among sources under common control of the same owner or operator within the same ozone nonattainment area to conform to the CAA and the D.C. Circuit Court of Appeals ruling in *NRDC v. EPA*, 571 F.3d 1245 (D.C. Cir. 2009). See 83 FR 62998, 63007 (December 6, 2018); see also *South Coast Air Quality Management Dist. v. EPA*, 882 F.3d 1138, 1154 (D.C. Cir. 2018). All areas located in unclassifiable/attainment areas in an OTR state are considered to be the same ozone nonattainment area. Allowing system-wide averaging to include units from different ozone

nonattainment areas would have the potential to increase or keep emissions higher in separate maintenance areas for the ozone NAAQS. This would conflict with the anti-backsliding provisions of the CAA. Furthermore, compliance with the applicable presumptive RACT NO_x emissions limitations is the most cost-effective compliance method available to the owner and operator of an affected source. Submission of an averaging plan entails costs for developing the plan and submitting it to the Department.

The EPA commented that proposed § 129.113(n) would add new language that specifies that averaging plans will be submitted to the EPA for approval. The EPA commented that proposed § 129.113(n) appears to be new language added by the Commonwealth to alert source owners and operators using an averaging plan that the averaging plan will be submitted to the EPA for approval. The EPA asked how the Department will determine whether the emissions from the two sources in the averaging plan are less than if both sources complied with presumptive RACT as would be required under proposed § 129.113(d) and also asked whether the demonstration of compliance with this method would be part of a permit and enforceable.

While the EPA references in its comment two sources included in the averaging plan, the Board notes that the averaging plan could include more than two sources.

The final-form rulemaking requires that the aggregate NO_x emissions emitted by the air contamination sources included in the facility-wide or system-wide NO_x emissions averaging plan be less than or equal to the amount of NO_x emissions that would be emitted by the group of included sources if each source complied with the applicable NO_x RACT emissions limitation in § 129.112 on a source-specific basis. This demonstration is done on a mass basis consistent with the appropriate averaging period for each presumptive NO_x emissions limitation. The exact calculations may vary somewhat among the averaging plans, so the final-form rulemaking does not specify the precise details to preserve flexibility in differing circumstances. Each averaging plan will be reviewed by the Department on a case-by-case basis. The provisions of each averaging plan, including terms and conditions regarding compliance, will be included in a plan approval or operating permit. Those terms and conditions will be submitted to the EPA as a SIP revision.

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

The EPA commented that proposed § 129.114(a) seems to not allow coal-fired EGUs to request case-by-case determinations under RACT III because there is no presumptive RACT for this source category in proposed § 129.112. The EPA commented that the Department should clearly notify the public when publicly noticing proposed case-by-case RACT II permits for coal-fired EGUs with SCRs that it intends to use the same limits to satisfy RACT for the 2015 ozone NAAQS and that the RACT II comment period will be the last opportunity to comment on whether the RACT II limits also meet the RACT III requirements.

In response, the Board notes that a coal-fired combustion unit with a rated heat input greater than 250 million Btu/hour, including an EGU with SCR, has no presumptive NO_x RACT requirement or emission limitation specified in § 129.112. Therefore, § 129.114(a) is not applicable. Owners and operators of these large coal-fired combustion units are required to propose a NO_x RACT requirement or RACT emissions limitation under § 129.114(b).

The owners and operators of large coal-fired combustion units that are EGUs equipped with SCR were required to submit an alternative NO_x RACT proposal to satisfy the requirement of § 129.99. Therefore, these owners and operators will also submit an analysis under § 129.114(i) to demonstrate that their limitations issued under §§ 129.96—129.100 (RACT II) remain RACT for §§ 129.111—129.115. These analyses received under § 129.114(i) will be subject to public comment to meet the SIP public participation requirements under section 110 of the CAA and 40 CFR 51.102.

Another commentator commented that any technically feasible reductions would be nominal with high cost-effectiveness values and, as a result, the Department would create a need to process a significant number of alternative RACT petitions and will require significant resources.

The Board notes that presumptive RACT requirements and emission limitations were determined based on the technical and economic feasibility of emission control measures. The Department has developed an accompanying TSD for the source categories included in this final-form rulemaking. The Department expects that many owners and operators will benefit by complying with the presumptive RACT requirements and RACT emission limitations. If an owner or operator cannot meet a presumptive RACT requirement or RACT emissions limitation, the owner or operator may submit a case-by-case proposal for an alternative RACT emission limitation under § 129.114.

A commentator commented that cost-effectiveness values (dollar per ton of pollutant removed) arrived at in the Department's TSD evaluation for presumptive RACT are reasonable and should be used as a standard for case-by-case evaluations of alternative limitations.

The Board concludes it is not appropriate to use the cost-effectiveness dollars as the standard for case-by-case evaluations of alternative limits as recommended by the commentator. The Department explains that compliance costs may vary for each source or facility depending on the source size, type, operational limitations and which control option is selected by the owner and operator of the affected source or facility. The cost-effectiveness benchmarks used in the analysis of presumptive RACT requirements and RACT emissions limitations are not to be taken as absolute cost-effectiveness threshold limits to be applied to case-by-case analyses. The Department believes that it is not appropriate to apply the same cost-effectiveness benchmarks used to determine the presumptive RACT requirements and RACT emissions limitations across all sources undergoing a case-by-case analysis due to these varying factors.

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

IRRC and other commentators commented that proposed § 129.115(b)(4) requires owners and operators of combustion units and process heaters to demonstrate compliance on a daily averaging period, which is a significant tightening of the presumptive limits for combustion units and process heaters when compared to the 30-operating day averaging period under § 129.97(g)(1) (RACT II). IRRC noted that commentators commented that presumptive limits cannot be met using a daily average under certain operating conditions, such as the start-up of a unit. A different commentator requested that the Commonwealth implement more stringent standards and require CEMS on existing emission sources.

The Department evaluated available and relevant continuous emissions monitoring data and determined that certain source categories using a CEMS, including combustion units and process heaters, are capable of meeting the presumptive NO_x RACT emissions limitations on a daily averaging basis. If an owner or operator of a subject source with a CEMS cannot meet the applicable presumptive RACT emissions limitation using a daily averaging basis, the owner or operator has the option to submit a case-by-case proposal for an alternative RACT emissions limitation.

Further, the Department notes that the regulations in §§ 129.96—129.100 (RACT II) established RACT requirements and RACT emission limitations to meet the Commonwealth's RACT obligations under the CAA for the 1997 and 2008 8-hour ozone NAAQS. The 1997 8-hour ozone standard was set at 0.08 ppm and the 2008 8-hour ozone standard was set at 0.075 ppm. The regulations in §§ 129.111—129.115 are designed to achieve and maintain the more stringent 2015 8-hour ozone standard of 0.070 ppm. To meet the Commonwealth's RACT obligations under the CAA for the 2015 8-hour ozone NAAQS, the Department determined that certain source categories should demonstrate compliance with the applicable RACT emissions limitations using a daily averaging period.

RACT implementation regulations and guidance issued by the EPA dictate that the standards and other requirements implemented be both technically and economically feasible. The Department believes that the monitoring, recordkeeping and reporting requirements included in this final-form rulemaking are sufficient to show compliance with the RACT III emissions standards and other requirements. The Board has amended § 129.115(f) from proposed rulemaking to this final-form rulemaking to further clarify that the existing monitoring and recordkeeping and reporting provisions of 25 Pa. Code Part 1, Subpart C, Article III (relating to air resources), apply as well as those provisions specified in the applicable plan approval or operating permit for the source or facility.

The Department explains that the preliminary analysis of the 2021 ambient air ozone season monitoring data shows that all ozone samplers in this Commonwealth are monitoring attainment of the 2015 8-hour ozone NAAQS except the Bristol sampler in Bucks County and the Philadelphia Air Management Services Northeast Airport sampler in Philadelphia County; all ozone samplers in this Commonwealth are projected to monitor attainment of the 2008 and 1997 8-hour ozone NAAQS. Implementing the daily averaging period is therefore appropriate to assist the Commonwealth in achieving and maintaining the 2015 8-hour ozone NAAQS.

The EPA commented that the RACT III proposed regulations have added language requiring the submission of information by every source subject to RACT that appears to address some of the missing information that caused difficulties for both the Department and the EPA in evaluating RACT II permits. For example, proposed § 129.115, entitled "Written notification, compliance demonstration and recordkeeping and reporting requirements," requires that every source subject to RACT notify the state within 6 months of how it is going to comply with the RACT III requirements, and requires these sources to identify those air contamination sources that are [proposed § 129.115(a)(1)(i)] and those air contamination sources that are not [proposed § 129.115(a)(1)(ii)] subject to §§ 129.112—129.114. Proposed § 129.115(a)(4) also requires information on source description and how the owner or operator shall comply with RACT III or the reason a source is exempted from RACT III requirements.

In response to the EPA's comment, the Board notes that the purpose of this notification provision in § 129.115(a) is for the Department to determine which facilities and sources are subject to RACT III requirements, which sources are exempt from RACT III requirements and if the owners and operators are complying with presumptive or case-by-case requirements. This notification is not meant to be a full RACT analysis.

Before an owner or operator of a facility can begin to construct, modify or operate a source, emissions unit or equipment emitting air contaminants in this Commonwealth, the owner or operator is required to obtain prior written approval from the Department's Air Quality Program as specified in § 127.11 (relating to plan approval requirements). Thus, the Department is already aware of new and modified sources that have occurred since the implementation of RACT II due to this requirement for the owner and operator of the facility to obtain prior written approval from the Air Quality Program. Therefore, it is not necessary that the owner or operator submit this specific information as part of the written notification required by § 129.115(a).

G. *Benefits, Costs and Compliance*

Benefits

The Department estimates that implementation of the final-form control measures could reduce NO_x emissions by as much as 9,800 TPY from engines, turbines and municipal waste combustors and VOC emissions by as much as 825 TPY from engines and turbines. These reductions in NO_x and VOC emissions will benefit the health and welfare of the approximately 12.8 million residents and numerous animals, crops, vegetation and natural areas of this Commonwealth by reducing the amount of ground-level ozone air pollution. Reduced ambient concentrations of ground-level ozone reduce the incidences of hospital admissions for respiratory ailments, including asthma, and improve the quality of life for citizens overall. While children, the elderly and those with respiratory problems are most at risk, even healthy individuals may experience increased respiratory ailments and other symptoms when they are exposed to high levels of ambient ground-level ozone while engaged in activities that involve physical exertion.

Implementation of and compliance with the presumptive RACT limitations, RACT control measures and RACT requirements in this final-form rulemaking will allow this Commonwealth to make substantial progress in achieving and maintaining the 1997, 2008 and 2015 8-hour ozone NAAQS Statewide by reducing the levels of NO_x and VOC ozone precursor emissions that contribute to potential nonattainment of the 2015 8-hour ozone NAAQS. As a result, the final-form RACT control measures are reasonably necessary to attain and maintain the health-based and welfare-based 8-hour ozone NAAQS in this Commonwealth and to satisfy related CAA requirements.

The EPA estimated that the monetized health benefits of attaining the 2008 8-hour ozone NAAQS of 0.075 ppm range from $8.3 billion to $18 billion on a National basis by 2020. See Regulatory Impact Analysis; Final National Ambient Air Quality Standard for Ozone (EPA, July 2011). Prorating that benefit to this Commonwealth, based on population, results in a public health benefit of $337 million to $732 million. Similarly, the EPA estimated that the monetized health benefits of attaining the 2015 8-hour ozone NAAQS of 0.070 ppm range from $1.5

billion to $4.5 billion on a National basis by 2025. See Regulatory Impact Analysis of the Final Revisions to the National Ambient Air Quality Standards for Ground-Level Ozone (EPA-452/R-15-007, September 2015). Prorating that benefit to this Commonwealth, based on population, results in a public health benefit of $63 million to $189 million. The Department is not stating that these estimated monetized health benefits would all be the result of implementing the final-form RACT control measures, but the EPA estimates are indicative of the benefits to Commonwealth residents of attaining and maintaining the 1997, 2008 and 2015 8-hour ozone NAAQS through the implementation of control measures to reduce ozone precursor emissions in the aggregate from different source categories.

This final-form rulemaking may create economic opportunities for NO_x and VOC emission control technology innovators, manufacturers and distributors through an increased demand for new or improved air pollution control equipment. In addition, the owners and operators of regulated facilities may be required to install and operate an emissions monitoring system or equipment necessary for an emissions monitoring method to comply with this final-form rulemaking, thereby creating an economic opportunity for the emissions monitoring industry.

Compliance costs

Compliance costs will vary for each facility depending on which compliance option is chosen by the owners and operators of a facility. This final-form rulemaking includes two alternative compliance options: a provision allowing the owner and operator of an affected facility that cannot meet the applicable NO_x RACT or VOC RACT emission limitation to elect to meet the applicable NO_x RACT requirement or NO_x RACT emission limitation in § 129.112 by averaging NO_x emissions on either a facility-wide or system-wide basis as specified in final-form § 129.113; and a provision allowing the affected owner and operator to submit a case-specific RACT proposal for an alternative RACT requirement or RACT emission limitation to the Department for approval as specified in final-form § 129.114.

Under final-form § 129.113, the owner or operator of an affected major NO_x emitting facility that includes an air contamination source subject to a NO_x RACT requirement or emission limitation in § 129.112 that cannot meet the applicable presumptive NO_x RACT requirement or NO_x RACT emission limitation may elect to meet the requirement or emission limitation by averaging NO_x emissions on either a facility-wide or system-wide basis. System-wide emissions averaging must be among sources under common control of the same owner or operator in this Commonwealth and within the same nonattainment area.

Under final-form § 129.114, the owner or operator of an air contamination source that cannot meet the applicable presumptive RACT requirement or RACT emission limitation of § 129.112 may submit an alternative NO_x RACT requirement, NO_x RACT emission limitation, VOC RACT requirement or VOC RACT emission limitation to the Department or approved local air pollution control agency for review.

Further, the Department notes that final-form § 129.114(i) provides owners and operators with the opportunity to submit an analysis, where applicable, demonstrating that RACT II conditions remain RACT for the 2015 8-hour ozone standard. This is an administratively efficient and less resource intensive approach than conducting a full case-by-case analysis for an alternative RACT proposal. For the owners and operators of eligible subject sources, this approach will likely reduce the consulting costs that an owner or operator may choose to incur. Additionally, there is no fee due to the Department to submit an analysis under final-form § 129.114(i).

Under these alternative compliance provisions, the owner or operator is required to demonstrate to the Department's or approved local air pollution control agency's satisfaction that it is economically or technically infeasible to meet the applicable final-form NO_x RACT or VOC RACT emission limitation. The flexibility provided by these alternative compliance provisions may minimize compliance costs to the owner or operator of an affected facility.

The RACT emission limitations and RACT requirements established in this final-form rulemaking do not require the owner or operator of an affected facility to submit an application for amendments to an existing operating permit. These requirements will be incorporated when the permit is renewed if less than 3 years remain in the permit term, as specified under § 127.463(c) (relating to operating permit revisions to incorporate applicable standards). If 3 years or more remain in the permit term, the requirements will be incorporated as applicable requirements in the permit within 18 months of the date of promulgation of this final-form rulemaking, as required under § 127.463(b). Most importantly, § 127.463(e) specifies that "[r]egardless of whether a revision is required under this section, the permittee shall meet the applicable standards or regulations promulgated under the Clean Air Act within the time frame required by standards or regulations." Consequently, upon promulgation as a final-form regulation, §§ 129.111—129.115 will apply to affected owners and operators irrespective of a modification to the operating permit. Therefore, the owner or operator shall comply with the applicable standards or regulations within the time frame specified by the final-form regulation even if the permit is not revised to incorporate the standard or regulation within the specified compliance time frame.

Compliance assistance plan

The Department will continue to educate and assist the public and the regulated community in understanding the requirements and how to comply with them after promulgation of this final-form rulemaking. The Department will also continue to work with the Department's provider of the Small Business Stationary Source Technical and Environmental Compliance Assistance services. These services are currently provided by the Environmental Management Assistance Program (EMAP) of the Pennsylvania Small Business Development Centers. The Department has partnered with EMAP to fulfill the Department's obligation to provide confidential technical and compliance assistance to small businesses as required by the APCA, section 507 of the CAA (42 U.S.C.A. § 7661f) and as authorized by the Small Business and Household Pollution Prevention Program Act (35 P.S. §§ 6029.201—6029.209).

In addition to providing one-on-one consulting assistance and onsite assessments, EMAP also operates a toll-free phone line to field questions from small businesses, as well as businesses wishing to start up in, or relocate to, this Commonwealth. EMAP operates and maintains a resource-rich environmental assistance web site and distributes an electronic newsletter to educate and inform small businesses about a variety of environmental compliance issues.

Due to the implementation date of January 1, 2023, required by the EPA's 2015 ozone standard implementation rule (see 83 FR 62998 (December 6, 2018); see also 40 CFR 51.1316(b)(3)), the Department will be conducting direct outreach to the regulated community well in advance of the January 1, 2023, implementation date due to the short turnaround time between the expected promulgation date of this final-form rulemaking and the implementation date.

Paperwork requirements

The recordkeeping and reporting requirements for owners and operators of subject sources under this final-form rulemaking are minimal because the records required align with the records already required to be kept for emission inventory purposes and for other Federal and State requirements. To minimize the burden of these requirements, the Department allows electronic submission of most planning, reporting and recordkeeping forms required by this final-form rulemaking.

H. *Pollution Prevention*

The Pollution Prevention Act of 1990 (42 U.S.C.A. §§ 13101—13109) established a National policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. The Department encourages pollution prevention, which is the reduction or elimination of pollution at its source, through the installation and operation of add-on air pollution controls, the substitution of environmentally friendly materials, more efficient use of raw materials and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance. Implementation of the final-form RACT requirements will allow the Department and approved local air pollution control agencies to maintain or further reduce the amounts of NO_x and VOC emissions from the regulated sources in this Commonwealth, sustain the gains made in healthful air quality by reducing the ambient concentrations of ground-level ozone air pollution formed from the emissions of NO_x and VOC and ensure continued protection of the environment and the public health and welfare of the citizens of this Commonwealth.

I. *Sunset Review*

This Board is not establishing a sunset date for this final-form rulemaking because it is needed for the Department to carry out its statutory authority. The Department will closely monitor the effectiveness of this final-form rulemaking and recommend updates to the Board as necessary.

J. *Regulatory Review*

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on July 14, 2021, the Department submitted a copy of the notice of proposed rulemaking, published at 51 Pa.B. 4333, to IRRC and the Chairpersons of the House and Senate Environmental Resources and Energy Committees.

Under section 5(c) of the Regulatory Review Act, IRRC and the House and Senate Committees were provided with copies of the comments received during the public comment period, as well as other documents when requested. In preparing this final-form rulemaking, the Department has considered all comments from IRRC, the House and Senate Committees and the public.

Under section 5.1(j.2) of the Regulatory Review Act (71 P.S. § 745.5a(j.2)), on September 14, 2022, this final-form rulemaking was deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on September 15, 2022, and approved this final-form rulemaking.

K. *Findings of the Board*

The Board finds that:

(1) Public notice of proposed rulemaking was given under sections 201 and 202 of the act of July 31, 1968 (P.L. 769, No. 240) (45 P.S. §§ 1201 and 1202), known as the Commonwealth Documents Law, and regulations promulgated thereunder at 1 Pa. Code §§ 7.1 and 7.2 (relating to notice of proposed rulemaking required; and adoption of regulations).

(2) At least a 60-day public comment period was provided as required by law and all comments were considered.

(3) This final-form rulemaking does not enlarge the purpose of the proposed rulemaking published at 51 Pa.B. 4333.

(4) These regulations are reasonably necessary and appropriate for administration and enforcement of the authorizing acts identified in section C of this order.

(5) These regulations are reasonably necessary to attain and maintain the ozone NAAQS and to satisfy related CAA requirements.

L. *Order of the Board*

The Board, acting under the authorizing statutes, orders that:

(a) The regulations of the Department, 25 Pa. Code Chapters 121 and 129, are amended by amending § 121.1 and adding §§ 129.111—129.115 to read as set forth in Annex A, with ellipses referring to the existing text of the regulations.

(b) The Chairperson of the Board shall submit this final-form rulemaking to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form, as required by law.

(c) The Chairperson of the Board shall submit this final-form rulemaking to IRRC and the House and Senate Committees as required by the Regulatory Review Act (71 P.S. §§ 745.1—745.14).

(d) The Chairperson of the Board shall certify this final-form rulemaking and deposit it with the Legislative Reference Bureau as required by law.

(e) This final-form rulemaking will be submitted to the EPA as a revision to the Commonwealth's SIP.

(f) This final-form rulemaking shall take effect immediately upon publication in the *Pennsylvania Bulletin*.

RAMEZ ZIADEH, P.E.,
Acting Chairperson

(*Editor's Note*: See 52 Pa.B. 6282 (October 1, 2022) for IRRC's approval order.)

Fiscal Note: Fiscal Note 7-561 remains valid for the final adoption of the subject regulations.

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE III. AIR RESOURCES

CHAPTER 121. GENERAL PROVISIONS

§ 121.1. Definitions.

The definitions in section 3 of the act (35 P.S. § 4003) apply to this article. In addition, the following words and terms, when used in this article, have the following meanings, unless the context clearly indicates otherwise:

* * * * *

Combustion efficiency—A measure of the extent of a combustion reaction, abbreviated C. E. and computed as follows:

$$C.E. = \frac{[CO_2]}{[CO_2] + [CO]} \times 100\%$$

where: $[CO_2]$ = concentration of carbon dioxide and
$[CO]$ = concentration of carbon monoxide

Combustion source—For purposes of §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS):

(i) A stationary device that combusts solid, liquid or gaseous fuel used to produce heat or energy for industrial, commercial or institutional use by direct heat transfer.

(ii) The term does not include:

(A) Brick kilns.

(B) Cement kilns.

(C) Lime kilns.

(D) Glass melting furnaces.

(E) A source listed in § 129.112(g)(2) or (3) (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule).

(F) A source subject to § 129.112(g)(4).

Combustion unit—A stationary equipment used to burn fuel primarily for the purpose of producing power or heat by indirect heat transfer.

* * * * *

Major NO_x emitting facility—A facility which emits or has the potential to emit NO_x from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than one of the following:

(i) Ten TPY in an ozone nonattainment area designated as extreme under section 182(e) and (f) of the Clean Air Act (42 U.S.C.A. § 7511a(e) and (f)).

(ii) Twenty-five TPY in an ozone nonattainment area designated as severe under section 182(d) and (f) of the Clean Air Act.

(iii) Fifty TPY in an area designated as serious under section 182(c) and (f) of the Clean Air Act.

(iv) One hundred TPY in an area included in an ozone transport region established under section 184 of the Clean Air Act (42 U.S.C.A. § 7511c).

(v) For purposes of §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs), twenty-five TPY and is located in Bucks, Chester, Delaware, Montgomery or Philadelphia County.

(vi) For purposes of §§ 129.96—129.100 and 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs, one hundred TPY statewide.

Major VOC emitting facility—A facility which emits or has the potential to emit VOCs from the processes located at the site or on contiguous properties under the common control of the same person at a rate greater than one of the following:

(i) Ten TPY in an ozone nonattainment area designated as extreme under section 182(e) of the Clean Air Act.

(ii) Twenty-five TPY in an ozone nonattainment area designated as severe under section 182(d) of the Clean Air Act.

(iii) Fifty TPY in an area included in an ozone transport region established under section 184 of the Clean Air Act.

(iv) For purposes of §§ 129.91—129.95, twenty-five TPY and is located in Bucks, Chester, Delaware, Montgomery or Philadelphia County.

(v) For purposes of §§ 129.96—129.100 and 129.111—129.115, fifty TPY statewide.

* * * * *

Natural-finish hardwood plywood panel—A panel on which the original grain pattern is enhanced by an essentially transparent finish frequently supplemented by filler and toner.

Natural gas compression and transmission facility fugitive VOC air contamination source—The group of fugitive-VOC-emitting components associated with an individual stationary source. Both of the following apply:

(i) The group of fugitive-VOC-emitting components is considered an individual VOC-emitting source.

(ii) Fugitive VOC emissions from the group of fugitive-VOC-emitting components are not aggregated with the VOC emissions from the associated individual stationary source.

Necessary preconstruction approvals or permits—Those permits or approvals required under the Clean Air Act or the act and regulations adopted under the acts, which are part of the applicable SIP.

* * * * *

CHAPTER 129. STANDARDS FOR SOURCES

ADDITIONAL RACT REQUIREMENTS FOR MAJOR SOURCES OF NO_x AND VOCs FOR THE 2015 OZONE NAAQS

§ 129.111. Applicability.

(a) Except as specified in subsection (c), the NO_x requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a major NO_x emitting facility that commenced operation on or before August 3, 2018, and the VOC requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a major VOC emitting facility that commenced operation on or before August 3, 2018, for which a requirement or emission limitation, or both, has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and

129.101—129.107. The owner or operator shall identify and list the sources and facilities subject to this subsection in the written notification required under § 129.115(a) (relating to written notification, compliance demonstration and recordkeeping and reporting requirements) as follows:

(1) The sources and facilities that commenced operation on or before August 3, 2018, for which a requirement or emission limitation has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107.

(2) The sources and facilities that commenced operation on or before August 3, 2018, and are subject to §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107.

(b) Except as specified in subsection (c), the NO_x requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a NO_x emitting facility that commenced operation on or before August 3, 2018, and the VOC requirements of this section and §§ 129.112—129.115 apply Statewide to the owner and operator of a VOC emitting facility that commenced operation on or before August 3, 2018, when the installation and operation of a new source after August 3, 2018, or a modification or change in operation after August 3, 2018, of a source that commenced operation on or before August 3, 2018, results in the source or facility meeting the definition of a major NO_x emitting facility or a major VOC emitting facility and for which a requirement or an emission limitation, or both, has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107. The owner or operator shall identify and list the sources and facilities subject to this subsection in the written notification required under § 129.115(a) as follows:

(1) The sources and facilities for which a requirement or emission limitation has not been established in §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107.

(2) The sources and facilities subject to §§ 129.51, 129.52(a)—(k) and Table I categories 1—11, 129.52a—129.52e, 129.54—129.63a, 129.64—129.69, 129.71—129.75, 129.77 and 129.101—129.107.

(c) Sections 129.112—129.114 do not apply to the owner and operator of a NO_x air contamination source that has the potential to emit less than 1 TPY of NO_x located at a major NO_x emitting facility subject to subsection (a) or (b) or a VOC air contamination source that has the potential to emit less than 1 TPY of VOC located at a major VOC emitting facility subject to subsection (a) or (b). The owner or operator shall identify and list these sources in the written notification required under § 129.115(a).

(d) Except as specified in subsection (e), this section and §§ 129.112—129.115 do not apply to the owner and operator of a facility that commenced operation on or before August 3, 2018, that is not a major NO_x emitting facility or a major VOC emitting facility on or before December 31, 2022.

(e) If the owner and operator of a facility that complied with subsection (d) meets the definition of a major NO_x emitting facility or a major VOC emitting facility after December 31, 2022, then the owner and operator shall comply with subsection (b).

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

(a) The owner and operator of a source listed in one or more of subsections (b)—(k) located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 (relating to applicability) shall comply with the applicable presumptive RACT requirement or RACT emission limitation, or both, beginning with the specified compliance date as follows, unless an alternative compliance schedule is submitted and approved under subsections (n)—(p) or § 129.114 (relating to alternative RACT proposal and petition for alternative compliance schedule):

(1) January 1, 2023, for a source subject to § 129.111(a).

(2) January 1, 2023, or 1 year after the date the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(b) The owner and operator of a source listed in this subsection that is located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall comply with the applicable presumptive RACT requirements in paragraph (1) and recordkeeping and reporting requirements in paragraph (2).

(1) The owner or operator of a:

(i) Combustion unit or process heater with a rated heat input equal to or greater than 20 million Btu/hour and less than 50 million Btu/hour shall conduct a biennial tune-up in accordance with the procedures in 40 CFR 63.11223 (relating to how do I demonstrate continuous compliance with the work practice and management practice standards?).

(A) Each biennial tune-up shall occur not less than 3 months and not more than 24 months after the date of the previous tune-up.

(B) The biennial tune-up must include, at a minimum, the following:

(I) Inspection and cleaning or replacement of fuel-burning equipment, including the burners and components, as necessary, for proper operation as specified by the manufacturer.

(II) Inspection of the flame pattern and adjustment of the burner, as necessary, to optimize the flame pattern to minimize total emissions of NO_x and, to the extent possible, emissions of CO.

(III) Inspection and adjustment, as necessary, of the air-to-fuel ratio control system to ensure proper calibration and operation as specified by the manufacturer.

(ii) Combustion unit or process heater with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up shall conduct a tune-up of the boiler one time in each 5-year calendar period in accordance with the following:

(A) Each tune-up shall occur not less than 3 months and not more than 60 months after the date of the previous tune-up.

(B) The tune-up must include, at a minimum, the following:

(I) Inspection and cleaning or replacement of fuel-burning equipment, including the burners and components, as necessary, for proper operation as specified by the manufacturer.

(II) Inspection of the flame pattern and adjustment of the burner, as necessary, to optimize the flame pattern to minimize total emissions of NO_x and, to the extent possible, emissions of CO.

(III) Inspection and adjustment, as necessary, of the air-to-fuel ratio control system to ensure proper calibration and operation as specified by the manufacturer.

(2) The applicable recordkeeping and reporting requirements of § 129.115(f) and (i) (relating to written notification, compliance demonstration and recordkeeping and reporting requirements).

(3) Compliance with the applicable presumptive RACT requirements in paragraph (1) and recordkeeping and reporting requirements in paragraph (2) assures compliance with the provisions in §§ 129.93(b)(2), (3), (4) and (5) and 129.97(b)(1), (2) and (3) (relating to presumptive RACT emissions limitations; and presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule).

(c) The owner and operator of a source listed in this subsection that is located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 shall install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices:

(1) A NO_x air contamination source that has the potential to emit less than 5 TPY of NO_x.

(2) A VOC air contamination source that has the potential to emit less than 2.7 TPY of VOC.

(3) A natural gas compression and transmission facility fugitive VOC air contamination source that has the potential to emit less than 2.7 TPY of VOC.

(4) A boiler or other combustion source with an individual rated gross heat input less than 20 million Btu/hour.

(5) A combustion turbine with a rated output less than 1,000 bhp.

(6) A lean burn stationary internal combustion engine rated at less than 500 bhp (gross).

(7) A rich burn stationary internal combustion engine rated at less than 100 bhp (gross).

(8) An incinerator, thermal oxidizer, catalytic oxidizer or flare used primarily for air pollution control.

(9) A fuel-burning unit with an annual capacity factor of less than 5%.

(i) For a combustion unit, the annual capacity factor is the ratio of the unit's heat input (in million Btu or equivalent units of measure) to the unit's maximum rated hourly heat input rate (in million Btu/hour or equivalent units of measure) multiplied by 8,760 hours during a period of 12 consecutive calendar months.

(ii) For an electric generating unit, the annual capacity factor is the ratio of the unit's actual electric output (expressed in MWe/hr) to the unit's nameplate capacity (or maximum observed hourly gross load (in MWe/hr) if greater than the nameplate capacity) multiplied by 8,760 hours during a period of 12 consecutive calendar months.

(iii) For any other unit, the annual capacity factor is the ratio of the unit's actual operating level to the unit's potential operating level during a period of 12 consecutive calendar months.

(10) An emergency standby engine operating less than 500 hours in a 12-month rolling period.

(11) An electric arc furnace.

(d) Except as specified in subsection (c), the owner and operator of a combustion unit, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source located at a major VOC emitting facility subject to § 129.111 shall install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices for the control of the VOC emissions from the combustion unit, brick kiln, cement kiln, lime kiln, glass melting furnace or combustion source.

(e) The owner and operator of a municipal solid waste landfill subject to § 129.111 shall comply with the following applicable presumptive RACT requirements. The owner or operator of a:

(1) Municipal solid waste landfill constructed, reconstructed or modified on or before July 17, 2014, that has not been modified or reconstructed since July 17, 2014, shall comply with the Federal plan for municipal solid waste landfills in 40 CFR Part 62, Subpart OOO (relating to federal plan requirements for municipal solid waste landfills that commenced construction on or before July 17, 2014 and have not been modified or reconstructed since July 17, 2014).

(2) Municipal solid waste landfill constructed, reconstructed or modified on or after July 18, 2014, shall comply with the New Source Performance Standards in 40 CFR Part 60, Subpart XXX (relating to standards of performance for municipal solid waste landfills that commenced construction, reconstruction, or modification after July 17, 2014), which are adopted and incorporated by reference in § 122.3 (relating to adoption of standards).

(f) The owner and operator of a municipal waste combustor subject to § 129.111 shall comply with the presumptive RACT emission limitation of 110 ppmvd NO_x @ 7% oxygen.

(g) Except as specified in subsection (c), the owner and operator of a NO_x air contamination source listed in this subsection that is located at a major NO_x emitting facility or a VOC air contamination source listed in this subsection that is located at a major VOC emitting facility subject to § 129.111 may not cause, allow or permit NO_x or VOCs to be emitted from the air contamination source in excess of the applicable presumptive RACT emission limitation specified in the following paragraphs:

(1) The owner or operator of:

(i) A natural gas-fired, propane-fired or liquid petroleum gas-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.10 lb NO_x/million Btu heat input.

(ii) A distillate oil-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.12 lb NO_x/million Btu heat input.

(iii) A residual oil-fired or other liquid fuel-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.20 lb NO_x/million Btu heat input.

(iv) A refinery gas-fired combustion unit or process heater with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.25 lb NO_x/million Btu heat input.

(v) A coal-fired combustion unit with a rated heat input equal to or greater than 50 million Btu/hour and less than 250 million Btu/hour shall comply with 0.45 lb NO_x/million Btu heat input.

(vi) A circulating fluidized bed combustion unit firing waste products of coal mining, physical coal cleaning and coal preparation operations that contain coal, matrix material, clay and other organic and inorganic material with a rated heat input equal to or greater than 250 million Btu/hour shall comply with the following presumptive RACT requirements and RACT emission limitations as applicable:

(A) 0.16 lb NO_x/million Btu heat input when firing primarily bituminous waste such as gob.

(B) 0.16 lb NO_x/million Btu heat input when firing primarily anthracite waste such as culm.

(C) Control the NO_x emissions each operating day by operating the installed air pollution control technology and combustion controls at all times consistent with the technological limitations, manufacturer's specifications, good engineering and maintenance practices and good air pollution control practices for controlling emissions.

(vii) A solid fuel-fired combustion unit that is not a coal-fired combustion unit with a rated heat input equal to or greater than 50 million Btu/hour shall comply with 0.25 lb NO_x/million Btu heat input.

(2) The owner or operator of a:

(i) Combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 120 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 5 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 150 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(ii) Combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 180 MW shall comply with the following presumptive RACT emission limitations as applicable:

(A) 42 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 5 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 96 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(iii) Combined cycle or combined heat and power combustion turbine with a rated output equal to or greater than 180 MW shall comply with the following presumptive RACT emission limitations as applicable:

(A) 4 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 2 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 8 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 2 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(iv) Simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 1,000 bhp and less than 4,100 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 120 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 9 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 150 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(v) Simple cycle or regenerative cycle combustion turbine with a rated output equal to or greater than 4,100 bhp and less than 60,000 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 42 ppmvd NO_x @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(B) 9 ppmvd VOC (as propane) @ 15% oxygen when firing natural gas or a noncommercial gaseous fuel.

(C) 96 ppmvd NO_x @ 15% oxygen when firing fuel oil.

(D) 9 ppmvd VOC (as propane) @ 15% oxygen when firing fuel oil.

(3) The owner or operator of a:

(i) Lean burn stationary internal combustion engine with a rating equal to or greater than 500 bhp and less than 3,500 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 3.0 grams NO_x/bhp-hr when firing natural gas or a noncommercial gaseous fuel.

(B) 0.5 gram VOC/bhp-hr excluding formaldehyde when firing natural gas or a noncommercial gaseous fuel, liquid fuel or dual-fuel.

(ii) Lean burn stationary internal combustion engine with a rating equal to or greater than 3,500 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 0.6 gram NO_x/bhp-hr when firing natural gas or a noncommercial gaseous fuel.

(B) 0.5 gram VOC/bhp-hr excluding formaldehyde when firing natural gas or a noncommercial gaseous fuel, liquid fuel or dual-fuel.

(iii) Stationary internal combustion engine with a rating equal to or greater than 500 bhp shall comply with 1.6 grams NO_x/bhp-hr when firing liquid fuel or dual-fuel.

(iv) Rich burn stationary internal combustion engine with a rating equal to or greater than 100 bhp shall comply with the following presumptive RACT emission limitations as applicable:

(A) 2.0 gram NO_x/bhp-hr when firing natural gas or a noncommercial gaseous fuel.

(B) 0.5 gram VOC/bhp-hr when firing natural gas or a noncommercial gaseous fuel.

(4) Except as specified in subparagraph (ii), the owner or operator of a unit firing multiple fuels shall comply with:

(i) The applicable RACT multiple fuel emission limit determined on a total heat input fuel weighted basis in accordance with the following:

(A) Using the following equation:

$$E_{HIweighted} = \frac{\sum_{i=1}^{n} E_i HI_i}{\sum_{i=1}^{n} HI_i}$$

Where:

$E_{HIweighted}$ = The heat input fuel weighted multiple fuel emission rate or emission limitation for the compliance period, expressed in units of measure consistent with the units of measure for the emission limitation.

E_i = The emission rate or emission limit for fuel i during the compliance period, expressed in units of measure consistent with the units of measure for the emission limitation.

HI_i = The total heat input for fuel i during the compliance period.

n = The number of different fuels used during the compliance period.

(B) Excluding a fuel representing less than 2% of the unit's annual fuel consumption on a heat input basis when determining the applicable RACT multiple fuel emission limit calculated in accordance with clause (A).

(ii) The determination in subparagraph (i) does not apply to a stationary internal combustion engine that is subject to the RACT emission limits in paragraph (3).

(h) The owner and operator of a Portland cement kiln subject to § 129.111 shall comply with the following presumptive RACT emission limitations as applicable:

(1) 3.88 pounds of NO_x per ton of clinker produced for a long wet-process cement kiln as defined in § 145.142 (relating to definitions).

(2) 3.0 pounds of NO_x per ton of clinker produced for a long dry-process cement kiln as defined in § 145.142.

(3) 2.30 pounds of NO_x per ton of clinker produced for:

(i) A preheater cement kiln as defined in § 145.142.

(ii) A precalciner cement kiln as defined in § 145.142.

(i) The owner and operator of a glass melting furnace subject to § 129.111 shall comply with the following presumptive RACT emission limitations as applicable:

(1) 4.0 pounds of NO_x per ton of glass pulled for container glass furnaces.

(2) 7.0 pounds of NO_x per ton of glass pulled for pressed or blown glass furnaces.

(3) 4.0 pounds of NO_x per ton of glass pulled for fiberglass furnaces.

(4) 7.0 pounds of NO_x per ton of glass pulled for flat glass furnaces.

(5) 6.0 pounds of NO_x per ton of glass pulled for all other glass melting furnaces.

(j) The owner and operator of a lime kiln subject to § 129.111 shall comply with the presumptive RACT emission limitation of 4.6 pounds of NO_x per ton of lime produced.

(k) The owner and operator of a direct-fired heater, furnace, oven or other combustion source with a rated heat input equal to or greater than 20 million Btu/hour subject to § 129.111 shall comply with the presumptive RACT emission limitation of 0.10 lb NO_x/million Btu heat input.

(l) The requirements and emission limitations of this section supersede the requirements and emission limitations of a RACT permit issued to the owner or operator of an air contamination source subject to one or more of subsections (b)—(k) prior to November 12, 2022, under §§ 129.91—129.95 (relating to stationary sources of NO_x and VOCs) or under §§ 129.96—129.100 (relating to additional RACT requirements for major sources of NO_x and VOCs) to control, reduce or minimize NO_x emissions or VOC emissions, or both, from the air contamination source unless the permit contains more stringent requirements or emission limitations, or both.

(m) The requirements and emission limitations of this section supersede the requirements and emission limitations of §§ 129.201—129.205, 129.301—129.310, 145.111—145.113 and 145.141—145.146 unless the requirements or emission limitations of §§ 129.201—129.205, §§ 129.301—129.310, §§ 145.111—145.113 or §§ 145.141—145.146 are more stringent.

(n) The owner or operator of a major NO_x emitting facility or a major VOC emitting facility subject to § 129.111 that includes an air contamination source subject to one or more of subsections (b)—(k) that cannot meet the applicable presumptive RACT requirement or RACT emission limitation without installation of an air cleaning device may submit a petition, in writing or electronically, requesting an alternative compliance schedule in accordance with the following:

(1) The petition shall be submitted to the Department or appropriate approved local air pollution control agency as soon as possible but not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or a major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) The petition must include:

(i) A description, including make, model and location, of each affected source subject to a RACT requirement or a RACT emission limitation in one or more of subsections (b)—(k).

(ii) A description of the proposed air cleaning device to be installed.

(iii) A schedule containing proposed interim dates for completing each phase of the required work to install the air cleaning device described in subparagraph (ii).

(iv) A proposed interim emission limitation that will be imposed on the affected source until compliance is achieved with the applicable RACT requirement or RACT emission limitation.

(v) A proposed final compliance date that is as soon as possible but not later than 3 years after the written

approval of the petition by the Department or the appropriate approved local air pollution control agency. The approved petition shall be incorporated in an applicable operating permit or plan approval.

(o) The Department or appropriate approved local air pollution control agency will review the timely and complete written petition requesting an alternative compliance schedule submitted in accordance with subsection (n) and approve or deny the petition in writing.

(p) Approval or denial under subsection (o) of the timely and complete petition for an alternative compliance schedule submitted under subsection (n) will be effective on the date the letter of approval or denial of the petition is signed by the authorized representative of the Department or appropriate approved local air pollution control agency.

(q) The Department will submit each petition for an alternative compliance schedule approved under subsection (o) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

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

(a) The owner or operator of a major NO_x emitting facility subject to § 129.111 (relating to applicability) that includes at least one air contamination source subject to a NO_x RACT emission limitation in § 129.112 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule) that cannot meet the applicable NO_x RACT emission limitation may elect to meet the applicable NO_x RACT emission limitation in § 129.112 by averaging NO_x emissions on either a facility-wide or system-wide basis. System-wide emissions averaging must be among sources under common control of the same owner or operator within the same ozone nonattainment area in this Commonwealth.

(b) The owner or operator of each facility that elects to comply with subsection (a) shall submit a NO_x emissions averaging plan in writing or electronically to the Department or appropriate approved local air pollution control agency as part of an application for an operating permit modification or a plan approval, if otherwise required. The application incorporating the requirements of this section shall be submitted by the applicable date as follows:

(1) December 31, 2022, for a source subject to § 129.111(a).

(2) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility, whichever is later, for a source subject to § 129.111(b).

(c) Each NO_x air contamination source included in the application for an operating permit modification or a plan approval, if otherwise required, for averaging NO_x emissions on either a facility-wide or system-wide basis submitted under subsection (b) must be an air contamination source subject to a NO_x RACT emission limitation in § 129.112.

(d) The application for the operating permit modification or the plan approval, if otherwise required, for averaging NO_x emissions on either a facility-wide or system-wide basis submitted under subsection (b) must demonstrate that the aggregate NO_x emissions emitted by the air contamination sources included in the facility-wide or system-wide NO_x emissions averaging plan are not greater than the NO_x emissions that would be emitted by the group of included sources if each source complied with the applicable NO_x RACT emission limitation in § 129.112 on a source-specific basis.

(e) The application for the operating permit modification or a plan approval, if otherwise required, specified in subsections (b)—(d) may include facility-wide or system-wide NO_x emissions averaging only for NO_x emitting sources or NO_x emitting facilities that are owned or operated by the applicant.

(f) The application for the operating permit modification or a plan approval, if otherwise required, specified in subsections (b)—(e) must include the following information:

(1) Identification of each air contamination source included in the NO_x emissions averaging plan.

(2) Each air contamination source's applicable emission limitation in § 129.112.

(3) Methods for demonstrating compliance and recordkeeping and reporting requirements in accordance with § 129.115 (relating to written notification, compliance demonstration and recordkeeping and reporting requirements) for each source included in the NO_x emissions averaging plan submitted under subsection (b).

(g) An air contamination source or facility included in the facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(f) may be included in only one facility-wide or system-wide NO_x emissions averaging plan.

(h) The Department or appropriate approved local air pollution control agency will:

(1) Review the timely and complete NO_x emissions averaging plan submitted in accordance with subsections (b)—(g).

(2) Approve the NO_x emissions averaging plan submitted under subsection (b), in writing, if the Department or appropriate approved local air pollution control agency is satisfied that the NO_x emissions averaging plan complies with the requirements of subsections (b)—(g) and that the proposed NO_x emissions averaging plan is RACT for the air contamination sources.

(3) Deny or modify the NO_x emissions averaging plan submitted under subsection (b), in writing, if the proposal does not comply with the requirements of subsections (b)—(g).

(i) The proposed NO_x emissions averaging plan submitted under subsection (b) will be approved, denied or modified under subsection (h) by the Department or appropriate approved local air pollution control agency in accordance with Chapter 127 (relating to construction, modification, reactivation and operation of sources) prior to the owner or operator implementing the NO_x emissions averaging plan.

(j) The owner or operator of an air contamination source or facility included in the facility-wide or system-wide NO_x emissions averaging plan submitted in accordance with subsections (b)—(g) shall submit the reportsand records specified in subsection (f)(3) to the Department or appropriate approved local air pollution control agency to demonstrate compliance with § 129.115.

(k) The owner or operator of an air contamination source or facility included in a facility-wide or system-wide NO_x emissions averaging plan submitted in accord-

ance with subsections (b)—(g) that achieves emission reductions in accordance with other emission limitations required under the act or the Clean Air Act, or regulations adopted under the act or the Clean Air Act, that are not NO_x RACT emission limitations may not substitute those emission reductions for the emission reductions required by the facility-wide or system-wide NO_x emissions averaging plan submitted to the Department or appropriate approved local air pollution control agency under subsection (b).

(l) The owner or operator of an air contamination source subject to a NO_x RACT emission limitation in § 129.112 that is not included in a facility-wide or system-wide NO_x emissions averaging plan submitted under subsection (b) shall operate the source in compliance with the applicable NO_x RACT emission limitation in § 129.112.

(m) The owner and operator of the air contamination sources included in a facility-wide or system-wide NO_x emissions averaging plan submitted under subsection (b) shall be liable for a violation of an applicable NO_x RACT emission limitation at each source included in the NO_x emissions averaging plan regardless of each individual facility's NO_x emission rate.

(n) The Department will submit each NO_x emissions averaging plan approved under subsection (i) to the Administrator of the EPA for approval as a revision to the SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

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

(a) The owner or operator of an air contamination source subject to § 129.112 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule) located at a major NO_x emitting facility or major VOC emitting facility subject to § 129.111 (relating to applicability) that cannot meet the applicable presumptive RACT requirement or RACT emission limitation of § 129.112 may propose an alternative RACT requirement or RACT emission limitation in accordance with subsection (d).

(b) The owner or operator of a NO_x air contamination source with a potential emission rate equal to or greater than 5.0 tons of NO_x per year that is not subject to § 129.112 or §§ 129.201—129.205 (relating to additional NO_x requirements) located at a major NO_x emitting facility subject to § 129.111 shall propose a NO_x RACT requirement or RACT emission limitation in accordance with subsection (d).

(c) The owner or operator of a VOC air contamination source with a potential emission rate equal to or greater than 2.7 tons of VOC per year that is not subject to § 129.112 located at a major VOC emitting facility subject to § 129.111 shall propose a VOC RACT requirement or RACT emission limitation in accordance with subsection (d).

(d) The owner or operator proposing an alternative RACT requirement or RACT emission limitation under subsection (a), (b) or (c) shall:

(1) Submit a RACT proposal in writing or electronically in accordance with the procedures in § 129.92(a)(1)—(5), (7)—(10) and (b) (relating to RACT proposal requirements) to the Department or appropriate approved local air pollution control agency as soon as possible but not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) Be in receipt of an approval issued by the Department or appropriate approved local air pollution control agency in writing through a plan approval or operating permit modification for a RACT proposal submitted under paragraph (1)(ii) prior to the installation, modification or change in the operation of the existing air contamination source that will result in the source or facility meeting the definition of a major NO_x emitting facility or major VOC emitting facility.

(3) Include in the RACT proposal the proposed alternative NO_x RACT requirement or RACT emission limitation or VOC RACT requirement or RACT emission limitation developed in accordance with the procedures in § 129.92(a)(1)—(5) and (b).

(4) Include in the RACT proposal a schedule for completing implementation of the RACT requirement or RACT emission limitation as soon as possible but not later than:

(i) November 12, 2023, for a source subject to § 129.111(a).

(ii) November 12, 2023, or 1 year after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(5) Include interim dates in the schedule required under paragraph (4) for the:

(i) Issuance of purchase orders.

(ii) Start and completion of process, technology and control technology changes.

(iii) Completion of compliance testing.

(6) Include in the RACT proposal methods for demonstrating compliance and recordkeeping and reporting requirements in accordance with § 129.115 (relating to written notification, compliance demonstration and recordkeeping and reporting requirements) for each air contamination source included in the RACT proposal.

(7) Demonstrate to the satisfaction of the Department or the appropriate approved local air pollution control agency that the proposed requirement or RACT emission limitation is RACT for the air contamination source.

(e) The Department or appropriate approved local air pollution control agency will:

(1) Review the timely and complete alternative RACT proposal submitted in accordance with subsection (d).

(2) Approve the alternative RACT proposal submitted under subsection (d), in writing, if the Department or appropriate approved local air pollution control agency is satisfied that the alternative RACT proposal complies with the requirements of subsection (d) and that the proposed alternative requirement or RACT emission limitation is RACT for the air contamination source.

(3) Deny or modify the alternative RACT proposal submitted under subsection (d), in writing, if the proposal does not comply with the requirements of subsection (d).

(f) The proposed alternative RACT requirement or RACT emission limitation and the implementation schedule submitted under subsection (d) will be approved,

denied or modified under subsection (e) by the Department or appropriate approved local air pollution control agency in accordance with Chapter 127 (relating to construction, modification, reactivation and operation of sources) prior to the owner or operator implementing the alternative RACT requirement or RACT emission limitation.

(g) The emission limit and requirements specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (f) supersede the emission limit and requirements in the existing plan approval or operating permit issued to the owner or operator of the source prior to November 12, 2022, on the date specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (f), except to the extent the existing plan approval or operating permit contains more stringent requirements.

(h) The Department will submit each alternative RACT requirement or RACT emission limitation approved under subsection (f) to the Administrator of the EPA for approval as a revision to the SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

(i) An owner or operator subject to subsection (a), (b) or (c) and § 129.99 that has not modified or changed a source that commenced operation on or before October 24, 2016, and has not installed and commenced operation of a new source after October 24, 2016, may, in place of the alternative RACT requirement or RACT emission limitation required under subsection (d), submit an analysis, certified by the responsible official, in writing or electronically to the Department or appropriate approved local air pollution control agency on or before December 31, 2022, that demonstrates that compliance with the alternative RACT requirement or RACT emission limitation approved by the Department or appropriate approved local air pollution control agency under § 129.99(e) (relating to alternative RACT proposal and petition for alternative compliance schedule) assures compliance with the provisions in subsections (a)—(c) and (e)—(h), except for sources subject to § 129.112(c)(11) or (i)—(k).

(1) The owner or operator of a subject source or facility 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:

(i) 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) 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.

(B) A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)—(3) included in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e).

(C) A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the "EPA Air Pollution Control Cost Manual" (6th Edition), EPA/452/B-02-001, January 2002, as amended.

(D) A statement that an evaluation of each economic feasibility analysis summarized in clause (C) 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.

(E) Additional information requested by the Department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.

(ii) Less than $7,500 per ton of NOX emissions reduced or $12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

(A) 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.

(B) A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)—(3) in the written RACT proposal submitted under § 129.99(d) and approved by the Department or appropriate approved local air pollution control agency under § 129.99(e).

(C) A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the "EPA Air Pollution Control Cost Manual" (6th Edition), EPA/452/B-02-001, January 2002, as amended.

(D) A statement that an evaluation of each economic feasibility analysis summarized in clause (C) 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.

(E) A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) in accordance with § 129.92(b)(4).

(F) Additional information requested by the Department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.

(2) The owner or operator of a subject source or facility 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:

(i) Perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b).

(ii) Submit the analyses performed under subparagraph (i) to the Department or appropriate approved local air pollution control agency for review.

(iii) 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.

(j) The Department or appropriate approved local air pollution control agency will:

(1) Review the analyses submitted in accordance with subsection (i).

(2) Publish notice in the *Pennsylvania Bulletin* and newspapers of general circulation for a minimum 30-day public comment period and an opportunity for a public hearing for the analyses submitted under subsection (i) and supporting documentation.

(3) Prepare a summary of the public comments received on the analyses and responses to the comments.

(4) As appropriate, issue the necessary plan approvals and operating permit modifications in conformance with Chapter 127 for the analyses reviewed under paragraph (1).

(k) The Department will submit the following information to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP.

(1) The analyses, supporting documentation and summary of public comments and responses described in subsection (j)(2) and (3).

(2) The plan approvals and operating permit modifications issued under subsection (j)(4).

(l) The owner and operator of a facility proposing to comply with the applicable RACT requirement or RACT emission limitation under subsection (a), (b) or (c) through the installation of an air cleaning device may submit a petition, in writing or electronically, requesting an alternative compliance schedule in accordance with the following:

(1) The petition requesting an alternative compliance schedule shall be submitted to the Department or appropriate approved local air pollution control agency as soon as possible but not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) The petition must include:

(i) A description, including make, model and location, of each air contamination source subject to a RACT requirement or RACT emission limitation in one or more of subsections (a)—(c).

(ii) A description of the proposed air cleaning device to be installed.

(iii) A schedule containing proposed interim dates for completing each phase of the required work to install the air cleaning device described in subparagraph (ii).

(iv) A proposed interim emission limitation that will be imposed on the affected air contamination source until compliance is achieved with the applicable RACT requirement or RACT emission limitation.

(v) A proposed final compliance date that is as soon as possible but not later than 3 years after the approval of the petition by the Department or the appropriate approved local air pollution control agency. If the petition is for the replacement of an existing source, the final compliance date will be determined on a case-by-case basis. The approved petition shall be incorporated in an applicable operating permit or plan approval.

(m) The Department or appropriate approved local air pollution control agency will review the timely and complete petition requesting an alternative compliance schedule submitted in accordance with subsection (l) and approve or deny the petition in writing.

(n) The emission limit and requirements specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (m) supersede the emission limit and requirements in the existing plan approval or operating permit issued to the owner or operator of the source prior to November 12, 2022, on the date specified in the plan approval or operating permit issued by the Department or appropriate approved local air pollution control agency under subsection (m), except to the extent the existing plan approval or operating permit contains more stringent requirements.

(o) Approval or denial under subsection (m) of the timely and complete petition for an alternative compliance schedule submitted under subsection (l) will be effective on the date the letter of approval or denial of the petition is signed by the authorized representative of the Department or appropriate approved local air pollution control agency.

(p) The Department will submit each petition for an alternative compliance schedule approved under subsection (m) to the Administrator of the EPA for approval as a revision to the Commonwealth's SIP. The owner and operator of the facility shall bear the costs of public hearings and notifications, including newspaper notices, required for the SIP submittal.

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

(a) The owner and operator of an air contamination source subject to this section and § 129.111 (relating to applicability) shall submit a notification, in writing or electronically, to the appropriate Regional Manager or the appropriate approved local air pollution control agency that proposes how the owner and operator intend to comply with the requirements of this section and §§ 129.111—129.114.

(1) The notification shall be submitted to the appropriate Regional Manager or appropriate approved local air pollution control agency as soon as possible but not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) This notification shall identify the air contamination sources in § 129.111(a) as one of the following:

(i) Subject to a RACT requirement or RACT emission limitation in §§ 129.112—129.114.

(ii) Exempted from §§ 129.112—129.114.

(3) The air contamination sources identified in § 129.111(b) as one of the following:

(i) Subject to a RACT requirement or RACT emission limitation in §§ 129.112—129.114.

(ii) Exempted from §§ 129.112—129.114.

(4) The air contamination sources identified in § 129.111(c) that have a potential to emit less than 1 TPY of NO_x located at a major NO_x emitting facility subject to § 129.111(a) or (b) or a VOC air contamination source that has the potential to emit less than 1 TPY of VOC located at a major VOC emitting facility subject to § 129.111(a) or (b).

(5) The following information for each air contamination source listed in paragraph (2):

(i) A description, including make, model and location, of each source.

(ii) The applicable RACT requirement or RACT emission limitation, or both, in §§ 129.112—129.114 for each source listed in accordance with paragraph (2)(i).

(iii) How the owner or operator shall comply with subparagraph (ii) for each source listed in subparagraph (i).

(iv) The reason why the source is exempt from the RACT requirements and RACT emission limitations in §§ 129.112—129.114 for each source listed in accordance with paragraph (2)(ii).

(6) The following information for each air contamination source listed in paragraph (3):

(i) A description, including make, model and location, of each source.

(ii) The applicable RACT requirement or RACT emission limitation, or both, in §§ 129.112—129.114 for each source listed in paragraph (3)(i).

(iii) How the owner or operator shall comply with subparagraph (ii) for each source listed in subparagraph (i).

(iv) The reason why the source is exempt from the RACT requirements and RACT emission limitations in §§ 129.112—129.114 for each source listed in accordance with paragraph (3)(ii).

(7) The following information for each air contamination source listed in paragraph (4):

(i) A description, including make, model and location, of each source.

(ii) Information sufficient to demonstrate that the source has a potential to emit less than 1 TPY of NO_x or 1 TPY of VOC, as applicable.

(b) Except as specified in subsection (d), the owner and operator of an air contamination source subject to a NO_x RACT requirement or RACT emission limitation or VOC RACT requirement or RACT emission limitation, or both, listed in § 129.112 (relating to presumptive RACT requirements, RACT emission limitations and petition for alternative compliance schedule) shall demonstrate compliance with the applicable RACT requirement or RACT emission limitation by performing the following monitoring or testing procedures:

(1) For an air contamination source with a CEMS, monitoring and testing in accordance with the requirements of Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources) using a 30-operating day rolling average, except for municipal waste combustors subject to § 129.112(f), combustion units or process heaters subject to § 129.112(g)(1) and direct-fired heaters, furnaces, ovens or other combustion sources subject to § 129.112(k).

(i) A 30-operating day rolling average emission rate for each applicable RACT emission limitation shall be calculated for an affected air contamination source for each consecutive operating day.

(ii) Each 30-operating day rolling average emission rate for an affected air contamination source must include the emissions that occur during the entire operating day, including emissions from start-ups, shutdowns and malfunctions.

(2) For a Portland cement kiln with a CEMS, monitoring of clinker production rates in accordance with 40 CFR 63.1350(d) (relating to monitoring requirements).

(3) For a municipal waste combustor with a CEMS, monitoring and testing in accordance with the requirements in Chapter 139, Subchapter C, using a daily average. The daily average will be considered valid if it contains at least 18 valid hourly averages reported at any time during the calendar day as required in the quality assurance section of the continuous source monitoring manual.

(4) For a combustion unit or process heater subject to § 129.112(g)(1) with a CEMS, monitoring and testing in accordance with the requirements in Chapter 139, Subchapter C, using a daily average.

(i) The daily average shall be calculated by summing the total pounds of pollutant emitted for the calendar day and dividing that value by the total heat input to the source for the same calendar day.

(ii) The daily average for the source shall include all emissions that occur during the entire day.

(5) For a direct-fired heater, furnace, oven or other combustion source subject to § 129.112(k) with a CEMS, monitoring and testing in accordance with the requirements in Chapter 139, Subchapter C, using a daily average.

(6) For an air contamination source without a CEMS, monitoring and testing in accordance with an emissions source test approved by the Department or appropriate approved local air pollution control agency that meets the requirements of Chapter 139, Subchapter A (relating to sampling and testing methods and procedures). The source test shall be conducted to demonstrate initial compliance and subsequently on a schedule set forth in the applicable permit.

(c) The owner or operator of a combined cycle combustion turbine may comply with the requirements in § 129.112(g)(2)(iii) on a mass-equivalent basis. The actual emissions during the compliance period must be less than the allowable emissions during the compliance period. The allowable emissions are calculated by multiplying actual heat input in million Btu during the compliance period by the following:

(1) 0.015 lb NO_x/million Btu for sources subject to § 129.112(g)(2)(iii)(A).

(2) 0.031 lb NO_x/million Btu for sources subject to § 129.112(g)(2)(iii)(B).

(3) 0.014 lb VOC/million Btu for sources subject to § 129.112(g)(2)(iii)(C).

(4) 0.030 lb VOC/million Btu for sources subject to § 129.112(g)(2)(iii)(D).

(d) Except as specified in § 129.112(n) and § 129.114(l) (relating to alternative RACT proposal and petition for alternative compliance schedule), the owner and operator of an air contamination source subject to subsection (b) shall demonstrate compliance with the applicable RACT requirement or RACT emission limitation in accordance with the procedures in subsection (a) not later than:

(1) January 1, 2023, for a source subject to § 129.111(a) (relating to applicability).

(2) January 1, 2023, or 1 year after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(e) An owner or operator of an air contamination source subject to this section and §§ 129.111, 129.112 and 129.113 (relating to facility-wide or system-wide NO_x emissions averaging plan general requirements) may request a waiver from the requirement to demonstrate compliance with the applicable emission limitation listed in § 129.112 if the following requirements are met:

(1) The request for a waiver is submitted, in writing or electronically, to the Department or appropriate approved local air pollution control agency not later than:

(i) December 31, 2022, for a source subject to § 129.111(a).

(ii) December 31, 2022, or 6 months after the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(2) The request for a waiver demonstrates that a Department-approved emissions source test was performed in accordance with the requirements of Chapter 139, Subchapter A on or after:

(i) November 12, 2021, for a source subject to § 129.111(a).

(ii) November 12, 2021, or within 12 months prior to the date that the source meets the definition of a major NO_x emitting facility or major VOC emitting facility, whichever is later, for a source subject to § 129.111(b).

(3) The request for a waiver demonstrates to the satisfaction of the Department or appropriate approved local air pollution control agency that the test results show that the source's rate of emissions is in compliance with the source's applicable NO_x emission limitation or VOC emission limitation.

(4) The Department or appropriate approved local air pollution control agency approves, in writing, the request for a waiver.

(f) The owner and operator of an air contamination source subject to this section and §§ 129.111—129.114 shall keep records to demonstrate compliance with §§ 129.111—129.114 and submit reports to the Department or appropriate approved local air pollution control agency in accordance with the applicable regulations in 25 Pa. Code, Part I, Subpart C, Article III (relating to air resources) and as specified in the operating permit or plan approval for the air contamination source as follows:

(1) The records shall include sufficient data and calculations to demonstrate that the requirements of §§ 129.111—129.114 are met.

(2) Data or information required to determine compliance shall be recorded and maintained in a time frame consistent with the averaging period of the requirement.

(3) The records necessary to determine compliance shall be reported to the Department or appropriate approved local air pollution control agency on a schedule specified in the applicable regulation or as otherwise specified in the operating permit or plan approval for the air contamination source.

(g) Beginning with the compliance date specified in § 129.112(a), the owner or operator of an air contamination source claiming that the air contamination source is exempt from the applicable NO_x emission rate threshold specified in § 129.114(b) and the requirements of § 129.112 based on the air contamination source's potential to emit shall maintain records that demonstrate to the Department or appropriate approved local air pollution control agency that the air contamination source is not subject to the specified emission rate threshold.

(h) Beginning with the compliance date specified in § 129.112(a), the owner or operator of an air contamination source claiming that the air contamination source is exempt from the applicable VOC emission rate threshold specified in § 129.114(c) and the requirements of § 129.112 based on the air contamination source's potential to emit shall maintain records that demonstrate to the Department or appropriate approved local air pollution control agency that the air contamination source is not subject to the specified emission rate threshold.

(i) The owner or operator of a combustion unit or process heater subject to § 129.112(b) shall record each adjustment conducted under the procedures in § 129.112(b). This record must contain, at a minimum:

(1) The date of the tuning procedure.

(2) The name of the service company and the technician performing the procedure.

(3) The final operating rate or load.

(4) The final NO_x and CO emission rates.

(5) The final excess oxygen rate.

(6) Other information required by the applicable operating permit.

(j) The owner or operator of a Portland cement kiln subject to § 129.112(h) shall maintain a daily operating log for each Portland cement kiln. The record for each kiln must include:

(1) The total hours of operation.

(2) The type and quantity of fuel used.

(3) The quantity of clinker produced.

(4) The date, time and duration of a start-up, shutdown or malfunction of a Portland cement kiln or emissions monitoring system.

(k) The records shall be retained by the owner or operator for 5 years and made available to the Department or appropriate approved local air pollution control agency upon receipt of a written request from the Department or appropriate approved local air pollution control agency.

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