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CEC Submittal

Equinix Great Oaks South Revised Emissions and Modeling Assessment

San Jose, California

Prepared for

Prepared by

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Revised Analyses for Air Quality and Public Health for Operations and Construction

Based on the recent Bay Area Air Quality Management District (BAAQMD) requirements for emergency diesel generators greater than 1,000 horsepower (hp), Equinix has updated the following analyses to reflect the new BAAQMD requirement which will now utilize Environmental Protection Agency (EPA) Tier 4 engines greater than 1,000 brake horsepower (bhp). The Applicants decision to incorporate Tier 4 diesel emergency generators will result in an annual readiness and maintenance testing schedule per year per engine which would be comprised of 20 hours per year (per engine). While the use of Tier 4 diesel emergency generators will greatly reduce the emissions of oxides of nitrogen (NO_x) and diesel particulate matter (DPM), during the routine testing of the engines, the catalyst used to control NO_x may not be fully controlling the emissions during a short period of time (approximately 15 minutes) after the initial startup of each engine. After the initial 15-minute catalyst warmup period, the catalyst is expected to be at the temperatures needed for full NO_x Tier 4 NO_x control. The diesel particulate filter (DPF) has no warmup requirements and will meet the Tier 4 particulate matter limits during all minutes of each operational period. Additionally, the maintenance and readiness testing (M&R) could occur at loads in the range of 10% to 100%. Based on the range of loads during the M&R testing, it was assumed that the use of EPA Tier 2 D2 cycle emissions would still be the most representative way to quantify emissions during these M&R testing hours with the use of Tier 4 emissions rates for the emergency operation as discussed below. While the project will utilize Tier 4 engines, the continued use of Tier 2 D2 cycle emission factors for the 20 hours of readiness testing would be a conservative estimate of project impacts. For emergency operations, 30 out of the 36 QSK95 engines will be operational with all three (3) of the smaller QSX15 engines. Two emergency scenarios were used for the purposes of implementing BAAQMD policy guidance relating to emission offset screening estimates:

- **Scenario 1 CEC** – QSK95 Engines - Maintenance and readiness testing will be limited to 20 hours/yr and will be based on EPA Tier 2 D2 cycle emissions rates at 100% load, with diesel particulate matter (DPM) limited through the use of diesel particulate filters (DPF) in order to achieve the Tier 4 controls. In accordance with BAAQMD policy guidance emergency emissions offset screening estimates are based on 30 engines with a total runtime of 100 hours/yr, at 100% load, with emergency periods allocated to 3-hour blocks. Each 3-hour period will consist of a 15-minute (0.25 hr) startup or warmup period (Tier 2 D2 cycle) followed by 2.75 hours of steady state operations at the Tier 4 limits. The 1-hour startup period will be evaluated using composite weighted emissions factors based on EPA Tier 2 D2 cycle and Tier 4 limits (with DPFs).

  QSX15 Engines – emissions for maintenance and readiness testing and emergency operations will be based on the 20- and 100-hour runtimes using the EPA Tier 2 D2 cycled weighted emissions factors (with DPFs) as previously submitted. These engines are less than 1,000 hp and are not subject to the Tier 4 requirements. However, the engines will utilize DPF to control DPM. There are no changes to the emissions from the previous analyses.

- **Scenario 2 BAAQMD** – QSK95 Engines - Maintenance and readiness testing will be limited to 20 hours/yr and the emissions will be based on EPA Tier 2 D2 cycle emissions rates at 100% load, with DPM limited through the use of DPFs. In accordance with BAAQMD policy guidance emergency emissions offset screening estimates are based on 30 engines with a total runtime of 100 hours/yr at 100% load using Tier 4 emissions factors for all pollutants.

QSX15 Engines – emissions for maintenance and readiness testing and emergency operations will be based on the 20- and 100-hour runtimes using the EPA Tier 2 D2 cycled weighted emissions factors (with DPFs) as previously submitted. There are no changes to the emissions from the previous analyses.

The tables which follow have been revised for the revised emissions factors, support data, and operational hour scenarios. In addition, the emissions, air quality impacts, and HRA results for the construction/operations overlap period are also included in several the following tables.

Attachment 1A includes the emission support data.

Table 1A Scenario 1 CEC						
Period	**NO_x**	**CO**	**VOC**	**SO_2**	**$PM_{10}/PM_{2.5}$**	**CO_2e**
QSK95 Engines M&R Testing						
1 Engine lbs/hr	44.92	5.10	2.35	0.05	0.15	-
1 Engine lbs/day	44.92	5.10	2.35	0.05	0.15	-
1 Engine TPY	0.446	0.051	0.023	0.001	0.002	50.3
6 Engines Lbs/day	267.7	30.6	14.1	0.31	0.92	-
All Engines TPY	16.06 (5.39)*	1.84	0.85	0.02	0.06	1811
QSK95 Engines Emergency Ops						
1st Hour Lbs/yr	498.9	170.0	55.3	1.70	5.10	-
Remaining Hours lbs/hr	340.5	340.5	95.34	3.40	10.21	-
1 Engine Total lbs/yr	839.4	510.5	150.6	5.10	15.3	-
1 Engine Max lbs/3 hr period	20.1	10.2	3.1	0.10	0.31	-
30 Engines Max lbs/3 hr period	602.6	306.3	92.7	3.06	9.2	-
Emergency Ops TPY	12.59	7.66	2.26	0.08	0.23	7547
Total TPY	**28.7 (17.98)***	**9.5**	**3.1**	**0.09**	**0.28**	**9359**

Scenario 1 CEC- see description of scenario above.

* The 5.39 tpy scenario represents the use of the composite emission factor which allows for 15 minutes of catalyst warmup.

Table 1B Scenario 1 BAAQMD						
Period	**NO_x**	**CO**	**VOC**	**SO_2**	**$PM_{10}/PM_{2.5}$**	**CO_2e**
QSK95 Engines M&R Testing						
1 Engine lbs/hr	44.92	5.1	2.35	0.05	0.15	-
1 Engine lbs/day	44.92	5.1	2.35	0.05	0.15	-
1 Engine TPY	0.446	0.051	0.023	0.001	0.002	50.3
6 Engines Lbs/day	267.7	30.6	14.1	0.31	0.92	-
All Engines TPY	16.06 (5.39)*	1.84	0.85	0.02	0.06	1811
QSK95 Engines Emergency Ops						
1 Engine lbs/hr	5.10	5.10	1.43	0.05	0.15	-
1 Engine lbs/day	122.5	122.5	34.3	1.23	3.68	-
1 Engine TPY	0.255	0.255	0.071	0.003	0.008	252
30 Engines lbs/hr	153.15	153.15	42.88	1.53	4.6	-
30 Engines lbs/day	3675.5	3675.5	1029.1	36.8	110.3	-
30 Engines TPY	7.66	7.66	2.14	0.077	0.23	7547
Total TPY	**23.72 (13.05)****	**9.49**	**2.99**	**0.09**	**0.28**	**9359**

Scenario 2 BAAQMD- see description of scenario above.

* The 5.39 tpy scenario represents the use of the composite emission factor which allows for 15 minutes of catalyst warmup.

** Total with composite emission factor in place of the Tier 2 D2 cycle weighted emissions factor data

Table 2 QSX15 Engine Emissions						
Period	**NO_x**	**CO**	**VOC**	**SO_2**	**$PM_{10}/PM_{2.5}$**	**CO_2e**
QSX15 Engines M&R Testing						
1 Engine lbs/hr	5.98	0.645	0.306	0.008	0.024	-
1 Engine lbs/day	5.98	0.645	0.306	0.008	0.024	-
1 Engine TPY	0.06	0.006	0.003	0.0001	0.0001	7.7
3 Engines lbs/day	17.94	1.934	0.92	0.024	0.073	-
3 Engines TPY	0.18	0.02	0.009	0.0002	0.0007	23
QSX15 Engines Emergency OPs						
1 Engine lbs/hr	5.98	0.645	0.306	0.008	0.024	-
1 Engine lbs/day	143.5	15.5	7.35	0.19	0.58	-
1 Engine TPY	0.299	0.032	0.015	0.0001	0.001	38.5
3 Engines lbs/hr	17.94	1.934	0.92	0.024	0.073	-
3 Engines lbs/day	430.5	46.4	22.05	0.58	1.74	-
3 Engines TPY	0.897	0.097	0.046	0.001	0.004	116
Total TPY	**1.08**	**0.116**	**0.055**	**0.001**	**0.004**	**139**
See scenario descriptions above.						

Table 3 BAAQMD 120 Hour per Year Emissions Summation (tons per year)						
Engines	**NO_x**	**CO**	**VOC**	**SO_2**	**$PM_{10}/PM_{2.5}$**	**CO_2e**
QSK95	23.72 (13.05)*	9.49	2.99	0.09	0.28	9359
QSX15	1.08	0.116	0.055	0.001	0.004	139
Total All Sources	24.8 (14.13)**	9.6	3.0	0.09	0.28	9498

See BAAQMD scenario description above.

These values are NOT the NSR applicability values.

* The 5.39 tpy scenario represents the use of the composite emission factor which allows for 15 minutes of catalyst warmup.

** Total with composite emission factor in place of the Tier 2 D2 cycle weighted emissions factor data

Table 4 Toxic Air Contaminant (DPM) Emissions from the Proposed Engines (per engine basis) Maintenance and Readiness Testing	
Scenario	**QSK95**
Maximum Annual, lbs/yr	3.06
Maximum Hourly, lbs	0.153
Scenario	**QSX15**
Maximum Annual, lbs/yr	0.48
Maximum Hourly, lbs	0.024
Notes: DPM is the approved surrogate compound for diesel fuel combustion for purposes of health risk assessment. DPM emission factor based on 0.015 g/bhp-hr	

Table 5 Engine Fuel Use Values-Maintenance and Readiness Testing	
Scenario	**Fuel Use, gallons (per engine basis)**
QSK95 Maximum Annual, gals/yr	4440
QSK95 Maximum Hourly, gals/hr	222
QSX15 Maximum Annual, gals/yr	680
QSX15 Maximum Hourly, gals/hr	34
Annual gallons based on 20 hrs/yr at 100% load.	
Total Annual Fuel Use (All Engines)	
Annual Fuel Use, gals/yr	161,880

Revised Impact Assessment

The following tables summarize the revised modeled concentrations based on the 20 hours per year of operation and the use of DPF, with the exception of the operational HRA where the engines were assumed to operate 50 hours per year (with DPF). The use of the Tier 4 engines will require post combustion controls in the form of Selective Catalytic Reduction (SCR). The use of SCR will increase the stack exit diameter to 34 inches and will increase the stack exit temperature to 872 degrees Fahrenheit. The revised exhaust flow rate is 23,910 cubic feet per minute (cfm). The placement and stack heights of each engine have not been modified.

The new stack parameters were modeled, and the tables below reflect the new operations of the project along with the combined impacts of both construction and operation of two of the completed data centers. The construction emissions presented below have not changed from the previous analysis. Based on the new stack parameters, there is a decrease in the annual modeled impacts. As noted in the summary tables below, the modeling summaries of the M&R testing for NO_x present both the composite emissions to

represent warmup along with the D2 cycle weighted modeling results. Updated background air quality summaries for the years 2017-2019 are provided in Attachment 1B.

Table 6 Modeled Concentrations and Ambient Air Quality Standards						
Pollutant	**Averaging Period**	**Maximum Concentration (µg/m³)**	**Background (µg/m³)**	**Total (µg/m³)**	**Ambient Air Quality Standards (µg/m³)**	
					CAAQS	**NAAQS**
3-/8-/24-Hour Maxima shown for one larger QSK95 engine operating up to 6 hours/day (conservatively represents six engines operating 1 hour/day each) or one smaller QSX15 engine operating up to 3 hours/day (conservative represents three engines operating 1 hour/day each) during the ten hours from 7AM to 5PM.						
NO_2*	1-hour maximum (CAAQS)	N/A	N/A	288.9 (251.5)[1]	339	-
	5-yr average of 1-hour yearly 98th % (NAAQS)**	N/A	N/A	94.6	-	188
	Annual maximum	3.29	22.6	25.9	57	100
CO	1-hour maximum	87.2	2,863	2,950.2	23,000	40,000
	8-hour maximum	27.5	2,405	2,432.5	10,000	10,000
SO_2	1-hour maximum (CAAQS)	0.78	38	18.9	655	-
	5-yr average of 1-hour yearly 99th% (NAAQS)**	0.003	7	7.1	-	196
	3-hour maximum	0.68	38	38.7	-	1,300
	24-hour maximum	0.21	4	4.2	105	365
	Annual maximum	0.004	0.5	0.5	-	80
PM_{10}	24-hour maximum (CAAQS)	0.34	122	122.3	50	-
	24-hour 6th highest over 5 years (NAAQS)	0.28	112	112.3	-	150
	Annual maximum (CAAQS)	0.013	23	23.0	20	-

Table 6 Modeled Concentrations and Ambient Air Quality Standards						
Pollutant	Averaging Period	Maximum Concentration (µg/m³)	Background (µg/m³)	Total (µg/m³)	Ambient Air Quality Standards (µg/m³)	
					CAAQS	NAAQS
$PM_{2.5}$	5-yr average of 24-hour yearly 98th% (NAAQS)	0.23	43	42.2	-	35
	Annual maximum (CAAQS)	0.013	12.8	12.8	12	-
	5-yr average of annual concentrations (NAAQS)	0.012	10.5	10.5	-	12.0

[1] This concentration represents the use of the composite emission factor for 1-hour.

*1-hour NO_2 impacts are evaluated using the USEPA Plume Volume Molar Ratio Method (PVMRM) and an in-stack NO_2/NOx ratio of 0.10 (10%), with appropriate maximum seasonal hourly NO_2 background values already added by AERMOD. Annual NO_2 impacts are evaluated with the USEPA Ambient Ratio Method #2 (ARM2) with USEPA-default minimum/maximum NO_2/NOx ambient ratios of 0.5/0.9.

** Impacts for the 1-hour statistical-based NO_2 and SO_2 NAAQS are based on the annual average emissions per USEPA guidance documents for intermittent sources like emergency generators. Impacts for the 1-hour NO_2 and SO_2 CAAQS are based on the 1-hour emission rate since these CAAQS are "values that are not to be exceeded".

TABLE 7 Modeled Maximum Construction Impacts						
Pollutant	Averaging Time	Maximum Construction Impacts (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standards (µg/m³)	Federal Standards (µg/m³)
NO_2	1-hour	19.97	162	182	339	-
	1-hour	14.8	102	110	-	188
	Annual	1.47	22.6	25.6	57	100
SO_2	1-hour	0.05	38	18.2	655	196
	3-hour	0.03	38	18.1	-	1300
	24-hour	0.01	4	2.9	105	365
	Annual	0.005	0.5	0.5	-	80
CO	1-hour	25.7	2,863	2,889	23,000	40,000
	8-hour	11.1	2,405	2,416	10,000	10,000
PM10	24-hour	3.58	122	125.6	50	150
	Annual[a]	1.3	23	24.4	20	-

PM2.5	24-hour Annual[a]	1.7 0.59	43 12.8	43.7 13.4	- 12	35 12.0

Notes:
[a] Maximum Annual Arithmetic Mean.

The health risk impact analyses were not revised from the previous assessments as the use of a diesel particulate filter (DPF) was already incorporated into the risk assessment. The use of DPF satisfies the requirements of the Tier 4 emission limitations. As noted previously, the new annual impacts are smaller than the prior analysis and thus, there would be a reduction in the overall risk. The previous analyses are summarized below.

Table 8 Operations Residential Risk Results

Receptor ID	Receptor, UTM	Cancer Risk	Chronic HI	Acute HI
PMI	30, 608154.6, 4121397.9	2.61E-5	0.00604	-
MEIR	6493, 608800, 4121050	2.98E-6	0.00069	-
MEIS	6588, 608900, 4120900	2.21E-6	0.00051	-

Assumes each engine is tested for 50 hours per year. Permit limit will be 20 hours per year per engine.
DPM is the surrogate compound for equipment diesel exhaust. No acute REL has been established for DPM.
FAH=1 for all age groups from 3rd trimester to 16 years.
MEIS – Los Paseos School

Table 9 Operations Worker Results

Receptor ID	Receptor, UTM	Cancer Risk	Chronic HI	Acute HI
PMI	30, 608154.6, 4121397.9	7.85E-6	0.00604	-
MEIW	3572, 608220, 4121360	5.06E-6	0.00389	-
MEIS	6588, 608900, 4120900	6.65E-7	0.00051	-

Assumes each engine is tested for 50 hours per year. Permit limit will be 20 hours per year per engine.
DPM is the surrogate compound for equipment diesel exhaust. No acute REL has been established for DPM.
FAH not used.
MEIS – Los Paseos School

Table 10 Construction Risk Results

Receptor ID	Receptor, UTM	Cancer Risk	Chronic HI	Acute HI
PMI	30, 608154.6, 4121397.9	3.69E-5	0.0161	-
MEIR	6493, 608800, 4121050	3.59E-6	0.0016	-
MEIW	3500, 608200, 4121340	3.77E-6	0.0139	-
MEIS	6588, 608900, 4120900	2.74E-6	0.0011	-

DPM is the surrogate compound for construction equipment diesel exhaust. No acute REL has been established for DPM.
4.3 year construction period (HRA used 5 year exposure period.)
FAH=1 for all age groups from 3rd trimester to 16 years, for MEIR and MEIS.
FAH not used for MEIW.
MEIS – Los Paseos School

Construction and Revised Operation Overlap Assessment

From the previous overlap assessment, CalEEMod was run for the periods, including the downtime periods between phases, using the equipment data and use rates as supplied by the applicant. Table 11 presents the previous summary of construction emissions for the project for each pollutant in terms of tons/year for the maximum emissions year by pollutant.

Table 11 Construction Emissions Tables from CalEEMod 7-1-2020

Scenario	NO_x	CO	VOC	SO_x	PM10	PM2.5	CO_2e
Max Const Year by Pollutant	2021	2021	2024	2021	2021/20	2021/20	NA
Max Project Emissions, Tons/Yr	3.93	4.41	4.26	0.0086	0.205 exhaust 0.294 fugitives	0.203 exhaust 0.149 fugitives	830*
Avg. Daily Emissions, Lbs	29.77	33.41	32.27	0.065	1.55 exhaust 2.27 fugitives	1.54 exhaust 1.14 fugitives	NA
BAAQMD Thresholds, Lbs/day	54	NA	54	NA	82	54	NA
Exceeds Thresholds	No	NA	No	NA	No	No	NA

Notes: PM10 and PM2.5 thresholds are exhaust only.

Construction schedule is approximately 52 months (3 Phase total), or ~1144 workdays (22 days/month).

Max construction year is 12 months at 22 days/month = 264 workdays.

*CO2e converted from MT to short tons. Total CO2e for the entire construction period is 3241 mtons (3573 short tons).

Source: ADI CalEEMod analysis, January 2020, updated June 2020.

The start date for engine operations subsequent to completion of Phase 1 (SV12) will occur at some point during the interim period between the end of Phase 1 and the start of construction of Phase 2 (SV18). The actual start date is unknown, and is materially not relevant, i.e., for purposes of emissions overlap, all of the engines are assumed to be operated under normal maintenance and readiness testing prior to the start of construction of Phase 2. The same situation is expected for the interim period between Phase 2 and Phase 3 (SV19), i.e., all of the engines for SV12 and SV18 are assumed to be operated under normal maintenance and readiness testing prior to the start of construction of Phase 3.

Based on the above, there will be an overlap of emissions during construction of Phase 2 and Phase 3. Table 2 presents a summation of construction emissions for each phase as derived from the revised CalEEMod analysis.

Table 12 Construction Phase Emissions Summary (tons per period)						
Phase	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**PM2.5**
Phase 1	6.83	6.65	4.54	0.0137	Total 0.84 Exhaust 0.32	Total 0.54 Exhaust 0.31
Phase 2	5.04	5.98	4.41	0.012	Total 0.55 Exhaust 0.27	Total 0.36 Exhaust 0.27
Phase 3	4.94	5.87	4.40	0.011	Total 0.55 Exhaust 0.27	Total 0.36 Exhaust 0.27

Notes: There is no emissions overlap for Phase 1, and no overlap analysis for Phase 1 is presented herein.

Determination of the Worst-Case Overlap Scenario

Scenario 1 – is defined as the overlap of the emissions from the Phase 1 engines (13 total) and the construction emissions from Phase 2.

Scenario 2 - is defined as the overlap of the emissions from the Phase 1 and 2 engines (26 total) and the construction emissions from Phase 3.

Even though the construction emissions for Phase 2 are just slightly higher than Phase 3, the addition of the engine emissions from Phases 1 and 2 result in higher emissions overall, as compared to the summation of Phase 2 construction and Phase 1 engine emissions. Table 13 presents a recap of Phase 3 construction emissions and emissions from the engines from Phase 1 and 2.

For purposes of an overlap analysis, Scenario 2 as defined above, was chosen as the worst case.

Table 13 Phase 3 Emissions for Overlap Analysis (Worst Case-Scenario 2)								
Phase 3 Construction Emissions (17 Months)								
Parameter	**NO_x**	**CO**	**VOC**	**SO_x**	**PM10 Exhaust**	**PM10 Fugitives**	**PM2.5 Exhaust**	**PM2.5 Fugitives**
Tons/Period	4.94	5.87	4.40	0.011	0.27	0.28	0.27	0.09
Avg Lbs/Month	581.2	690.6	517.6	1.29	31.76	32.9	31.76	10.6
Avg Lbs/day	26.4	31.4	23.5	0.06	1.44	1.5	1.44	0.48
Avg Lbs/hour	3.30	3.94	2.94	0.0075	0.18	0.19	0.18	0.06
Engine Operations Emissions for Phase 1 and 2 During Phase 3 Construction (17 Months)								
Tons/Period	15.4	1.77	0.81	0.017	0.052	-	0.052	-
Phase 3 Construction Plus Phase 1 and 2 Engine Emissions for the 17 Month Period								
Tons/Period	20.3	7.6	5.2	0.03	0.32	0.28	0.32	0.09

Table Assumptions from CalEEMod applicant data:

1. Construction period is 6-1-26 through 12-1-27, total of 17 months.
2. 22 average work days per month, equals 374 work days.
3. 10 hours per day, 5 days per week.
4. Total CO2e for Phase 3 construction is 1003 metric tons (1103 short tons).
5. Work day is 10 hours, but accounting for lunch and daily breaks, an average work day is approximately 8 hours for purposes of emissions estimates.
6. Operations emissions for Phases 1 and 2 are for the 17-month construction period for Phase 3 based on the BAAQMD Scenario, with only 26 of the engines in operation.

Criteria Pollutant Impacts for Scenario 2

In order to model the worst-case impact for Scenario 2, the emissions in Table 13 for the tons/period, which are based on a 17-month period, were normalized over 12 months by taking the average pounds/month and multiplying by 12 months to calculate the annualized emissions in terms of tons/year. Table 14 presents these emissions which were used in the criteria pollutant analysis as well the subsequent health risk assessment. Operational testing of the diesel backup generators at SV12 and SV18 were based on the following assumptions:

- 20 hours per year per engine, comprised of 20 hours of full load emissions based on the use of Tier 2 cycle weighted data described earlier.
- Six (6) engines tested per day
- Only one (1) engine tested per hour
-

Table 14 Normalized Annual Const Emissions for Phase 3

Parameter	NO_x	CO	VOC	SO_x	PM10 Exh	PM10 Fug	PM2.5 Exh	PM2.5 Fug
Lbs avg month *	581.2	690.6	577.6	1.29	31.76	32.9	31.76	10.6
Lbs/Yr**	6974.4	8287.2	6931.2	15.48	381.1	394.8	381.1	127.2
Lbs/day	26.42	31.39	26.25	0.059	1.44	1.5	1.44	0.48
Lbs/hr	3.30	3.92	3.28	0.0074	0.18	0.188	0.18	0,06

*based on the 17-month construction period
**Avg month x 12 months
Workdays per year = 22 days per month x 12 months = 264
Avg work hours per day = 8

The same background ambient air quality levels and modeling techniques from the modeling analyses of project operating impacts were used in the construction analysis. The applicable background concentrations of NO_2, SO_2, CO, PM2.5, and PM10 from the operational modeling analyses used in the construction impact analysis are shown in the following table. The USEPA-approved model AERMOD (version 19191) was used to estimate ambient impacts from construction activities, consistent with the facility operational impact analyses and the version of AERMET (version 18081) used by BAAQMD to process the meteorological data from the San Jose and Oakland Airports. A detailed discussion of the AERMOD dispersion model and the associated processing programs AERSURFACE, AERMET, and AERMAP is included with the discussion of the modeling analyses of project operating impacts. As with the operational impact analysis, the meteorological data were processed by BAAQMD in accordance with USEPA guidance using the new USEPA default option U*.

The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. Combustion equipment exhaust emissions were modeled as 11 3.048-meter-high point sources (exhaust parameters of 750 Kelvins, 64.681 m/s exit velocity, and 0.1524-meter stack diameter) placed at regular 30-meter intervals around the construction area of SV19. Construction fugitive dust emissions were modeled as an area source covering the construction area with an effective plume height of 0.5 meters. Combustion and fugitive emissions were assumed to occur for 10 hours/day (7 AM to 5 PM) consistent with the expected period of onsite construction activities generating both exhaust emissions and fugitive dust. The construction impacts modeling analysis used the same receptor locations and

meteorological data as used for the project operating impact analysis. A detailed discussion of the receptor locations and meteorological data is included with the discussion of the modeling analyses of project operating impacts.

Modeling Results

Based on the emission rates of operational emissions (SV12 and SV19) plus the construction emissions for SV19 of NO_x, SO_2, CO, PM2.5, and PM10, the modeling options, receptor grids, and meteorological data, AERMOD calculated the short-term and annual ambient impacts for each pollutant. As mentioned above, the modeled 1-hour, 3-hour 8-hour, and 24-hour ambient impacts are based on the worst-case daily emission rates of NO_x, SO_2, CO, PM2.5, and PM10 spread over the estimated daily hours of operation. The annual impacts are based on the annual emission rates of these pollutants. The 1-hour and annual average concentrations of NO_2 were computed using plume volume molar ratio method with a NO_2/NO_x ratio of 0.1.

The modeling analysis results are shown in Table 15 below, including the appropriate background levels and the resulting total ambient impacts. Modeled construction impacts due to facility emissions alone for all pollutants are expected to be below the most stringent state and Federal standards.

TABLE 15 MODELED MAXIMUM COMBINED OPERATIONS/CONSTRUCTION OVERLAP IMPACTS

Pollutant	Averaging Time	Maximum Overlap Impacts (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standards (µg/m³)	Federal Standards (µg/m³)
NO_2	1-hour C	289.1	-	389.1	339	-
	1-hour N	91.8	-	91.8	-	188
	Annual	3.55	24.5	28.1	57	100
SO_2	1-hour	0.72	18.1	18.8	655	196
	3-hour	0.69	18.1	18.7	-	1300
	24-hour	0.21	2.9	3.1	105	365
	Annual	0.006	0.5	0.5	-	80
CO	1-hour	81.83	2,863	2,944.9	23,000	40,000
	8-hour	51.87	2,405	2,456.9	10,000	10,000
PM10	24-hour	6.0	122	128.0	50	150
	Annual[a]	1.7	23.1	24.8	20	-
PM2.5	24-hour	1.4	42	43.4	-	35
	Annual[a]	0.6	12.8	13.4	12	12.0

Notes:
[a] Maximum Annual Arithmetic Mean.

HRA Impacts for Scenario 2

Based on the dispersion modeling results presented above and the reduction in the annual impacts, a revised health risk assessment for the emissions overlap period was not performed as there would be a slight decrease in the overall risk results. The prior analyses are presented below.
The HRA was previously performed using HARP (ADMRT Version 19121). The HRA was performed for diesel particulate matter (DPM) only, as DPM is the accepted surrogate compound for whole diesel exhaust. The necessary output files from AERMOD were imported into HARP. Detailed descriptions of the risk assessment methods and support data are contained in the SPPE application document and are not repeated here. Assumptions used in the prior HRA analysis are as follows:

- The standard project receptor file was used. This file contained an extensive cartesian grid of receptors as well as the identified sensitive receptors included in the other project modeling analyses.
- The BAAQMD health tables were used (enabled in HARP)
- Three separate analyses were run as follows:
  a. Residential run, FAH=defaults, 2-year exposure period (see note below)
  b. Residential run, FAH=1, 2-year exposure period (see note below)
  c. Worker run, FAH=off, 2-year exposure period (see note below)
  Note: HARP does not allow fractions of years as exposure values, therefore a 2-year period was used to represent the 17-month emissions overlap.
- The PMI, MEIR, MEIW, and MEIS values were derived from the HRA output files.

Table 16 Construction/Operations Overlap Risk Results

Receptor ID	Receptor, UTM	Cancer Risk	Chronic HI	Acute HI
PMI	44, 607975.6, 4121426	4.86E-5	0.0291	-
MEIR	6493, 608800, 4121050	2.31E-6	0.0014	-
MEIW	3292, 608140,4121300	1.02E-6	0.0094	-
MEIS	6588, 608900, 4120900	1.91E-6	0.0011	-

Testing hours for the overlap of construction and operation was set to 20 hours per engine.
DPM is the surrogate compound for construction equipment diesel exhaust. No acute REL has been established for DPM.
Phase 3 construction period is 17 months (HRA used 2-year exposure period.)
FAH=1 for all age groups from 3rd trimester to 16 years, for MEIR and MEIS.
FAH not used for MEIW.
MEIS – Los Paseos School

Attachments

Attachment 1A CEC and BAAQMD Tier 4 engine emissions scenarios

Attachment 1B 2017-2019 Background Air Quality Summaries

All modeling input and output files, support files, and HRA files will be supplied in electronic format.

Attachment 1A

Table 1A-1 Emissions Estimates for Emergency Standby Generators

Engine Mfg:	**Cummins**	# of Units:	36		Max # of Engines Tested per Day:	6		Redundant Engines:	6						
Model #:	**QSK95-G9**				*(engines are not tested concurrently)*										
Fuel:	ULSD				**Engine OPs Data**									***METRIC UNITs***	
												Stack Vel,	**Stk Diam,**	**Stk Temp,**	**Stk Vel,**
Fuel S, %wt:	0.0015	**BHP**	**kWe**	**Load %**	**RPM**	**Fuel, gph**	**Stk Ht, ft**	**Stk Diam, in**	**Stk Temp, F**	**mmbtu/hr**	**Stk ACFM**	**f/s**	**m**	**Kelvin**	**m/s**
Fuel wt, lb/gal:	7.05	4631	3250	100	1800	222	TBD	32	872	30.86	23910	71.3511	0.8128	739.82	21.7478
Btu/gal:	139000	3501	2438	75	1800	171	TBD	32	735	23.77	20454	61.0379	0.8128	663.71	18.6044
Lbs S/1000 gal:	0.10575	2371	1625	50	1800	126	TBD	32	672	17.51	16885	50.3875	0.8128	628.71	15.3581
Lbs SO2/1000 gal:	0.2115	1240	813	25	1800	72	TBD	32	643	10.01	10587	31.5932	0.8128	612.59	9.6296
EPA Tier:	4	562	325	10	1800	42	TBD	32	541	5.84	7187	21.4471	0.8128	555.93	6.5371
Turbocharged:	Yes	0	0	0	0	0	0	0	0	0.00	0	0.0000	0.0000	0	0.0000
Aftercooled:	Yes					Stack Exit Area (sq.ft) =		5.585054							

Warm-up Period, mins.	15	0.25	hrs.	0.75	Steady-state hrs		
Maintenance and Readiness Testing, hrs/yr:			20		Composite CO2e EF, lb/mmbtu:	163.052	(40 CFR 98, Subpart C, Tables C-1 and C-2)
Emergency Runtime, hrs/yr:			100				(40 CFR 98, Subpart A, Table A-1)

1. Emissions factors for engines without controls are based on D2 Cycle values for the specific engine and size.
2. Emissions factors for engine steady-state periods are based on Tier 4 values for the specific engine and size.
3. Composite warm-up/steady state hour will be based on 0.25 hr warmup (D2) and 0.75 hr steady-state (Tier 4).
4. All scenarios employ DPF (D2 Cycle and Tier 4)

			g/bhp-hr			
	Nox	**CO**	**VOC**	**SOx**	**PM10/2.5**	
D2 Cycle EFs	4.37	0.5	0.23	0.005	0.015	with DPFs
T4 Steady-state EFs	0.5	0.5	0.14	0.005	0.015	with DPFs
Composite Hour EFs	1.4675	0.5	0.1625	0.005	0.015	with DPFs

***

Scenario 1 CEC Emissions Evaluation

1. 20 hrs of maintenance and readiness (M&R) testing at 100% load, using D2 Cycle EFs
2. 100 hrs of emergency ops, in 3 hr blocks (1st hr composite warmup+steady state, remaining 2 hrs at steady state T4), 100% load
3. Redundant engines will not be run during emergency ops
4. Daily M&R-engines will be tested consecutively, i.e., one engine per hour

M&R Testing

Hrs/engine/yr:	20		**Nox**	**CO**	**VOC**	**SOx**	**PM10/2.5**	**CO2e**
	1 Engine	lbs/hr	44.62	5.10	2.35	0.05	0.15	NA
	1 Engine	lbs/day	44.62	5.10	2.35	0.05	0.15	NA
	1 Engine	TPY	0.446	0.051	0.023	0.001	0.002	50.3
	6 Engines	lbs/day	267.7	30.6	14.1	0.31	0.92	NA
	All Engines	TPY	16.06	1.84	0.85	0.02	0.06	1811

Emergency Ops

						Single Engine			
Hrs/engine/yr:	100			**Nox**	**CO**	**VOC**	**SOx**	**PM10/2.5**	**CO2e**
Warmup hrs:	33.3	1st Hr	lbs/yr	498.92	169.99	55.25	1.70	5.10	167548
Steady state hrs:	66.7	2 Hrs	lbs/yr	340.492185	340.492185	95.3378117	3.40492185	10.2147655	335598
# engines:	30	Total	lbs/yr	839.42	510.48	150.58	5.10	15.31	503146
		1 engine	Max lbs/3hr	20.09	10.21	3.09	0.10	0.31	NA
						30 Engines			
				Nox	**CO**	**VOC**	**SOx**	**PM10/2.5**	**CO2e**
			TPY	12.59	7.66	2.26	0.08	0.23	7547
		30 engines	Max lbs/3hr	602.63	306.29	92.65	3.06	9.19	NA
				Nox	**CO**	**VOC**	**SOx**	**PM10/2.5**	**CO2e**
	M&R + Emergency Ops		TPY	28.65	9.49	3.10	0.09	0.28	9359

Scenario 2 BAAQMD Emissions Evaluation

1. 20 hrs of maintenance and readiness (M&R) testing at 100% load, using D2 Cycle EFs
2. 100 hrs of emergency ops, 100% load, T4 EFs
3. Redundant engines will not be run during emergency ops
4. Daily M&R-engines will be tested consecutively, i.e., one engine per hour

M&R Testing

Hrs/engine/yr:	20		**Nox**	**CO**	**VOC**	**SOx**	**PM10/2.5**	**CO2e**
	1 Engine	lbs/hr	44.62	5.10	2.35	0.05	0.15	NA
	1 Engine	lbs/day	44.62	5.10	2.35	0.05	0.15	NA
	1 Engine	TPY	0.446	0.051	0.023	0.001	0.002	50.3
	6 Engines	lbs/day	267.7	30.6	14.1	0.31	0.92	NA
	All Engines	TPY	16.06	1.84	0.85	0.02	0.06	1811

Emergency Ops

Hrs/engine/yr:	100					Single Engine		
Hrs/engine/day:	24		**Nox**	**CO**	**VOC**	**SOx**	**PM10/2.5**	**CO2e**
# engines:	30	lbs/hr	5.10	5.10	1.43	0.05	0.15	NA
		lbs/day	122.52	122.52	34.30	1.23	3.68	NA
		TPY	0.255	0.255	0.071	0.003	0.008	251.57
					30 Engines			
			Nox	**CO**	**VOC**	**SOx**	**PM10/2.5**	**CO2e**
		lbs/hr	153.145	153.145	42.881	1.531	4.594	NA
		lbs/day	3675.478	3675.478	1029.134	36.755	110.264	NA
		TPY	7.657	7.657	2.144	0.077	0.230	7547
	M&R + Emergency Ops	TPY	23.72	9.49	2.99	0.09	0.28	9359

Table 1A-2 Emissions Estimates for Emergency Standby Generators

Engine Mfg:	**Cummins**	# of Units:	3	Max # of Engines Tested per Day:	3
Model #:	**QSX15-G9**			*(engines are not tested concurrently)*	
Fuel:	ULSD	**Engine OPs Data**			
Fuel S, %wt:	0.0015				
Fuel wt, lb/gal:	7.05				
Btu/gal:	139000				
Lbs S/1000 gal:	0.10575				
Lbs SO2/1000 gal:	0.2115				
EPA Tier:	2				
Turbocharged:	Yes				
Aftercooled:	Yes				

Redundant Engines: 0

												METRIC UNITs		
	BHP	**kWe**	**Load %**	**RPM**	**Fuel, gph**	**Stk Ht, ft**	**Stk Diam, in**	**Stk Temp, F**	**mmbtu/hr**	**Stk ACFM**	**Stack Vel, f/s**	**Stk Diam, m**	**Stk Temp, Kelvins**	**Stk Vel, m/s**
	731	500	100	1800	34	TBD	12	894	4.73	3442	73.0415	0.3048	752.04	22.2631
	554	375	75	1800	25.3	TBD	12	852	3.52	2771	58.8025	0.3048	728.71	17.9230
	378	250	50	1800	18.4	TBD	12	828	2.56	2245	47.6404	0.3048	715.37	14.5208
	201	125	25	1800	10.4	TBD	12	719	1.45	1418	30.0909	0.3048	654.82	9.1717
	96	50	10	1800	5.9	TBD	12	541	0.82	955	20.2657	0.3048	555.93	6.1770
	0	0	0	0	0	0	0	0	0.00	0	0.0000	0.0000	0	0.0000

Stack Exit Area (sq.ft) = 0.785398

Emissions Factor Scenarios (all values in g/bhp-hr)

Scenarios	**NOx**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.080	0.080	163.052
Maint/Readiness Testing, 20 hrs/yr, D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.080	0.080	163.052
	0.00	0.00	0.00	0	0.000	0.000	0

APC Installed: Diesel Particulate Filters

Controlled Emissions Factor Scenarios (all values in g/bhp-hr)

	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.015	0.015	163.052
Maint/Readiness Testing, 20 hrs/yr, D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.015	0.015	163.052
	0.00	0.00	0.00	0	0.000	0.000	0

Scenario 1: **Declared Emergency Ops, 100 hrs/yr, D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

Single Engine

	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	143.496	15.471	7.349	0.193	0.580	0.580	na
TPY	0.299	0.032	0.015	0.000	0.001	0.001	38.5

All Engines

	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	17.937	1.934	0.919	0.024	0.073	0.073	na
lbs/day	430.487	46.414	22.047	0.580	1.741	1.741	na

All Engines

TPY	0.897	0.097	0.046	0.001	0.004	0.004	115.6

Scenario 2: **Maint/Readiness Testing, 20 hrs/yr, D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 20

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	5.979	0.645	0.306	0.008	0.024	0.024	na
TPY	0.060	0.006	0.003	0.000	0.000	0.000	7.706

3 Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	17.937	1.934	0.919	0.024	0.073	0.073	na

All Engines

TPY	0.179	0.019	0.009	0.0002	0.0007	0.0007	23.118

Scenario 3:

Max Hourly Runtime: 0
Max Daily Runtime: 0
Max Annual Runtime: 0

Single Engine

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na
TPY	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.000

3 Engines

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na

All Engines

TPY	0.000	0.000	0.000	0.000	0.0000	0.0000	0.000

BAAQMD M/R Testing + Emergency Emissions Totals, TPY:		**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
QSX-15	Scenario 1 + 2	1.076	0.116	0.055	0.001	0.004	0.004	138.705

Application & Performance Warranty Data

Project Information

Site Location:	USA
Project Name:	Equinix San Jose 3250kW - AT-IV
Application:	Standby Power
Number Of Engines:	1
Operating Hours per Year:	200

Engine Specifications

Engine Manufacturer:	Cummins
Model Number:	QSK95-G9
Rated Speed:	1800 RPM
Generator Power:	3250 ekW
Type of Fuel:	Ultra-Low Sulfur Diesel (ULSD)
Type of Lube Oil:	1 wt% sulfated ash or less
Lube Oil Consumption:	0.1 % Fuel Consumption
Number of Exhaust Manifolds:	2

Engine Cycle Data

Load	Speed	Power	Exhaust Flow	Exhaust Temp.	Fuel Cons.	NO_x	CO	NMHC	NMNEHC	PM_{10}	O_2	H_2O
%		*bhp*	*acfm (cfm)*	*F*		*g/bhp-hr*	*g/bhp-hr*	*g/bhp-hr*	*g/bhp-hr*	*g/bhp-hr*	*%*	*%*
25	Rated	1,276	10,812	648								
100	Rated	4,703	24,590	874		5.7	0.5	0.06	0.06	0.11	10	12

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	*g/bhp-hr*	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	
NO_x*	5.7	5.91	521	963	7.644	16.85	0.5	0.52	46	84	0.671	1.48	91.2%
CO	0.5	0.52	75	139	0.671	1.48	2.6	2.7	390	721	3.487	7.69	
NMHC**	0.06	0.06	16	29	0.08	0.18	0.14	0.15	37	68	0.188	0.41	
PM_{10}	0.11	0.11	39	71	0.148	0.33	0.02	0.02	7	13	0.027	0.06	81.8%
NH_3	0	0	0	0	0	0	0.08	0.08	20	37	0.109	0.24	

* MW referenced as NO_2

** MW referenced as CH_4. Propane in the exhaust shall not exceed 15% by volume of the NMHC compounds in the exhaust, excluding aldehydes. The 15% (vol.) shall be established on a wet basis, reported on a methane molecular weight basis. The measurement of exhaust NMHC composition shall be based upon EPA method 320 (FTIR), and shall exclude formaldehyde.

System Specifications

SCR/DOC/ADPF System Specifications (SP-AT-IV-10-TBD, ACIS-3, Commissioning & Startup)

Design Exhaust Flow Rate:	24,590 acfm (cfm)
Design Exhaust Temperature[1]:	874°F
SCR Catalyst Volume:	63 cubic feet
System Pressure Loss:	20.0 inches of WC (Clean) (49.8 mBar)
Sound Target:	70 dBA @ 23 feet
Exhaust Temperature Limits:	572 – 977°F (300 – 525°C)
Minimum Regeneration Temperature[12]:	500°F (260°C)
Reactant:	Urea
Percent Concentration:	32.5%
System Dosing Capacity:	115 L/hr
Estimated Reactant Consumption:	16.3 gal/hr (61.6 L/hr) / Per Engine

Sound Data

	Octave Band Center Frequency (OBCF)											Receiver	
	Hz	*31.5*	*63*	*125*	*250*	*500*	*1000*	*2000*	*4000*	*8000*	*dBA*	*Angle*	*Distance*
Raw Engine Exhaust Sound Levels													
Sound Power A-Weighted	dBA	69.9	100.5	109.4	122.7	123.7	123.0	123.2	123.4	121.3	130.8		
Calculated Sound Power	dB	109.4	126.7	125.6	131.4	126.9	123.0	122.0	122.4	122.4	130.8		
Calculated Sound Pressure	dB	101.4	118.7	117.5	123.3	118.9	114.9	113.9	114.4	114.4	122.7	90°	3.3 feet
Requested Sound Target													
Overall Sound Pressure											70.0	90°	23 feet
Calculated Target Overall Sound Pressure											86.9	90°	3.3 feet
Sound Performance Estimations(System Sound Attenuation)													
Estimated Sound Attenuation	dB	12.0	17.5	24.5	31.8	37.5	45.3	56.5	66.8	70.3	37.3		
Estimated Sound Power	dB	97.4	109.2	101.1	99.6	89.4	77.7	65.5	55.6	52.1	93.5		
Estimated Sound Pressure	dB	72.5	84.3	76.2	74.6	64.5	52.8	40.6	30.7	27.2	68.5	90°	23 feet
Estimated Sound Pressure	dB	89.4	101.2	93.0	91.5	81.4	69.6	57.4	47.6	44.1	85.4	90°	3.3 feet
Warranted Sound Level													
Warranted Sound Pressure											86.9	90°	3.3 feet

- WARNING: Warranted Sound Level does not meet requested Sound Target.
- Computed noise levels at each distance and frequency is based on a *free field condition.*
- Site conditions have *not* been taken into account in acoustic predictions.
- The ambient sound level must be at least 10 dBA below the requested sound target.
- MIRATECH does not warrant Sound Performance Estimations.
- Warranted sound level is of the primary silencer only.
- For all distance noise propagation, free field dispersion rule of 6 dB is used every time distance is doubled.

MIRATECH Scope of Supply & Equipment Details

	Model Number	Quantity
Selective Catalytic Reduction Housing	**SP-AT-IV-10-TBD**	**1 / engine**
SCR Housing	SP-AT-IV-10-TBD-HSG	1 / engine
• Number of Catalyst Layers	2.0	
• Number of Spare Catalyst Layers	1.0	
• Number of Catalyst Blocks per Layer	88	
• Material	Carbon Steel	
• Paint	MIRATECH Coating System II - High Temperature Dark Grey - Insulated Surfaces	
• Inlet Pipe Size & Connection	32 inch FF Flange, 150# ANSI standard bolt pattern	
• Outlet Pipe Size & Connection	32 inch FF Flange, 150# ANSI standard bolt pattern	
• Dimensions	82.000" H x 110.250" W x 266" L	
• Weight Without Catalyst	12,500 lbs	
• Weight Fully Loaded With Catalyst	21,525 lbs	
• Insulation	None	
Tray Set	Tray Set-AT-IV-10-450mm	2 / engine
SCR Catalyst	SCRC-044-150-450	176 / engine
AT-IV Module	SP-AT-IV-Module	10 / engine
AT-IV Electronics	SP-AT-IV-Electronics	4 / engine
AT-IV Transformer	SP-AT-IV-Transformer	4 / engine
Oxidation Element	MECB-OXZ-SB3213-2421-19020071	1 / engine
Oxidation Element	MECB-OXZ-SB4488-2421-19020072	1 / engine
AT-IV Assembly Kit	SP-AT-IV-10 Assembly Kit	1 / engine
	System Sound Attenuation	**1 / engine**
SCR Control System	**ACIS-3**	**1 / engine**
SCR Controller	OLC-60-HMI	1 / engine
• Overall Dimensions	31.181 W x 31.535 H x 12.442 D	
• Weight	110 lbs	
Dosing Box	SEN115.lab	1 / engine
Reactant Pump	VPN115.lab	1 / engine
Reactant Filter	FILTER115	1 / engine
Injector	DEN115.600	1 / engine
Differential Pressure Sensor	PT.040	1 / engine
Bypass Probe	NP-18	2 / engine
Temperature Sensor	TT-14-FLEX60-32-1112	2 / engine
Air Compressor	CA115.lab	1 / engine
NOx Sensor	NOX-24V	2 / engine
Wiring Harness	BLU-WH-NOX-24V-50-SL	2 / engine
Commissioning & Startup	**Commissioning & Startup**	**1 / engine**

	Model Number	Quantity
Analyzer Charges	Analyzer Charges	1 / engine
Expense Charges	Expense Charges	1 / engine
Labor Charges	Labor Charges	1 / engine

Optional Content MIRATECH Scope of Supply & Equipment Details

	Model Number	Quantity
Maintenance Pack	**ACIS-3 Maintenance Pack**	**1 / engine**
Maintenance Pack	DEX115.XXX Maintenance Pack	1 / engine
Maintenance Pack	CA115 Maintenance Pack	1 / engine
SCR Parts	2020.025	1 / engine
SCR Parts	2020.0249	1 / engine
SCR Parts	2020.0251	1 / engine
Maintenance Pack	SEN115 Maintenance Pack	1 / engine
SCR Parts	902.0021	1 / engine
SCR Parts	2020.0234	2 / engine
Maintenance Pack	VPN115 Maintenance Pack	1 / engine
SCR Parts	601.0021	1 / engine
Spare Parts	**ACIS-3 Recommended Spare Parts**	**1 / engine**
Recommended Spare Parts	OLC Recommended Spare Parts	1 / engine
Spare Part	OLC Fuses & Fuse Holders	1 / engine
Recommended Spare Parts	CA115 Recommended Spare Parts	1 / engine
Recommended Spare Parts	SEN115 Recommended Spare Parts	1 / engine
Recommended Spare Parts	VPN115 Recommended Spare Parts	1 / engine
SCR Reactant Tank	**SW550.ht.ins**	**1 / engine**
Reactant Tank	SW550.ht.ins	1 / engine
• Material	Cross-Linked Polyethylene	
• Tank Dimensions	50.5 D x 82 H	
• Capacity	500 US Gallons	
• Weight	130 lbs	
• Wall Construction	Single	
• Insulation	Nominal 2" of Urethane Spray Foam w/ Mastic Coating	
• Heat Trace	Included	
• Seismic Tie Downs	None	
SCR Reactant Tank	**DW550.ht.ins**	**1 / engine**
Reactant Tank	DW550.ht.ins	1 / engine
Reactant Tank Level Indicator	**TLI**	**1 / engine**
Reactant Tank Level Indicator	TLI	1 / engine
Level Transmitter	LU20	1 / engine
Level Controller	LI55	1 / engine
Level Controller Enclosure	LM92	1 / engine
304 Stainless Steel Adder	**SP-AT-IVS-10-TBD**	**1 / engine**
Insulation	**FIELD/FACTORY-INSTALLED**	**1 / engine**

Customer Scope Of Supply

- Support Structure
- Attachment to Support Structure (Bolts, Nuts, Levels, etc.)
- Expansion Joints
- Exhaust Piping
- Inlet Pipe Bolts, Nuts, & Gasket
- Outlet Pipe Bolts, Nuts, & Gasket
- Insulation for Exhaust Piping
- Insulation for Housing
- Installation, Fabrication, and Installation of Mounting Frame for Particulate Filters
- Power Input (230 VAC, 60 Hz, Single Phase)
- Component Installation Including External Tubing and Wiring
- Isolated Engine Load Signal to MIRATECH Equipment (4-20 mA)
- Dry Contact (N.O.) for Engine Run Signal to MIRATECH Equipment
- Heat Tracing of Reactant Lines (Required when Ambient Temperatures are Below 40 °F)
- Heat Tracing of Sample Lines (Required when Ambient Temperatures are Below 32 °F)
- Design for Structural Support and Thermal Expansion

Special Notes & Conditions

1. For housings and exhaust components that are insulated, internally or externally, please refer to Section 7.1 of the General Terms and Conditions of Sale to prevent voiding MIRATECH product warranty.

    - **Emission Equipment:**
        - Carbon steel is suitable for temperatures up to 900° F / 482° C continuously, when covered with external insulation or a heat shield. For continuous operation above 900° F / 482° C, where the equipment is externally insulated or has a heat shield, stainless steel should be used.
    - **Silencers, Accessories and Exhaust Piping:**
        - *Aluminized Steel:*
            - Aluminized steel is suitable for temperatures up to 1100° F / 593° C continuously when covered with insulation or a heat shield.
        - *Carbon Steel:*
            - Carbon steel is suitable for temperatures up to 1100° F / 593° C in intermittent use, i.e., less than 500 hours per year, when covered with external insulation or a heat shield.
            - Silencers (plain carbon steel or aluminized) with internal insulation, and without external insulation or heat shield, are suitable for temperatures up to 1100° F / 593° C continuously.
        - *Stainless Steel:*
            - Stainless steel should be used when the exhaust temperature will exceed 1100° F / 593° C continuously and product is internally or externally insulated.

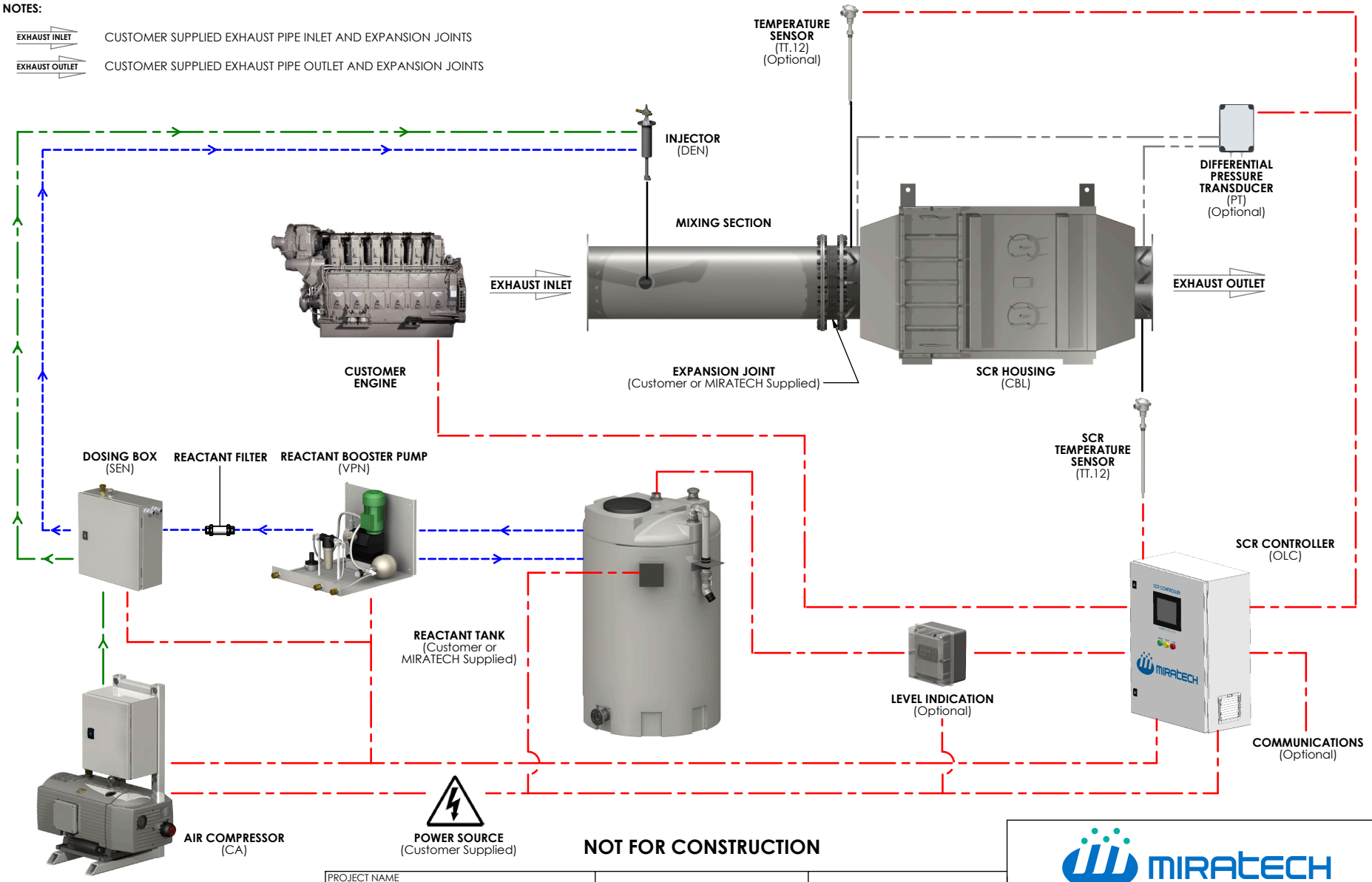
2. Diesel Particulate Filters depend on exhaust temperature to keep soot regenerated and the filter back pressure within acceptable levels. If the engine will be operated consistently at low loads/low exhaust temperatures, the customer should make provisions to add load via facility operations or a load bank. Refer to the included *Guidelines for Successful Operation of LTR™ DPF*.

- A packed silencer installed upstream of the MIRATECH catalyst system will void MIRATECH's limited warranty.
- Final catalyst housings are dependent on engine output and required emission reductions. Changes may be made to optimize the system design at the time of order.
- Any drawings included with this proposal are preliminary in nature and could change depending on final product selection.
- Any sound attenuation listed in this proposal is based on housing with catalyst elements installed.
- MIRATECH Corporation warrants that the emissions reductions requested for this inquiry will be achieved at the design and test load point as outlined in the proposal. Tier 4 is an engine certificate designation, not an actual tons/yr or g/bhp-hr measurement. MIRATECH will utilize the engine manufacturer’s emission data at 100% load to provide our warranty. This is the maximum volume potential point for pollutants to be emitted. Permitting is normally done on a mass flow or tons per year basis, therefore the system will be sized accordingly. The MIRATECH design is to achieve the blended Tier 4 emission targets from the D2 test cycle, measured at 100% engine load conditions.
- Any emission reductions listed in this proposal are based on housing with catalyst elements installed.
- MIRATECH will confirm shipping location upon placement of order.

NOTES:

EXHAUST INLET — CUSTOMER SUPPLIED EXHAUST PIPE INLET AND EXPANSION JOINTS

EXHAUST OUTLET — CUSTOMER SUPPLIED EXHAUST PIPE OUTLET AND EXPANSION JOINTS



Air

Wire

Reactant

Direct Connect

Exhaust Sample Tubing

NOT FOR CONSTRUCTION

PROJECT NAME	
PROPOSAL NUMBER	
SALES ORDER NO.	
CUSTOMER P.O.	

DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED

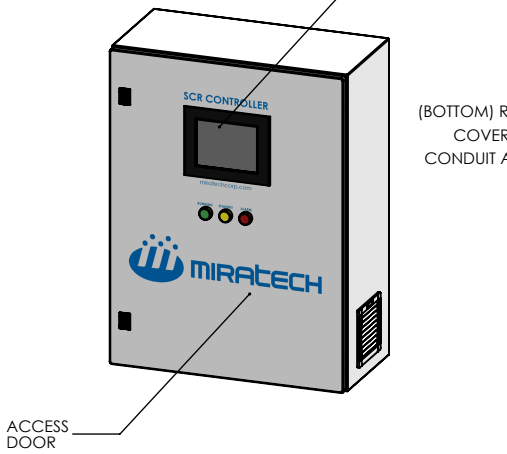
DO NOT SCALE DRAWING

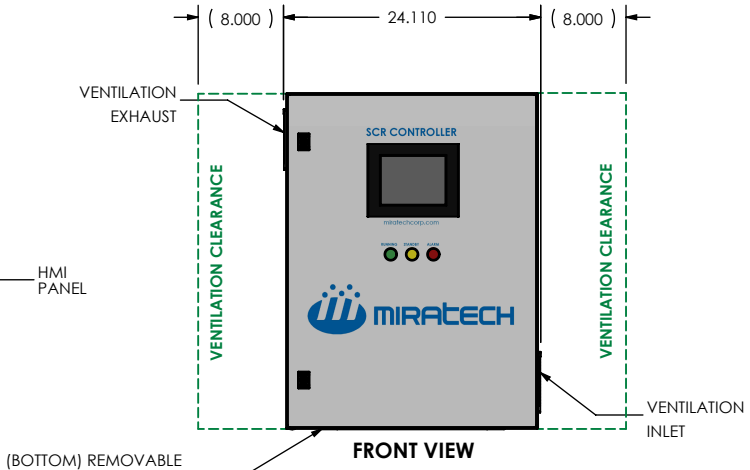
DRAWN	GFS	DATE	10/18/2017
REVIEWED BY	AJM	DATE	10/20/2017

MIRATECH

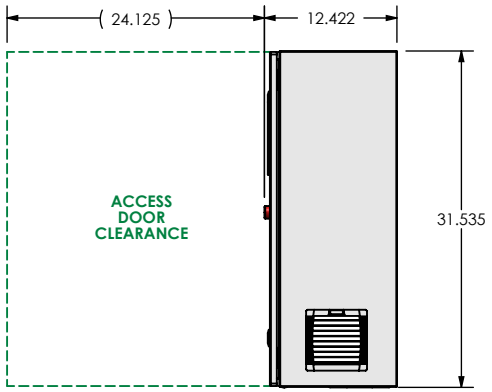
CBL ACIS-3 LITE
System Overview Drawing

DRAWING	CBL-ACIS-3-LITE SOD	REV	0
SIZE A	NOT TO SCALE	SHEET 1 OF 1	

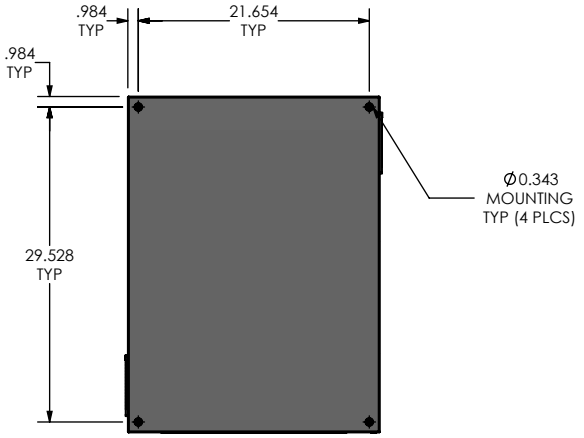




FRONT VIEW



RIGHT VIEW



BACK VIEW

NOTES:

- POWER CONSUMPTION: 300 W MAX
- VOLTAGE: 208 VAC +/- 10%, SINGLE Φ, 60 HZ
- CURRENT DRAW: 1.5 A
- POWER CONSUMPTION OF THE REACTANT BOOSTER PUMP AND DOSING PANEL ARE SUPPLIED USING THE SAME CIRCUIT AS THE OLC; REFERENCE THESE DRAWINGS FOR THEIR ADDED POWER CONSUMPTION
- OPERATING TEMPERATURE: 32°F - 122°F (NON-CONDENSING)

INSTALLATION INSTRUCTIONS:

- ENCLOSURE RATED IP66 (NEMA 4 EQUIVALENT)
- INSTALLATION LOCATION MUST BE VENTILATED AND TEMPERATURE CONTROLLED TO MAINTAIN PROPER OPERATING TEMPERATURE.
- UNIT MAY BE WALL MOUNTED OR INSTALLED ON A BASE

PROJECT NAME	
PROPOSAL NUMBER	
SALES ORDER NO.	
CUSTOMER P.O.	

DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
ANGLES MACH: ±2° BEND: ±3° | INCHES: ±0.125 MILLIMETERS: ±3

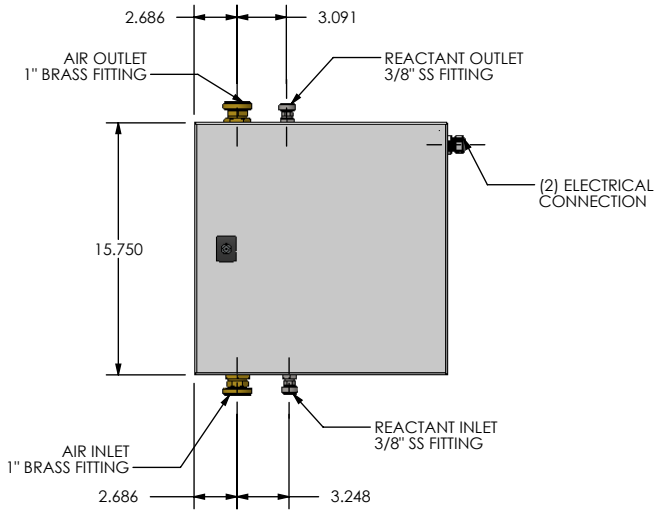
DO NOT SCALE DRAWING

DRAWN	GFS	DATE	10/13/2017
REVIEWED BY	AJM	DATE	10/31/2017

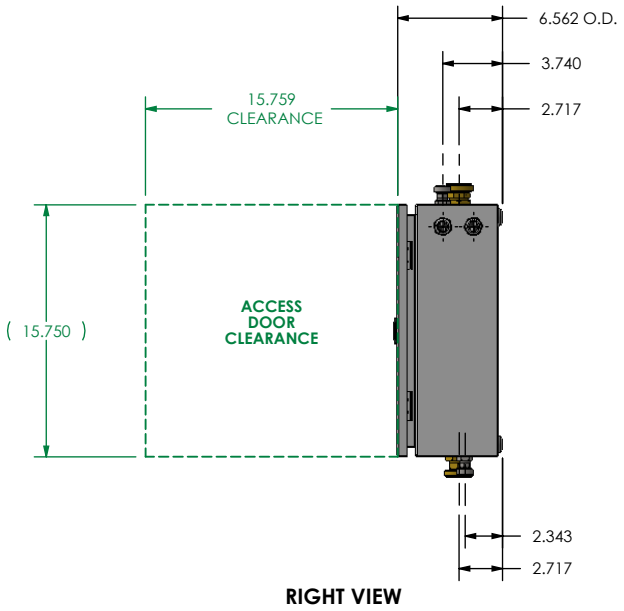
MIRATECH

OLC-60-HMI Controller Sales Drawing

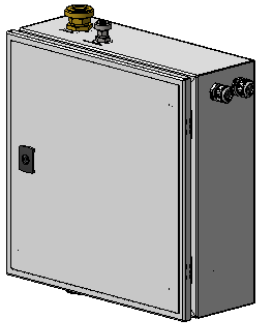
DRAWING	OLC-60-HMI SD		REV 0
SIZE A	SCALE 1:18	WEIGHT: 76lb	SHEET 1 OF 1

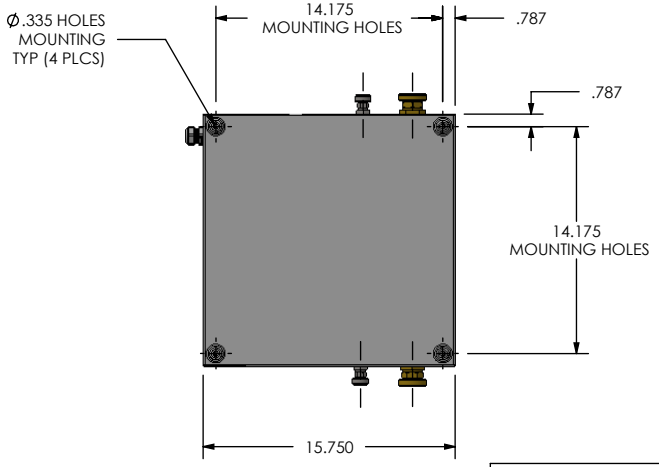


FRONT VIEW



RIGHT VIEW





BACK VIEW

NOTES:

- *POWER CONSUMPTION:* 5.75 W MAX
- *POWER:* SUPPLIED FROM SNQ CONTROLLER
- *OPERATION TEMPERATURE:* 40-104°F
  14-104°F (WITH .WT OPTION)
- NO DEW DROPS ALLOWED
- OPERATING PRESSURE: REACTANT - 3 BAR (43.50 PSI)
  AIR - 1 BAR (14.50 PSI)

INSTALLATION INSTRUCTIONS:

- IF UNIT IS INSTALLED IN AN ENCLOSURE, THE ENCLOSURE MUST BE VENTILATED AND TEMPERATURE CONTROLLED TO MAINTAIN PROPER OPERATION TEMPERATURE.
- UNIT TO BE MOUNTED SO THAT IT IS ACCESSIBLE WHILE ENGINE IS IN OPERATION AND NO MORE THAN 6.5 FEET FROM DOSING INJECTOR.
- UREA LINES SHOULD BE HEAT TRACED IF AMBIENT CONDITIONS FALL BELOW 40°F

PROJECT NAME	
PROPOSAL NUMBER	
SALES ORDER NO.	
CUSTOMER P.O.	

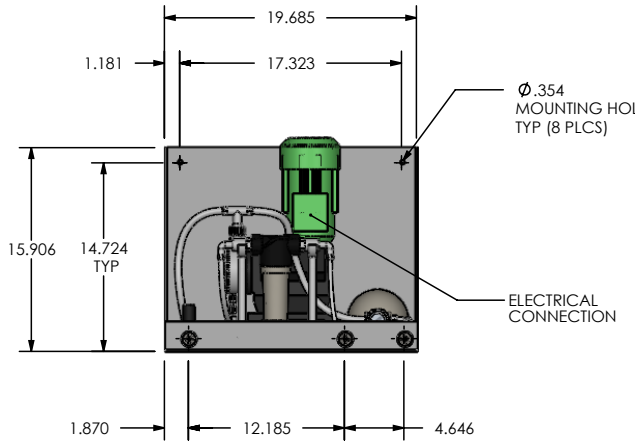
DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED

DO NOT SCALE DRAWING

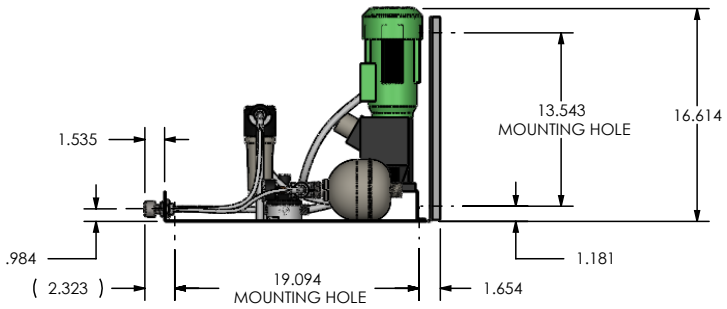
DRAWN	JFS	DATE	08/22/2011	DRAWING	SEN115 SD	REV 6
REVIEWED BY	AJM	DATE	08/22/2011	SIZE A	SCALE 1:12	WEIGHT: 31 lb	SHEET 1 OF 1

MIRATECH

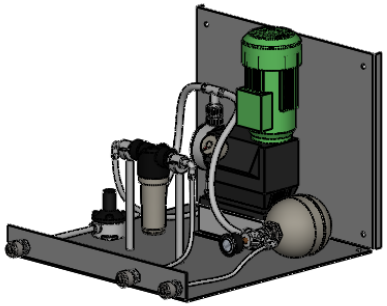
SEN115 Dosing Box
Sales Drawing

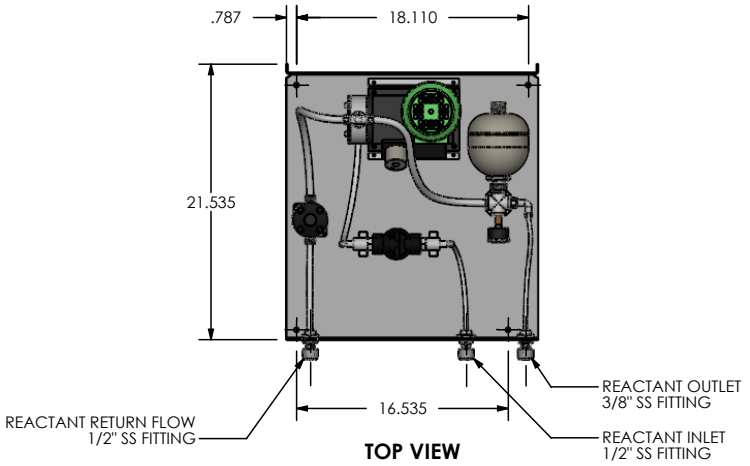


FRONT VIEW



RIGHT VIEW





TOP VIEW

NOTES:

- *POWER CONSUMPTION:* 250 W MAX SUPPLIED BY SNQ CONTROLLER
- *OPERATION TEMPERATURE:* 40°F - 104°F

INSTALLATION INSTRUCTIONS:

- UNIT TO BE MOUNTED SO THAT THE MAXIMUM SUCTION HEIGHT IS LESS THAN 5 FEET
- UREA LINES SHOULD BE HEAT TRACED IF AMBIENT CONDITIONS FALL BELOW 40° F

PROJECT NAME	
PROPOSAL NUMBER	
SALES ORDER NO.	
CUSTOMER P.O.	

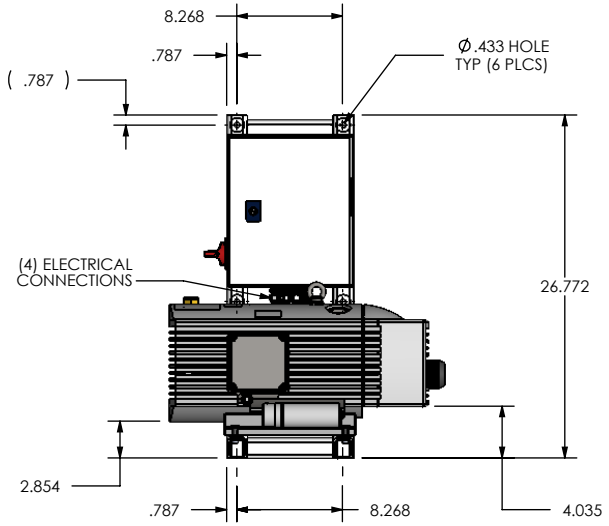
DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED

DO NOT SCALE DRAWING

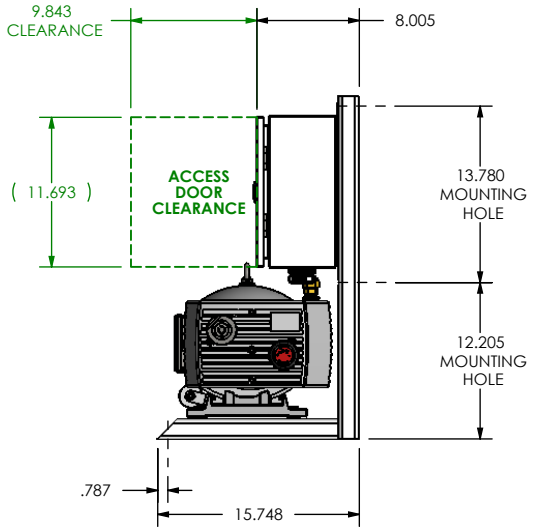
DRAWN	JFS	DATE	08/22/2011	DRAWING	VPN115 SD	REV 6
REVIEWED BY	AJM	DATE	08/22/2011	SIZE A	SCALE 1:15	WEIGHT: 101 lb	SHEET 1 OF 1

MIRATECH

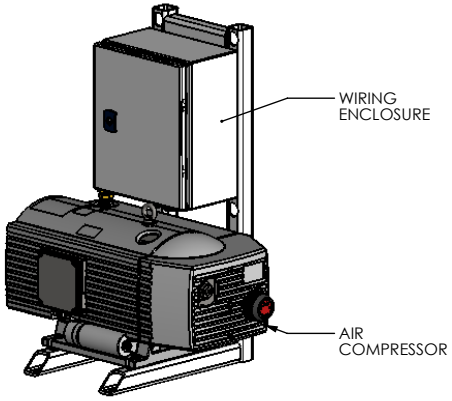
VPN115 Booster Pump Sales Drawing

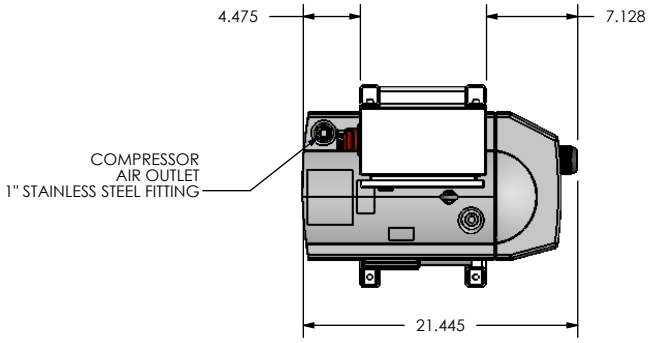


FRONT VIEW



RIGHT VIEW





TOP VIEW

NOTES:

- *POWER CONSUMPTION:* 2200 W MAX
- *VOLTAGE:* 230 VAC +/- 10%, SINGLE Φ, 60 Hz
- *CURRENT DRAW:* 11.0 A
- OPERATION TEMPERATURE: 32°F - 104°F

INSTALLATION INSTRUCTIONS:

- IF UNIT IS INSTALLED IN AN ENCLOSURE, THE ENCLOSURE MUST BE VENTILATED AND TEMPERATURE CONTROLLED TO MAINTAIN PROPER OPERATION TEMPERATURE

PROJECT NAME	
PROPOSAL NUMBER	
SALES ORDER NO.	
CUSTOMER P.O.	

DIMENSIONS ARE APPROXIMATE IN INCHES UNLESS OTHERWISE SPECIFIED

DO NOT SCALE DRAWING

DRAWN	JFS	DATE	08/22/2011	DRAWING	CA115 SD	REV 7
REVIEWED BY	AJM	DATE	08/22/2011	SIZE A	SCALE 1:15	WEIGHT: 131 lb	SHEET 1 OF 1

MIRATECH

CA115 Air Compressor Sales Drawing

GENERATOR DATA:

MODEL:	C3250 D6e 480V
DIMS INCHES:	311.3L X 119.25W X 144.2T
WET WEIGHT Lbs:	67,700
FUEL CONSUMPTION GPH @ 100% LOAD:	221.0
COMBUSTION AND COOLING CFM:	120,450
GEN DRAWING:	A049-P688

GENERAL DESCRIPTION:

SUB BASE FUEL SUPPLY TANK
- UL 142 LISTED DOUBLE WALL
- NORMAL VENT EXTENDED 12 FEET ABOVE GRADE
- EMERGENCY VENTS EXTENDED 12 FEET ABOVE GRADE
- LOW LEVEL, HIGH LEVEL, CRITICAL HIGH LEVEL & LEAK DETECTION FLOAT SWITCHES
- MECHANICAL OVERFILL PREVENTION VALVE SET @95% WITH CUSTOM 7.5 GALLON SPILL CONTAINER
- 1" FIRE RATED FUEL LINE SET
- ROCHESTER 6540 FUEL LEVEL GAUGE
- SPARE PORTS FOR CUSTOMER SUPPLIED FUEL POLISHER
- 2" BASIN TO PAD AIRSPACE FOR VISUAL INSPECTION

WALK-IN LEVEL 2 SOUND ATTENUATED ENCLOSURE
- ESTIMATED AVERAGE SOUND LEVEL 75 dB(A) @ 23 FEET
- SEISMIC DESIGN CATEGORY: D, IMPORTANCE FACTOR: 1.25
- RATED 100 MPH WIND LOAD - 120 MPH 3-SECOND GUST
- 12 GAUGE GALVANEAL STEEL CONSTRUCTION
- INTAKE WITH PENTHOUSE EXTENSION, AMCA FIXED VANE LOUVERS, SOUND CONTROL SECTIONS & MOTORIZED DAMPERS
- DISCHARGE WITH GRAVITY DAMPERS, SOUND DIRECTIONAL PLENUM & STACK EXTENSION WITH SOUND CONTROL SECTION
- PLENUM STACK EXTENSION CAPABLE OF ACCEPTING UP TO (4) ADDITIONAL 8'-3 1/2" STACK EXTENSIONS
- ACCESS DOOR OPENINGS:
  - 72" X 36" TYP. SINGLE DOOR
  - 72" X 72" TYP. DOUBLE DOOR

ELECTRICAL PACKAGE
- GROUND BOND PACKAGE INCLUDING GROUND STRAP ON MAJOR COMPONENTS, PAINT PIERCING WASHERS ON REMOVABLE PANELS & STAINLESS STEEL TAB ON ALL (4) CORNERS OF THE BASE FOR CONTRACTOR CONNECTION
- SUPPLY & INSTALL CUSTOM FREESTANDING 5000A SWITCHBOARD WITH SCHNEIDER MASTERPACT NW50H BREAKER & 6.0A TRIP
- 3Ø 480V NEMA 3R 125A NF PANELBOARD WITH BOLT-ON BRANCH BREAKERSTO 480VBLOCK HEATER & 30KVA TRANSFORMER WITH NEMA 3R WEATHER SHIELD (480/277 TO 120/208) WITH FEED TO
- 3Ø 200A M.L.O. LOAD CENTER WITH 100A M.C.B. (4) GFCI DUPLEX OUTLETS, (4) INTERIOR LIGHTS, (2) EXTERIOR LIGHTS, DAMPER MOTORS, BATTERY CHARGERS, ALT. STRIP HEATER & (2) UNIT HEATERS WIRED IN STEEL EMT WITH COMPRESSION FITTINGS & LIQUIDTIGHT FLEXIBLE CONDUIT
- (1) EXTERIOR MOUNTED EMERGENCY STOP SWITCH (SHIPS LOOSE, INSTALLED ON SITE)
- PNEUMERCATOR SYSTEM, TMS2000 & ETD1000 REMOTE DISPLAY IN EACH UNIT
- AP-4 TANK STATUS ALARM PANEL

NOTE: NO CONDUIT ON FLOOR OR SUPPORTED BY CEILING

ACCESSORIES
- ROOF MOUNTED MIRATECH T4 SCR WITH DEF TANK, FLEX CONNECTIONS, EXHAUST COLLECTOR, MIRATECH AIR COMPRESSOR, PUMP & CONTROL
- 18" W-BEAM SUBFRAME WITH 6" SUPPORT TUBES, FULL NON-SLIP FLOOR, ENGINE FLUID SPILL CONTAINMENT & PROVISIONS FOR CP SUPPLIED SEISMIC SPRING ISOLATORS
- OIL & COOLANT DRAINS PIPED TO EXTERIOR WITH VALVES
- WALL MOUNTED DOCUMENT HOLDER

** INTERIOR & EXTERIOR EQUIPMENT MOUNTING MAY VARY IN LOCATION DUE TO MANUFACTURING DESIGN REQUIREMENTS

PAINT COLORS:

ENCLOSURE COLOR:	ANSI 61 - LIGHT GRAY (#42082)
SUBFRAME COLOR:	BLACK
FUEL TANK COLOR:	BLACK

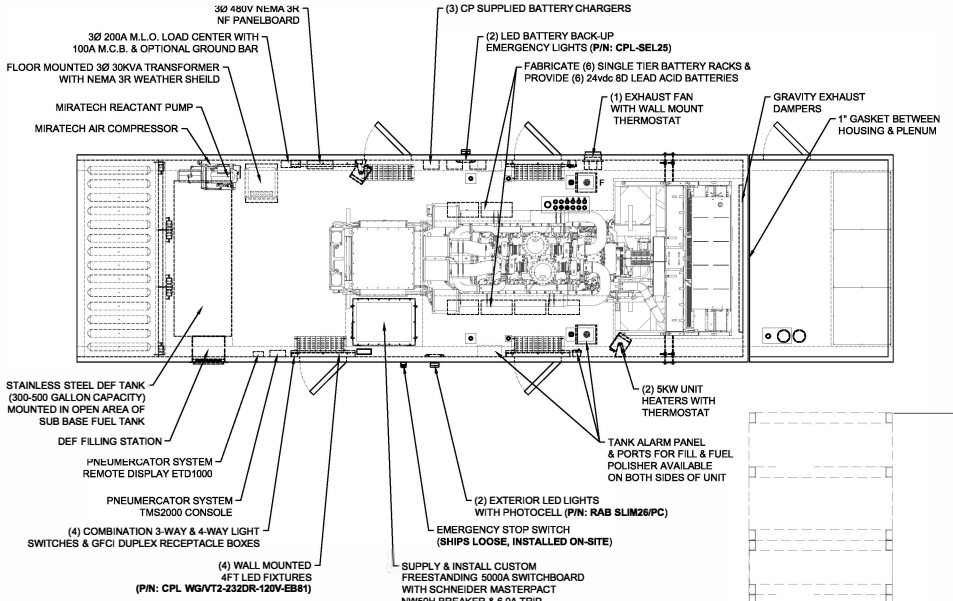
ESTIMATED WEIGHTS: (lbs)

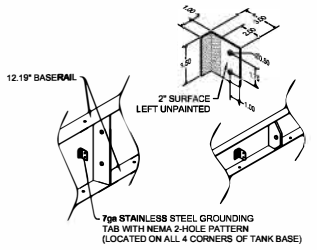
ENCLOSURE WEIGHT:	67,551
TOTAL SHIPPING WEIGHT (NOT INCLUDING TANK):	138,000
TOTALSYSTEMWET WEIGHT:	252,433

TANK DATA & NOTES:

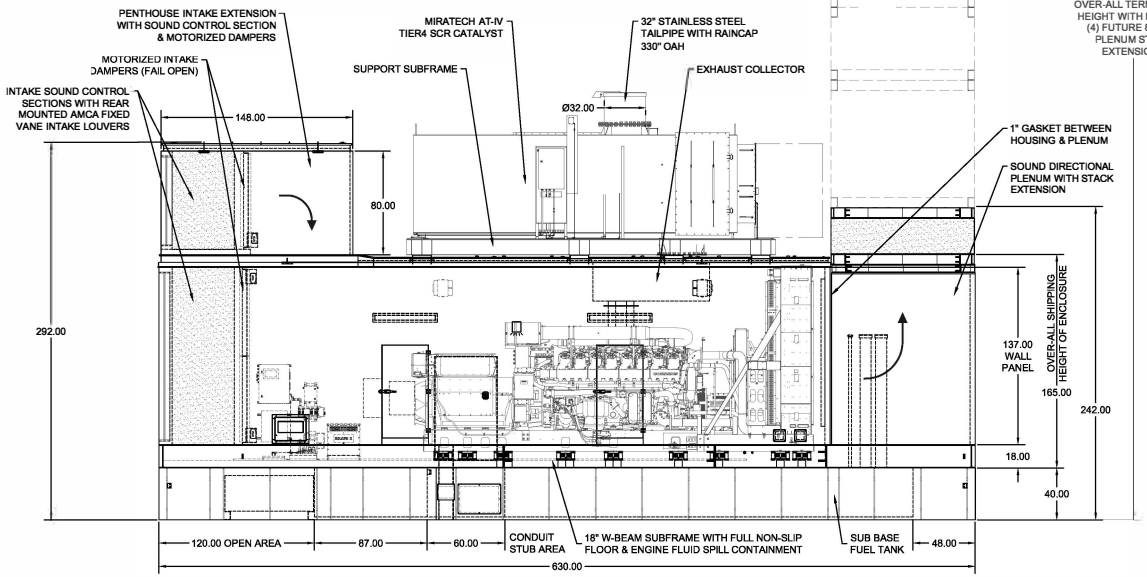
CAPACITY GALLONS:	8,250
GALLONS PER IN OF DEPTH:	244.0
RUN TIME @FULL LOAD Hrs:	36.1
TANK WEIGHT DRY lbs:	32,000
TANK WEIGHT WET: lbs:	93,933
CONDUIT STUB AREA:	TYPE C (SIDE)

1. EMERGENCY VENT SIZING BASED ON UL142 TABLE8.1
2. PORTS PER UL 142 SECTION 10
3. NORMAL VENTING PER UL 142 SECTION 8.11, TABLE 8.2
4. WELDS & JOINTS PER UL SECTION 6 FIGURE 6.1, 6.2

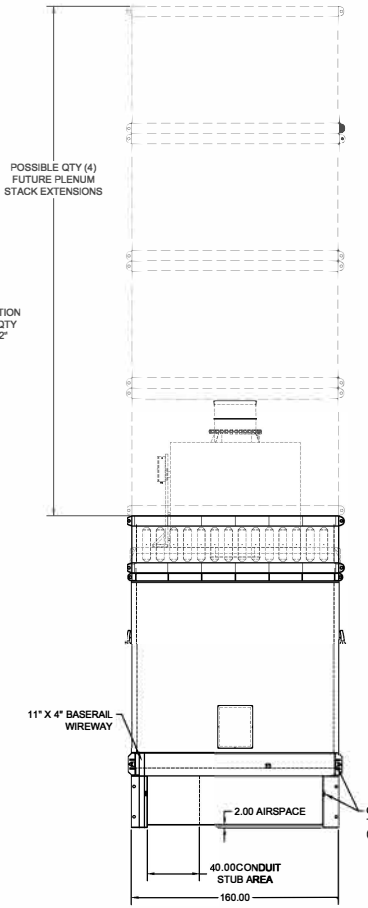




1 GROUNDING TABS
Scale: N.T.S.



53 FT
OVER-ALL TERMINATION HEIGHT WITH MAX QTY (4) FUTURE 8'-21/2" PLENUM STACK EXTENSIONS



REV	DESCRIPTION	BY	DATE
0	ORIGINAL SUBMISSION RELEASE	AW	01/28/21

CONCEPTUAL - NOT FOR CONSTRUCTION

UL SPEC	DESCRIPTION	CLASS	FILE #
UL 142	SECONDARY CONTAINMENT DOUBLE WALL TANK	EVFT	MH47836
N/A			
N/A			

EQUINIX SV-11 T4

Quote Reference	Edition
24709	0

Drawing Number: S384921 GA

Designed by	Salesperson	Date	Scale	Sheet #
AW	JD	01/28/20	N.T.S.	1/1

FREEMAN ENCLOSURE SYSTEMS

Attachment 1B

The existing air quality conditions in the project area are summarized in Table Error! No text of specified style in document. and Table Error! No text of specified style in document.1B.2, which provide the background ambient air concentrations of criteria pollutants for the previous three (3) years as measured at certified monitoring stations near the project site. To evaluate the potential for air quality degradation as a result of the project, modeled project air concentrations are combined with the respective background concentrations as presented below and used for comparison to the NAAQS and CAAQS.

Table Error! No text of specified style in document.**: Measured Ambient Air Quality Concentrations by Year**

Pollutant	Units	Avg Time	Basis of Yearly/ Design Concentrations	2017	2018	2019	Design
Ozone	ppb	1-Hr	CAAQS-1st Highs/3-yr Max	121	78	95	121
Ozone	ppb	8-Hr	CAAQS-1st Highs/3-yr Max	98	61	81	98
Ozone	ppb	8-Hr	NAAQS-4th Highs/3-yr Avg	75	53	60	63
NO_2	ppb	1-Hr	CAAQS-1st Highs/3-yr Max	67	86	59	86
NO_2	ppb	1-Hr	NAAQS-98thos/3-yr Avg	50	59	52	54
NO_2	ppb	Annual	CAAQS/NAAQS-AAM/3-yr Max	12	12	11	12
CO	ppm	1-Hr	CAAQS-1st Highs/3-yr Max	2.1	2.5	1.7	2.5
			NAAQS-2nd Highs/3-yr Max	2.0	2.4	1.6	2.4
CO	ppm	8-Hr	CAAQS-1st Highs/3-yr Max	1.8	2.1	1.3	2.1
			NAAQS-2nd Highs/3-yr Max	1.7	2.0	1.3	2
SO_2	ppb	1-Hr	CAAQS-1st Highs/3-yr Max	3.6	6.9	14.5	14.5
			NAAQS-99thos/3-yr Avg	3	3	2	2.7
		24-Hr	CAAQS-1st Highs/3-yr Max	1.1	1.1	1.5	1.5
			NAAQS-2nd Highs/3-yr Max	1.0	1.1	0.6	1.1
		Annual	CAAQS/NAAQS-AAM/3-yr Max	0.20	0.21	0.14	0.21
PM_{10}	µg/m^3	24-Hr	CAAQS-1st Highs/3-yr Max	70	122	77	122
			NAAQS-2nd Highs/3-yr 4th High	67	112	54	112
		Annual	CAAQS-AAM/3-yr Max	22	23	23	23
$PM_{2.5}$	µg/m^3	24-Hr	NAAQS-98th%/3-yr Avg	34	73	21	43
		Annual	CAAQS –AAM/3-yr Max	9.5	12.8	9.1	12.8
			NAAQS-AAM/3-yr Avg				10.5

Notes: Values for 158 East Jackson Street, San Jose, CA, the nearest BAAQMD monitoring site (all applicable pollutants measured)
Data sources: BAAQMD website Air Pollution Summaries for CAAQS and USEPA AIRS Data Reports website for NAAQS.

Table Error! No text of specified style in document.**B.2: Background Air Quality Data Summary**	
Pollutant and Averaging Time	**Background Value (µg/m^3)**
Ozone – 1-hour Maximum CAAQS	238
Ozone – 8-hour Maximum CAAQS/ 3-year average 4th High NAAQS	192/124
PM_{10} – 24-hour Maximum CAAQS/ 24-hour 3-year 4th High NAAQS	122/112
PM_{10} – Annual Maximum CAAQS	23
$PM_{2.5}$ – 3-Year Average of Annual 24-hour 98th Percentiles NAAQS	43
$PM_{2.5}$ – Annual Maximum CAAQS/ 3-Year Average of Annual Values NAAQS	12.8/10.5
CO – 1-hour Maximum CAAQS/ 1-hour High, 2nd High NAAQS	2863/2748
CO – 8-hour Maximum CAAQS/ 8-hour High, 2nd High NAAQS	2405/2290
NO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 98th Percentile 1-hour Daily Maxima NAAQS	162/102
NO_2 – Annual Maximum CAAQS/NAAQS	22.6
SO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 99th Percentile 1-hour Daily Maxima NAAQS	38/7
SO_2 – 3-hour Maximum NAAQS (Not Available - Used 1-hour Maxima)	38
SO_2 – 24-hour Maximum CAAQS 24-hour High, 2nd High NAAQS	4/3
SO_2 – Annual Maximum NAAQS	0.5
Notes: Values for 158 East Jackson Street, San Jose, CA, the nearest BAAQMD monitoring site (all applicable pollutants measured) Conversion of ppm/ppb measurements to µg/m^3 concentrations based on: µg/m^3 = ppm x 40.9 x MW, where MW = 48 ozone, 28 CO, 46 NO_2, and 64 for SO_2, respectively.	