

DOCKETED

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ATMOSPHERIC DYNAMICS, INC
Meteorological & Air Quality Modeling

1. Page 92 of 96 of the Revised AQ and HRA Modeling Analysis with Overlapping Construction and Operation and with Diesel Particulate Filters (TN# 234479) shows vendor information of the DPFs. But it only shows the larger QSK95-G9 as the engine model and the quantity is only 3. And staff cannot find the DPF vendor information for the smaller QSX15-G9 engines. Please confirm whether the applicant will use DPF for each of the 39 engines. Please provide corrected information (with correct engine quantity and vendor information for all of the engines) to the docket.

Response: The quantity number “3” on page 92 is simply a typo in the provided technical data sheet supplied by the vendor. DPFs will be used on all proposed engines (36 large engines, and 3 small engines, for a total of 39 engines). Secondly, the number value for all intents and purposes is meaningless because the technical data presented describes the system to be installed on **each** of the engines. The technical data for the QSK95 engine(s) is valid and does not require updating. A technical data sheet for the small engines has been requested and will be supplied to CEC after review by the Applicant. (See additional information in Response 2 below.)

2. Page 92 of 96 of TN# 234479 shows the PM10 emissions would meet the 0.01 g/bhp-hr emission standard. Therefore, the ATCM limit of no testing during 7:30 am and 3:30 pm on days when school is in session would not apply. However, the revised analysis is based on a more conservative PM emission factor of 0.015 g/bhp-hr. Staff would like to confirm whether or not the PM emissions would meet the 0.01 g/bhp-hr emission standard.

Response: The page referred to is the DPF supplier information, and it does state that the proposed DPF systems will meet 0.01 g/bhp-hr for PM10. But this data sheet is not an emissions guarantee. The Applicant also believes that the emissions will also comply with the 0.01 g/bhp-hr value. For purposes of conservativeness, the emissions rate used for both engines, i.e., the QSK95 and QSX15, was 0.015 g/bhp-hr for emissions calculations. Please note that the emissions based upon the 0.015 g/bhp-hr value were evaluated at 50 hrs/yr in the operations HRA per the CEC direction, not 20 hours per year as proposed by the applicant as an enforceable permit limit for maintenance and readiness testing. In addition, the Applicant notes that the provisions of the ATCM with respect to engine operations pursuant to section 93115.6 do not apply to the proposed facility since no school or school grounds are within 500 ft. of the project site.

3. Page 10 of 96 of TN# 234479 states that during the Trenching/Fine Grading phase for each building, Atmospheric Dynamics, Inc. (ADI) added the following equipment types: (1) grader, (2)



scrapers, and (1) rubber-tired dozer. Staff compared the CalEEMod files submitted in May 2020 and in August 2020. Staff did not see difference in construction equipment types or numbers in the two files. Please confirm whether or not the construction equipment types or numbers have been changed and update the analysis as needed to be consistent.

Response: The added equipment was included in the original analysis dated May 2020 and was not changed in the August 2020 analysis, i.e., both analyses contain the additional equipment.

4. Staff noticed that the HRA for operation used rural dispersion option, while all the other HRA and criteria pollutant impacts modeling files used urban dispersion option. Staff would like to know the reason for the inconsistency. Please provide justification for using different dispersion options for the same project at the same location. Update the analysis for consistency or justify the basis of the inconsistency.

Response: The operational HRA should have been analyzed with urban dispersion coefficients and thus, was rerun with the urban option and the results are summarized below.

Table 8 REVISED 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 3 rd trimester to 16 years. MEIS – Los Paseos School				

Table 9 REVISED OPERATIONS WORKER RISK 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				



5. Table 8 on page 9 of 96 of TN# 234479 shows cancer risk at MEIS to be 2.41E-7 during operation. However, staff checked the HRA file and found the cancer risk at MEIS is 2.41E-6, an order of magnitude higher than 2.41E-7. In addition, the cancer risk at the MEIW was shown as 5.12E-6 in Table 9, but the HRA file shows 5.10E-6. Please confirm these values and resolve inconsistencies.

Response: The MEIS value of 2.41E-7 is simply a typographical error and should read 2.41E-6. The MEIW value of 5.12E-6 should read 5.10E-6.

6. Table 13 on page 13 of 96 of TN# 234479 shows emissions during overlapping period. It is unclear how the engine operations emissions for Buildings 1 and 2 for the 17-month overlapping period were calculated. For example, Table 13 shows the NOx emissions to be 9.55 tons/period for the engine operations during the 17-month overlapping period. However, the NOx emissions are shown to be 10.708 tpy and 0.120 tpy for the larger engines and smaller engines respectively on pages 27 and 29, with a total of 10.827 tpy for engines in Buildings 1 and 2. The 17-month NOx emission would be prorated to 15.3 tons/period ($= 10.827 * 17 / 12$) from engine operations in Buildings 1 and 2, instead of 9.55 tons/period. Similarly, the PM emissions would be 0.053 tons/period from engine operations in Buildings 1 and 2 for the 17-month overlapping period, instead of 0.25 tons/period. Staff would like to confirm whether the numbers shown in Table 13 were typographical errors. If yes, please provide the correct values or staff will use values based on staff's independent analysis.

Response: Table 13 is revised as follows.

Tabled 13 Worst Case 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	15.3	1.76	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	20.2	7.63	5.21	0.028	0.32	0.28	0.32	0.09
Table Assumptions from CalEEMod applicant data: <ol style="list-style-type: none"> 1. Construction period is 6-1-26 through 12-1-27, total of 17 months. 2. 22 avg 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 mtons (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. 								



7. The VOC emissions shown in Table 14 on page 14 of TN# 234479 do not match those shown in Table 12 on page 12. Table 12 shows VOC emissions of 4.4 tons per period (17 months) during Phase 3 construction. Therefore, the average VOC emissions per month would be 517.6 lbs (= $4.4 * 2000 / 17$), instead of 577.6 lbs shown in Table 14. Staff would like to confirm that the 577.6 lbs/month and the annual, daily, and hourly emissions of VOC shown in Table 14 were typographical errors. Please resolve these inconsistencies.

Response: The VOC value in Table 14 should read 517.6, not 577.6 lbs avg/month. This is a typographical error. This correction causes the other VOC values to be revised downward to read as follows: 6211.2 lb avg/yr, 23.53 lbs/avg/day, and 2.94 lbs/hr.

8. The note under Table 14 on page 14 of TN# 234479 says average work hours per day is 8. However, modeling was done assuming 10 hours/day, consistent with the 7 am to 5 pm construction schedule. Please explain and resolve the inconsistency.

Response: (1) The 7am to 5pm workday is not a fixed timeframe. It represents a 10 hour day that could start and stop at various times, (2) not all phases of construction on site will start and stop at the same precise times, (3) in a 10 hour day, laborers are allowed, and in the context of union labor, required to be given a defined morning break, lunch, and afternoon break periods, which typically lasts a total of approximately 1.5-2 hours per day, resulting in a typical actual work period of 8 to 8.5 hours per day. Since the periods shift and move each day depending on the work involved, etc., the emissions that were based over an 8-hour period were modeled over the 10-hour period to account for the fluctuations noted above.

9. Staff noticed that in the annual NO₂ impacts modeling file for the overlapping period, the emission rate for each of the 11 combustion sources for Building 3 construction was set to be 4.868E-5 g/s. Staff noticed this emission rate was for SO₂, instead of NO₂. Please update the annual NO₂ impacts analysis for the overlapping period with correct NO₂ emission rates.

Response: The revised annual NO₂ modeling results for the crossover assessment is summarized in Table 15 below.



TABLE 15 MODELED MAXIMUM COMBINED OPERATIONS/CONSTRUCTION OVERLAP IMPACTS						
Pollutant	Averaging Time	Maximum Construction Impacts ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	State Standards ($\mu\text{g}/\text{m}^3$)	Federal Standards ($\mu\text{g}/\text{m}^3$)
NO ₂	1-hour C	253.4	-	270.5	339	-
	1-hour N	91.8	-	91.8	-	188
	Annual	3.64	24.5	28.1	57	100
SO ₂	1-hour	0.05	18.1	18.2	655	196
	3-hour	0.03	18.1	18.1	-	1300
	24-hour	0.01	2.9	2.9	105	365
	Annual	0.005	0.5	0.5	-	80
CO	1-hour	92.86	2,863	2,955.9	23,000	40,000
	8-hour	42.80	2,405	2,447.8	10,000	10,000
PM10	24-hour	6.1	122	125.6	50	150
	Annual ^a	1.6	23.1	24.4	20	-
PM2.5	24-hour	1.8	42	43.7	-	35
	Annual ^a	0.6	12.8	13.4	12	12.0

Notes:
^a Maximum Annual Arithmetic Mean.

10. Table 16 on page 16 of TN# 234479 shows cancer risk at PMI to be 4.86E-5 for the overlapping period. But the HRA file shows cancer risk of 4.98E-5. Staff will use the value from the HRA file unless the applicant resolves these apparent inconsistencies.

Response: The correct value is 4.98E-5. The 4.86E-5 value is a transcription error. The Applicant notes that these values are for the PMI which is not a bonafide receptor for purposes of assessing risk impacts to residential, sensitive, or worker locations, and secondly we note that any conclusions drawn from these values would be the same.

11. Staff noticed that the SO₂ impacts (provided with the SPPE application) during operation of the project were modeled using annual emissions averaged over the year. While this is consistent with EPA's guidance on intermittent sources for demonstration with 1-hour NAAQS, no modeling was done for the 1-hour and 24-hour SO₂ CAAQS. Please provide 1-hour and 24-hour SO₂ CAAQS modeling analysis for operation of the project.

Response: The modeling results for the 1 and 24-hour SO₂ CAAQS were based on the screening load modeling results as summarized in the provided spreadsheet "Equinix Engine Emissions 020320 20 HR no DPFbc3.xlsx". The screening analysis utilized a normalized emission rate that was then prorated to the applicable scenario emission



rate and the applicable averaging period. For the short term SO₂ impacts (1 and 24 hour), the maximum hourly SO₂ emission rate was used in the spreadsheet to prorate the normalized concentration.

12. Please provide CO impacts modeling files for the overlapping period. The AERMOD output files for other pollutants were provided. However, the AERMOD input files for short-term impacts analysis for the overlapping period (i.e. 1-hour NO₂ CAAQS, 1-hour NO₂ NAAQS, 24-hour PM₁₀, 24-hour PM_{2.5}, 1-hour, 3-hour, and 24-hour SO₂) were not provided. Please provide all files for completeness and staff review, including CO.

Response: The input/output files for the overlapping period will be provided to the CEC with this response letter.

