

**ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM**

October 8, 2026

SUBJECT: **University of Pittsburgh, Main Campus**
 3412 Forbes Avenue
 Pittsburgh, PA 15260

Title V Operating Permit: No. 0647-OP26

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

FROM: Bernadette Lipari
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FACILITY DESCRIPTION:

The University of Pittsburgh is a public university located in Pittsburgh. The source consists of one (1) campus-wide painting operation, one (1) Melwood spray booth, one (1) Melwood laminate spray area, 97 natural gas-fired boilers, six (6) Carrillo Street natural gas-fired boilers using No. 2 fuel oil as backup fuel with two associated (2) diesel-fired emergency generator engines, 13 natural gas-fired space heaters, 38 natural gas-fired hot water heaters, 80 diesel-fired emergency generator engines, and four (4) natural gas-fired emergency generator engines. There is a diesel storage tank associated with each diesel-fired emergency generator and the boilers using fuel oil as backup fuel.

The University acquired the Biomedical Science Tower (BST) Incinerator in a transfer from the University of Pittsburgh Medical Center in August 2014. The BST incinerator, I-004, was first permitted under Installation Permit No. 93-I-003-I, issued on April 6, 1993. In 2007, the waste stream to the incinerator changed and the permit was reissued under permit No. 0224-I001. On July 16, 2014, the Department received a letter from UPMC Presbyterian Shadyside with a formal request to transfer the BST incinerator from UPMC Presbyterian Minor Source Operating Permit (P-0224) to the University of Pittsburgh.

The Carrillo Street boilers, B48-1 through B48-6, issued under Installation Permit No. 0678-I001b and Installation Permit No. 0678-I002a, have also been incorporated into this permit.

The University of Pittsburgh is a minor source of particulate matter (PM), particulate matter of 10 microns or less in diameter (PM₁₀), particulate matter of 2.5 microns or less in diameter (PM_{2.5}), sulfur oxides (SO_x), volatile organic compounds (VOCs), and hazardous air pollutants (HAPs), and a major source of nitrogen oxides (NO_x), and carbon monoxide (CO) as defined in section 2101.20 of Article XXI. The facility is also a major source of greenhouse gas emissions (CO_{2e}) as defined in the U.S. EPA Greenhouse Gas Tailoring Rule.

OPERATING PERMIT APPLICATION COMPONENTS:

1. Installation Permit No. 0647-I001, issued April 5, 2011
2. Installation Permit No. 0647-I002, issued June 4, 2018
3. Installation Permit No. 0647-I003, issued July 5, 2024
4. Installation Permit No. 0678-I001b, issued May 4, 2004; amended October 23, 2009
5. Installation Permit No. 0678-I002a, issued April 14, 2008; amended October 23, 2009
6. Installation Permit No. 0224-I001, dated November 5, 2007
7. Installation Permit No. 0631-I001, dated March 8, 2005 (Formerly Marriott Residence Inn - These boilers have been replaced with B66A&B)
8. Title V Permit No. 0647, issued December 19, 2013
9. Correspondence, dated December 22, 2014 (Boiler Replacement)
10. Correspondence, dated April 4, 2017 (Diesel Generator Update)
11. Correspondence, dated December 20, 2017 (NG Boiler/Diesel Generator Update)
12. Correspondence, dated July 16, 2014 (Transfer of Biomedical Science Tower (BST) Incinerator)
13. Correspondence, dated July 29, 2016 (Transfer of BST tanks and generators)
14. Operating Permit Application No. 0647, dated June 19, 2018
15. Request for Determination, dated March 21 2016 (Boilers B40A, B40B, B43A, and B43B)

16. Request for Determination, dated February 6, 2018 (Emergency Generators DG27 and DG41)
17. Request for Determination, dated June 25, 2019 (Biomedical Sciences Tower Incinerator)
18. Title V Permit No. 0647-OP20, issued August 20, 2020
19. Operating Permit Application No. 0647, dated February 18, 2025
20. Request for Determination, dated September 29, 2021 (Two (2) Natural Gas Boiler (B26A&B) replacements for B26)
21. Request for Determination, dated May 1, 2025 (One (1) Cummins 150 kW Diesel Emergency Generator)
22. Request for Determination, dated August 11, 2025 (One (1) Cummins 450 kW Diesel Emergency Generator)

EMISSION SOURCES:

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
Processes					
CP1	Campus-Wide Painting	Uncontrolled	15,840 gallons/yr	Paints and Solvents	-
SP1	Melwood Spray Booth Furniture Painting	Fabric Filter	150 gallons/yr	Paints and Solvents	SP1
PLS1	Laminate Spray Area (Melwood)	Fabric Filter	260 gallons/yr	Adhesives	LS1
I-004	BST Waste Incinerator Crawford C5000P Class 5	Uncontrolled	5 MMBtu/hr	Natural Gas	S001
Boilers and Heaters					
B10 - B17	Eight (8) Lochinvar AWN701PM (Sutherland Hall)	Uncontrolled	0.80 MMBtu/hr (2.4 MMBtu/hr total)	Natural Gas	SB10
B22	Ace Heater B8G (Forbes Craig Bldg)	Uncontrolled	0.64 MMBtu/hr	Natural Gas	SB22
B23A	Bryan Boilers RW1050-S-15-FDG (Biotech Building)	Uncontrolled	8.4 MMBtu/hr	Natural Gas	B23
B23B	Bryan Boilers RW1050-S-15-FDG (Biotech Building)	Uncontrolled	8.4 MMBtu/hr	Natural Gas	B23
B23C	Bryan Boilers RW1050-S-15-FDG (Biotech Building)	Uncontrolled	8.4 MMBtu/hr	Natural Gas	B23
B23D	Bryan Boilers RW1050-S-15-FDG (Biotech Building)	Uncontrolled	8.4 MMBtu/hr	Natural Gas	B23

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
B26A-B	Two (2) Peerless Boiler 211A-06-W (Child Care Center)	Uncontrolled	0.65 MMBtu/hr, 0.45 MMBtu/hr (1.10 MMBtu/hr total)	Natural Gas	SB26
B27	AO Smith Boiler LB-1000-920 (Eureka)	Uncontrolled	1.00 MMBtu/hr	Natural Gas	SB27
B28A - B28B	Two (2) Lochinvar AWN601PM (Forbes Residence Hall)	Uncontrolled	0.6 MMBtu/hr (1.2 MMBtu/hr total)	Natural Gas	SB28
B30A - B30C	Three (3) Lochinvar Boilers PBN1002 (Craig Hall)	Uncontrolled	1.03 MMBtu/hr (3.09 MMBtu/hr total)	Natural Gas	SB32
B31	Peerless Boiler 211-10-S-1 (Falk School)	Uncontrolled	1.89 MMBtu/hr	Natural Gas	SB31
B33A - B33C	Three (3) American Standard 4BN-J2 (310 Oakland Ave)	Uncontrolled	0.164 MMBtu/hr, 0.164 MMBtu/hr, 0.125 MMBtu/hr (0.453 MMBtu/hr total)	Natural Gas	SB33
B35A - B35C	Three (3) Galaxy Boilers GG-250 (306 Oakland Ave)	Uncontrolled	0.25 MMBtu/hr (0.75 MMBtu/hr total)	Natural Gas	SB35
B36	Burnham Boiler 208NCL-TE12 (264 Oakland Ave Apts.)	Uncontrolled	0.24 MMBtu/hr	Natural Gas	SB36
B37	Crane Boiler 7-202 (268 Oakland Ave Apts.)	Uncontrolled	0.18 MMBtu/hr	Natural Gas	SB37
B38	Weil-McLain Boiler H-10 (296-306 Oakland Ave)	Uncontrolled	0.54 MMBtu/hr	Natural Gas	SB38
B45	One (1) Weil-McLain Boiler LGB-8 (263 Atwood Ave Apts.)	Uncontrolled	0.91 MMBtu/hr	Natural Gas	SB45
B46A & B46B	Two (2) Knight Boilers KBN501 (305 Atwood Ave Apts.)	Uncontrolled	0.50 MMBtu/hr (1.00 MMBtu/hr total)	Natural Gas	SB46
B47	One (1) Bryan Boiler CLM150-W-G1 (Mayflower Apts. – 141 N. Dithridge Street)	Uncontrolled	1.44 MMBtu/hr	Natural Gas	SB47
B48-1 - B48-6	Six (6) Nebraska Boilers (Carrillo Street Steam Plant)	Ultra Low- NO _x Burners w/FGR	140 MMBtu/hr (840 MMBtu/hr total)	Natural Gas/No. 2 Fuel Oil	B48-1 - B48-6

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
B49A & B49B	Two (2) Lochinvar Boilers (3343 Forbes Ave)	Uncontrolled	1.44 MMBtu/hr (2.88 MMBtu/hr total)	Natural Gas	SB48
B50A & B50B	Two (2) Kewanee Boilers (Thomas Blvd)	Uncontrolled	2.145 MMBtu/hr (4.29 MMBtu/hr total)	Natural Gas	SB50
B51	One (1) Burnham Boiler P-207-WI (260 Oakland Ave Apts.)	Uncontrolled	0.198 MMBtu/hr	Natural Gas	SB36
B53A & B53B	Two (2) Lochinvar Boilers (3343 Forbes Ave)	Uncontrolled	0.50 MMBtu/hr (1.00 MMBtu/hr total)	Natural Gas	SB48
B54	One (1) Fulton Boiler PHW-1000 (Public Safety Bldg)	Uncontrolled	0.84 MMBtu/hr	Natural Gas	SB46
B55A & B55B	Two (2) NG Boilers (Panther Hall)	Uncontrolled	3.5 MMBtu/hr (7.0 MMBtu/hr total)	Natural Gas	SB32
B56A & B56B	Two (2) NG Boilers (PA Hall)	Uncontrolled	3.5 MMBtu/hr (7.0 MMBtu/hr total)	Natural Gas	SB32
B57A - B57B	Two (2) Boilers (McGowan Center)	Uncontrolled	2.4 MMBtu/hr (4.8 MMBtu/hr total)	Natural Gas	--
B57C	One (1) Boiler (McGowan Center)	Uncontrolled	2.4 MMBtu/hr,	Natural Gas	--
B59A - B59F	Six (6) Boilers (BSP-2)	Uncontrolled	3.0 MMBtu/hr, (18.0 MMBtu/hr total)	Natural Gas	--
B60A - B60F	Six (6) Boilers (BSP-2 Fulton)	Uncontrolled	2.0 MMBtu/hr, (12.0 MMBtu/hr total)	Natural Gas	--
B61A & B	Two (2) Boilers (BSP-2)	Uncontrolled	6.1 MMBtu/hr, (12.2 MMBtu/hr total)	Natural Gas	--
B62A - C	Three (3) Boilers (20th Century Club)	Uncontrolled	0.78 MMBtu/hr, (2.34 MMBtu/hr total)	Natural Gas	--
B63A - B63M	(13) Boilers (College Gardens)	Uncontrolled	0.199 through 0.285 MMBtu/hr, (3.26 MMBtu/hr total)	Natural Gas	--

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
B63O - B63T	Six (6) Boilers (College Gardens)	Uncontrolled	0.199 through 0.285 MMBtu/hr, (1.17 MMBtu/hr total)	Natural Gas	--
B64A - B64G	Seven (7) Boilers (Frats #1-#7)	Uncontrolled	0.399 MMBtu/hr, (2.79 MMBtu/hr total)	Natural Gas	--
B65A & B	Two (2) Boilers (234 Oakland Ave)	Uncontrolled	0.5 MMBtu/hr, (1.0 MMBtu/hr total)	Natural Gas	--
B66A & B	Two (2) Boilers (Residence Inn on Bigelow)	Uncontrolled	0.7 MMBtu/hr, (1.4 MMBtu/hr total)	Natural Gas	--
B67	One (1) Boiler (Shirley Apartments)	Uncontrolled	1.0 MMBtu/hr	Natural Gas	--
B68A - B68C	Three (3) Boilers (5th & Halkett)	Uncontrolled	6.0 MMBtu/hr (18.0 MMBtu/hr total)	Natural Gas	--
B69A - B69E	Five (5) Boilers (Pittsburgh Athletic Association)	Uncontrolled	0.8, 1.501 (2), 3.0 (2) MMBtu/hr, 9.8 MMBtu/hr	Natural Gas	--
H1A & H1B	Two (2) Forced Air Heaters Dayton 4LX62, Reznor BEX250 (Motor Pool)	Uncontrolled	0.10 MMBtu/hr (0.20 MMBtu/hr total)	Natural Gas	SH1
H2A - H2F	Six (6) Radiant Heaters #2 Solaronics (Melwood Warehouse)	Uncontrolled	0.15 MMBtu/hr (0.90 MMBtu/hr total)	Natural Gas	--
H3A - H3E	Five (5) Infrared Heaters Vintage HE80N, HE100N-40 (Public Safety Building)	Uncontrolled	3 – 1.0 MMBtu/hr, 2 – 0.8 MMBtu/hr (4.6 MMBtu/hr total)	Natural Gas	--
HW1 - HW8 & HW11 - HW18	(16) AO Smith Boilers; BT-100 (Fraternity Hot Water Tank)	Uncontrolled	15 – 0.075 MMBtu/hr, 0.26 MMBtu/hr (1.39 MMBtu/hr total)	Natural Gas	SHW1 - SHW18
HW19 - HW22	Four (4) ACE Breecher Boilers; B-11 (Sutherland Hot Water Tanks)	Uncontrolled	1.06 MMBtu/hr (4.24 MMBtu/hr total)	Natural Gas	SHW19 - SHW22
HW23 & HW24	Two (2) AJAX Boilers; B86 (Forbes Residence Hall Hot Water Tanks)	Uncontrolled	0.80 MMBtu/hr (1.60 MMBtu/hr total)	Natural Gas	SHW23 & SHW24

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
HW25	Patterson-Kelley Boiler; NB-88860 (Ruskin Hall Hot Water Heater)	Uncontrolled	1.10 MMBtu/hr	Natural Gas	SHW25
HW26	AO Smith Hot Water Heater – GCVX 50 100 (3343 Forbes Ave)	Uncontrolled	0.065 MMBtu/hr	Natural Gas	SHW25
HW27	AO Smith Hot Water Heater – M2TW75T6BN (Thackeray Hall)	Uncontrolled	0.076 MMBtu/hr	Natural Gas	SHW25
HW28	AO Smith Hot Water Heater – HWZ00M890 (Thaw Hall)	Uncontrolled	0.190 MMBtu/hr	Natural Gas	SHW25
HW29	AO Smith Hot Water Heater – BTR-200-110 (SRCC)	Uncontrolled	0.199 MMBtu/hr	Natural Gas	SHW25
HW30A & HW30B	Hot Water Heater (Panther Hall)	Uncontrolled	0.99 MMBtu/hr (1.98 MMBtu/hr total)	Natural Gas	SHW25
HW31A & HW31B	Hot Water Heater (PA Hall)	Uncontrolled	0.99 MMBtu/hr (1.98 MMBtu/hr total)	Natural Gas	SHW25
HW32A & HW32B	Two (2) Fulton EDR-2000 (Thomas Blvd)	Uncontrolled	2.0 MMBtu/hr (4.0 MMBtu/hr total)	Natural Gas	--
HW33	One (1) Fulton ICT-10 LE (Thomas Blvd)	Uncontrolled	0.78 MMBtu/hr	Natural Gas	--
HW34	One (1) Bryan CLM240-S (McGowan)	Uncontrolled	1.30 MMBtu/hr	Natural Gas	SHW34
HW35A & B	Weil McLain LGB-12 (O'Hara Student Center)	Uncontrolled	0.90 MMBtu/hr (1.80 MMBtu/hr total)	Natural Gas	--
HW36A	ACE Buehler UL-AH7241232 (Bellefield Hall)	Uncontrolled	0.199 MMBtu/hr	Natural Gas	SHW36
Emergency Generators					
DG1	Emergency Generator Cummins Onan 80DGDA (Eberly Hall)	Uncontrolled	80 kW	Diesel Fuel	SDG1
DG2	Emergency Generator Onan 50-DGDA (Bellefield Hall)	Uncontrolled	50 kW	Diesel Fuel	SDG2
DG3	Emergency Generator Kohler 200ROZD71 (Bendum Hall)	Uncontrolled	200 kW	Diesel Fuel	SDG3

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
DG4	Emergency Generator Kohler 750ROZD71 (Biotech Building)	Uncontrolled	680 kW	Diesel Fuel	SDG4
DG5	Emergency Generator Caterpillar 3412 (Cathedral Of Learning)	Uncontrolled	600 kW	Diesel Fuel	SDG5
DG6	Emergency Generator Onan DFAC-4488188 (Chevron)	Uncontrolled	250 kW	Diesel Fuel	SDG6
DG7	Emergency Generator Onan DGCB-3373593 (Clapp Hall)	Uncontrolled	60 kW	Diesel Fuel	SDG7
DG8	Emergency Generator Olympian D125P1 (Crawford Hall)	Uncontrolled	150 kW	Diesel Fuel	SDG8
DG9	Emergency Generator Olympian D100P1 (David Lawrence)	Uncontrolled	100 kW	Diesel Fuel	SDG9
DG10	Emergency Generator Onan DGFC-3381687 (Eureka Building)	Uncontrolled	200 kW	Diesel Fuel	SDG10
DG11	Emergency Generator Onan 25DKAF (Field House)	Uncontrolled	25 kW	Diesel Fuel	SDG11
DG12	Emergency Generator Cummins DGFB-4963250 (Forbes Residence Hall)	Uncontrolled	175 kW	Diesel Fuel	SDG12
DG13	Emergency Generator Onan DFCB-3381249 (Forbes Quad)	Uncontrolled	300 kW	Diesel Fuel	SDG13
DG14	Emergency Generator Cummins DFAC-5659890 (GSPH #1)	Uncontrolled	230 kW	Diesel Fuel	SDG14
DG16	Emergency Generator Kohler 80ROZJ71 (School of Info Science)	Uncontrolled	80 kW	Diesel Fuel	SDG16
DG17	Emergency Generator Olympian D200P1 (Alumni Hall)	Uncontrolled	200 kW	Diesel Fuel	SDG17
DG18	Emergency Generator Onan 75.0-DYC-15R (Mervis Hall)	Uncontrolled	75 kW	Diesel Fuel	SDG18
DG19	Emergency Generator Olympian D200P1 (Old Engineering Building)	Uncontrolled	200 kW	Diesel Fuel	SDG19

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
DG21	Emergency Generator Onan 250DFBE (S and S Garage)	Uncontrolled	250 kW	Diesel Fuel	SDG21
DG22	Emergency Generator Olympian D100P1 (Thackeray Hall)	Uncontrolled	100 kW	Diesel Fuel	SDG22
DG23	Emergency Generator Olympian D150P2 (Thaw Hall)	Uncontrolled	150 kW	Diesel Fuel	SDG23
DG24	Emergency Generator Onan 400DFCE (Litchfield Towers)	Uncontrolled	400 kW	Diesel Fuel	SDG24
DG25	Emergency Generator Onan 200DGFC (Lothrop Hall #1)	Uncontrolled	200 kW	Diesel Fuel	SDG25
DG26	Emergency Generator Caterpillar 3406 (Lothrop Hall)	Uncontrolled	400 kW	Diesel Fuel	SDG26
DG27	Emergency Generator Kohler 275RHOZ81 (William Pitt Union)	Uncontrolled	230 kW	Diesel Fuel	SDG27
DG28	Emergency Generator Kohler 230ROZ81 (Centre Plaza)	Uncontrolled	265 kW	Diesel Fuel	SDG28
DG29	Emergency Generator Caterpillar 3512TA/SR4B (Petersen Events Center)	Uncontrolled	1,250 kW	Diesel Fuel	SDG29
DG30	Emergency Generator Kohler 400 (Sennott Square)	Uncontrolled	400 kW	Diesel Fuel	SDG30
DG31	Clark Control Fire Pump DDFR-03DT-5068F (Field House Fire Pump)	Uncontrolled	82 kW	Diesel Fuel	SDG31
DG32	Patterson Fire Pump (Litchfield Fire Pump)	Uncontrolled	65 kW	Diesel Fuel	SDG32
DG33-1	Emergency Generator Caterpillar 3456/SR4B (Carrillo Street)	Uncontrolled	1,000 kW	Diesel Fuel	SDG33
DG33-2	Emergency Generator Caterpillar 3456/SR4B (Carrillo Street)	Uncontrolled	1,000 kW	Diesel Fuel	SDG33
DG34	Emergency Generator Onan 400 DFCE (Eberly Hall #2)	Uncontrolled	400 kW	Diesel Fuel	SDG34

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
DG35	Emergency Generator Cummins/Onan 35.0DGGD (Music Building)	Uncontrolled	35 kW	Diesel Fuel	SDG35
DG36	Emergency Generator Cummins DQAD (3343 Forbes)	Uncontrolled	100 kW	Diesel Fuel	SDG36
DG37	Emergency Generator Kohler 60 (Frick Fine Arts)	Uncontrolled	62 kW	Diesel Fuel	SDG37
DG40	Emergency Generator Caterpillar 3508 (Life Science Annex)	Uncontrolled	1,000 kW	Diesel Fuel	SDG40
DG41	Emergency Generator Cummins DQFAC-1816041 (McGowan)	Uncontrolled	900 kW	Diesel Fuel	SDG41
DG42	Emergency Generator Kohler 400 REOV-13C2 (PA Hall)	Uncontrolled	400 kW	Diesel Fuel	SDG42
DG43	Emergency Generator Caterpillar 3512 (BST-3 #1)	Uncontrolled	1,500 kW	Diesel Fuel	SDG43
DG44	Emergency Generator Caterpillar 3516 (BST-3 #2)	Uncontrolled	1,750 kW	Diesel Fuel	SDG44
DG45	Emergency Generator Cummins DGDK (Trees Hall)	Uncontrolled	125 kW	Diesel Fuel	SDG45
DG46	Emergency Generator Cummins DGFS (Victoria Hall)	Uncontrolled	230 kW	Diesel Fuel	SDG46
DG47	Emergency Generator Cummins DFGE 5754681 (McCormick Quad)	Uncontrolled	750 kW	Diesel Fuel	SDG47
DG48	Emergency Generator Cummins DGCG-5710358 (Craig Hall)	Uncontrolled	80 kW	Diesel Fuel	SDG48
DG50	Emergency Generator Cummins/Onan 300DFCB- 5702962 (Sutherland)	Uncontrolled	300 kW	Diesel Fuel	SDG50
DG51	Emergency Generator Cummins/Onan 16DNEA- 4223 (Frats 1 through 4)	Uncontrolled	16 kW	Diesel Fuel	SDG51

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
DG52	Emergency Generator Cummins/Onan 11.5DNAD-5738533 (Frats 5 and 6)	Uncontrolled	11 kW	Diesel Fuel	SDG52
DG54	Emergency Generator Cummins/Onan DQAF- 5746748 (Panther Hall)	Uncontrolled	400 kW	Diesel Fuel	SDG54
DG56	Emergency Generator Cummins DQFAD (Public Safety)	Uncontrolled	250 kW	Diesel Fuel	SDG56
DG57	Emergency Generator Kohler 150ROZJ (Law School)	Uncontrolled	150 kW	Diesel Fuel	SDG57
DG58	Emergency Generator Caterpillar C18 DITA (Benedum Hall)	Uncontrolled	600 kW	Diesel Fuel	SDG58
DG59	Emergency Generator Cummins DFED (Posvar Hall)	Uncontrolled	500 kW	Diesel Fuel	SDG59
DG60	Emergency Generator Cummins QSB5-DSFAD (Falk School)	Uncontrolled	60 kW	Diesel Fuel	SDG60
DG61	Emergency Generator Caterpillar C27 (Mid-Campus)	Uncontrolled	800 kW	Diesel Fuel	SDG61
DG62	Emergency Generator Cummins QSB7 (Olympic Sports Complex)	Uncontrolled	100 kW	Diesel Fuel	SDG62
DG63	Emergency Generator Cummins DQGAB (Chevron Annex)	Uncontrolled	1,500 kW	Diesel Fuel	SDG63
DG64	Emergency Generator Cummins DSGAC (University Club)	Uncontrolled	175 kW	Diesel Fuel	SDG64
DG65	Emergency Generator Koehler 100REOZJD (Forbes Craig)	Uncontrolled	100 kW	Diesel Fuel	SDG65
DG67	Emergency Generator Cummins DSHAC-5857339 (Darragh Street)	Uncontrolled	200 kW	Diesel Fuel	SDG67
DG68	Emergency Generator #2 Cummins DFAC-5659890 (Graduate School of Public Health)	Uncontrolled	250 kW	Diesel Fuel	SDG68

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
DG69	Emergency Generator #2 Cummins DQHAB-5938319 (Ruskin Hall)	Uncontrolled	300 kW	Diesel Fuel	SDG69
DG70	Emergency Generator Cummins DGFC-5005544 (Thomas Blvd)	Uncontrolled	200 kW	Diesel Fuel	SDG69
DG71	Emergency Generator Caterpillar C-9 (Bouquet Gardens)	Uncontrolled	250 kW	Diesel Fuel	SDG71
DG72	Emergency Generator CAT C-18 (Salk Hall Addition)	Uncontrolled	600 kW	Diesel Fuel	SDG72
DG73	Emergency Generator Cummins DFEG (Nordenberg Hall)	Uncontrolled	350 kW	Diesel Fuel	SDG72
DG74	Emergency Generator Cummins DQCB (GSPH Addition)	Uncontrolled	750 kW	Diesel Fuel	SDG74
DG75	Emergency Generator Cummins DSGAB (Sports Dome)	Uncontrolled	125 kW	Diesel Fuel	SDG75
DG76	Emergency Generator Make Kohler 100 REOZJD (Sports Dome Backup)	Uncontrolled	100 kW	Diesel Fuel	SDG41
DG77	Emergency Generator Cummins DQPAB-1879640 (Hillman Library)	Uncontrolled	650 kW	Diesel Fuel	SDG77
DG78	Emergency Generator (Residence Inn on Bigelow)	Uncontrolled	350 kW	Diesel Fuel	SDG78
DG79A	Emergency Generator (BSP-2)	Uncontrolled	1,000 kW	Diesel Fuel	SDG79A-B
DG79B	Emergency Generator (BSP-2)	Uncontrolled	1,000 kW	Diesel Fuel	SDG79A-B
DG80A	Emergency Generator (Central Utility Building)	Uncontrolled	2,500 kW	Diesel Fuel	SDG80A-B
DG80B	Emergency Generator (Central Utility Building)	Uncontrolled	2,500 kW	Diesel Fuel	SDG80A-B
DG81	Emergency Generator (Central Utility Building)	Uncontrolled	400 kW	Diesel Fuel	SDG81
DG82	Emergency Generator (Fifth Ave & Halkett)	Uncontrolled	800 kW	Diesel Fuel	SDG82
DG83	Fire Pump (Parkvale Building)	Uncontrolled	4.5 kW	Diesel Fuel	SDG83
DG84	Emergency Generator (Campus Rec Center)	Uncontrolled	600 kW	Diesel Fuel	SDG84

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
DG85	Emergency Generator (Athletic Club Bldg (PAA))	Uncontrolled	400 kW	Diesel Fuel	SDG85
DG86	Emergency Generator (Arena-Sports Performance Center)	Uncontrolled	450 kW	Diesel Fuel	SDG86
DG87	Emergency Generator (Pitt BioForge)	Uncontrolled	150 kW	Diesel Fuel	SDG87
NG17	Emergency Generator Kohler 175RZ2828 (3343 Forbes Ave)	Uncontrolled	175 kW	Natural Gas	SNG17
NG18	Emergency Generator Cummins GGHG (Benedum Hall)	Uncontrolled	85 kW	Natural Gas	SNG8
NG19	Emergency Generator Onan 100.0WA15R31 (Victoria Hall)	Uncontrolled	100 kW	Natural Gas	SNG8
NG20	Emergency Generator Cummins GTA50E (Salk Hall Addition)	Uncontrolled	600kW	Natural Gas	SNG8

Miscellaneous Emission Sources of Minor Significance:

- Maintenance welding activities (WELD). Emissions are negligible.
- Maintenance parts cleaners using Safety Kleen solvent (MPC1). Emissions are negligible.
- Paved roads and parking lots. Fugitive emissions are negligible.
- Diesel fuel storage tanks (T001) for each diesel-fired emergency generator engine and for the six (6) Carrillo Street boilers using fuel oil as backup fuel. Emissions from the tanks are estimated to be 129 pounds per year.
- Two (2) diesel fuel storage tanks (T002) for each Carrillo Street emergency generator. Emissions from the tanks are estimated to be 6.46 pounds per year.
- Laboratory fume hoods. Emissions are negligible.
- Maker Space ductless spray booth. Emissions are negligible.

Emission Controls:

The emissions from Campus-Wide Painting (CP1) is uncontrolled. The particulate emissions from the Melwood Spray Booth (SP1) and the Laminate Spray Area (PLS1) are controlled with a fabric filter; VOC and HAP emissions are uncontrolled. The emissions from the natural gas-fired boilers located at the Carrillo Street Steam Plant (B48-1 through B48-6) are controlled with ultra-low-NO_x burners and flue gas recirculation. Emissions from all other natural gas-fired boilers located on campus are uncontrolled. The emissions from the natural gas-fired space heaters and natural gas-fired hot water heaters are uncontrolled. The emissions from the diesel-fired emergency generator engines, fire pump engines and natural gas-fired emergency generator engines are uncontrolled. The hospital waste incinerator acquired by the University is equipped with a spray chamber.

EMISSION CALCULATIONS:

Surface Coating: Campus-Wide Painting (CP1), Melwood Spray Booth (SP1), and the Laminate Spray Area (PLS1):

Emissions calculations for particulate, VOC and HAP emissions from the surface coating facilities are provided in Appendix A, page 10 to this document. Emission calculations are based on source reports of the amounts and types of inks, coatings, and solvents used. Emissions have been scaled up from 4,160 actual hours of operation for painting operations and from 2,080 actual hours of operation for laminating and printing operations to 8,760 potential hours of operation. A 15% adjustment was added to all emissions to account for operational variability. The following table shows the maximum potential emissions from the surface coating facilities.

Maximum Potential Emissions for Surface Coating Facilities CP1, SP1, and PLS1

POLLUTANT	HOURLY EMISSION LIMIT (lb/hr) ¹	ANNUAL EMISSION LIMIT (tons/year) ¹
VOC	1.17	4.91
Total HAPs	0.02	0.43

¹ A year is defined as any consecutive 12-month period.

Biomedical Science Tower (BST) Waste Incinerator I-004:

Emission calculations are provided in Appendix A, page 10 to this document for the BST incinerator. Emission calculations are based on emission factors found in U.S.EPA AP-42 "Compilation of Air Pollutant Emission Factors", Section 2.3: "Medical Waste Incineration" for uncontrolled emissions, tables 2.3-1, 2.3-2, 2.3-3, and 2.3-10. The values listed in the table correspond to AP-42 emission factors plus 15%. ACHD believes that the AP-42 factor of 33.5 lb/ton is excessively high based on 2016 stack test results. Therefore, ACHD has opted to retain the HCl limit from IP 0224-I001 issued on November 5, 2007.

Basis:

1. BST Incinerator:

Throughput: 500 lb/hr or 260 tons/yr
 Maximum annual operation: 1,040 hr/year

Maximum Potential Emissions for the Incinerator ¹

POLLUTANT	HOURLY EMISSION LIMIT (lbs/hr)	ANNUAL EMISSION LIMIT (tons/year) ²
PM	1.34	0.70
PM ₁₀	0.87	0.45
SO ₂	0.62	0.32
NO _x	1.02	0.53
CO	0.85	0.44
VOC	0.08	0.04
HCl	0.09	0.05
HF	0.04	0.02
Pb	0.02	0.01

¹ See installation permit No. 0224-I001, issued November 5, 2007 for additional details.

² A year is defined as any consecutive 12-month period.

HCl = Hydrogen chloride, HF = Hydrogen fluoride, Pb = Lead

The Department received a request from the University of Pittsburgh to increase the maximum allowable daily waste combusted by the incinerator from 4,000 pounds per day to 6,000 pounds per day on June 25, 2019. The request was granted since there is no increase in the hourly or annual emissions and the maximum hourly and annual throughputs remain unchanged.

Natural Gas-fired Boilers, Space Heaters, and Water Heaters:

< 5 MMBtu/hr (B10 – B17, B22, B26A&B, B27, B28A&B, B30A-C, B31, B33A – C, B35A-C, B36-B38, B45, B46A&B, B47, B49A&B, B50A&B, B51, B53A&B, B54, B55A&B, B56A&B, B57A&B, B57C, B59A-F, B60A-F, B62A-C, B63A-T, B64A-G, B65A&B, B66A&B, B67, B69A-E, H1A – H1B, H2A – H2F, H3A – H3E, HW1 – HW8, and HW11 – HW29, HW30A – B, HW31A – B, HW32A – B, HW33 – HW34, HW35A – B, HW36A)

Emission calculations are provided in Appendix A, pages 2 and 3 to this document for the natural gas-fired boilers, space heaters, and water heater with a rating less than 5 MMBtu/hr. Emission calculations for SO_x, VOC, NO_x, CO, and HAP were based on emission factors found in U.S. EPA AP-42 Section 1.4: Natural Gas Combustion (7/98). PM and PM₁₀ emissions were based on Article XXI emission limits (§2104.02). A 15% adjustment was added to all emissions calculated with AP-42 factors to account for operational variability. All boilers limit the input of natural gas to 70% of potential annual natural gas usage. All space heaters and water heaters limit the input of natural gas to 70% of potential annual natural gas usage. See Appendix A, page 2 and 3 for the hourly emission limits for each of the small boilers.

GHG Mass and CO₂e Emissions:

Calculations of greenhouse gases (GHG) and CO₂-equivalent (CO₂e) emissions are based on the methodology found in 40 CFR Part 98, Subpart C, §98.33(a)(1), and factors found in Table C-1 and Table C-2 of that subpart.

The limited rated heat input capacity of the boilers, space heaters, and water heaters =
761.02 MMCF/yr × 1,020 Btu/scf = 776,243 MMBtu/yr

Emission Factors: CO₂ = 53.02 kg/MMBtu
 N₂O = 1 × 10⁻⁴ kg/MMBtu/hr
 CH₄ = 1 × 10⁻³ kg/MMBtu/hr

CO₂: 776,243 MMBtu/yr × 53.02 kg/MMBtu ÷ 1,000 kg/metric ton = 41,156 metric tons/year

N₂O: 776,243 MMBtu/yr × 1 × 10⁻⁴ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.078 metric tons/year

CH₄: 776,243 MMBtu/yr × 1 × 10⁻³ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.776 metric tons/year

Global Warming Potential (GWP) Factors (from Part 98, Subpart A, Table A-1):

CO₂ = 1
N₂O = 265
CH₄ = 28

CO₂e = (41,156 × 1) + (0.078 × 265) + (0.776 × 28) = 41,199 MT/year of CO₂e
= 45,415 tpy of CO₂e

The following table shows the total annual potential emissions for all of the boilers, space heaters and water heaters with a rating less than 5 MMBtu/hr.

Emission Limitations for B10 – B17, B22, B26A&B, B27, B28A&B, B30A-C, B31, B33A-C, B35A-C, B36-B38, B45, B46A&B, B47, B49A&B, B50A&B, B51, B53A&B, B54, B55A&B – B57A&B, - B57C, B59A-F, B60A-F, B62A-C, B63A-T, B64A-G, B65A&B, B66A&B, B67, B69A-E, H1A – H1B, H2A – H2F, H3A – H3E, HW1 – HW8, and HW11 – HW29, HW30A – B, HW31A – B, HW32A – B, HW33 – HW34, HW35A – B, HW36A

POLLUTANT	HOURLY EMISSION LIMIT (lbs/hr)	COMBINED ANNUAL EMISSION LIMIT (tons/year) ^{1, 2}
PM	(See Appendix A in the attached spreadsheet for the pound per hour emission limits for each of the individual boilers)	3.34
PM ₁₀		3.34
PM _{2.5}		3.34
SO ₂		0.28
NO _x		46.85
VOC		2.58
CO		39.36
HAPs		0.89

¹ A year is defined as any consecutive 12-month period.

² Combined limit is for all boilers.

Natural Gas-fired Boilers 5 MMBtu/hr – 15 MMBtu/hr (B23A– D, B61A&B, B68A - B68C):

Emission calculations are provided in Appendix A, page 4 to this document for the natural gas-fired boilers with a rating greater than 5 MMBtu/hr and less than 15 MMBtu/hr. Emission calculations for SO_x, VOC, NO_x, CO, and HAP were based on emission factors found in U.S. EPA AP-42 Section 1.4: Natural Gas Combustion (7/98). Particulate Matter emissions were based on Article XXI emission limits (§2104.02). A 15% adjustment was added to all emissions calculated with AP-42 factors to account for operational variability. All PM is assumed to be PM₁₀, and all PM₁₀ is assumed to be PM_{2.5}. The following table shows the total annual potential emissions for all of the boilers with a rating greater than 5 MMBtu/hr and less than 15 MMBtu/hr. All boilers limit the input of natural gas to 70% of potential annual natural gas usage. See Appendix A, page 4 for the hourly emission limits for each of the boilers.

GHG Mass and CO₂e Emissions:

The limited rated heat input capacity of boilers B23A-D, B61A&B, B68A - B68C =
383.55 MMcf/yr × 1,020 Btu/scf = 391,222 MMBtu/yr

CO₂: 391,222 MMBtu/yr × 53.02 kg/MMBtu ÷ 1,000 kg/metric ton = 20,743 metric tons/year

N₂O: 391,222 MMBtu/yr × 1 × 10⁻⁴ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.039metric tons/year

CH₄: 391,222 MMBtu/yr × 1 × 10⁻³ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.392 metric tons/year

Global Warming Potential (GWP) Factors (from Part 98, Subpart A, Table A-1):

CO₂ = 1

N₂O = 265

CH₄ = 28

$$\text{CO}_2\text{e} = (20,743 \times 1) + (0.039 \times 265) + (0.392 \times 28) = 20,764 \text{ MT/year of CO}_2\text{e}$$

$$= \mathbf{22,888 \text{ tpy of CO}_2\text{e}}$$

The following table shows the total annual potential emissions for all of the boilers, space heaters and water heaters with a rating greater than 5 MMBtu/hr and less than 15 MMBtu/hr.

Emission Limitations for B23A, B23B, and B23C

POLLUTANT	HOURLY EMISSION LIMIT (lbs/hr)	COMBINED ANNUAL EMISSION LIMIT (tons/year) ^{1, 2}
PM	(See Appendix A in the attached spreadsheet for the pound per hour emission limits for each of the individual boilers)	1.56
PM ₁₀		1.56
PM _{2.5}		1.56
SO ₂		0.13
NO _x		22.05
VOC		1.21
CO		18.53
HAPs		0.42

¹ A year is defined as any consecutive 12-month period.

² Combined limit is for all boilers.

Carrillo Street Boilers (B48-1 through B48-6):

Emission calculations are provided in Appendix A, pages 5 and 6 to this document for boilers B48-1 through B48-6. Hourly emission limits for PM, PM₁₀, SO_x, VOC, NO_x, and CO for boilers B48-1 through B48-3 were established in Installation Permit 0678-I001, issued May 4, 2004. Hourly emission limits for PM, PM₁₀, SO_x, VOC, NO_x, and CO for boilers B48-4 through B48-6 were established in Installation Permit 0678-I002, issued April 14, 2008. Hourly and annual emission limits for boilers B48-1 through B48-6 for CO and NO_x were established in Installation Permit 0678-I002, issued April 14, 2008. Annual natural gas usage limits and fuel oil usage limits for boilers B48-1 through B48-6 were established in Installation Permit 0678-I002, issued April 14, 2008. Hourly and annual limits are shown in the table below. Calculations for the potential to emit of HAP were based on emission factors found in U.S. EPA AP-42 Section 1.4: Natural Gas Combustion (7/98) and Section 1.3: Fuel Oil Combustion (9/98). A 15% adjustment was added to HAP emissions calculated with AP-42 factors to account for operational variability. The permittee has accepted limits on fuel usage in these boilers.

GHG Mass and CO₂e Emissions:

The University of Pittsburgh has taken a limit of 2,900 MMcf/year (2,958,000 MMBtu/yr) potential annual natural gas usage on the Carrillo Street boilers.

Emission Factors: CO₂ = 53.02 kg/MMBtu
 N₂O = 1 × 10⁻⁴ kg/MMBtu/hr
 CH₄ = 1 × 10⁻³ kg/MMBtu/hr

CO₂: 2,958,000 MMBtu/yr × 53.02 kg/MMBtu ÷ 1,000 kg/metric ton = 156,833 metric tons/year
 N₂O: 2,958,000 MMBtu/yr × 1 × 10⁻⁴ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.296 metric tons/year
 CH₄: 2,958,000 MMBtu/yr × 1 × 10⁻³ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 2.958 metric tons/year

$$\text{CO}_2\text{e} = (156,833 \times 1) + (0.296 \times 265) + (2.958 \times 28) = 156,994 \text{ MT/year of CO}_2\text{e}$$

= 173,056 tpy of CO₂e

The following table shows the limited hourly emissions for each of the boilers and limited total annual emissions for the Carrillo Street boilers.

Limited Potential Emissions for Boilers B48-1 through B48-6

POLLUTANT	HOURLY EMISSION LIMIT (Each Boiler) (lbs/hr)		TOTAL ANNUAL EMISSION LIMIT (All Six Boilers) (tons/year) ^{1, 2}
	Natural Gas	Fuel Oil	Both Fuels
PM	0.70	5.40	8.56
PM ₁₀	0.70	5.40	8.56
PM _{2.5}	0.70	1.35	7.69
SO ₂	0.084	6.95	2.39
NO _x	1.61	9.45	19.05
VOC	0.77	0.68	8.28
CO	5.43	10.53	59.59
HAPs	--	--	3.28

¹ A year is defined as any consecutive 12-month period.

² Combined limit is for all boilers.

Diesel-Fired Emergency Generator Engines (DG1-DG07, DG09-DG14, DG16-DG19, DG21-DG31, DG34-DG37, DG40-DG48, DG50-DG54, DG56-DG78, DG79A, DG79B, DG80A, DG80B, DG81-DG87, and DG33-1 & DG33-2):

There are 80 diesel-fired emergency generator engines located at various buildings on the University of Pittsburgh campus in addition to DG33-1 and DG33-2. Detailed emission calculations for these generator engines are shown on Appendix A, pages 7 and 8 to this document. Emission calculations were based on manufacturer data or U.S. EPA AP-42 Chapter 3.4, when manufacturer data was not available. A 15% adjustment factor was added to all emissions calculated using AP-42 factors to account for operational variability of equipment. Emission limits for emergency generator DG33-1 were established in Installation Permit 0678-I001, issued May 4, 2004. Emission limits for emergency generator DG33-2 were established in Installation Permit 0678-I002, issued April 14, 2008. Yearly limits of 150 operating hours per year were established for emergency generators DG33-1 and DG33-2 in Installation Permit 0678-I001 and Installation Permit 0678-I002, respectively. Emission limits and yearly limits of 400 operating hours per year for emergency generators DG56-DG63 were established in Installation Permit 0647-I001. The permittee has accepted limits of 400 operating hours per year for generator engines DG09, DG16, and DG17. However, the permittee has requested a 100 hour operating limit in the 2025 renewal application for emergency generators DG9, DG16, DG17, and DG56 – DG63. All other diesel generator engines have a limit of 100 operating hours per 12 consecutive month period. The following table shows the limited total annual emissions for all diesel-fired emergency generator engines. See Appendix A, page 8 for the hourly emission limits for each of these generator engines.

**Limited Potential Emissions for Generator Engines
DG1-DG14, DG16-DG19, DG21-DG31, DG34-DG37, DG40-DG48, DG50-DG54, DG56-DG78,
DG79A, DG79B, DG80A, DG80B, DG81-DG87, and DG33-1 & DG33-2**

POLLUTANT	HOURLY EMISSION LIMIT (lbs/hr)	COMBINED ANNUAL EMISSION LIMIT (tons/year) ^{1, 2}
PM	(See Appendix A)	1.79
PM ₁₀	(See Appendix A)	1.79
SO ₂	(See Appendix A)	2.48
NO _x	(See Appendix A)	69.26
VOC	(See Appendix A)	3.23
CO	(See Appendix A)	14.85

¹ A year is defined as any consecutive 12-month period.

² Combined limit for all of these emergency generator engines.

GHG Mass and CO₂e Emissions:

Total rated heat input capacity of the diesel generators = 12,490 MMBtu/yr

Emission Factors: CO₂ = 73.96 kg/MMBtu
N₂O = 6 × 10⁻⁴ kg/MMBtu/hr
CH₄ = 3 × 10⁻³ kg/MMBtu/hr

CO₂: 12,490 MMBtu/yr × 73.96 kg/MMBtu ÷ 1,000 kg/metric ton = 923.76 metric tons/year

N₂O: 12,490 MMBtu/yr × 6 × 10⁻⁴ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.007 metric tons/year

CH₄: 12,490 MMBtu/yr × 3 × 10⁻³ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.037 metric tons/year

Global Warming Potential (GWP) Factors (from Part 98, Subpart A, Table A-1):

CO₂ = 1
N₂O = 265
CH₄ = 28

CO₂e = [923.76 × 1] + [0.007 × 298] + [0.037 × 25] = 926.80 MT/year of CO₂e
= 1,022 tpy of CO₂e

Natural Gas-fired Emergency Generator Engines (NG-17, NG-18, NG-8, and NG20):

There are four (4) natural gas-fired emergency generator engines located at various buildings on the campus. Emission calculations are provided in Appendix A, page 9 to this document for the natural gas-fired emergency generator engines. Emission calculations were based on U.S. EPA AP-42 emission factors for natural gas-fired engines from Chapter 3.2, Table 3.2-2, published July 2000. A 15% adjustment factor was added to all emissions calculated using AP-42 factors to account for operational variability of equipment. The permittee has requested that the operating hours of generator engine NG-17 be limited to 400 hours per year and all other natural gas-fired emergency generator engines be limited to 100 hours per year each. The following table shows the limited total annual potential emissions for these natural gas-fired generator engines. See Appendix A, page 9 for the hourly emission limits for each of these natural gas-fired generator engines.

**Limited Potential Emissions for Natural Gas-fired Generator Engines
NG17, NG18, NG8, and NG20**

POLLUTANT	HOURLY EMISSION LIMIT (lbs/hr)	COMBINED ANNUAL EMISSION LIMIT (tons/year)^{1, 2}
PM	(See Appendix A)	0.003
PM ₁₀	(See Appendix A)	0.003
SO ₂	(See Appendix A)	1.7E-04
NO _x	(See Appendix A)	0.25
VOC	(See Appendix A)	0.034
CO	(See Appendix A)	0.16

¹ A year is defined as any consecutive 12-month period.

² Combined limit for all of these emergency generator engines.

GHG Mass and CO₂e Emissions:

Total rated heat input capacity of the natural gas generators = 506.84 MMBtu/yr

CO₂: 506.84 MMBtu/yr × 53.02 kg/MMBtu ÷ 1,000 kg/metric ton = 26.87 metric tons/year

N₂O: 506.84 MMBtu/yr × 1 × 10⁻⁴ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.00005 metric tons/year

CH₄: 506.84 MMBtu/yr × 1 × 10⁻³ kg/MMBtu/hr ÷ 1,000 kg/metric ton = 0.00051 metric tons/year

Global Warming Potential (GWP) Factors (from Part 98, Subpart A, Table A-1):

CO₂ = 1

N₂O = 265

CH₄ = 28

CO₂e = (26.87 × 1) + (0.00005 × 265) + (0.00051 × 28) = 26.90 MT/year of CO₂e
= **29.65 tpy of CO₂e**

No. 2 Fuel Oil Tanks (T001):

The permittee maintains diesel fuel storage tanks for each diesel-fired emergency generator engine and for the six (6) boilers using fuel oil as backup fuel. VOC emissions are expected to be minimal due to the low turnover rate and low volatility of the stored liquid (fuel oil). Emission calculations using U.S. EPA's TANKS version 4.0 are shown in Appendix A, page 12 to this document.

REGULATORY APPLICABILITY:

1. Article XXI Requirements for Issuance:

The requirements of Article XXI, Parts B and C for the issuance of minor source operating permits have been met for this facility. Article XXI, Part D, Part E & Part H will have any necessary sections addressed individually. See the Operating Permit No. 0647-OP26 for a listing of all applicable requirements.

This facility is not subject to the requirements of Article XXI, §2105.10: Surface Coating Processes, and §2105.83.1: Control of VOC Emissions from Miscellaneous Metal and/or Plastic Parts Surface Coating Processes because actual emissions are less than 2.7 tons per

year of VOC.

§2105.32 (Hospital/Medical/Infectious Waste Incinerators): The BST Waste Incinerator I-004 is not subject to this regulation as it is only used for pathological waste (§2105.32.e.1).

§2105.48 (Areas Subject to §2105.40 through §2105.47): The University of Pittsburgh is located within the area specified in Article XXI, Section 2105.48.a. Therefore, the requirements of Article XXI, Sections §2105.40 through §2105.47 apply to this source.

2. Testing Requirements:

- (a) Installation Permit #0678-I001b, issued May 4, 2004, required that the permittee conduct performance tests on boilers B48-1 through B48-3 at least once every two (2) years after the initial performance test, to determine compliance with the carbon monoxide and nitrogen oxide emission limitations specified in IP #0678-I001b for each boiler. These testing requirements are specified in the permit.
- (b) Installation Permit #0678-I002a, issued April 14, 2008, required that the permittee conduct performance tests on boilers B48-4 through B48-6 at least once every two (2) years after the initial performance test, to determine compliance with the carbon monoxide and nitrogen oxide emission limitations specified in IP #0678-I002a for each boiler. These testing requirements are specified in the permit.
- (c) Installation Permit No. 0224-I001, dated November 5, 2007, required that the permittee conduct the required performance test at least once every five (5) years from the most recent stack test using EPA test methods 5, 6, 10 and 26 or other method approved by the Department.
- (d) Testing is not required for the other emission units at this source. However, the Department reserves the right to require testing in the future to assure compliance with the terms and conditions of Title V Operating Permit No. 0647-OP26.

3. New Source Performance Standards (NSPS):

40 CFR 60, Subpart Da, Standards of Performance for Electric Utility Steam Generating Units:

- (a) Boilers B59A-F, B60A-F, and B62A-C and B58A-B, B61A-B, and B23A-D were installed after the applicability date of September 18, 1978, and each have a heat input capacity less than the applicability threshold of 250 MMBtu/hr. Therefore, these units are not subject to the requirements of 40 CFR 60, Subpart Da.

40 CFR 60, Subpart Db for Industrial-Commercial-Institutional Steam Generating Units:

- (a) Boilers B1 - B47, and B49A - B56B either commenced construction prior to June 19, 1984, or commenced construction after June 19, 1984 and each have a heat input capacity from fuels combusted in the steam generating unit of less than 100 million British thermal units per hour (MMBtu/hr). Therefore, the requirements of 40 CFR 60, Subpart Db do not apply to these boilers. Boilers B59A-F, B60A-F, and B62A-C and B58A-B, B61A-B, and B23A-D each have a heat input capacity less than the applicability threshold of 100 MMBtu/hr. Therefore, these units are not subject to the

requirements of 40 CFR 60, Subpart Db.

- (b) Boilers B48-1 through B48-6 commenced construction after June 19, 1984 and each have a heat input capacity from fuels combusted in the steam generating unit greater than 100 million British thermal units per hour (MMBtu/hr). Therefore, boilers B48-1 through B48-6 are subject to the requirements of 40 CFR 60.

40 CFR 60, Subpart Dc for Small Industrial-Commercial-Institutional Steam Generating Units:

- (a) Boilers B10 - B47, and B49A - B56B either commenced construction prior to June 9, 1989, or each have a heat input capacity from fuels combusted in the steam generating unit of less than 10 million British thermal units per hour (MMBtu/hr). Therefore, the requirements of 40 CFR 60, Subpart Dc do not apply to these boilers.
- (b) Boilers B59A-F, B60A-F, and B62A-C and B61A-B, B62A-B69E and B23A-D each have a heat input capacity less than the applicability threshold of 10 MMBtu/hr. Therefore, these units are not subject to the requirements of 40 CFR 60, Subpart Dc.
- (b) Boilers B48-1 through B48-6 commenced construction after June 9, 1989 but do not have a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h). Therefore, the requirements of 40 CFR 60, Subpart Dc do not apply to these boilers.

40 CFR Part 60, Subpart JJJJ for Stationary Spark Ignition Internal Combustion Engines: The natural gas-fired emergency generators (spark ignition internal combustion engines) at this source commenced modification or reconstruction prior to June 12, 2006, and have not been modified or reconstructed since that time. Therefore, the rule does not apply.

40 CFR Part 60, Subpart IIII for Compression Ignition Internal Combustion Engines:

- (a) The diesel fuel-fired emergency generators identified as DG1 - DG32, DG33-1, and DG34 - DG54 are compression ignition internal combustion engines. These engines commenced construction prior to July 11, 2005, and have not been modified or reconstructed since that time. Therefore, the rule does not apply.
- (b) The diesel fuel-fired emergency generators identified as DG33-2 and DG56 - DG87 are subject to 40 CFR Part 60, Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. The dates the generators were ordered is after the date April 1, 2006 at §60.4200(a)(2)(i) making the installation subject to 40 CFR Part 60, Subpart IIII. All of the generators have a displacement of <30 L per cylinder.

4. NESHAP and MACT Standards:

40 CFR 63, Subpart KK for the Printing and Publishing Industry:

Process PP1 is not subject to the requirements of 40 CFR 63, Subpart KK as it is a minor source of HAPs.

40 CFR 63, Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines:

The generators meet the operational requirements of “emergency stationary RICE” under §63.6640(f), and therefore are not subject to this subpart per §63.6585(f).

40 CFR 63, Subpart JJJJJ for Industrial, Commercial, and Institutional Boilers Area Sources

Pursuant to 40 CFR63.11193, natural gas boilers B48-1 through B48-6 use fuel oil as an emergency back-up fuel. The boilers are not exempt as specified in §63.11195. The boilers are an existing source having commenced construction or reconstruction prior to June 4, 2010. The boilers meet the criteria of oil subcategory using fuel oil as a back-up fuel for reasons other than periods of gas curtailment, gas supply emergencies or periodic testing not to exceed 48 hours during any consecutive 12-month period, located at an area source of HAPs and constructed on or before June 4, 2010 and are therefore subject to this rule.

5. Emissions Inventory:

This facility is required to provide annual Emissions Inventory reports per §2108.01.e of Article XXI because this facility has the potential to emit more than 25 tpy of NO_x and CO.

6. Risk Management Plan (CAA Section 112(r)):

The source is not required to have a risk management plan at this time because none of the regulated chemicals exceed the thresholds on the regulation.

7. Greenhouse Gas Reporting (40 CFR Part 98):

The facility is a major source of greenhouse gas (CO₂) emissions. However, the Greenhouse Gas (GHG) reporting rule under 40 CFR Part 98 is not considered an applicable requirement under the Title V regulations at this time. Therefore, there are presently no greenhouse gas requirements at the facility.

8. Compliance Assurance Monitoring (40 CFR Part 64):

The Compliance Assurance Monitoring (CAM) rule found in 40 CFR 64 is not applicable to this facility. The processes at the facility are either uncontrolled or have an uncontrolled potential-to-emit less than the major source thresholds.

9. Environmental Justice:

The University of Pittsburgh is not located in, but is located near an environmental justice (EJ) area, defined by the Pennsylvania DEP as “any census tract where 20 percent or more individuals live at or below the federal poverty line, and/or 30 percent or more of the population identifies as a non-white minority, based on data from the U.S. Census Bureau and the federal guidelines for poverty”. Because this facility is an existing source, alternative site location is not possible. The operating permit contains all testing, monitoring, recordkeeping, and reporting requirements (as required under §70.6(a)(3)).

METHOD OF DEMONSTRATING COMPLIANCE:

TVOP Section	Process	Method(s) of Demonstrating Compliance
V.A	Surface Coating and Printing (CP1, SP1, PLS1)	• Weekly inspections of process equipment • Recordkeeping of monthly consumption of each material used

TVOP Section	Process	Method(s) of Demonstrating Compliance
V.B	Natural Gas-Fired Boilers, Space Heaters, and Water Heaters < 5 MMBtu/hr	Recordkeeping of natural gas fuel use
V.C	Natural Gas-Fired Boilers #5 - 15 MMBtu/hr	Recordkeeping of natural gas fuel use
V.D	Carrillo Street Boilers (B48-1, B48-2, B48-3, B48-4, B48-5, B48-6)	- NO_x and O₂ CEMs - Testing for CO and NO_x every two (2) years - Boiler tune-up every other year - Recordkeeping of natural gas fuel use, fuel oil use, and biennial tune-ups
V.E	Diesel Generators (No. 1 – No. 7, No. 9 – No. 14, No. 16 – No. 19, No. 21 – No. 31, No. 34 – No. 37, No. 40 – No. 48, No. 50 – No. 52, No. 54, No. 56 – No. 65, No. 67 – No.78, No. 79A-B, No. 80A-B, No. 81-No.87, DG33-1 & DG33-2)	Recordkeeping of fuel consumption and hours of operation
V.F	Natural Gas Generators (NG-17, NG-18, NG-19, NG-20)	Recordkeeping of fuel consumption and hours of operation
V.G	Incinerator I-004	- Continuous monitoring of temperature, O₂, and CO - Performance testing every five (5) years for particulate matter, carbon monoxide, sulfur dioxide, and hydrogen chloride emissions - Recordkeeping of fuel consumption and hours of operation - Recordkeeping of the pounds of waste incinerated each day and the hours of operation each day

See Title V Operating Permit No. 0647-OP26 for the specific conditions for determining compliance with the applicable requirements.

EMISSIONS SUMMARY (Total Facility):

Emissions Limitations Summary

POLLUTANT	ANNUAL EMISSION LIMIT (tons/year)¹
PM	15.95
PM ₁₀	15.71
PM _{2.5}	15.25
SO ₂	5.61
NO _x	158.00
VOC	20.34
CO	132.92
HAPs	5.13
CO ₂ e	247,085

¹ A year is defined as any consecutive 12-month period.

RECOMMENDATION:

All applicable Federal, State and County regulations have been addressed in the permit application. The Title V Operating Permit application for the University of Pittsburgh, Campus should be approved with the emission limitations and terms and conditions in Title V Operating Permit No. 0647-OP26.