

DOCKETED	
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Project Title:	San Jose Data Center 04
TN #:	262637
Document Title:	Microsoft SJ04 Email Responses to Staff AQ related Questions
Description:	N/A
Filer:	Scott Galati
Organization:	DayZenLLC
Submitter Role:	Applicant Representative
Submission Date:	4/9/2025 2:32:40 PM
Docketed Date:	4/9/2025

From: [Gregory Darwin](#)
To: [Qian, Wenjun@Energy](#); [Scott Galati](#)
Cc: [Heiser, John@Energy](#); [Chang, Kaycee@Energy](#); [Record, Jacquelyn@Energy](#); [Chu, Ann@Energy](#); [Perez, Andres@Energy](#); [Hughes, Joseph@Energy](#)
Subject: RE: New request for San Jose 04 data center
Date: Wednesday, March 26, 2025 5:58:26 PM
Attachments: [image002.png](#)
[image003.png](#)
[OPS.zip](#)
[pmsize.pdf](#)
[2025-02-27 Email Evap by Month-Stantec.pdf](#)

Hi Wenjun.

Finally!

Background: PM2.5 Impacts

The project's annual PM2.5 impacts (as shown in TN 258121 dated 07/29/2024), during both construction and operation, would exceed the new PM2.5 [significant impact level] (SIL) ($0.13 \mu\text{g}/\text{m}^3$, effective April 30, 2024) at the fence line and the Apple site southeast of the project. Given that the existing background PM2.5 already exceeds the new PM2.5 NAAQS ($9.0 \mu\text{g}/\text{m}^3$), the project would contribute to the existing exceedance.

For construction, the fugitive dust control measures would reduce PM fugitive impacts to less than significant. However, the operational PM2.5 impacts, primarily from the cooling tower (based on a conservative estimate using traditional cooling tower data), require further analysis. To demonstrate that the project's PM2.5 impacts would be less than significant, the applicant needs to perform a more refined analysis of the cooling tower emissions and impacts. If the refined modeling still indicates significant impacts, the applicant should propose mitigation measures to reduce those impacts to less than significant levels.

CEC Data Request:

Please provide a more refined analysis of the cooling tower emissions and impacts to demonstrate that the project's PM2.5 impacts would be less than significant. If the refined modeling still indicates significant impacts, please propose mitigation measures to reduce those impacts to less than significant levels.

Applicant Data Response:

To address the modeled exceedance of the PM2.5 SIL ($0.13 \mu\text{g}/\text{m}^3$) from the cooling towers, two refinements were made to the PM2.5 emission calculations:

1. The cooling tower emission calculation utilized the methodology in AP-42 and was conservatively based on the maximum monthly water usage over a 12-month period. In other words, the maximum monthly water usage was used to calculate the annual average emissions. This assumption was revised by obtaining the expected cooling tower annual water usage by month, which was recalculated to be 221,479,926 gallons/year. This results in a per cooling tower water usage rate of 443.3 gpm (see attached water usage estimates), which is a decrease from the maximum monthly rate of 650 gpm. In addition, the TDS in the water was revised to reflect an annual average of 502.4 ppmw, which is a slight decrease from the previously used TDS of 513 ppmw (this is prior to the application of four cycles of concentration). Overall, the total PM from all of the cooling towers was reduced from 0.8331 tpy down to 0.5664 tpy. The revised calculation spreadsheet is attached to this response.

- The second refinement was to speciate the calculated PM emissions into PM10. The AP-42 methodology assumes all of the TDS are emitted as PM. Based on the attached “Calculating Realistic PM10 Emissions from Cooling Towers” (Reisman-Frisbie) methodology, total PM was speciated into PM10. Speciation of total PM to PM2.5 was not utilized to retain a level of conservatism. The percent mass of total PM that is PM10, based on four cycles of concentration at 2,010 ppmw, is 70.509 percent as taken from the attached paper. This further refines the calculated PM10 emissions from all cooling towers down to 0.3923 tpy.

The revised cooling tower PM10 emissions were then conservatively assumed to be PM2.5 and the AERMOD (Version 24142) model was rerun for both operations and construction (hybrid case where operation of one data center is concurrent with the construction of the second). The same modeling methodologies, five-year meteorological data set from the San Jose Airport (2013-2017) and identical receptor grids as used in the application were utilized for this refined analysis. Individual source groups were specified for the model output. The results of the revised annual PM2.5 modeling are summarized in Table 1 below.

Table 1 Annual PM2.5 SIL Modeling (Operations + Construction)				
Pollutant	Source Group	Averaging Time	Maximum Concentration (µg/m³)	Class II Annual SIL (µg/m³)
Operations PM2.5 Annual	Cooling Tower	Annual	0.080	0.13
	Emergency Engines	Annual	0.035	
	All	Annual	0.115	
Construction PM2.5 Annual	Cooling Tower	Annual	0.051	0.13
	Emergency Engines	Annual	0.009	
	Cooling Tower+ Engines	Annual	0.074	
	Fugitive Dust	Annual	0.189	
	All	Annual	0.203*	
*The annual impact is taken directly from the AERMOD output and is not the sum of the individual source groups as listed. The annual PM2.5 SIL is the highest of the 5 year average.				

For operations, the cooling tower modeled results are less than the annual PM2.5 SIL of $0.13 \mu\text{g}/\text{m}^3$. Also of note is that the combined PM2.5 Sil analysis from all PM2.5 sources are also below the annual SIL.

For the construction modeling, with the exception of the fugitive dust from the area source of activity, the cooling towers are less than the applicable SIL and when combined with the emergency engine modeling results, are also less than the annual PM2.5 SIL. While the fugitive dust (PM2.5) remains over the SIL, construction activities are temporary in nature. And as noted in the BAAQMD comment background, application of the fugitive dust control measures would reduce PM fugitive impacts to less than significant.

Based on this refined analysis described above, the modeled project impacts for both construction and operations will remain below the annual PM2.5 SIL and will not cause or contribute to exceedances of the annual PM2.5 CAAQS or NAAQS.

I have attached the modeling input/output files and revised emission calculations in the attached zip file. Also included is the new monthly water usage report and the table with speciated PM10 data based on TDS.

Let me know if you have any additional questions or need anything else.

Regards,

Gregory Darwin

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Sundog

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From: Qian, Wenjun@Energy <Wenjun.Qian@energy.ca.gov>

Sent: Tuesday, February 25, 2025 1:43 PM

To: Scott Galati <sgalati@dayzenllc.com>; Gregory Darwin <darwin@atmosphericdynamics.com>

Cc: Heiser, John@Energy <john.heiser@energy.ca.gov>; Chang, Kaycee@Energy <kaycee.chang@energy.ca.gov>; Record, Jacquelyn@Energy <Jacquelyn.Record@energy.ca.gov>; Chu, Ann@Energy <Ann.Chu@energy.ca.gov>; Perez, Andres@Energy <Andres.Perez@Energy.ca.gov>; Hughes, Joseph@Energy <Joseph.Hughes@energy.ca.gov>

Subject: New request for San Jose 04 data center

Scott and Greg,

We are currently working on the air quality analysis for the San Jose 04 project. After we have carefully examined the modeling files, we noticed that the project's annual PM2.5 impacts would exceed the new PM2.5 SIL of 0.13 $\mu\text{g}/\text{m}^3$ and contribute to the existing exceedance of the new PM2.5 NAAQS of 9.0 $\mu\text{g}/\text{m}^3$.

To address this issue, we have prepared an informal data request (see below). We would greatly appreciate it if you could respond to this request before we finalize our analysis. Upon receiving your response, we can document it as a Record of Conversation.

Background: PM2.5 Impacts

The project's annual PM2.5 impacts (as shown in TN 258121 dated 07/29/2024), during both construction and operation, would exceed the new PM2.5 SIL (0.13 $\mu\text{g}/\text{m}^3$, effective April 30, 2024) at the fence line and the Apple site southeast of the project. Given that the existing background PM2.5 already exceeds the new PM2.5 NAAQS (9.0 $\mu\text{g}/\text{m}^3$), the project would contribute to the

existing exceedance.

For construction, the fugitive dust control measures would reduce PM fugitive impacts to less than significant. However, the operational PM_{2.5} impacts, primarily from the cooling tower (based on a conservative estimate using traditional cooling tower data), require further analysis. To demonstrate that the project's PM_{2.5} impacts would be less than significant, the applicant needs to perform a more refined analysis of the cooling tower emissions and impacts. If the refined modeling still indicates significant impacts, the applicant should propose mitigation measures to reduce those impacts to less than significant levels.

Data Request:

Please provide a more refined analysis of the cooling tower emissions and impacts to demonstrate that the project's PM_{2.5} impacts would be less than significant. If the refined modeling still indicates significant impacts, please propose mitigation measures to reduce those impacts to less than significant levels.

Thanks. And please let us know if you have any questions/concerns.

Wenjun Qian, Ph.D., P.E.

Program and Project Supervisor

California Energy Commission

715 P St, MS-46

Sacramento, CA 95814

Email: Wenjun.Qian@energy.ca.gov

Cell: (916) 695-5448



Size Distribution

1000 ppm (TDS)		2000 ppm		3000 ppm		% Mass
d _d	d _p	d _d	d _p	d _d	d _p	≤
10	0.7387304	10	0.930527	10	1.0650435	0
20	1.4774608	20	1.8610539	20	2.130087 PM2.5	0.196
30	2.2161912	30	2.7915809 PM2.5	30	3.1951306 PM2.5	0.226
40	2.9549216 PM2.5	40	3.7221079	40	4.2601741	0.514
50	3.693652	50	4.6526349	50	5.3252176	1.816
60	4.4323825	60	5.5831618	60	6.3902611	5.702
70	5.1711129	70	6.5136888	70	7.4553046	21.348
90	6.6485737	90	8.3747427	90	9.5853917	49.812
110	8.1260345	110	10.235797 PM10	110	11.715479 PM10	70.509
130	9.6034953	130	12.096851	130	13.845566	82.023
150	11.080956 PM10	150	13.957905	150	15.975653	88.012
180	13.297147	180	16.749485	180	19.170783	91.032
210	15.513339	210	19.541066	210	22.365914	92.468
240	17.72953	240	22.332647	240	25.561045	94.091
270	19.945721	270	25.124228	270	28.756175	94.689
300	22.161912	300	27.915809	300	31.951306 TSP/PM30	96.288
350	25.855564	350	32.568444 TSP/PM30	350	37.276523	97.011
400	29.549216	400	37.221079	400	42.601741	98.34
450	33.242868 TSP/PM30	450	41.873714	450	47.926958	99.071
500	36.93652	500	46.526349	500	53.252176	99.071
600	44.323825	600	55.831618	600	63.902611	100

Mendell, Chad

From: Tumber, Saahil
Sent: Wednesday, February 26, 2025 3:38 PM
To: Mendell, Chad
Cc: Fisk, Jordan; Walsh, Ryan
Subject: SJC04/06 - Water Usage and Sanitary Discharge Estimates

Chad,

Following are our calcs for water usage and sanitary discharge for SJC04/06 campus. Please have the environmental consultant share their estimates.

Month	Evap for SJC04+06 (gal)	Blowdown for SJC04+06 (gal)	Sandfilter Backwash (gal)	Admin Sanitary (gal)	TOTAL SANITARY (gal)	TOTAL MAKEUP (gal)
January	9,741,212	3,247,071	372,000	4,836	3,623,907	13,360,283
February	9,681,216	3,227,072	336,000	4,368	3,567,440	13,244,288
March	13,904,888	4,634,963	372,000	4,836	5,011,799	18,911,850
April	13,419,804	4,473,268	360,000	4,680	4,837,948	18,253,072
May	15,056,854	5,018,951	372,000	4,836	5,395,787	20,447,805
June	15,213,839	5,071,280	360,000	4,680	5,435,960	20,645,118
July	15,588,823	5,196,274	372,000	4,836	5,573,110	21,157,097
August	16,222,939	5,407,646	372,000	4,836	5,784,482	22,002,585
September	14,959,262	4,986,421	360,000	4,680	5,351,101	20,305,683
October	15,294,168	5,098,056	372,000	4,836	5,474,892	20,764,225
November	12,443,689	4,147,896	360,000	4,680	4,512,576	16,951,585
December	11,298,253	3,766,084	372,000	4,836	4,142,920	15,436,337
					58,711,922	221,479,929

Thanks
Saahil

From: [Gregory Darvin](#)
To: [Ann Chu](#)
Subject: RE: Question regarding Overlap HRA of SIA
Date: Friday, April 4, 2025 4:54:37 PM
Attachments: [image001.png](#)
[See Table 4.3-28.docx](#)
[Screenshot.docx](#)

This is what I had mentioned in the previous email.

Gregory Darvin
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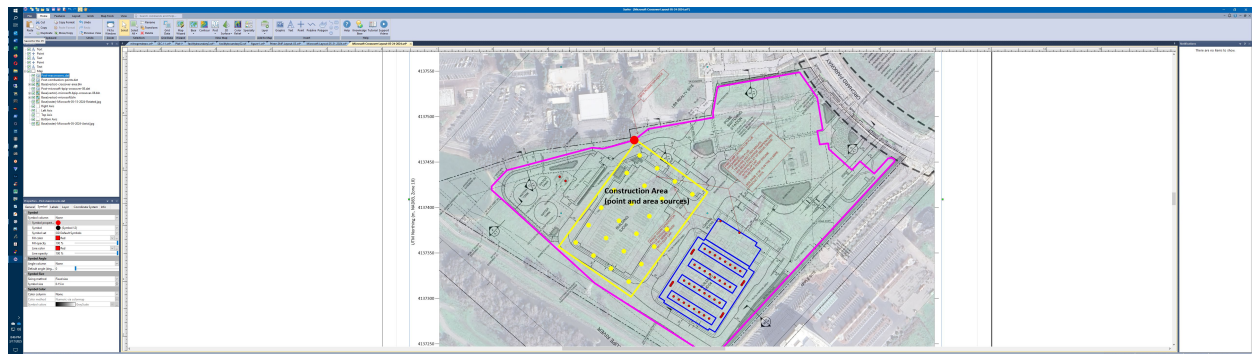
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From: Gregory Darvin
Sent: Monday, March 17, 2025 9:53 PM
To: Chu, Ann@Energy <Ann.Chu@energy.ca.gov>
Cc: Qian, Wenjun@Energy <Wenjun.Qian@energy.ca.gov>; Record, Jacquelyn@Energy <Jacquelyn.Record@energy.ca.gov>
Subject: RE: Question regarding Overlap HRA of SIA

I noticed that there was a huge decrease in max concentrations from the first high receptor. Also noticed that the residential receptors did not seem to be impacted as much compared to the fence line receptors.

I plotted up the location of the max impact and noticed it was right next to the area source, which was the giveaway. There shouldn't be an area source for DPM. The only DPM is from the combustion construction equipment (yellow dots) and the red dots (diesel gen sets). As it turns out, it was the area source for PM10 fugitives which was included as a DPM emissions source when it summarized the results in the plot files. The red spot below is the max location receptor (229 in a million) and the yellow outline is the area source of fugitive dust.

I removed the fugitive dust source and reran the HRA (yellow and red dots) and the results went way down (I have attached the zip file with the crossover HRA files and AERMOD files). Max PM10 is now 9.06 in a million. I have also revised Table 4.3-28 for the worker, residential and school locations. The chronic values were also updated.



Sorry about that!

Regards,

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From: Chu, Ann@Energy <Ann.Chu@energy.ca.gov>
Sent: Monday, March 17, 2025 5:34 PM
To: Gregory Darvin <gdarvin@atmosphericdynamics.com>
Cc: Qian, Wenjun@Energy <Wenjun.Qian@energy.ca.gov>; Record, Jacquelyn@Energy <Jacquelyn.Record@energy.ca.gov>
Subject: Question regarding Overlap HRA of SIA

Hi, Greg,

I am wondering if you know why the cancer risk of PM10 during overlap is so high (229). I checked the AQ part and the levels look ok. Thanks.

Huel-An (Ann) Chu, Ph.D.
Air Resources Engineer
California Energy Commission
715 P Street, MS-46
Sacramento, CA 95814

Table 4.3-28: MBGF Overlap (Construction + Operation) Health Risk Assessment Summary

Location	Receptor #	UTM (meters)	Cancer Risk	Chronic HI	Acute HI	Cancer Burden
PMI	57	594419.46, 4137474.21	9.06E-06	0.0056	-	NA
MEIR	7642	596050.0, 4136225.0	2.33E-07	0.000144	-	NA
MEIS	4953	593250.0, 4138475.0	1.07E-07	0.000066	-	NA
MEIW	2059	594330.0, 4137485.0	1.73E-07	0.00127	-	NA

Notes: See acronym definitions above.

The PMI noted above is located on the northern fenceline.

Testing hours for the overlap of construction and operation was set to 50 hours per engine.

DPM is the surrogate compound for construction equipment diesel exhaust. No acute REL has been established for DPM.

SJC06 construction period is 25 months (HRA used 3-year exposure period.)

The maximum chiller contribution to the HRA is 2.09E-10 at Receptor #57. This has no appreciable contribution to the total risk.

FAH=1 for all age groups from 3rd trimester to 16 years, for MEIR and MEIS.

FAH not used for MEIW.

MEIS – Montague Elementary School