APPENDIX D

Air Quality Emissions Analysis

Table 1
Location and Utility Characteristics
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Characteristic	Description
Location Scope	County
County	Contra Costa
Climate Zone	1
Operational Year - Phase 1	2027
Operational Year - Phases 2 & 3	2040
Utility	Pacific Gas & Electric
CO_2 Intensity Factor (lbs CO_2/MWh)[1]	204
CH_4 Intensity Factor (lbs CH_4/MWh)[1]	0.033
N_2O Intensity Factor (lbs N_2O/MWh)[1]	0.004

Notes:

1. CO_2, CH_4 and N_2O Intensity Factors for PG&E are from CalEEMod® v2022.1 and conservatively represent 2019 reported data. Forecasted intensity factors were unavailable.

Abbreviations:

CalEEMod® - California Emissions Estimator Model
CO_2 - carbon dioxide
CH_4 - methane
lbs - pounds
MWh - megawatt hour
N_2O - nitrogen dioxide
PG&E - Pacific Gas & Electric

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com.

Table 2
Land Use Characteristics
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Land Use Activity	CalEEMod Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage
Phase 1					
Data Center	Industrial	Industrial Park	347	1000sqft	2.7
Parking/Hardscape	Parking	Parking Lot	188	1000sqft	4.3
Landscaping	Recreational	City Park	11	Acre	11
Substation	Industrial	Industrial Park	100	1000sqft	2.3
Phase 2					
Parking	Parking	Parking Lot	737	Spaces	6.6
Parking	Parking	Other Asphalt Surfaces	10	1000sqft	0.2
Landscaping	Recreational	City Park	20	Acre	20
Development - Variation A	Commercial	Research & Development	369	1000sqft	2.8
Development - Variation B	Industrial	Manufacturing	369	1000sqft	2.8
Development - Variation C	Industrial	Industrial Park	369	1000sqft	2.8
Development - Variation D	Commercial	Office Park	369	1000sqft	2.8
Phase 3					
Parking	Parking	Parking Lot	785	Spaces	7.1
Parking	Parking	Other Asphalt Surfaces	33	1000sqft	0.8
Landscaping	Recreational	City Park	16	Acre	16
Development - Variation A	Commercial	Research & Development	393	1000sqft	3.0
Development - Variation B	Industrial	Manufacturing	393	1000sqft	3.0
Development - Variation C	Industrial	Industrial Park	393	1000sqft	3.0
Development - Variation D	Commercial	Office Park	393	1000sqft	3.0

Abbreviations:

CalEEMod® - California Emissions Estimator Model

1000sqft - thousand square feet

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com.

Table 3
Phase 1 - Emergency Generator Information
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Generator Information

Make	Cummins
Model	QSK95-G9
USEPA Tier Equivalent	2
Generator Output at 100% Load (kilowatt)	3,213
Engine Output at 100% Load (horsepower)	4,309
Make and Model of DPF and SCR	MIRATECH ACIS-3

Pollutant	Uncontrolled Emission Factors[1] (g/bhp-hr)	Controlled Emission Factors[2] (g/bhp-hr)
NO_X	6.77	0.5
ROG	0.13	0.13
CO	0.42	0.42
PM	0.08	0.02
$PM_{2.5}$[3]	0.08	0.02
PM_{10}[3]	0.08	0.02
SO_2	0.004	0.004
CO_2[4]	526.2	526.2
CH_4[5]	0.021	0.021
N_2O[5]	0.0042	0.0042
CO_2e[6]	528	528

Notes:

1. Uncontrolled emissions factors from Cummins QSK95-G9 design criteria exhaust emission data sheet. Safety factors for NO_X, ROG, CO, and PM have been applied to make the nominal emission factors more reflective of potential site variation (i.e., worst-case) emission factors. The safety factors applied to these pollutants are: 1.3, 1.7, 2, and 2.5, respectively.
2. Emissions factors for all pollutants except NOx and PM are considered uncontrolled. Controlled emissions factors for NOx and PM obtained from MIRATECH ACIS-3 (M3-80-70-30PF-B-R4) design criteria outlet emission performance.
3. Emissions factors for PM_{10} and $PM_{2.5}$ are conservatively assumed to be equal to the PM emission factor.
4. Emissions factor from AP-42, Vol. I, Section 3.4, Table 3.4-1 for Gaseous Emission Factors for Large Stationary Diesel and All Stationary Dual Fuel Engines.
5. Emissions factors from 40 CFR 98, Subpart C, Table C-2. Petroleum emissions listed as 3 g CH_4/MMBtu and 0.6 g N_2O/MMBtu. Assumed conversion factor of 7000 Btu/hp-hr per AP-42 Vol I, Table 3.3-1.
6. Global warming potential values of 1 for CO_2, 25 for CH_4, and 298 for N_2O from USEPA's Federal Register (FR) final rule published on November 29, 2013 [78 FR 71904] and effective on January 1, 2014, were used to convert emissions to metric tons of carbon dioxide equivalents.

Abbreviations:

CH_4 - methane	hp - horsepower
CO - carbon monoxide	hr - hour
CO_2 - carbon dioxide	NO_x - nitrogen oxides
CO_2e - carbon dioxide equivalents	N_2O - nitrous oxide
DPF - Diesel Particulate Filter	PM - particulate matter
g - gram	ROG - reactive organic gases

References:

40 CFR Appendix Table C-2 to Subpart C of Part 98. Available online at: https://www.law.cornell.edu/cfr/text/40/appendix-Table_C-2_to_subpart_C_of_part_98

USEPA. 78 FR 71904 Part VI. Revisions to Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements. Available at: https://www.govinfo.gov/content/pkg/FR-2013-11-29/pdf/2013-27996.pdf

USEPA. AP-42 Vol 1, 3.4: Large Stationary Diesel And All Stationary Diesel-Fuel engines. Available at: https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s04.pdf

Table 4
Operational Energy Use Emissions
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Phase		Electricity Data						Natural Gas Data						Annual CO_2e Emitted[6] (MT/yr)
		Annual Electricity Use[1,2] (MWh/yr)	CO_2 Intensity Factor[3] (lbs/MWh)	CH_4 Intensity Factor[3] (lbs/MWh)	N_2O Intensity Factor[3] (lbs/MWh)	CO_2e Intensity Factor[4] (lbs/MWh)	CO_2e Emitted from Electricity (MT/yr)	Annual Natural Gas Use[1,2] (MMBTU/yr)	CO_2 Intensity Factor[5] (lbs/MMBtu)	CH_4 Intensity Factor[5] (lbs/MMBtu)	N_2O Intensity Factor[5] (lbs/MMBtu)	CO_2e Intensity Factor[4] (lbs/MMBtu)	CO_2e Emitted from Natural Gas (MT/yr)	
Phase 1		858,480	204	0.033	0.004	206	80,216	0	117	0.0104	0.0002	117	0	80,216
Phase 2 - Variation A	Research & Development	8,055	204	0.033	0.004	206	753	8,753	117	0.0104	0.0002	117	466	1,218
Phase 2 - Variation B	Manufacturing	4,274	204	0.033	0.004	206	399	16,139	117	0.0104	0.0002	117	859	1,258
Phase 2 - Variation C	Industrial Park	8,055	204	0.033	0.004	206	753	8,753	117	0.0104	0.0002	117	466	1,218
Phase 2 - Variation D	Office Park	8,055	204	0.033	0.004	206	753	8,753	117	0.0104	0.0002	117	466	1,218
Phase 3 - Variation A	Research & Development	8,580	204	0.033	0.004	206	802	9,324	117	0.0104	0.0002	117	496	1,298
Phase 3 - Variation B	Manufacturing	4,553	204	0.033	0.004	206	425	17,190	117	0.0104	0.0002	117	915	1,340
Phase 3 - Variation C	Industrial Park	8,580	204	0.033	0.004	206	802	9,324	117	0.0104	0.0002	117	496	1,298
Phase 3 - Variation D	Office Park	8,580	204	0.033	0.004	206	802	9,324	117	0.0104	0.0002	117	496	1,298

Notes:

1. Estimated annual electricity consumption for Phase 1 was estimated assuming a power demand of 98 megawatts. Phase 1 is not anticipated to have natural gas usage.
2. Estimated maximum annual energy consumption for Phases 2 & 3 was estimated using default values from CalEEMod® v2022.1.
3. Electricity CO_2, CH_4 and N_2O intensity factors for PG&E are from CalEEMod® v2022.1 and conservatively represent 2019 reported data.
4. Global warming potential values of 1 for CO_2, 25 for CH_4, and 298 for N_2O from USEPA's Federal Register (FR) final rule published on November 29, 2013 [78 FR 71904] and effective on January 1, 2014, were used to convert emissions to metric tons of carbon dioxide equivalents.
5. Nonresidential natural gas CO_2, CH_4 and N_2O intensity factors obtained from CalEEMod® v2022.1.
6. Annual emissions are the sum of emissions from electricity and natural gas usage.

Abbreviations:

CalEEMod® - California Emissions Estimator Model
CH_4 - methane
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalent
FR - Federal Register
kBtu - thousand British thermal units
kWh - kilowatt-hours
lbs - pounds
MMBtu - million British thermal units
MT - metric tons
MW - megawatt
MWh - megawatt-hours
N_2O - nitrogen dioxide
PG&E - Pacific Gas & Electric
yr - year

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com

USEPA. 78 FR 71904 Part VI. Revisions to Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements. Available at: https://www.govinfo.gov/content/pkg/FR-2013-11-29/pdf/2013-27996.pdf

Table 5
Operational Trips
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Phase		Estimated Daily Trips[1,2] (trips per day)
Phase 1		344
Phase 2 - Variation A	Research & Development	1,568
Phase 2 - Variation B	Manufacturing	1,568
Phase 2 - Variation C	Industrial Park	1,568
Phase 2 - Variation D	Office Park	1,568
Phase 3 - Variation A	Research & Development	1,670
Phase 3 - Variation B	Manufacturing	1,670
Phase 3 - Variation C	Industrial Park	1,670
Phase 3 - Variation D	Office Park	1,670

Notes:

1. Trip rate for Phase 1 was calculated using the building square footage and a trip rate of 0.99 trips/day/1,000 square feet per the *Trip Generation Manual* (11th Edition), ITE, 2017.

2. Trip rates for Phases 2 & 3 were calculated using the building square footage, assuming a breakdown of 80% manufacturing and 20% office, and the following trip rates from the Contra Costa Transportation Authority: 1.75 trips/day/employee (manufacturing) and 3.64 trips/day/employee (office).

Abbreviations:

CalEEMod® - California Emissions Estimator Model

sqft - square feet

Table 6
Water Usage Rates
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Land Use Activity	CalEEMod Land Use Type	Land Use Subtype	Indoor Water Usage (gal/yr)	Outdoor Water Usage (gal/yr)
Phase 1				
Data Center	Industrial	Industrial Park	15,181,410	0
Parking/Hardscape	Parking	Parking Lot	0	0
Landscaping	Recreational	City Park	0	6,208,744
Substation	Industrial	Industrial Park	0	0
Phase 2				
Parking	Parking	Parking Lot	0	0
Parking	Parking	Other Asphalt Surfaces	0	0
Landscaping	Recreational	City Park	0	10,559,109
Development - Variation A	Commercial	Research & Development	181,214,296	0
Development - Variation B	Industrial	Manufacturing	85,227,419	0
Development - Variation C	Industrial	Industrial Park	85,227,419	0
Development - Variation D	Commercial	Office Park	65,503,951	0
Phase 3				
Parking	Parking	Parking Lot	0	0
Parking	Parking	Other Asphalt Surfaces	0	0
Landscaping	Recreational	City Park	0	8,219,572
Development - Variation A	Commercial	Research & Development	193,022,818	0
Development - Variation B	Industrial	Manufacturing	90,781,119	0
Development - Variation C	Industrial	Industrial Park	90,781,119	0
Development - Variation D	Commercial	Office Park	69,772,404	0

Notes:

1. Estimated annual water usage for Phase 1 is project specific.
2. Estimated annual water usage for Phases 2 & 3 was estimated using default values from CalEEMod® v2022.1.

Abbreviations:

gal - gallons
yr - year

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com.

Table 7
Phase 1 - Operational Mass Emissions of Criteria Air Pollutants
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Emissions Source		CAP Emissions[1] [ton/year]				CAP Emissions[1] [lb/day]			
		ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total	ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total
Phase 1	Architectural Coating	0.24	--	--	--	1.3	--	--	--
	Consumer Products	1.8	--	--	--	9.9	--	--	--
	Landscaping	0.29	0.01	0.003	0.002	1.6	0.08	0.02	0.01
	Building Energy Use[2]	--	--	--	--	--	--	--	--
	Mobile Emissions	0.20	0.16	0.33	0.09	1.1	0.9	1.8	0.5
	Diesel Storage Tanks[3]	0.022	--	--	--	0.01	--	--	--
Emergency Generators[4]		1.10	4.39	0.18	0.18	6.0	24.1	0.96	0.96
Full Buildout Operational Emissions		**3.7**	**4.6**	**0.5**	**0.3**	**19.9**	**25.0**	**2.8**	**1.4**
BAAQMD Significance Threshold[6]		**10**	**10**	**15**	**10**	**54**	**54**	**82**	**54**

Notes:

1. Operational emissions estimated using CalEEMod® v2022.1 for all sources except building energy use, emergency generator usage, and diesel storage tank emissions.
2. Phase 1 will not feature any natural gas consumption.
3. Diesel storage tanks emissions were calculated using methodology consistent with AP-42, Vol. I, Section 7.1 for Liquid Storage Tanks.
4. The emissions from the emergency generators assume 37 generators operating up to 50 hours per year each.
5. Significance thresholds are from BAAQMD California Environmental Quality Act Guidelines.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
CalEEMod® - California Emissions Estimator Model
CAP - Criteria Air Pollutant
lb - pounds
NOx - nitrogen oxides
ROG - reactive organic gases
PM_{10} - particulate matter less than 10 microns
$PM_{2.5}$ - particulate matter less than 2.5 microns

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com

BAAQMD. 2022. CEQA Air Quality Guidelines. Chapter 3 - Thresholds of Significance. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-3-thresholds_final_v2-pdf.pdf?rev=a976830cce0c4a6bb624b020f72d25b3&sc_lang=en

Table 8
Phase 2 - Operational Mass Emissions of Criteria Air Pollutants
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Emissions Source		CAP Emissions[1] [ton/year]				CAP Emissions[1] [lb/day]			
		ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total	ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total
Phase 2 - Variation A Research & Development	Architectural Coating	0.20	--	--	--	1.1	--	--	--
	Consumer Products	1.5	--	--	--	8.4	--	--	--
	Landscaping	0.24	0.012	0.003	0.002	1.3	0.07	0.01	0.01
	Building Energy Use	0.02	0.429	0.033	0.033	0.1	2.35	0.18	0.18
	Mobile Emissions	0.61	0.41	1.51	0.39	3.3	2.2	8.3	2.12
Phase 2 - Variation A Operational Emissions		**2.6**	**0.8**	**1.5**	**0.4**	**14.3**	**4.6**	**8.5**	**2.3**
Phase 2 - Variation B Manufacturing	Architectural Coating	0.20	--	--	--	1.1	--	--	--
	Consumer Products	1.5	--	--	--	8.4	--	--	--
	Landscaping	0.24	0.01	0.003	0.002	1.3	0.07	0.01	0.01
	Building Energy Use	0.04	0.79	0.060	0.060	0.2	4.33	0.33	0.33
	Mobile Emissions	0.61	0.41	1.51	0.39	3.3	2.2	8.3	2.12
Phase 2 - Variation B Operational Emissions		**2.6**	**1.2**	**1.6**	**0.4**	**14.4**	**6.6**	**8.6**	**2.5**
Phase 2 - Variation C Industrial Park	Architectural Coating	0.20	--	--	--	1.1	--	--	--
	Consumer Products	1.5	--	--	--	8.4	--	--	--
	Landscaping	0.24	0.01	0.003	0.002	1.3	0.07	0.01	0.01
	Building Energy Use	0.02	0.43	0.033	0.033	0.1	2.35	0.18	0.18
	Mobile Emissions	0.61	0.41	1.51	0.39	3.3	2.2	8.3	2.12
Phase 2 - Variation C Operational Emissions		**2.6**	**0.8**	**1.5**	**0.4**	**14.3**	**4.6**	**8.5**	**2.3**
Phase 2 - Variation D Office Park	Architectural Coating	0.20	--	--	--	1.1	--	--	--
	Consumer Products	1.5	--	--	--	8.4	--	--	--
	Landscaping	0.24	0.01	0.003	0.002	1.3	0.07	0.01	0.01
	Building Energy Use	0.02	0.43	0.033	0.033	0.1	2.35	0.18	0.18
	Mobile Emissions	0.61	0.41	1.51	0.39	3.3	2.2	8.3	2.12
Phase 2 - Variation D Operational Emissions		**2.6**	**0.8**	**1.5**	**0.4**	**14.3**	**4.6**	**8.5**	**2.3**
BAAQMD Significance Threshold[2]		**10**	**10**	**15**	**10**	**54**	**54**	**82**	**54**

Notes:

1. Operational emissions estimated using CalEEMod ® v2022.1.
2. Significance thresholds are from BAAQMD California Environmental Quality Act Guidelines.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
CalEEMod® - California Emissions Estimator Model
CAP - Criteria Air Pollutant
lb - pounds
NOx - nitrogen oxides
ROG - reactive organic gases
PM_{10} - particulate matter less than 10 microns
$PM_{2.5}$ - particulate matter less than 2.5 microns

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com

BAAQMD. 2022. CEQA Air Quality Guidelines. Chapter 3 - Thresholds of Significance. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-3-thresholds_final_v2-pdf.pdf?rev=a976830cce0c4a6bb624b020f72d25b3&sc_lang=en

Table 9
Phase 3 - Operational Mass Emissions of Criteria Air Pollutants
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Emissions Source		CAP Emissions[1] [ton/year]				CAP Emissions[1] [lb/day]			
		ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total	ROG	NOx	PM_{10} Total	$PM_{2.5}$ Total
Phase 3 - Variation A Research & Development	Architectural Coating	0.21	--	--	--	1.1	--	--	--
	Consumer Products	1.61	--	--	--	8.8	--	--	--
	Landscaping	0.25	0.01	0.003	0.002	1.4	0.07	0.01	0.01
	Building Energy Use	0.03	0.46	0.03	0.03	0.1	2.50	0.19	0.19
	Mobile Emissions	0.65	0.43	1.61	0.41	3.6	2.4	8.8	2.26
Phase 3 - Variation A Operational Emissions		**2.7**	**0.9**	**1.6**	**0.4**	**15.0**	**4.9**	**9.0**	**2.5**
Phase 3 - Variation B Manufacturing	Architectural Coating	0.21	--	--	--	1.1	--	--	--
	Consumer Products	1.61	--	--	--	8.8	--	--	--
	Landscaping	0.25	0.01	0.003	0.002	1.4	0.07	0.01	0.01
	Building Energy Use	0.05	0.84	0.06	0.06	0.3	4.62	0.35	0.35
	Mobile Emissions	0.65	0.43	1.61	0.41	3.6	2.4	8.8	2.26
Phase 3 - Variation B Operational Emissions		**2.8**	**1.3**	**1.7**	**0.5**	**15.2**	**7.1**	**9.2**	**2.6**
Phase 3 - Variation C Industrial Park	Architectural Coating	0.21	--	--	--	1.1	--	--	--
	Consumer Products	1.61	--	--	--	8.8	--	--	--
	Landscaping	0.25	0.01	0.003	0.002	1.4	0.07	0.01	0.01
	Building Energy Use	0.03	0.46	0.03	0.03	0.1	2.50	0.19	0.19
	Mobile Emissions	0.65	0.43	1.61	0.41	3.6	2.4	8.8	2.26
Phase 3 - Variation C Operational Emissions		**2.7**	**0.9**	**1.6**	**0.4**	**15.0**	**4.9**	**9.0**	**2.5**
Phase 3 - Variation D Office Park	Architectural Coating	0.21	--	--	--	1.1	--	--	--
	Consumer Products	1.61	--	--	--	8.8	--	--	--
	Landscaping	0.25	0.01	0.003	0.002	1.4	0.07	0.01	0.01
	Building Energy Use	0.03	0.46	0.03	0.03	0.1	2.50	0.19	0.19
	Mobile Emissions	0.65	0.43	1.61	0.41	3.6	2.4	8.8	2.26
Phase 3 - Variation D Operational Emissions		**2.7**	**0.9**	**1.6**	**0.4**	**15.0**	**4.9**	**9.0**	**2.5**
BAAQMD Significance Threshold[2]		**10**	**10**	**15**	**10**	**54**	**54**	**82**	**54**

Notes:

1. Operational emissions estimated using CalEEMod® v2022.1.
2. Significance thresholds are from BAAQMD California Environmental Quality Act Guidelines.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
CalEEMod® - California Emissions Estimator Model
CAP - Criteria Air Pollutant
lb - pounds
NOx - nitrogen oxides
ROG - reactive organic gases
PM_{10} - particulate matter less than 10 microns
$PM_{2.5}$ - particulate matter less than 2.5 microns

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com

BAAQMD. 2022. CEQA Air Quality Guidelines. Chapter 3 - Thresholds of Significance. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-3-thresholds_final_v2-pdf.pdf?rev=a976830cce0c4a6bb624b020f72d25b3&sc_lang=en

Table 10
Phase 1 - Operational Mass Emissions of Greenhouse Gases
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Emissions Source		GHG Emissions[1] MT CO_2e/yr
Phase 1	Landscaping	6.6
	Data Center Energy Use[2]	80,216
	Water Use	33
	Waste Disposed	174
	Refrigerant Usage	19
	Mobile Emissions	321
Total GHG Emissions During Full Buildout (Excluding Emergency Generators)		**80,770**

Emissions Source	GHG Emissions[3] MT CO_2e/yr
Emergency Generators	4,209
BAAQMD Stationary Source Threshold[4]	**10,000**

Notes:

1. Operational emissions estimated using CalEEMod® v2022.1 for all sources except building energy use and emergency generator usage.
2. Data center energy use was calculated based on maximum energy use projections and PG&E carbon intensity factors.
3. Calculated based on emission factors from AP-42 Chapter 3.4 Table 3.4-1 (Large Stationary Diesel and All Stationary Dual-fuel Engines) and scaled by engine horsepower, proposed annual operating hours, and number of proposed generators.
4. Significance thresholds are from BAAQMD California Environmental Quality Act Guidelines.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
CalEEMod® - California Emissions Estimator Model
CEQA - California Environmental Quality Act
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
MT - metric ton
yr - year

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com

BAAQMD. 2022. CEQA Air Quality Guidelines. Chapter 3 - Thresholds of Significance. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-3-thresholds_final_v2-pdf.pdf?rev=a976830cce0c4a6bb624b020f72d25b3&sc_lang=en

USEPA. AP-42 Chapter 3.4. Large Stationary Diesel and All Stationary Dual-fuel Engines. Available at: https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s04.pdf

Table 11
Phase 2 - Operational Mass Emissions of Greenhouse Gases
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Emissions Source		GHG Emissions[1] MT CO_2e/yr
Phase 2 - Variation A Research & Development	Landscaping	5.4
	Building Energy Use	1,218
	Water Use	361
	Waste Disposed	9.3
	Refrigerant Usage	1.6
	Mobile Emissions	1,208
Phase 2 - Variation A GHG Emissions		**2,804**
Phase 2 - Variation B Manufacturing	Landscaping	5.4
	Building Energy Use	1,258
	Water Use	172
	Waste Disposed	143
	Refrigerant Usage	15.9
	Mobile Emissions	1,208
Phase 2 - Variation B GHG Emissions		**2,803**
Phase 2 - Variation C Industrial Park	Landscaping	5.4
	Building Energy Use	1,218
	Water Use	172
	Waste Disposed	143
	Refrigerant Usage	15.9
	Mobile Emissions	1,208
Phase 2 - Variation C GHG Emissions		**2,763**
Phase 2 - Variation D Office Park	Landscaping	5.4
	Building Energy Use	1,218
	Water Use	134
	Waste Disposed	108
	Refrigerant Usage	0.1
	Mobile Emissions	1,208
Phase 2 - Variation D GHG Emissions		**2,673**

Notes:

1. Operational emissions estimated using CalEEMod® v2022.1.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
CalEEMod® - California Emissions Estimator Model
CEQA - California Environmental Quality Act
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
MT - metric ton
yr - year

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com

BAAQMD. 2022. CEQA Air Quality Guidelines. Chapter 3 - Thresholds of Significance. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-3-thresholds_final_v2-pdf.pdf?rev=a976830cce0c4a6bb624b020f72d25b3&sc_lang=en

Table 12
Phase 3 - Operational Mass Emissions of Greenhouse Gases
Pittsburg Technology Park Specific Plan
Pittsburg, CA

Emissions Source		GHG Emissions[1] MT CO_2e/yr
Phase 3 - Variation A Research & Development	Landscaping	5.8
	Building Energy Use	1,298
	Water Use	383
	Waste Disposed	9.7
	Refrigerant Usage	1.7
	Mobile Emissions	1,286
Phase 3 - Variation A GHG Emissions		**2,985**
Phase 3 - Variation B Manufacturing	Landscaping	5.8
	Building Energy Use	1,340
	Water Use	182
	Waste Disposed	152
	Refrigerant Usage	16.9
	Mobile Emissions	1,286
Phase 3 - Variation B GHG Emissions		**2,984**
Phase 3 - Variation C Industrial Park	Landscaping	5.8
	Building Energy Use	1,298
	Water Use	182
	Waste Disposed	152
	Refrigerant Usage	16.9
	Mobile Emissions	1,286
Phase 3 - Variation C GHG Emissions		**2,942**
Phase 3 - Variation D Office Park	Landscaping	5.8
	Building Energy Use	1,298
	Water Use	141
	Waste Disposed	114
	Refrigerant Usage	0.2
	Mobile Emissions	1,286
Phase 3 - Variation D GHG Emissions		**2,845**

Notes:

1. Operational emissions estimated using CalEEMod® v2022.1.

Abbreviations:

BAAQMD - Bay Area Air Quality Management District
CalEEMod® - California Emissions Estimator Model
CEQA - California Environmental Quality Act
CO_2e - carbon dioxide equivalent
GHG - greenhouse gas
MT - metric ton
yr - year

References:

CAPCOA. 2022. California Emissions Estimator Model. Available at: http://www.caleemod.com

BAAQMD. 2022. CEQA Air Quality Guidelines. Chapter 3 - Thresholds of Significance. Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-guidelines-2022/ceqa-guidelines-chapter-3-thresholds_final_v2-pdf.pdf?rev=a976830cce0c4a6bb624b020f72d25b3&sc_lang=en

D-1 BAAQMD thresholds

These guidelines are nonbinding recommendations, intended to assist lead agencies with navigating the CEQA process. They may be updated as needed in the future, and any updates will likewise be nonbinding and advisory.

3 THRESHOLDS OF SIGNIFICANCE

The Bay Area Air Quality Management District's (Air District's) 2022 California Environmental Quality Act (CEQA) Guidelines (Guidelines) present the recommended thresholds of significance for air quality and climate impacts. Although the air quality thresholds of significance remain unchanged from those adopted in 2010 (see Appendix A), the thresholds of significance for climate impacts from greenhouse gas (GHG) emissions (thresholds of significance for GHG emissions) were updated in 2022 (see Appendix B). The update to the climate impacts thresholds of significance reflects substantive changes to assumptions, underlying data, analytical methodologies, state and local policies and programs, and court decisions regarding GHG emissions since June 2010. Additionally, global climate change poses urgent risks to public health and air quality, exacerbating and bringing existing inequities into focus and prominence. Addressing climate change is a priority of the Air District, State of California, and Bay Area jurisdictions. Taking strong legislative, regulatory, and programmatic action to achieve deep GHG reductions is critical to the health of people and the planet.

The thresholds of significance are presented below. Table 3-1 includes the project-level thresholds of significance for air quality impacts, Table 3-2 the project-level thresholds of significance for climate impacts, Table 3-3 and Table 3-4 the plan-level thresholds of significance for air quality and climate impacts of local long-range and regional plans, respectively.

3.1 FRAMEWORK FOR ANALYZING IMPACTS UNDER CEQA

The central requirement of the CEQA environmental analysis is to determine whether implementing a project will result in any significant adverse impact on the environment, either individually or cumulatively.

This mandate requires the lead agency first to evaluate whether the project will have a significant impact by itself and then to consider whether the project may contribute to a significant cumulative impact in conjunction with other past, present, and reasonably foreseeable future projects that also contribute to the impact.[1]

In the cumulative context, the analysis has two parts. To evaluate cumulative impacts, the lead agency must assess (1) whether the overall cumulative impact will be significant and, (2) if the overall impact is significant, whether the project's incremental contribution will be cumulatively considerable, as explained in more detail below. Section 15064(h)(1) of the CEQA Guidelines states:

> *When assessing whether a cumulative effect requires an EIR [environmental impact report], the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable. An EIR must be prepared if the cumulative impact may be significant and the project's incremental effect, though individually limited, is cumulatively considerable.*

Both parts of this test must be met for a project's impact to be treated as significant under CEQA. If the overall cumulative impact does not rise to the level of a "significant" impact, or if the project's incremental contribution is not cumulatively considerable, then the project's impact is not treated as significant. (See *San Francisco Baykeeper, Inc. v. State Lands Commission* [2015] [242 Cal.App.4th 202, 222] [project not significant if "the cumulative impact is insignificant or if the project's incremental contribution to the impact is not cumulatively considerable"]; see also State CEQA Guidelines Sections 15130[a][3] and 15064[h].)

Cumulatively considerable means that the incremental effect of the specific project under review will be significant when viewed in the context of the overall cumulative problem (State CEQA Guidelines Section 21083[b][2]). Notably, lead agencies must not diminish a project's individual pollution load by comparing its size to a much larger cumulative problem. Such a comparative approach (or "ratio theory") can improperly trivialize the project's emissions as *de minimis* and foreclose the possibility of finding that the project's contribution is cumulatively considerable. Instead, "the greater the existing environmental problems are, the lower the threshold should be for treating a project's contribution to cumulative impacts as significant." (*Communities for a Better Environment v. California Resources Agency* [2002] 103 Cal.App.4th 98, 120.) That said, CEQA does not require that any incremental addition to a significant cumulative impact, no matter how small, must necessarily be treated as cumulatively considerable. The statute does not require a so-called "one additional molecule" standard, and some projects' incremental contributions would be so minor that their impact does not have to be treated as significant even though the projects would add an additional amount to the significant cumulative impact (*Ibid*.; see also State CEQA Guidelines Section 15064[h][4].) The level at which the incremental addition becomes cumulatively considerable will depend on the nature of the particular cumulative impact being evaluated. The ultimate test is whether any additional amount should be considered significant in the context of the existing cumulative effect. (CEQA Section 21083[b][2]).)

[1] A cumulative impact is the change in the environment that results from the incremental impact of the project under review in conjunction with other past, present, and reasonably foreseeable probable future projects (CEQA Guidelines Section 15355).

Applying these principles, the environmental impact analysis under CEQA is a four-step process:

- Step One: **Determine the level at which an impact on the environmental resource under consideration becomes "significant."** This is the touchstone for assessing whether the project may have a significant impact individually or may contribute to a cumulative impact that is significant. The level at which the impact becomes significant will depend on the nature of the environmental resource being evaluated.
- Step Two: **Evaluate whether the project under review would degrade the environmental resource to such an extent that there would be an impact exceeding the "significant" level determined during Step One**. If implementing the project would cause an impact to exceed that level all by itself, then the project's impact is treated as significant under CEQA, and the project requires preparation of an EIR, implementation of feasible mitigation measures to reduce the impact to a less-than-significant level, and consideration of alternatives that would avoid or lessen any significant impacts. If the project under review would not degrade the environmental resource to such an extent that there would be a significant impact, the analysis proceeds to Step Three.
- Step Three: **Determine whether the contribution of the project combined with the contributions of all other past, present, and reasonably foreseeable future projects would exceed the "significant" level determined during Step One.** If implementing the project would not cause a significant impact by itself, it still must be evaluated to determine whether it would make a cumulatively considerable contribution to a significant cumulative impact. The first element of that analysis is to assess the overall cumulative impact caused by the project in conjunction with other past, present, and reasonably foreseeable future projects affecting the same resource. If the overall cumulative impact exceeds the "significant" level determined during Step One, then the project would contribute to a significant cumulative impact, and the analysis proceeds to Step Four to determine whether that contribution is cumulatively considerable.
- Step Four: **Determine whether the project's incremental contribution is cumulatively considerable.** The final step is to determine whether the project's incremental contribution is cumulatively considerable in light of the overall cumulative impact. If implementing the project would make a cumulatively considerable contribution to a significant cumulative impact, the impact is considered significant under CEQA, and the agency must prepare an EIR, impose feasible mitigation measures to bring the incremental contribution below the cumulatively considerable level, and consider alternatives.

3.2 AIR QUALITY IMPACTS (PROJECT LEVEL)

The San Francisco Bay Area Air Basin is currently designated as a nonattainment area for the California and national ambient air quality standards for ozone and particulate matter. A number of criteria and non-criteria pollutants, such as volatile organic compounds, particulate matter (PM), and nitrogen oxides (NOx), and toxic air contaminants (TACs), also carry local health risks to surrounding communities. With these effects in mind, if a project exceeds the identified project-level thresholds of significance, its emissions would result in a significant adverse air quality impact.

The thresholds of significance for risks and hazards were designed to ensure that no individual project (or source) creates a significant adverse impact and that no sensitive receptor endures a significant adverse

impact from any individual project. Additionally, the thresholds of significance recognize that some areas are already near or at levels of significant impact.

Moreover, the accidental release of acutely hazardous air pollutants can have significant health impacts if acutely hazardous materials are stored or used near receptors. The Air District recommends, at a minimum, that the lead agency in consultation with the administering agency of the Risk Management Prevention Program find any project that would expose receptors to Emergency Response Planning Guidelines (ERPG) exposure level 2[2] would have a significant air quality impact.

For more information on issues associated with locating sensitive land uses in areas with high levels of air pollution (i.e., "receptor thresholds") see Section 3.5 below.

Table 3-1 Air Quality Thresholds of Significance (Project Level)

	Construction Related*	Operational	
Criteria Air Pollutants and Precursors (Regional)			
Pollutant	**Average Daily Emissions (lb/day)**	**Average Daily Emissions (lb/day)**	**Maximum Annual Emissions (tpy)**
ROG	54	54	10
NO_X	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best management practices**	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
Local Risks and Hazards			
Risks and hazards for new sources and receptors (cumulative threshold)	Same as operational thresholds	Cancer Risk: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (chronic, from all local sources) $PM_{2.5}$: > 0.8 µg/m3 annual average (from all local sources)	*OR* Compliance with Qualified Community Risk Reduction Plan
Risks and hazards for new sources and receptors (individual project)	Same as operational thresholds	Increased Cancer Risk >10.0 in a million Increased Non-cancer > 1.0 Hazard Index (chronic or acute) PM2.5 increase: > 0.3 µg/m^3 annual average	*OR* Compliance with Qualified Community Risk Reduction Plan

[2] ERPG exposure level 2 is defined as "the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action." See https://response.restoration.noaa.gov/oil-and-chemical-spills/chemical-spills/resources/emergency-response-planning-guidelines-erpgs.html.

	Construction Related*	Operational
Accidental release of acutely hazardous air pollutants		
	None	Storage or use of acutely hazardous materials locating near receptors or new receptors locating near stored or used acutely hazardous materials considered significant
Odors		
	None	Five confirmed complaints per year averaged over 3 years

Notes: µg/m3 = micrograms per cubic meter; CO = carbon monoxide; lb/day = pounds per day; NO_X = oxides of nitrogen; $PM_{2.5}$= fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppm = parts per million; ROG = reactive organic gases; TACs = toxic air contaminants; tpy = tons per year; VMT =vehicle miles traveled.

The air quality project-level thresholds of significance were adopted by the Air District's Board of Directors on June 2, 2010.

* The Air District recommends for construction projects that require less than 1 year to complete, lead agencies should annualize impacts over the scope of actual days that peak impacts would occur rather than over the full year. Additionally, for phased projects that results in concurrent construction and operational emissions. Construction-related exhaust emissions should be combined with operational emissions for all phases where construction and operations overlap.

** PM_{10}/$PM_{2.5}$ (fugitive dust) is also recognized to impact local communities. The Air District strongly recommends implementing all feasible fugitive dust management practices especially when construction projects are located near sensitive communities, including schools, residential areas, or other sensitive land uses. These measures are detailed in Chapter 5, Section 5.2.2 Construction-Related Criteria Air Pollutant Emissions.

3.3 CLIMATE IMPACTS FROM GREENHOUSE GAS EMISSIONS (PROJECT LEVEL)

Evaluating climate impacts under CEQA can be challenging because global climate change is inherently a cumulative problem. Climate change is not caused by any individual emission source but by a large number of sources around the world emitting GHGs that collectively create a significant cumulative impact. Climate change impacts may include an increase in extreme heat days, higher concentrations of air pollutants, sea level rise, impacts on water supply and water quality, increased frequency of wildfires, public health impacts, impacts on ecosystems, impacts on agriculture, and other environmental impacts. No single project could generate enough GHG emissions to noticeably change the global climate. The combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

The Air District's approach to developing thresholds of significance for climate impacts is to use a "fair share" approach for determining whether an individual project's GHG emissions would be cumulatively considerable.[3] If a project would contribute its "fair share" of what is needed to achieve the State's long-term GHG reduction goals, then the lead agency can find that the project is adequately contributing to solving the problem of global climate change and that project's impact is not significant. Using this

[3] The California Supreme Court endorsed this approach in *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204.

approach, the Air District has identified the necessary design elements required of new land use projects and plans being built today in order to achieve California's long-term climate goal of carbon neutrality by 2045. If these design elements are incorporated into the design and construction of a project, then the project would contribute its portion of what is necessary to achieve California's long-term climate goals—its "fair share"—and a lead agency reviewing the project under CEQA can conclude that the project would not make a cumulatively considerable contribution to global climate change. Alternatively, a project for which these design elements are not implemented could still be determined to make a less-than-significant contribution of GHG emissions by demonstrating consistency with a local GHG reduction strategy that is consistent with state guidance (State CEQA Guidelines Section 15183.5[b]). Table 3-2 summarizes the thresholds of significance for project-level climate impacts from GHG emissions.

Table 3-2 Climate Impact Thresholds of Significance (Project Level)

Thresholds of Significance for Land Use Projects (Must Include A or B)
A. Projects must include, at a minimum, the following project design elements: 1. Buildings a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development). b. The project will not result in any wasteful, inefficient, or unnecessary energy use as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines. 2. Transportation a. The project will achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target that reflects the recommendations provided in the Governor's Office of Planning and Research's *Technical Advisory: Evaluating Transportation Impacts in CEQA*: i. Residential projects: 15 percent below the existing VMT per capita ii. Office projects: 15 percent below the existing VMT per employee iii. Retail projects: no net increase in existing VMT b. The project will achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.
B. Projects must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Note: The project-level thresholds of significance for climate impacts were adopted by the Air District's Board of Directors on April 20, 2022.

3.4 PLAN-LEVEL THRESHOLDS OF SIGNIFICANCE

Plan-level thresholds of significance were developed to assist lead agencies with determining significance for long-range local and regional plans. Local long-range plans are discretionary, program-level planning activities, such as general plans and general plan elements, specific plans, area plans, community plans, congestion management plans, and annexations of lands and service areas.

Regional plans are different from long-range local plans because of their unique characteristics and because they do not establish land use designations. Regional plans include the Regional Transportation Plan (i.e., Plan Bay Area) prepared by the Metropolitan Transportation Commission/Association of Bay Area

Governments. Thresholds of significance for long-range plans and for regional plans are presented in Table 3-3 and Table 3-4, respectively.

Table 3-3 Local Long-Range Plan Thresholds of Significance

	Construction Related	Operational
Criteria Air Pollutants (Regional)	None	1. Consistency with current air quality plan control measures, and 2. Project VMT or vehicle trip increase less than or equal to projected population increase
Local Risks and hazards	None	1. Overlay zones around existing and planned sources of TACs (including adopted Risk Reduction Plan areas), and 2. Overlay zones of at least 500 feet from all freeways and high-volume roadways
Accidental release of acutely hazardous air pollutants	None	None
Odors	None	Identify the location, and include policies to reduce the impacts, of existing or planned sources of odors
Climate Impacts	None	1. Meet State's goals to reduce emissions to 40% below 1990 levels by 2030 and carbon neutrality by 2045; or 2. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b)

Notes: TAC = toxic air contaminant; VMT = vehicle miles traveled.

The plan-level thresholds of significance for criteria air pollutants, risks and hazards, accidental release of acutely hazardous air pollutants, and odors were adopted by the Air District's Board of Directors on June 2, 2010. The plan-level threshold of significance for climate impacts was adopted by the Air District's Board of Directors on April 20, 2022.

Table 3-4 Regional Plan Thresholds of Significance

Pollutant	Construction Related	Operational
Criteria air pollutants, risks and hazards, and greenhouse gases	None	No net increase in emissions

Note: The plan-level thresholds of significance for regional plans were adopted by the Air District's Board of Directors on June 2, 2010.

3.5 APPLICATION OF RISK AND HAZARDS THRESHOLDS TO NEW RECEPTORS

The risk and hazard thresholds apply in determining whether a new source of pollution will result in unacceptable risks to the community. In some instances, they may also be applied to determine if there will be unacceptable risks to *new receptors* of air pollution—i.e., future users of a project, including future residents and workers. The following addresses how analysis of the environment's impact on a project's future users fits into the CEQA framework and when it may be appropriate to use the risks and hazards thresholds to evaluate impacts on a project's future users.

CEQA generally does not require analysis of how the environment may impact a project's future users, including residents and workers (*California Building Industry Assn. v. Bay Area Air Quality Management*

Dist. (2015) 62 Cal.4th 369, 386 (*CBIA*)). Thus, in most situations, it would be improper under CEQA to assess the effect of existing air pollution on future users of a project. Although a lead agency may not require an EIR or mitigation solely on the basis that future project users may be exposed to air pollution that exceeds the receptor thresholds, they can consider how existing conditions may impact future project users. (*Id.*, at p. 387 fn. 12.). Additionally, lead agencies can consider other regulatory authorities outside of CEQA, such as police powers, when seeking to address concerns related to future project users.

Moreover, there are several statutory exceptions to the general rule. As noted in *CBIA*, CEQA requires analysis of new receptors being exposed to existing environmental hazards "in several specific contexts involving certain airport (State CEQA Guidelines Section 21096) and school construction projects (State CEQA Guidelines Section 21151.8), and some housing development projects (State CEQA Guidelines Sections 21159.21[f], [h]; 21159.22[a], [b][3]; 21159.23[a][2][A]; 21159.24[a][1], [3]; 21155.1[a][4], [6])." (*Id*. at 391.) Additionally, in *CBIA*, the Supreme Court explained that it is proper for environmental review to analyze a project's potential to exacerbate existing conditions (*id*. at 388-389). "Because this type of inquiry still focuses on the project's impacts on the environment—how a project might worsen existing conditions—directing an agency to evaluate how such worsened conditions could affect a project's future users or residents is entirely consistent with this focus and with CEQA as a whole." (*Id*. at 389.) Accordingly, in these situations, a lead agency may choose to rely on the receptor thresholds to not only analyze the impact of the project on the environment, but also to analyze impacts on future users. (See *California Building Industry Assn. v. Bay Area Air Quality Management Dist*. (2016) 2 Cal.App.5th 1067, 1082-1087.)