UNITED AIRLINES (06603)
PCP250002

Date: 6/18/2025

New Jersey Department of Environmental Protection
Reason for Application

Permit Being Modified

Permit Class: **Number:** 0

Description of Modifications: United Airlines is submitting this application for an initial preconstruction permit to add two AmpCart towable charging stations to United's facility in Terminal C of Newark Liberty International Airport in Newark, New Jersey.

Please see application package for more details.

UNITED AIRLINES (06603)
PCP250002

New Jersey Department of Environmental Protection
Facility Profile (General)

Facility Name (AIMS): United Airlines

Facility ID (AIMS): 06603

Street Address: UNITED AIRLINES
TERMINAL C - EWR
NEWARK LIBERTY INTERNATIONAL AIRPORT
NEWARK, NJ 07114

Mailing Address: UNITED AIRLINES
TERMINAL C - EWR
NEWARK LIBERTY INTERNATIONAL AIRPORT
NEWARK, NJ 07114

State Plane Coordinates:

X-Coordinate:	41
Y-Coordinate:	74
Units:	Dec. Deg.
Datum:	NAD83
Source Org.:	Other/Unknown
Source Type:	Prop Loc - Dig Image

County: Essex

Location Description: Newark International Airport

Industry:

Primary SIC:	
Secondary SIC:	
NAICS:	481111

New Jersey Department of Environmental Protection
Facility Profile (General)

Contact Type: **Air Permit Information Contact**

Organization: United Airlines
Org. Type: Corporation
Name: Alison Kehrer
NJ EIN: 00749009724
Title:
Phone: (312) 244-0122 x
Fax: ( ) - x
Other: ( ) - x
Type:
Email: Alison.Kehrer@united.com
Mailing Address: 1 Terminal C
Newark Liberty International Airport
Newark, NJ 07114

Contact Type: **Consultant**

Organization: Environmental Resources Management, Inc.
Org. Type: Private
Name: Josh Hemperly
NJ EIN:
Title: Principal Consultant
Phone: (609) 403-7554 x
Fax: ( ) - x
Other: ( ) - x
Type:
Email: josh.hemperly@erm.com
Mailing Address: 200 Charles Ewing Blvd
Suite 160
Ewing, NJ 08628

Contact Type: **Fees/Billing Contact**

Organization: United Airlines
Org. Type: Corporation
Name: Alison Kehrer
NJ EIN: 00749009724
Title:
Phone: (312) 244-0122 x
Fax: ( ) - x
Other: ( ) - x
Type:
Email: Alison.Kehrer@united.com
Mailing Address: 1 Terminal C
Newark Liberty International Airport
Newark, NJ 07114

New Jersey Department of Environmental Protection
Facility Profile (General)

Contact Type: General Contact

Organization: United Airlines
Org. Type: Corporation
Name: Alison Kehrer
NJ EIN:
Title: Senior Manager- Env Progr
Phone: ( ) - x
Fax: ( ) - x
Other: ( ) - x
Type:
Email: alison.kehrer@united.com
Mailing Address: 233 S. Wacker Drive
11th Floor EN
Chicago
Chicago, IL 60606

Contact Type: Owner (Current Primary)

Organization:
Org. Type:
Name: United Airlines
NJ EIN:
Title:
Phone: ( ) - x
Fax: ( ) - x
Other: ( ) - x
Type:
Email:
Mailing Address:

Contact Type: Responsible Official

Organization: United Airlines
Org. Type: Corporation
Name: Jonathan Gooda
NJ EIN: 00749009724
Title: Vice President, Newark Hub
Phone: (973) 681-1000 x
Fax: ( ) - x
Other: ( ) - x
Type:
Email: Jonathan.Gooda@united.com
Mailing Address: 1 Terminal C
Newark Liberty International Airport
Ewing, NJ 08628

UNITED AIRLINES (06603) Date: 6/18/2025

PCP250002

New Jersey Department of Environmental Protection
Facility Profile (Permitting)

1. Is this facility classified as a small business by the USEPA?	No
2. Is this facility subject to N.J.A.C. 7:27-22?	No
3. Are you voluntarily subjecting this facility to the requirements of Subchapter 22?	No
4. Has a copy of this application been sent to the USEPA?	No
5. If not, has the EPA waived the requirement?	No
6. Are you claiming any portion of this application to be confidential?	No
7. Is the facility an existing major facility?	No
8. Have you submitted a netting analysis?	No
9. Are emissions of any pollutant above the SOTA threshold?	No
10. Have you submitted a SOTA analysis?	No
11. If you answered "Yes" to Question 9 and "No" to Question 10, explain why a SOTA analysis was not required	
12. Have you provided, or are you planning to provide air contaminant modeling?	No

UNITED AIRLINES (06603) Date: 6/18/2025

PCP250002

New Jersey Department of Environmental Protection
Equipment Inventory

Equip. NJID	Facility's Designation	Equipment Description	Equipment Type	Certificate Number	Install Date	Grand-Fathered	Last Mod. (Since 1968)	Equip. Set ID
E4301	AmpCart1	AmpCart1	Fuel Combustion Equipment (Other)		3/1/2025	No		
E4302	AmpCart2	AmpCart2	Fuel Combustion Equipment (Other)		3/1/2025	No		

UNITED AIRLINES (06603) Date: 6/18/2025

PCP250002

New Jersey Department of Environmental Protection
Control Device Inventory

CD NJID	Facility's Designation	Description	CD Type	Install Date	Grand-Fathered	Last Mod. (Since 1968)	CD Set ID
CD1	E1 CO	Exhaust Aftertreament System	Oxidizer (Catalytic)				
CD2	E1 SCR	Exhaust Aftertreament System	Selective Catalytic Reduction				
CD3	E2 CO	Exhaust Aftertreament System	Oxidizer (Catalytic)				
CD4	E2 SCR	Exhaust Aftertreament System	Selective Catalytic Reduction				

UNITED AIRLINES (06603)
PCP250002

Date: 6/18/2025

New Jersey Department of Environmental Protection
Emission Points Inventory

PT NJID	Facility's Designation	Description	Config.	Equiv. Diam. (in.)	Height (ft.)	Dist. to Prop. Line (ft)	Exhaust Temp. (deg. F)			Exhaust Vol. (acfm)			Discharge Direction	PT Set ID
							Avg.	Min.	Max.	Avg.	Min.	Max.		
PT4301	AmpCart1	AmpCart1	Round	3	7	2,000	800.0	300.0	1,200.0	564.0	282.0	1,038.0	Up	
PT4302	AmpCart2	AmpCart2	Round	3	7	2,000	800.0	300.0	1,200.0	564.0	282.0	1,038.0	Up	

UNITED AIRLINES (06603)
PCP250002

Date: 6/18/2025

New Jersey Department of Environmental Protection
Emission Unit/Batch Process Inventory

U 430 AmpCarts AmpCart Charging Stations

UOS NJID	Facility's Designation	UOS Description	Operation Type	Signif. Equip.	Control Device(s)	Emission Point(s)	SCC(s)	Annual Oper. Hours Min.	Annual Oper. Hours Max.	VOC Range	Flow (acfm) Min.	Flow (acfm) Max.	Temp. (deg F) Min.	Temp. (deg F) Max.
OS1	AmpCart1	AmpCart1	Normal - Steady State	E4301	CD1 (P) CD2 (P)	PT4301		0.0	2,080.0		0.0	1,038.0	0.0	795.0
OS2	AmpCart2	AmpCart2	Normal - Steady State	E4302	CD3 (P) CD4 (P)	PT4302		0.0	2,080.0		0.0	1,038.0	0.0	795.0

UNITED AIRLINES (06603) Date: 6/18/2025

PCP250002

New Jersey Department of Environmental Protection
Potential to Emit

Subject Item: **U430 AmpCarts**

Operating Scenario: **OS0 Summary**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
CO				3.36000000	tons/yr	No
Formaldehyde				0.18100000	tons/yr	No
HAPs (Total)				0.00464000	tons/yr	No
NOx (Total)				0.38800000	tons/yr	No
PM-10 (Total)				D	tons/yr	No
Pb				D	tons/yr	No
SO2				D	tons/yr	No
TSP				D	tons/yr	No
VOC (Total)				D	tons/yr	No

Subject Item: **U430 AmpCarts**

Operating Scenario: **OS1 AmpCart1**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
CO				1.62000000	lb/hr	No
Formaldehyde				0.00223000	lb/hr	No
HAPs (Total)				0.00223000	lb/hr	No
NOx (Total)				0.19400000	lb/hr	No
PM-10 (Total)				D	lb/hr	No
Pb				D	lb/hr	No
SO2				D	lb/hr	No
TSP				D	lb/hr	No
VOC (Total)				0.08700000	lb/hr	No

UNITED AIRLINES (06603) Date: 6/18/2025

PCP250002

New Jersey Department of Environmental Protection
Potential to Emit

Subject Item: **U430 AmpCarts**

Operating Scenario: **OS2 AmpCart2**

Step:

Air Contaminant Category (HAPS)	Fugitive Emissions	Emissions Before Controls	Emissions After Controls	Total Emissions	Units	Alt. Em. Limit
CO				1.62000000	lb/hr	No
Formaldehyde				0.00223000	lb/hr	No
HAPs (Total)				0.00223000	lb/hr	No
NOx (Total)				0.19400000	lb/hr	No
PM-10 (Total)				D	lb/hr	No
Pb				D	lb/hr	No
SO2				D	lb/hr	No
TSP				D	lb/hr	No
VOC (Total)				0.08700000	lb/hr	No

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erm.com

Michelle Taubler
New Jersey Department of Environmental Protection
Bureau of Stationary Sources – Minor Source Permits
401 East State St. – 2nd Floor
Trenton, NJ 08625

DATE
2 May 2025

SUBJECT
Construction of New Source Permit Application

REFERENCE
United Airlines – EWR
Program Interest Number: 06603

Dear Michelle:

On behalf of United Airlines (United), Environmental Resources Management (ERM) hereby submits this application for a Construction of New Source permit. In this application, United requests the addition of two AmpCart towable charging stations to their facility at Terminal C of Newark Liberty International Airport in Newark, New Jersey. This application was originally submitted on March 24, 2025, as a revision to PCP240002. However, NJDEP requested that the equipment be submitted as a new source on April 29, 2025, per its current standard to have one emission unit per permit and group similar equipment together in PCP permits. This single submittal is for both AmpCarts at the request of NJDEP and will not impede the original DEP review timeline. This application consists of the RADIUS application, emission calculations, and vendor specification sheets.

Background

United is a minor air source facility and currently holds two active air permits with the New Jersey Department of Environmental Protection (NJDEP) under the program interest number 06603. United operates several pieces of air permitted equipment such as emergency generators and storage tanks under its two air permits, PCP240002 and GEN240001. In this application, United is looking to permit two AmpCart towable charging stations as a new source.

Project Description

United is electrifying their Ground Support Equipment (GSE) and seeks to bring this AmpCart on-site for the purpose of charging GSE equipment. The AmpCarts will be stationary pieces of equipment parked near the GSE or Terminal areas. The AmpCarts are each powered by a diesel-fired Cummins Model QS87-G9 engine with a maximum horsepower rating of 282 HP. The vendor specification sheet for the diesel engine is included as Attachment 1. United plans to operate each of the AmpCarts for a maximum of 2,080 hours per year.

Emissions Calculations

Potential-to-emit (PTE) calculations for the AmpCart are included as Attachment 2. Worst-case hourly emission rates were calculated using the engine certified emission rates from the vendor specification sheet. Worst-case annual emission rates were calculated using the hourly emission rates and the maximum annual hours of operation limit of 2,080 hours/year. Hazardous air pollutant (HAP) emissions were also calculated using emission factors from AP-42 Chapter 3.3, Table 3.3-2 and assessed for reportability based on the reporting thresholds in N.J.A.C. 7:27-17.9, Tables 3A and 3B. Formaldehyde is the only reportable HAP. All other HAPs are below their respective reporting threshold.

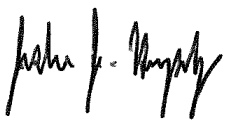
Regulatory Assessment

State-of-the-Art (SOTA)

Pursuant to N.J.A.C. 7:27-8.12, newly constructed, reconstructed, or modified equipment and control apparatus shall incorporate "advances in the art of air pollution control". This is commonly referred to as the State-of-The-Art (SOTA) requirement. Per N.J.A.C. 7:27-8.12(a)(1) and (2), documentation of SOTA is not required for equipment with a PTE less than the applicable SOTA emission thresholds for HAPs in N.J.A.C. 7:27-17.9 or air contaminants in N.J.A.C. 7:27-8.12, Appendix 1, Table A. The emission calculations included as Attachment 2 contain a SOTA analysis and demonstrate that no HAP or air contaminant PTE exceeds SOTA thresholds. Therefore, documentation of SOTA is not required for the addition of the AmpCarts to United's PCP240002.

Please contact me at (609) 403-7554 or josh.hemperly@erm.com, or Bruce Warren at (973) 681-1257 or bruce.warren@united.com if you or your staff have any questions regarding this application.

Sincerely,



Josh Hemperly
Principal Consultant

Enclosures:

Attachment 1 – Engine Vendor Specification Sheet
Attachment 2 – PTE Calculations
Attachment 3 – RADIUS Application (.pdf)

Attachment 1 – Engine Vendor Specification Sheet

EXHAUST EMISSION DATA SHEET

MQ POWER GENERATOR SET

Model: SG1400C4F/P

The engine used in this generator set is certified to comply with United States EPA Tier 4 and CARB Mobile Off-Highway emission regulations.

ENGINE DATA

Manufacturer:	Cummins	**Bore:**	4.21 in. (107 mm)
Model:	QSB7-G9	**Stroke:**	4.88 in. (124 mm)
Type:	4-Cycle, In-Line, 6-cylinder, Diesel	**Displacement:**	409 cid (6.7 liters)
Aspiration:	Electric Direct Injection, TurboCharged, Charged Air Cooled, ECM, EGR, DOC, SCR	**Compression Ratio:**	17.3:1

PERFORMANCE DATA

SAE Gross HP @ 1800 RPM (60 Hz)	282
Rated Load Fuel Consumption (gal/Hr)	13.5
Rated Load Exhaust Gas Flow (cfm)	1038
Rated Load Exhaust Gas Temperature (ºF)	795

United States EPA - Mobile Off-Highway Tier 4 Limits - ≤174 ~ <751 BHP

Criteria Pollutant	Emission Requirements	Certified Engine Emissions
NOx (Oxides of Nitrogen as NO2)	0.298 gr/bhp-hr	0.141 gr/bhp-hr
HC (Total Unburned Hydrocarbons)	N/A gr/bhp-hr	N/A gr/bhp-hr
NOx + HC (Combined)	N/A gr/bhp-hr	N/A gr/bhp-hr
CO (Carbon Monoxide)	2.6 gr/bhp-hr	0.0 gr/bhp-hr
PM (Particulate Matter)	0.014 gr/bhp-hr	0.007 gr/bhp-hr
NMHC (Non-Methane Hydrocarbons)	0.141 gr/bhp-hr	0.029 gr/bhp-hr
NMHC + NOx	N/A gr/bhp-hr	N/A gr/bhp-hr

EPA Engine Family:	PCEXL06.7AAL
EPA Certificate of Conformance:	PCEXL06.7AAL-041
ARB Executive Order:	U-R-002-0845
Effective Date:	Model Year 2023

Note: Engine operation with excessive air intake or exhaust restriction beyond factory published maximum limits, or with improper service maintenance, may result in higher emission levels.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2023 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Cummins Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: PCEXL06.7AAL-041

Effective Date: 07/21/2022

Expiration Date: 12/31/2023

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 07/21/2022

Revision Date: N/A

Model Year: 2023
Manufacturer Type: Original Engine Manufacturer
Engine Family: PCEXL06.7AAL

Mobile/Stationary Indicator: Both
Emissions Power Category: 130<=kW<=560
Fuel Type: Diesel
After Treatment Devices: Diesel Oxidation Catalyst, Ammonia Slip Catalyst, Selective Catalytic Reduction
Non-after Treatment Devices: Electronic Control, Electronic/Electric EGR - Cooled

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Parts 60 and 1039, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Parts 60 and 1039 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Parts 60 and 1039 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Parts 60 and 1039.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Parts 60 and 1039. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Parts 60 and 1039.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

CALIFORNIA AIR RESOURCES BOARD	CUMMINS INC.	EXECUTIVE ORDER U-R-002-0845 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in California Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-19-095;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2023	PCEXL06.7AAL	6.7	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Electronic Direct Injection, Turbocharger, Charge Air Cooler, Electronic Control Module, Exhaust Gas Recirculation, Diesel Oxidation Catalyst, Selective Catalytic Reduction – Urea, Ammonia Oxidation Catalyst	Generator Set

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for non-methane hydrocarbon (NMHC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			NMHC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
130 ≤ kW ≤ 560	Tier 4 Final	STD	0.19	0.40	N/A	3.5	0.02	N/A	N/A	N/A
		CERT	0.04	0.19	--	0.00	0.01	--	--	--

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed on this 17th day of August 2022.

Robin U. Lang

Robin U. Lang, Chief
Emissions Certification and Compliance Division

Attachment: Engine Models **EO #:** U-R-002-0845 **Family:** PCEXL06.7AAL **Attachment Last Revised:** 8/2/2022

Model	Code	Trim	Config	Displacement	Displacement - Units	Peak Power	Peak Power - Units	Peak Power - Speed (rpm)	Peak Power - Fueling	Peak Power - Fuel Units	Peak Torque	Peak Torque - Units	Peak Torque - Speed (rpm)	Peak Torque - Fuel	Peak Torque - Fuel Units	OBD	GHG	Special	Notes
QSB7-G9	OB1		I6	6.7	Liters	274	horsepower	1500	192	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7	OB1		I6	6.7	Liters	274	horsepower	1500	192	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7-G9	OB1		I6	6.7	Liters	314	horsepower	1800	182	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7	OB1		I6	6.7	Liters	314	horsepower	1800	182	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7-G9	OB2		I6	6.7	Liters	274	horsepower	1500	192	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7	OB2		I6	6.7	Liters	274	horsepower	1500	192	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7-G9	OB2		I6	6.7	Liters	314	horsepower	1800	182	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7	OB2		I6	6.7	Liters	314	horsepower	1800	182	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7-G8	OB3		I6	6.7	Liters	222	horsepower	1500	146	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7	OB3		I6	6.7	Liters	222	horsepower	1500	146	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7-G8	OB3		I6	6.7	Liters	241	horsepower	1800	135	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				
QSB7	OB3		I6	6.7	Liters	241	horsepower	1800	135	mm3/stroke	N/A	lb-ft	N/A	N/A	lb/hr				

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
Air Quality Permitting Program
Cancer Risk Screening Worksheet for Nonroad Diesel Engines - Version 2.1.2 (April 23, 2015)

The purpose of this worksheet is to provide a quick estimate of a diesel engine's cancer risk outside the facility boundary.
It divides diesel engines into two categories: engines rated at less than or equal to 600 hp, and engines rated over 600 hp.

NOTE: Please see "Instructions" sheet (tab at bottom). Information can only be typed into white boxes.

Step 1 - Determine If This Worksheet Is Appropriate For Your Diesel Engine

A. Engine's Stack Height: 32 feet

B. Engine's Horsepower: 282 hp

C. Discharge Direction of the Stack: (•) Up ( ) Down ( ) Horizontal

(A fixed rain cap is considered a horizontal discharge.)

Click here to test if this Worksheet is Appropriate for you

Step 2 - Determine the Potential Annual Diesel Particulate Matter (DPM) Emission Rate

A. Engine's horsepower (from above): 282 hp

B. Engine's tier or year of manufacture
☑ Tier (1-4): 4 **OR** ☐ Year Manufactured: 0

C. Engine's maximum annual operating hours: 2080 hours/year

D. DPM emission factor: 0.015 g/hp-hr

Click Here to Calculate DPM Emissions

E. DPM emission rate = DPM emission factor * (Horsepower * hours of operation) / 454 g/lb

19.4 lbs/yr = 0.015 g/hp-hr * 282 hp * 2080 hrs/yr / 454 g/lb

Step 3 - Calculate Incremental Cancer Risk

For engines of 600 hp and less, an assumption was made of a stack height of 15 feet and a plume rise of 25 feet.

For engines rated over 600 hp, an assumption was made of a stack height of 25 feet and a plume rise of 50 feet.

A. DPM Emission Rate: 19.4 lbs/year

B. Distance from Stack to Property Line: 1000 feet

C. Incremental Cancer Risk: 1.50E-06 or less than 1.5 in a million

Click here to Assess Cancer Risk-Impact

Color Key for Incremental Cancer Risk

Green	The risk is less than or equal to 1 in a million (1E-06). The risk is negligible, and the permit should be approvable.
Yellow	The risk is greater than 1 in a million (1E-06) and less than or equal to 10 in a million (1E-05). The permit may be approvable. Risk minimization measures must be evaluated, and reasonable ones implemented. Consult with the NJDEP permit evaluator.
Orange	The risk is greater 10 in a million (1E-05) and less than or equal to 100 in a million (1E-04). The engine may pose a significant health risk to the surrounding community. More detailed evaluation is needed, including refined air dispersion modeling. Some type of control device to reduce emissions will most likely be required, along with other risk minimization measures.
Red	The risk is greater than 100 in a million (1E-04). The engine's operation has the potential to cause a significant health risk to the surrounding community. The permit is not approvable.

NJDEP DIVISION OF AIR QUALITY RISK SCREENING WORKSHEET
For Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects

April 2023

Read the Instructions tab carefully before completing this spreadsheet.

Date	5/7/2025
Facility ID No.	06603
Activity ID No.	PCP250001
Facility name	United Airlines
Facility location	Newark, NJ
File name (.xls)	

Emission Unit/Batch Process ID No.	U430	Stack height[1]	32.0	ft
Emission Point ID No.	PT4301	Distance to property line	2000	ft
Equipment ID No(s).	E4301	**Annual air impact value, C'**	0.24782	**(ug/m^3)/(ton/yr)**
Operating Scenario(s)	OS1	**1-hour air impact value, C'$_{st}$**	108.934	**(ug/m^3)/(lb/hr)**

KEY:

Long-Term Effects

- **Q =** Annual emission rate (in tons per year) contributed from the source
- **C =** C' x Q = Annual average ambient air concentration
- **URF =** Unit risk factor (for carcinogenic risk)
- **IR =** C x URF = Incremental risk (for carcinogen)
- **RfC =** Reference concentration (for noncarcinogenic effects)
- **HQ =** C/RfC = Hazard quotient (for noncarcinogenic risk)
- **RsIt =** The result of comparing the IR or HQ to the negligible threshold (FER if > threshold, Negl. if <= threshold)
- **FER =** Further Evaluation Required (See Notes for thresholds)
- **Negl. =** Negligible (See Notes for thresholds)

Short-Term Effects

- **Q_h =** Hourly emission rate (in pounds per hour)
- **C_{st} =** C'_{st} x Q_h = Short-term average ambient air concentration
- **RfC_{st} =** Short-term reference concentration (for noncarcinogenic effects)
- **HQ_{st} =** C_{st}/RfC_{st} = Hazard quotient for short-term noncarcinogenic effects
- **RsIt =** The result of comparing the HQ_{st} to the negligible threshold (FER if > threshold, Negl. if <= threshold)
- **FER =** Further Evaluation Required (See Notes for thresholds)
- **Negl. =** Negligible (See Notes for thresholds)

[1] When evaluating risk for diesel engines, use the equivalent stack height consistent with the memo dated June 10, 2009.
Click here to view the "Stack Height Equivalents for Use in First Level Screening Analyses for Diesel Engines" memo.

				LONG-TERM EFFECTS								SHORT-TERM EFFECTS				
	H A P	CAS No.	Air Toxic	Q (ton/yr)	C (ug/m^3)	URF [(ug/m^3)$^{-1}$]	IR	RsIt	RfC (ug/m^3)	HQ	RsIt	Q_h (lb/hr)	C_{st} (ug/m^3)	RfC_{st} (ug/m^3)	HQ_{st}	RsIt
1	*	75070	Acetaldehyde			2.2E-06			9					470		
2	*	60355	Acetamide			2.0E-05										
3		67641	Acetone						31000					62000		
4		75865	Acetone cyanohydrin						2							
5	*	75058	Acetonitrile						60							
6	*	98862	Acetophenone						0.02							
7	*	53963	Acetylaminofluorene (2-)			1.3E-03										
8	*	107028	Acrolein						0.02					2.5		
9	*	79061	Acrylamide			1.0E-04			6							
10	*	79107	Acrylic acid						1					6000		
11	*	107131	Acrylonitrile			6.8E-05			2							
12		309002	Aldrin			4.9E-03										
13	*	107051	Allyl chloride			6.0E-06			1							
14		117793	Aminoanthraquinone (2-)			9.4E-06										
15	*	92671	Aminobiphenyl (4-)			6.0E-03										
16		7664417	Ammonia						100					3200		
17	*	62533	Aniline			1.6E-06			1					3000		
18	*	90040	Anisidine (o-)			4.0E-05										
19	**	1309644	Antimony trioxide						0.2							
20		140578	Aramite			7.1E-06										
21	*		Arsenic (inorganic)			4.3E-03			0.015					0.2		
22	**	7784421	Arsine						0.05							
23	*	1332214	Asbestos			7.7E-03										
24		103333	Azobenzene			3.1E-05										
25			Barium											0.5		
26	*	71432	Benzene			7.8E-06			3					27		
27	*	92875	Benzidine			6.7E-02										
28	**	50328	Benzo(a)pyrene			6.0E-04			0.002							
29	*	98077	Benzotrichloride			3.7E-03										
30	*	100447	Benzyl chloride			4.9E-05								240		
31	*		Beryllium			2.4E-03			0.02							
32	*	92524	Biphenyl (1,1-)						0.4							
33		108601	Bis(2-chloroisopropyl)ether			1.0E-05										
34	*	117817	Bis(2-ethylhexyl)phthalate			2.4E-06										
35	*	542881	Bis(chloromethyl)ether			6.2E-02										
36		7440428	Boron (elemental)						20							
37		7637072	Boron trifluoride						0.7							
38		74975	Bromochloromethane						40							
39		75274	Bromodichloromethane			3.7E-05										
40	*	75252	Bromoform			1.1E-06										
41		106945	Bromopropane (1-)						101					5030		
42	*	106990	Butadiene (1,3-)			3.0E-05			2					660		
43	*		Cadmium			4.2E-03			0.02							
44		105602	Caprolactam						2.2					50		
45	*	133062	Captan			6.6E-07										
46	*	75150	Carbon disulfide						700					6200		
47	*	56235	Carbon tetrachloride			6.0E-06			40					1900		
48	*	463581	Carbonyl sulfide						10					660		
49	*	57749	Chlordane			1.0E-04			0.02							
50		108171262	Chlorinated paraffins			2.0E-05										
51	*	7782505	Chlorine						0.2					210		
52		10049044	Chlorine dioxide						0.2					28		
53		75683	Chloro-1,1-difluoroethane (1-) *(HCFC-142b)*						50000							
54	*	532274	Chloroacetophenone (2-)						0.03							
55	*	108907	Chlorobenzene						1000							
56	*	510156	Chlorobenzilate			3.1E-05										
57		75456	Chlorodifluoromethane *(HCFC-22)*						50000							
58	*	67663	Chloroform			2.3E-05			300					150		
59	*	107302	Chloromethyl methyl ether			6.9E-04										
60		95830	Chloro-o-phenylenediamine (4-)			4.6E-06										
61		95692	Chloro-o-toluidine (p-)			7.7E-05										
62		76062	Chloropicrin						0.4					29		
63	*	126998	Chloroprene			5.0E-04			20							
64		75296	Chloropropane (2-)						100							
65	**		Chromic acid mists (Cr VI)						0.008							
66	**	18540299	Chromium VI (total)			1.2E-02										
67	**		Chromium VI dissolved aerosols						0.008							
68	**		Chromium VI particulates						0.1							
69	*		Cobalt			7.7E-03			0.006							
70	*	8007452	Coke oven emissions			6.2E-04										
71			Copper											100		
72		120718	Cresidine (p-)			4.3E-05										
73	*		Cresol mixtures						600							
74		98828	Cumene						400							
75		135206	Cupferron			6.3E-05										
76		110827	Cyclohexane											6000		
77	*	72559	DDE			9.7E-05										

78		50293	DDT			9.7E-05											
79		615054	Diaminoanisole (2,4-)			6.6E-06											
80		124481	Dibromochloromethane			2.7E-05											
81	*	96128	Dibromo-3-chloropropane (1,2-)			2.0E-03			0.2								
82		764410	Dichloro-2-butene (1,4-)			4.2E-03											
83		95501	Dichlorobenzene (1,2-)						200								
84	*	106467	Dichlorobenzene (1,4-)			1.1E-05			800								
85	*	91941	Dichlorobenzidine (3,3'-)			3.4E-04											
86		75718	Dichlorodifluoromethane						100								
87	*	111444	Dichloroethyl ether			3.3E-04											
88	*	542756	Dichloropropene (1,3-)			4.0E-06			20								
89	*	62737	Dichlorvos			8.3E-05			0.5								
90		77736	Dicyclopentadiene						0.3								
91		60571	Dieldrin			4.6E-03											
92			Diesel particulate matter			3.0E-04			5								
93	*	111422	Diethanolamine						3								
94		112345	Diethylene glycol monobutyl ether						0.1								
95		75376	Difluoroethane (1,1-)						40000								
96	*	77781	Dimethyl sulfate			4.0E-03											
97	*	60117	Dimethylaminoazobenzene (4-)			1.3E-03											
98	*	79447	Dimethylcarbamyl chloride			3.7E-03											
99	*	68122	Dimethylformamide (N,N-)						30								
100	*	57147	Dimethylhydrazine (1,1-)						0.002								
101		540738	Dimethylhydrazine (1,2-)			1.6E-01											
102	*	121142	Dinitrotoluene (2,4-)			8.9E-05											
103	*	123911	Dioxane (1,4-)			5.0E-06			30						3000		
104	*		Dioxin	See footnote "a"													
105	*	122667	Diphenylhydrazine (1,2-)			2.2E-04											
106	*	106898	Epichlorohydrin			1.2E-06			1						1300		
107	*	106887	Epoxybutane (1,2-)						20								
108	*	140885	Ethyl acrylate						8								
109	*	100414	Ethylbenzene			2.5E-06									1000		
110	*	51796	Ethyl carbamate			2.9E-04											
111	*	75003	Ethyl chloride												10000		
112	*	106934	Ethylene dibromide			6.0E-04			0.8								
113	*	107062	Ethylene dichloride			2.6E-05			400								
114	*	107211	Ethylene glycol						400								
115		111762	Ethylene glycol monobutyl ether						82						4700		
116	**	110805	Ethylene glycol monoethyl ether						200						370		
117	**	111159	Ethylene glycol monoethyl ether acetate						300						140		
118	**	109864	Ethylene glycol monomethyl ether						20						93		
119	**	110496	Ethylene glycol monomethyl ether acetate						90								
120	*	75218	Ethylene oxide			5.0E-03			30						42		
121	*	96457	Ethylene thiourea			1.3E-05											
122	*	151564	Ethyleneimine			1.9E-02											
123	*	75343	Ethylidene dichloride			1.6E-06			500								
124		16984488	Fluoride						13								
125	*	50000	Formaldehyde	2.3E-03	5.7E-04	1.3E-05	**7.5E-09**	**Negl.**	9	**6.4E-05**	**Negl.**	2.2E-03	0.24292	55	**4.4E-03**	**Negl.**	
126		98011	Furfural						50								
127			Gasoline vapors			1.0E-06			15								
128		111308	Glutaraldehyde						0.08						4.1		
129		765344	Glycidaldehyde						1								
130	*	76448	Heptachlor			1.3E-03											
131		1024573	Heptachlor epoxide			2.6E-03											
132	*	118741	Hexachlorobenzene			4.6E-04											
133	*	87683	Hexachlorobutadiene			2.2E-05											
134	**	319846	Hexachlorocyclohexane (alpha-)			1.8E-03											
135	**	319857	Hexachlorocyclohexane (beta-)			5.3E-04											
136	*	58899	Hexachlorocyclohexane (gamma-)			3.1E-04											
137	**	608731	Hexachlorocyclohexane (technical grade)			5.1E-04											
138	*	77474	Hexachlorocyclopentadiene						0.2								
139		19408743	Hexachlorodibenzo-p-dioxin, mixture			1.3E+00											
140	*	67721	Hexachloroethane			1.1E-05			30								
141	*	822060	Hexamethylene diisocyanate						0.03						0.3		
142	*	110543	Hexane (N-)						700								
143	*	302012	Hydrazine			4.9E-03			0.2						10		
144		10034932	Hydrazine sulfate			4.9E-03											
145	*	7647010	Hydrogen chloride						20						2100		
146	**	74908	Hydrogen cyanide						0.8						340		
147	*	7664393	Hydrogen fluoride						14						240		
148	**	7783075	Hydrogen selenide												5		
149		7783064	Hydrogen sulfide						2						98		
150	*	78591	Isophorone						2000								
151		67630	Isopropanol												3200		
152	*		Lead			1.2E-05									0.1		
153	*	108316	Maleic anhydride						0.7								
154	*		Manganese						0.05						0.17		
155	*		Mercury (elemental)						0.3								
156	*	7439976	Mercury (inorganic)						0.03						0.6		
157		126987	Methacrylonitrile						0.7								
158	*	67561	Methanol						4000						28000		
159	*	74839	Methyl bromide						5						31000		
160	*	74873	Methyl chloride			1.8E-06			90								
161	*	71556	Methyl chloroform						1000						9000		
162		78933	Methyl ethyl ketone						5000						13000		
163	*	108101	Methyl isobutyl ketone												3000		
164	*	624839	Methyl isocyanate						1								
165	*	80626	Methyl methacrylate						700								
166		25013154	Methyl styrene (mixed isomers)						40								
167	*	1634044	Methyl tert butyl ether			2.6E-07			3000								
168		108872	Methylcyclohexane						3000								
169	*	101144	Methylene bis(2-chloroaniline) (4,4'-)			4.3E-04											
170	*	75092	Methylene chloride			1.3E-08			600						14000		
171	*	101779	Methylenedianiline (4,4-)			4.6E-04			20								
172	*	101688	Methylenediphenyl diisocyanate (4,4'-)						1						12		
173	*	60344	Methylhydrazine			1.0E-03			0.02								
174		90948	Michler's ketone			2.5E-04											
175	*		Mineral fibers (<1% free silica)						24								
176	*	91203	Naphthalene			3.4E-05			3								
177	*		Nickel and compounds			4.8E-04			0.014						0.2		
178	**	1313991	Nickel oxide						0.02								
179	**		Nickel refinery dust			2.4E-04											
180	**		Nickel, soluble salts						0.2								
181	**	12035722	Nickel subsulfide			4.8E-04											
182		7697372	Nitric acid												86		
183		88744	Nitroaniline (o-)						0.05								
184	*	98953	Nitrobenzene			4.0E-05			9								
185	*	79469	Nitropropane (2-)			2.7E-03			20								
186		55185	Nitrosodiethylamine (N-)			4.3E-02											
187	*	62759	Nitrosodimethylamine (N-)			1.4E-02											
188		924163	Nitrosodi-n-butylamine (N-)			1.6E-03											
189		621647	Nitrosodi-n-propylamine (N-)			2.0E-03											
190		86306	Nitrosodiphenylamine (N-)			2.6E-06											

191		156105	Nitrosodiphenylamine (p-)			6.3E-06										
192		10595956	Nitrosomethylethylamine (N-)			6.3E-03										
193	*	59892	Nitrosomorpholine (N-)			1.9E-03										
194		759739	Nitroso-n-ethylurea (N-)			7.7E-03										
195	*	684935	Nitroso-n-methylurea (N-)			3.4E-02										
196		100754	Nitrosopiperidine (N-)			2.7E-03										
197		930552	Nitrosopyrrolidine (N-)			6.1E-04										
198	*	87865	Pentachlorophenol			5.1E-06										
199	*	108952	Phenol						200					5800		
200	*	75445	Phosgene						0.3					4		
201	*	7803512	Phosphine						0.3					70		
202	*	7664382	Phosphoric acid						10							
203	*		Phosphorus (white)						0.07							
204	*	85449	Phthalic anhydride						20							
205	*	1336363	Polychlorinated biphenyls (PCBs)			1.0E-04										
206	*		Polycylic aromatic hydrocarbons (PAHs)	See footnote "b"												
207	*		Polycylic organic matter (POM)													
208		7758012	Potassium bromate			1.4E-04										
209	*	1120714	Propane sultone (1,3-)			6.9E-04										
210	*	57578	Propiolactone (beta-)			4.0E-03										
211	*	123386	Propionaldehyde						8							
212		115071	Propylene						3000							
213	*	78875	Propylene dichloride			1.0E-05			4							
214		107982	Propylene glycol monomethyl ether						2000							
215	*	75569	Propylene oxide			3.7E-06			30					3100		
216	**		Selenium and compounds						20							
217		7631869	Silica (crystalline, respirable)						3							
218		1310732	Sodium hydroxide											8		
219	*	100425	Styrene			5.7E-07			1000					21000		
220	*	96093	Styrene oxide			4.6E-05										
221			Sulfates											120		
222		7664939	Sulfuric acid						1					120		
223	***	2699798	Sulfuryl fluoride						150					4170		
224	*	1746016	Tetrachlorodibenzo(p)dioxin (2,3,7,8-)			3.8E+01			0.00004							
225		630206	Tetrachloroethane (1,1,1,2-)			7.4E-06										
226	*	79345	Tetrachloroethane (1,1,2,2-)			5.8E-05										
227	*	127184	Tetrachloroethylene			6.1E-06			40					40		
228		811972	Tetrafluoroethane (1,1,1,2-)						80000							
229		109999	Tetrahydrofuran						2000							
230		62555	Thioacetamide			1.7E-03										
231	*	7550450	Titanium tetrachloride						0.1							
232	*	108883	Toluene						420					5000		
233	*	584849	Toluene diisocyanate (2,4-)			1.1E-05			0.02					0.07		
234	*	26471625	Toluene diisocyanate (2,4-/2,6-)			1.1E-05			0.02					0.07		
235	*	91087	Toluene diisocyanate (2,6-)			1.1E-05			0.02					0.07		
236	*	95807	Toluene-2,4-diamine			1.1E-03										
237	*	95534	Toluidine (o-)			5.1E-05										
238	*	8001352	Toxaphene			3.2E-04										
239		76131	Trichloro-1,2,2-trifluoroethane (1,1,2-)						30000							
240	*	120821	Trichlorobenzene (1,2,4-)						2							
241	*	79005	Trichloroethane (1,1,2-)			1.6E-05								200		
242	*	79016	Trichloroethylene			4.8E-06			2					2		
243		75694	Trichlorofluoromethane						700							
244	*	88062	Trichlorophenol (2,4,6-)			3.1E-06										
245	*	121448	Triethylamine						7					2800		
246	*	1582098	Trifluralin			2.2E-06										
247		526738	Trimethylbenzene (1,2,3-)						60							
248		95636	Trimethylbenzene (1,2,4-)						60							
249		108678	Trimethylbenzene (1,3,5-)						60							
250		25551137	Trimethylbenzene (1,2,3-/1,2,4-/1,3,5-)						60							
251		7440622	Vanadium						0.1					0.8		
252		1314621	Vanadium pentoxide											30		
253	*	108054	Vinyl acetate						200							
254	*	593602	Vinyl bromide			3.2E-05			3							
255	*	75014	Vinyl chloride			8.8E-06			100					180000		
256	*	75354	Vinylidene chloride						200							
257	*		Xylene (m-,o-,p-, or mixed isomers)						100					22000		

If any calculated long-term or short-term effects for an air toxic result in "Further Evaluation Required" (FER) on this Risk Screening Worksheet, a Refined Risk Assessment is required for that air toxic.

NOTE:

* **Clean Air Act hazardous air pollutant**

** **Clean Air Act hazardous air pollutant, but not listed individually (part of a group)**

*** **In addition to the Federally listed HAPs, the Department proposes to regulate hydrogen sulfide (H2S), 1-Bromopropane (1-BP), otherwise known as n-propyl bromide (n-PB), and sulfuryl fluoride, as State-specific hazardous air pollutants**

a Dioxins may be considered to be all 2,3,7,8-tetrachlorodibenzo(p)dioxin), or separated into congeners (contact AQEv).

b PAH or POM may be considered to be all benzo(a)pyrene, or separated into individual PAHs (contact AQEv).

The results are determined by comparing the long-term and short-term effects to the single-source thresholds, listed below.
The threshold value of negligible risk for incremental risk (IR) is 1 in a million (1.0E-06). An IR value less than or equal to 1 in million is considered negligible.
The threshold value of negligible risk for long-term hazard quotient (HQ) for non-carcinogenic risk is 1.0. An HQ less than or equal to 1.0 is considered negligible.
The threshold value of negligible risk for short-term hazard quotient (HQ_{st}) for non-carcinogenic risk is 1.0. An HQ_{st} less than or equal to 1.0 is considered negligible.

United Airlines, Inc.
JBT Amp Cart PTE Calculations

Engine Specifications	
Manufacturer	Cummins
Model	QS87-G9
Rating (hp)	282
Rating (kW)	207
Fuel Type	Diesel
Fuel Consumption (gal/hr)	13.5
Heat Input (MMBtu/hr)	1.89
Fuel Tank Capacity (gal)	250
Operating Parameters	
Total Operating Hours (hr/yr)	2,080
Annual Throughput (gal/yr)	28,080

Fuel Parameters	
Heating Value of Distillate Oil (Btu/gal)	140,000
Percent Weight Sulfur	0.0015
Fuel Oil Density (lb/gal)	7.05
Molecular Weight SO2 (lb/lb-mol)	64
Molecular Weight S (lb/lb-mol)	32

PTE Calculations

Criteria Pollutants	Emission Factor	Units	Source[1]	Hourly Emission Rate per Unit (lb/hr)	Annual Emission Rate per Unit (tons/yr)	Annual Emission Rate all Units (tons/yr)	Reporting Threshold[2] (lb/hr)	Reportable? (Yes/No)	SOTA Threshold[2] (tons/yr)	Exceeds SOTA? (Yes/No)
CO	2.6	g/HP-hr	Tier 4	1.616	1.681	3.362	0.05	Yes	5	No
NO_x	0.3	g/HP-hr	Tier 4	0.187	0.194	0.388	0.05	Yes	5	No
$PM_{2.5}$ / PM_{10}	0.01	g/HP-hr	Tier 4	0.006	0.006	0.013	0.05	No	5	No
NMHC (VOC)	0.14	g/HP-hr	Tier 4	0.087	0.091	0.181	0.05	Yes	5	No

HAPs	Emission Factor	Units	Source[3]	Hourly Emission Rate (lb/hr)	Annual Emission Rate (lbs/yr)	Annual Emission Rate all Units (lbs/yr)	Reporting Threshold[4] (lbs/yr)	Reportable? (Yes/No)	SOTA Threshold[4] (lbs/yr)	Exceeds SOTA? (Yes/No)
Benzene	9.33E-04	lb/MMBtu	AP-42	1.76E-03	3.67	7.34	6	No	4,000	No
Toluene	4.09E-04	lb/MMBtu	AP-42	7.73E-04	1.61	3.22	2,000	No	10,000	No
Xylenes	2.85E-04	lb/MMBtu	AP-42	5.39E-04	1.12	2.24	2,000	No	10,000	No
Propylene	2.58E-03	lb/MMBtu	AP-42	4.88E-03	10.14	20.28	N/A	No	N/A	No
1,3-Butadiene	3.91E-05	lb/MMBtu	AP-42	7.39E-05	0.15	0.31	1.5	No	140	No
Formaldehyde	1.18E-03	lb/MMBtu	AP-42	2.23E-03	4.64	9.28	3.5	Yes	4,000	No
Acetaldehyde	7.67E-04	lb/MMBtu	AP-42	1.45E-03	3.02	6.03	21	No	10,000	No
Acrolein	9.25E-05	lb/MMBtu	AP-42	1.75E-04	0.36	0.73	1	No	80	No
Total PAH	1.68E-04	lb/MMBtu	AP-42	3.18E-04	0.66	1.32	2	No	20	No

Notes:

1. Criteria pollutant emission factors are engine certified emission rates based on Tier 4 emission factors.
2. Criteria pollutant reporting thresholds and SOTA thresholds are from N.J.A.C. 7:27-8, Appendix 1, Table A.
3. HAP emission factors are from AP-42 Chapter 3.3, Table 3.3-2.
4. HAP reporting thresholds and SOTA thresholds are from N.J.A.C. 7:27-17.9, Tables 3A and 3B.