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July 29, 2019

Subject: Bay Area Air Quality Management District's (BAAQMD) Recent Policy Change: Potential to Emit (PTE): Laurelwood Data Center (19-SPPE-01)

Dear Ms. Worrall,

On behalf of the Applicant, we are submitting this letter describing how the Applicant will comply with the Bay Area Air Quality Management District's (BAAQMD) recently issued policy change for calculating the potential to emit emissions for emergency backup power generators as applicable to the proposed Laurelwood Data Center (LDC). This letter includes discussion of the following:

- BAAQMD's new policy change description: *Calculating Potential to Emit for Emergency Backup Power Generators*
- Update of LDC's potential to emit (PTE) emission estimates following the new BAAQMD guidance
- An assessment of LDC's compliance with applicable air quality regulations applying the new BAAQMD policy, based on the post-policy PTE methodology.
- An air quality impact analysis to demonstrate compliance with the annual ambient air quality standards, applying the new BAAQMD policy

BAAQMD's Policy Change Description

The BAAQMD recently released a new policy, *Calculating Potential to Emit for Emergency Backup Power Generators*, that has been developed to include a new requirement to determine PTE for emergency backup power generators (BAAQMD, 2019). The policy has been signed but it has not been subject to any formal rulemaking and is not an adopted BAAQMD regulation.

The policy states that all facilities with one or more generators used for emergency backup power purposes may be subject to this policy. These facilities should in the analyses for the project assume 100 hours per year of emergency operations, in addition to the requested number of annual hours for maintenance and testing, when calculating the sources PTE in order to determine the regulatory applicability of Regulation 2, Rule 2 New Source Review (NSR) and Title V Major Facility Review regulations (Regulation 2, Rule 6) requirements. Significantly, this policy clearly states that emission reduction credits required for a project are based on the permitted hours/emissions associated with testing and maintenance activities, not the assumed 100 hours set forth in the analyses required by the policy. Similarly, the new policy notes emergency operations are exempt from New Source Review of Toxic Air Contaminants regulations (Regulation 2, Rule 5) specific to toxic air contaminants.

While implementing this new policy, the BAAQMD will not approve a permit condition to limit emergency operation to less than the assumed 100 hours per year in order to lower a source's PTE. This policy does not limit emergency operation of the backup power generators because of the need to maintain flexibility to respond to emergency situations. Therefore, the BAAQMD set the assumed 100 hours per year for

emergency operations in the new policy as a reasonable worst-case assumption for the amount of time a facility may operate for emergency purposes within a given year.

PTE Calculations Applying the BAAQMD Policy

The updated LDC PTE is based on the policy's assumption of standby generators operating for 100 hours per year with 21 hours per year per engine of for maintenance and testing.

As the LDC is physically limited by energy demand and the project's equipment to a maximum 99-megawatt (MW) demand, the LDC PTE updated to apply the new BAAQMD policy is based on 99 MWs of generation either assuming 33 of the 3 MW standby generators operate at 100 percent load.[1] The updated LDC PTE also assumes all 56 standby generators would operate for 21 hours per year at 100 percent load for maintenance and testing for the analyses set forth in the BAAQMD's policy. Table 1 describes the operation, maintenance and testing details for the proposed standby generators.

Table 1. Operation, Maintenance and Testing Details for Generators at 100% Load

Parameter	Units	Value	Comments
Total Number of Standby Generators	units	56	Total number of 3 MW standby generators
Number of Standby Generators Assumed for Emergency Operation	units	33	Based on the physical limitation of electrical generation assuming a maximum 99-MW electrical demand by the facility
Number of Standby Generators Assumed for Maintenance and Testing Purposes	units	56	Assumed for maintenance and testing
Annual Hours Assumed for Emergency Purposes (each Generator)	hours/year	100	Assumed per the BAAQMD's *Calculating Potential to Emit for Emergency Backup Power Generators* (BAAQMD, 2019)
Annual Hours of Operation Assumed for Maintenance and Testing (each Generator)	hours/year	21	Assumed for maintenance and testing
Total Hours for Calculating Emergency PTE, all generators combined	Total hours/year	3,300	33 units * 100 hours/year
Total Hours for Calculating Offsets, all generators combined	Total hours/year	1,176	56 units * 21 hours/year

Table 2 summarizes the post-BAAQMD policy PTE based on the operation, maintenance and testing details in Table 1. The post-BAAQMD policy PTE estimates have been calculated for all criteria pollutants including volatile organic compounds (VOCs), carbon monoxide (CO), nitrous oxides (NOx), sulfur dioxide (SO_2), particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}), and particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$). Emission factors used to calculate PTE can be found in Appendix DR32-A (Transaction Number [TN] # 228854) (Jacobs, 2019). The emission estimates assume 33 standby generators will operate for 100 hours per year for emergency purposes while all 56 standby generators will operate for 21 hours per year for maintenance and testing purposes.

[1] The operation of all 56 generators at approximately 58.9 percent load (99 MWs) results in the same PTE as assuming 33 generator operate at 100 percent load for 100 hours per year.

Table 2. Operation Criteria Pollutant Hourly Emission Rate and Annual Emissions Applying the BAAQMD Policy

Parameter	Tier 2 Emission Rate (lb/hour)					
	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Single Standby Generator	3.49	10.91	41.9	0.05	0.12	0.12
Annual Operation	**Annual Emissions (tpy)**					
Standby Generators - Emergency PTE [a]	5.8	18.0	69	0.07	0.20	0.20
Standby Generators - Routine PTE [b]	2.05	6.4	24.7	0.03	0.07	0.07
Mobile Sources [c]	0.02	0.45	0.41	0.003	0.04	0.02
Facility Upkeep [c]	4.09	0.81	0.95	0.01	0.07	0.07
Project Total [d]	**6.16**	**7.7**	**26.0**	**0.04**	**0.18**	**0.16**
BAAQMD Annual Thresholds of Significance [e]	10	--	10	--	15	10
Exceeds BAAQMD Annual Threshold (Y/N)?	N	N	Y	N	N	N
Standby Generators - Maximum PTE [f]	**7.8**	**24.4**	**94**	**0.1**	**0.3**	**0.3**
Title V Threshold [g]	100	100	100	100	100	100
Exceeds Title V Threshold (Y/N)?	N	N	N	N	N	N
Prevention of Significant Deterioration (PSD) Threshold [h]	250	250	250	250	250	250
Exceeds PSD Threshold (Y/N)?	N	N	N	N	N	N

Notes:

[a] Emergency PTE emissions assume operation of 33 standby diesel generators at 100% load. To comply with BAAQMD's new policy, Calculating Potential to Emit for Emergency Backup Power Generators (BAAQMD, 2019), it is assumed that only 33 of the 56 generators will operate to meet the project equipment's physical limit of 99-megawatts (MW) during a power outage.

[b] Routine PTE emissions assume operation of all 56 standby diesel generators at 100% load for only 21 hours per year for maintenance and testing purposes.

[c] Emissions from mobile sources and facility upkeep are included from calculations in Appendix DR32-A (Transaction Number [TN] # 228854) (Jacobs, 2019).

[d] For CEQA comparison purposes, the Project Total includes the maintenance and testing PTE emissions for standby generators, and emissions associated with offsite vehicles and ongoing facility upkeep.

[e] BAAQMD Thresholds of Significance taken from Table 2-1 of the *2017 CEQA Air Quality Guidelines* (BAAQMD, 2017).

[f] For permitting comparison purposes, consistent with BAAQMD's new policy (BAAQMD, 2019), only the maximum PTE emissions for standby generators were used to determine Title V and PSD applicability.

[g] Title V applicability criteria taken from BAAQMD's Title V Applicability Criteria - Major Facility website, located at http://www.baaqmd.gov/permits/major-facility-review-title-v/title-v-applicability-criteria. This criteria is consistent with BAAQMD Regulation 2-2-217, Major Facility.

[h] U.S. EPA's PSD Thresholds taken from BAAQMD Regulation 2-2-224, PSD Project.

As shown in Table 2, based on the application of the BAAQMD's policy as described in Table 1, the updated LDC PTE is below the Title V and PSD permitting thresholds.

The LDC operational PTE exceeds the 10 per year emission reduction credits (ERC) threshold for oxides of nitrogen (NOx), which requires the Applicant to acquire NOx ERCs to offset project emissions. Applying the BAAQMD policy assumptions, the NOx emissions PTE thereby exceeds the 35 ton per year threshold that requires the use of an offset ratio of 1.15:1. Application of the new BAAQMD policy means that the Applicant will be required to purchase and surrender 28.4 tons of NOx ERCs (24.7 tons * 1.15).

Before application of the BAAQMD's new policy, the LDC project was eligible to use offsets from the Small Facility Banking Account to mitigate the potential impacts from the project (Regulation 2, Rule 2, Section 2-2-302.1.1.1). With application of the new policy, while LDC's actual projected emissions for maintenance and testing have not increased, the LDC project would nevertheless no longer be able to

use the Small Facility Banking Account. Accordingly, LDC will acquire offsets using the usual BAAQMD banking practices and procedures to purchase and surrender 28.4 tons of NOx. There are 2,333 tons of NOx ERCs currently banked with the BAAQMD available for purchase and surrender.[2]

Air Quality Compliance

Federal, state, and regional agencies regulate air quality in the vicinity of which the project site is located. Table 3 describes the applicable regulations set by the United States Environmental Protection Agency (U.S. EPA), the California Air Resources Board (CARB), and the BAAQMD, and LDC's compliance with these rules and regulations.

Table 3. Regulatory Applicability

Regulation/Rule	Purpose	Regulating Agency	Applicability/Compliance Assessment
Regulation 2, Rule 2: New Source Review	Rule 2 implements federal New Source Review (NSR) and Prevention of Significant Deterioration requirements.	BAAQMD	This rule applies to all new or modified sources requiring a Permit to Operate and requires Best Available Control Technology (BACT) for any new source with a Potential to Emit (PTE) of 10.0 or more pounds per day (lb/day) of any single pollutant. Offsets are required if more than 10 tpy of NOx or Precursor Organic Compounds or more than 100 tpy of $PM_{2.5}$, PM_{10}, or SO_2 are emitted. If a facility's PTE is greater than 35 tpy of precursor organic compounds, the offset ratio is 1.15:1. The Applicant will submit an Authority to Construct (ATC) permit application as part of the NSR requirements, which will also provide the required 28.4 tons of NOx ERCs.
Regulation 2, Rule 6: Major Facility Review	Establishes procedures for large facilities to obtain Title V permits.	BAAQMD	This rule is to implement the operating permit requirements of Title V of the federal Clean Air Act. This rule is applicable to any major facility, which emits more than 100 tons per year of any criteria pollutant. The proposed LDC project will not exceed more than 100 tpy of any criteria air pollutant, so LDC will submit a Synthetic Minor Permit Application consistent with Regulation 2, Rule 6 requirements with a not to exceed NOx limit of 95 tons per year.

Air Quality Impacts

The pre-BAAQMD policy air dispersion modeling assumes 50 hours of operation per standby generator for testing and maintenance. The BAAQMD's new policy increases the theoretical standby generator operation to be 121 hours per year (100 hours for emergency purposes plus 21 hours to testing and maintenance). This results in an assumed increase of 121 hours/50 hours, which equals 2.42. For the purposes of this analysis, 2.42 has been conservatively rounded up to 2.5 increase.

To estimate the annual air quality impacts of the BAAQMD's new policy on those pollutants with annual ambient air quality standards (PM_{10} and $PM_{2.5}$, SO_2 and NO_2), the pre-BAAQMD policy ambient air quality impacts were conservatively multiplied by 2.5. Tables 4 through 6 show these estimated annual increased air quality impacts for the criteria pollutants and their post-BAAQMD policy values compared to the pre-BAAQMD policy National Ambient Air Quality Standards (NAAQS) and the California State Air Quality Standards (CAAQS), respectively.

[2] http://www.baaqmd.gov/permits/emissions-banking/bank-status

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Table 4. Comparison of Post-BAAQMD Policy Modeled Results to the NAAQS

Pollutant	Averaging Time	Pre-BAAQMD Policy Maximum Modeled Concentration ($\mu g/m^3$) [a]	Post-BAAQMD Policy Maximum Modeled Concentration ($\mu g/m^3$) [b]	Background Concentration ($\mu g/m^3$) [c]	Post-BAAQMD Policy Total Predicted Concentration ($\mu g/m^3$) [d]	NAAQS ($\mu g/m^3$)
$PM_{2.5}$	Annual [e]	0.02	0.05	10.60	10.65	12
SO_2	Annual [f]	0.01	0.03	0.79	0.82	80
NO_2	Annual [f]	7.31	18.28	24.10	42.38	100

Notes:
[a] The maximum modeled concentration assuming 50 hours per year from Attachment DR32 Table 8 (Transaction Number [TN] # 228854).
[b] The maximum modeled concentrations assuming 50 hours per year operations were multiplied conservatively by 2.5 to estimate the new ratioed maximum modeled concentrations as a result of the additional 100 hours of emergency operation per year (total of 121 hours per year).
[c] Background concentrations were included to estimate the total predicted concentrations.
[d] The sum of the post-BAAQMD policy maximum modeled concentration and the background concentration.
[e] The total predicted concentration for the annual $PM_{2.5}$ standard is the maximum 5-year average modeled concentration combined with the maximum background concentration.
[f] The total predicted concentrations for the annual SO_2 and annual NO_2 standards are the highest modeled concentrations of the 5 individual years modeled (2013-2017) combined with the maximum background concentrations.

Table 5. Comparison of Post-BAAQMD Policy Modeled Results to the CAAQS

Pollutant	Averaging Time	Pre-BAAQMD Policy Maximum Modeled Concentration ($\mu g/m^3$) [a, b]	Post-BAAQMD Policy Maximum Modeled Concentration ($\mu g/m^3$) [c]	Background Concentration ($\mu g/m^3$) [d]	Post-BAAQMD Policy Total Predicted Concentration ($\mu g/m^3$) [e]	CAAQS ($\mu g/m^3$)
$PM_{2.5}$	Annual	0.02	0.05	10.60	10.65	12
NO_2	Annual	7.31	18.28	24.10	42.38	57

Notes:
[a] The maximum modeled concentration assuming 50 hours per year from Attachment DR32 (Transaction Number [TN] # 228854).
[b] The maximum modeled concentration for each pollutant and averaging period are the high-first-high concentrations for comparison to the CAAQS.
[c] The maximum modeled concentrations assuming 50 hours per year operations were multiplied conservatively by 2.5 to estimate the new ratioed maximum modeled concentrations as a result of the additional 100 hours of emergency operation per year (total of 121 hours per year).
[d] Background concentrations were included from to estimate the total predicted concentrations.
[e] The sum of the post-BAAQMD policy maximum modeled concentration and the background concentration.

Table 6. Comparison of Post-BAAQMD Policy Modeled PM_{10} Results to the Significant Impact Levels

Pollutant	Averaging Time	Pre-BAAQMD Policy Maximum Modeled Concentration ($\mu g/m^3$) [a]	Post-BAAQMD Policy Maximum Modeled Concentration ($\mu g/m^3$) [b, c]	SIL ($\mu g/m^3$)
PM_{10}	Annual	0.02	0.05	1

Notes:
[a] The maximum modeled concentration assuming 50 hours per year from Attachment DR32 (Transaction Number [TN] # 228854).
[b] The maximum modeled concentration assuming 50 hours per year operations was multiplied conservatively by 2.5 to estimate the new ratioed maximum modeled concentrations as a result of the additional 100 hours of emergency operation per year (total of 121 hours per year).
[c] Modeled concentration is the maximum high-1st-high value of the 5 individual modeled years (2013-2017).

As shown in Tables 4 through 6, after conservatively increasing the pre-BAAQMD policy maximum modeling annual air quality impacts, LDC's air quality impacts are less than significant and to not cause or contribute to an exceedance of an ambient air quality standard.

Please contact me (916-286-0207 | Jerry.Salamy@jacobs.com) or Matt Muell (303-961-7965 | matt.muell@edgecore.com) if you have any questions about the information contained in this submittal or the project itself.

Regards,

Jerry Salamy
Jacobs, Principal Project Manager

Copies to: Matt Muell/EdgeCore
Brian Probst/EdgeCore
Wylie Nelson/EdgeCore
Jeff Harris/ESHD

References

Bay Area Air Quality Management District (BAAQMD). 2019. Calculating Potential to Emit for Emergency Backup Power Generators. June. http://www.baaqmd.gov/~/media/files/engineering/policy_and_procedures/banking-and-offsets/calculating-pte-for-emergency-generators-06032019-pdf.pdf?la=en.

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Bay Area Air Quality Management District (BAAQMD). 2018. Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. April. http://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-rule-5-new-source-review-of-toxic-air-contaminants/documents/rg0205_120716-pdf.pdf?la=en.

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Jacobs Engineering Inc. (Jacobs). 2019. DR32 (Transaction Number [TN] # 228854).