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State Energy Resources Conservation and Development Commission
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APPLICATION FOR SMALL POWER PLANT EXEMPTION FOR THE: ***SEQUOIA BACKUP GENERATING FACILITY***	**Docket No. 19-SPPE-03**

ENERGY COMMISSION STAFF'S JANUARY STATUS REPORT

On December 23, 2020, the Committee appointed to oversee this proceeding issued an *Order After Committee Conference*[1] ordering the parties to submit monthly status reports and, in the first status report, respond to several questions. Staff responds to these questions (paraphrased below) as follows:

1. Provide monthly status report informing the Committee about whether or not the case is progressing satisfactorily and bringing to the Committee's attention any potential delays or other relevant matters.

The applicant has informed staff that it intends to modify the project to use Tier 4-compliant engines. As discussed below, the applicant's anticipated proposal to switch to Tier 4 engines, coupled with staff's analysis of the proposed modification and additional detail regarding the modeling of NO_2 emissions from testing and maintenance, should resolve all outstanding matters related to this proceeding. Staff has confirmed with CARB that this satisfies CARB's concerns. Staff recommends that this information be

[1] TN 236128

expeditiously accepted into the record, the Committee Proposed Decision updated accordingly, and the matter presented to the full Commission for a vote.

2. Does the Bay Area Air Quality Management District's (BAAQMD) December 21, 2020, letter (stating that it has established that U.S. EPA Tier 4 emissions standards is best available control technology (BACT) for diesel engines of the type proposed to be used in this project) change the description of the project? If so, is further environmental analysis required and, if so, when can the analysis be completed?

It is our understanding that in its January status report, the applicant will be modifying the project to comply with Tier 4. Tier 4 engines include a selective catalytic reduction (SCR) system designed to reduce air emissions. Ultimately, the SCR system injects a liquid-reductant agent through a special catalyst into the exhaust of a diesel engine. The reductant source is usually urea, also known as diesel exhaust fluid or DEF. Staff anticipates that the proposed modification will use urea with the urea tanks installed below grade. No changes to the project footprint are anticipated.

Staff held a meeting with City of San Jose Mineta International Airport planning staff and County of Santa Clara Airport Land Use Commission (ALUC) planning staff on January 11, 2021, to discuss the anticipated proposed modification. Specifically, to confirm that the following statement on page 2 of the Committee Proposed Decision[2] remains accurate with the change from Tier 2 to Tier 4 engines: "We also find that, despite the Project's proximity to the Norman Y. Mineta International Airport, the Project will not result in a safety hazard or noise problem for persons using the airport or residing or working in the Project area."

Staff confirmed that installation of Tier 4 engines with DEF stored in below grade tanks would not conflict with the ALUC Comprehensive Land Use Plan general compatibility Policy S-4, which prohibits above ground storage of fuel or other hazardous materials in the Inner Safety Zone and Turning Safety Zone. Additionally, a potential negligible increase in the engines' stack height would not exceed the Federal Aviation

[2] TN 234416

Administration obstruction surface height of 162 feet above mean sea level for the Norman Y. Mineta International Airport or create a plume that would be a danger to overflying aircraft. Further, the implementation of Tier 4 engines is not expected to result in a substantive change in project operations noise.

Therefore, if the proposed modification is described as anticipated above, the modified project would not result in a safety hazard or noise problem for persons using the airport or residing or working in the project area. However, if the applicant's formal proposal, which is expected to be filed Friday, January 15, includes substantial modifications beyond those discussed and ALUC staff determines that the modifications need to be reviewed by the ALUC at one of their monthly public meetings, then staff anticipates limited further environmental analysis would be required taking approximately 60 days in the following technical areas: Hazards and Hazardous Materials, Land Use, Noise, and Transportation. If the project modification, however, is as straightforward as what is discussed above, this status report can serve as staff's additional testimony and no additional analysis under any technical area would be required.

3. Explain why staff believes that the modeling discussed in the IS/PMND for routine testing and maintenance, in which the temporal pairing of the Project's NO_2 impacts (as modeled by Applicant) with the NO_2 background concentrations used by the Applicant (as modified by Staff), addresses the California Air Resources Board's (CARB) concerns that the averaging used in that analysis does not provide complete information about worst case impacts.

Staff has had many conversations with CARB about their concerns regarding the modeling analysis. In the interest of resolving these issues, staff has performed a supplemental 1-hour NO_2 modeling analysis, which is included as an attachment to this report. Consistent with the analysis performed in the IS/PMND, the supplemental modeling analysis also assumes the use of Tier 2 engines and uses the same emission rates that were presented in the IS/PMND.

In response to CARB's comment regarding the temporal pairing of the project's NO_2 impacts with the NO_2 background concentrations, staff performed supplemental modeling analysis for the 1-hour NO_2 California Ambient Air Quality Standard (CAAQS)

assessment for testing and maintenance. Staff updated the NO_2 background data using the maximum seasonal hour-of-day values for the most recent three years available (December 2016 to November 2019) to replace the five-year average third-highest values for the season and hour-of-day. Along with newer NO_2 data, staff's supplemental modeling analysis used a newer 5-year record of meteorological and ozone data from 2015 to 2019 per CARB's request and intervenor Sarvey's request to update the modeling with more recent data.

The modeling analysis in the IS/PMND used the most recent years of meteorological data available at the time the application was submitted and the IS/PMND was published. In response to CARB's request and intervenor Sarvey's request to update the modeling with more recent data, staff requested and received the meteorological data for 2018 and 2019 from the Bay Area Air Quality Management District (BAAQMD), processed for use in AERMOD.

The supplemental 1-hour NO_2 modeling analysis is provided as an attachment to this report. As is explained in the supplemental analysis, the worst-case total 1-hour NO_2 impact from staff's supplemental modeling analysis is lower than the worst-case total 1-hour NO_2 impact presented in the IS/PMND and lower than the 1-hour NO_2 CAAQS. Therefore, staff conservatively estimated the 1-hour NO_2 CAAQS impacts of the project during testing and maintenance in the IS/PMND. Furthermore, now that it is expected that the project would be switching to Tier 4 engines, emissions and associated impacts from the engines would be even lower than what is presented in the IS/PMND and the supplemental 1-hour NO_2 modeling analysis.

4. Please indicate whether the parties will be performing modeling of emergency operations and a timeline outlining all necessary steps involved.

Staff does not intend to perform any modeling of emergency operations. Staff's expert opinion continues to be that attempting to model emergency operations is a speculative exercise that would not produce meaningful information concerning the project's potential for significant impacts. Additionally, as stated in their Joint Recommendation filed on December 14, 2020, BAAQMD and CARB agreed that if the project switched to Tier 4-compliant engines, no modeling of emergency operations would be necessary.

Staff has confirmed that this remains the agencies' position. For these reasons modeling of emergency operations is unwarranted.

5. Skipping this question, which requests information of the applicant.

6. Provide a detailed schedule for the resolution of this proceeding, including dates by which any additional analyses will be performed, the filing deadline for additional testimony and exhibits, and dates for any evidentiary hearing that may be required.

	Staff files supplemental analysis	Last day for all parties to file additional testimony and exhibits	Evidentiary Hearing, if required
If project modifications are limited to that described in this document (SCR added to engines, urea added below grade, no change in project footprint)	January 14, 2021	January 22, 2021	January 29, 2021
If project modifications are more extensive	March 12, 2021[3]	March 26, 2021	April 6, 2021

DATED: January 14, 2021

Respectfully submitted,

APPROVED BY:

Shawn Pittard, Deputy Director

Siting, Transmission, and Environmental Protection Division

[3] This estimate is subject to further extension should staff need to file data requests on the submitted information.

Attachment 1 – Supplemental 1-hour NO_2 Modeling Analysis

In response to CARB's comment regarding the temporal pairing of the project's NO_2 impacts with the NO_2 background concentrations, staff performed supplemental modeling analysis for the 1-hour NO_2 California Ambient Air Quality Standard (CAAQS) assessment for testing and maintenance. Staff updated the NO_2 background data using the maximum seasonal hour-of-day values from the most recent three years available (December 2016 to November 2019) to replace the five-year average third-highest values for the season and hour-of-day. Along with newer NO_2 data, staff's supplemental modeling analysis used a newer 5-year record of meteorological and ozone data from 2015 to 2019 per CARB's request and intervenor Sarvey's request to update the modeling with more recent data.

Meteorological Data

The modeling analysis in the IS/PMND used data from 2013 to 2017 (the most recent years of data when the application was submitted). In response to CARB's request and intervenor Sarvey's request to update the modeling with more recent data, staff requested and received the meteorological data for 2018 and 2019 from the Bay Area Air Quality Management District (BAAQMD), processed for use in AERMOD. Staff combined the meteorological data for 2018 and 2019 with those for 2015 to 2017 provided previously to form the updated five years (2015-2019) of meteorological data for the modeling analysis.

Ozone Data

Staff also processed the hourly ozone (O_3) data from the Jackson Street monitoring station for the five modeling years (2015 to 2019). Staff followed the 2011 CAPCOA Guidance Document[1] to replace the missing ozone data in the raw dataset:

• If one or two consecutive hours were missing, the values were replaced by the larger value of the preceding or following hour (more conservative than the interpolation method listed in Section 6.1.1 of the 2011 CAPCOA Guidance Document);

• If three or more consecutive hours were missing, those values were replaced by the maximum values of the month-by-hour data for that month and that year (listed as Monthly Hourly Concentration – Option 1 [For each year] in Section 6.1.2.2 Complex Fill Methods in the 2011 CAPCOA Guidance Document).

NO_2 Background and Pairing with Project Impacts

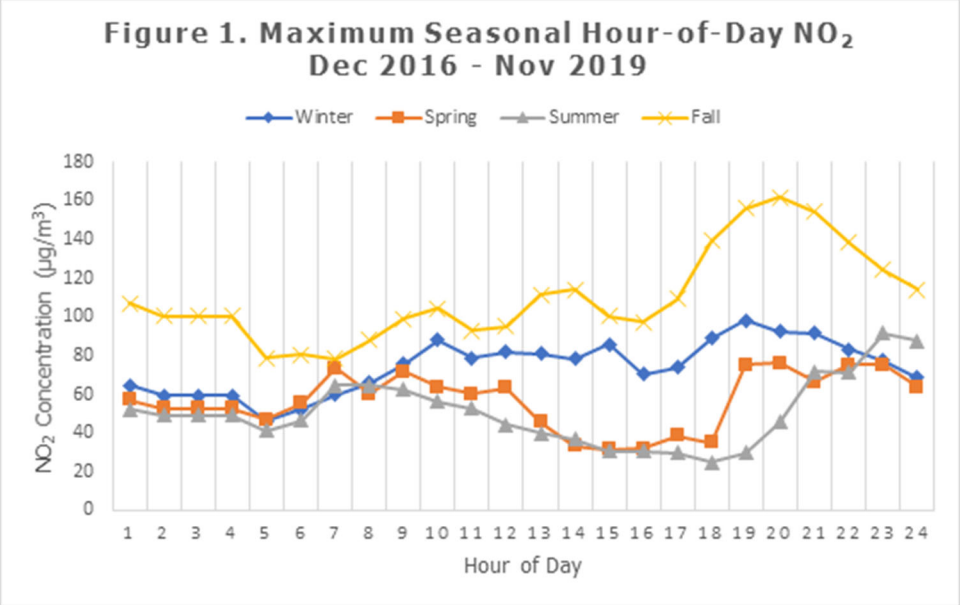
CARB questioned the temporal pairing of the project's NO_2 impacts with the NO_2 background concentrations and suggested combining the maximum modeled project impact with the maximum background to compute the total impact. Staff believes the maximum plus maximum method is overly conservative and would over-estimate project-related impacts. Because the suggested method assumes the project's maximum 1-hour NO_2 impact occurs at the exact same time the background experiences its maximum 1-hour NO_2 level, it ignores the difference between the temporal patterns of the modeling impacts and those in the ambient monitoring data. The US EPA Guideline on Air Quality Models (40 CFR 51 Appendix W[2]) states that if the diurnal or seasonal patterns of the air quality monitoring data differ significantly from the patterns for the modeled concentrations, it may be appropriate to pair the air quality monitoring data in a temporal manner that reflects these patterns (e.g. pairing by season and or hour of day). The following discussion and figures show the difference in the temporal patterns of these data.

To show the temporal pattern of the NO_2 monitoring data, staff processed the background NO_2 data to produce the maximum seasonal hour-of-day background for the most recent three modeling years (December 2016 – November 2019). This was done by organizing all the NO_2 concentrations by hour of day for each season of the year in descending order and selecting the first highest NO_2 concentrations for each hour of the day and season, resulting in 24 hourly background NO_2 values for each season. The same step was repeated for each of the most recent three modeling years. For each hour of the day and each season, there would be three maximum background values from these three years. Staff chose the maximum of the three values to conservatively represent the background values for each hour of the day and each season.

Figure 1 shows the maximum seasonal hour-of-day NO_2 background data plotted for each hour of day and each season. The figure shows that there are significant seasonal and diurnal variabilities in the NO_2 background data.

The temporal pattern of the modeled NO_2 impacts is not only determined by the meteorological conditions, but also by the background ozone levels with the use of Tier 3 NO_2 modeling options to convert NO to NO_2 (i.e. the Ozone Limiting Method [OLM] and Plume Volume Molar Ratio Method [PVMRM]). To show the temporal pattern of the background ozone data, staff processed the ozone data similarly to the method for the NO_2 data as described above.

Figure 2 shows the maximum seasonal hour-of-day ozone background data plotted for each hour of day and each season. The figure shows strong seasonal and diurnal variabilities in the ozone background data. This would result in seasonal and diurnal variabilities in the modeled NO_2 impacts because ozone levels limit the conversion from NO to NO_2. However, the exact temporal pattern of the modeled NO_2 impacts is also influenced by the diurnal pattern of meteorological data.



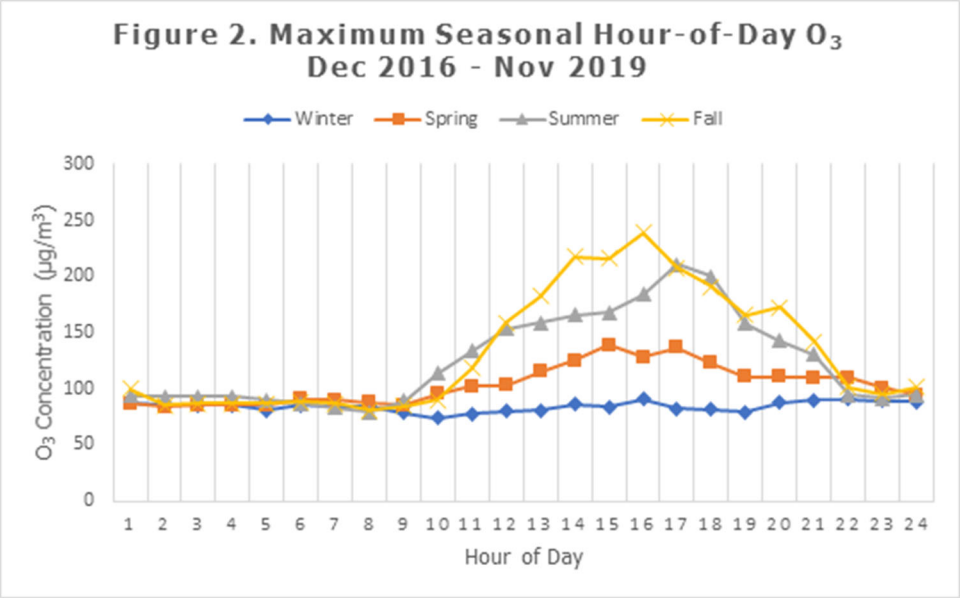


Figure 1 and Figure 2 show a significant difference in the seasonal and diurnal patterns of the background NO_2 data and ozone data. When ozone levels peak in the afternoon, the NO_2 background levels are usually low. The comparison of Figure 1 and Figure 2 indicates it is unlikely that the project's maximum 1-hour NO_2 impact would occur at the exact same time the background experiences its maximum 1-hour NO_2 level. Staff believes the significant difference in the seasonal and diurnal patterns of the background NO_2 data and ozone data provides enough justification for the temporal pairing of the project impacts with the background data. Staff believes using the maximum seasonal hour-of-day NO_2 background values to pair with project impacts would reasonably but still conservatively represent the worst-case total NO_2 impacts expected to occur. Therefore, staff used the maximum seasonal hour-of-day NO_2 background values in the supplemental modeling analysis.

Modeling Results

Staff performed the supplemental modeling analysis for the 1-hour NO_2 CAAQS assessment for testing and maintenance of Tier 2 engines (consistent with the modeling done in the IS/PMND) using the dataset described above, i.e. meteorological data for 2015-2019, hourly ozone data concurrent with the meteorological data for 2015-2019, and maximum seasonal hour-of-day background NO_2 data from the most recent three modeling years (December 2016 – November 2019). Staff re-ran AERMOD for the

worst-case engine ("C1SWEG01" at 75% load and 100% load) that resulted in the maximum total 1-hour NO_2 CAAQS impact shown in Table 5.3-8 of the IS/PMND.

The worst-case total 1-hour NO_2 impact found by staff's supplemental modeling analysis is 274.1 $\mu g/m^3$ at 100% load (and 272.9 $\mu g/m^3$ at 75% load), which is lower than the 333 $\mu g/m^3$ shown in Table 5.3-8 of the IS/PMND and lower than the 1-hour NO_2 CAAQS of 339 $\mu g/m^3$.

In order to understand the difference between the modeling results from staff's supplemental modeling analysis and those shown in the IS/PMND, staff compared the data used in the modeling analyses. The difference was mainly due to the different gap filling methods used for replacing missing ozone data for three or more consecutive hours. As described above, if three or more consecutive hours of data were missing, staff filled the gap with the maximum values of the month-by-hour data for that month and that year. This method is consistent with the 2011 CAPCOA Guidance Document. However, the applicant replaced the missing data with maximum month-by-hour data monitored for the five years. The applicant's approach is overly conservative and does not take into consideration the variation of ozone values in different years. Staff's gap filling method following the 2011 CAPCOA Guidance Document provides more realistic substitution of the actual missing data because it accounts for diurnal, seasonal, as well as annual changes in the ozone data.

Conclusion

Staff performed supplemental modeling analysis for the 1-hour NO_2 CAAQS assessment for project testing and maintenance with data from 2015 to 2019. Staff replaced the five-year average third-highest NO_2 background values for the season and hour-of-day with more conservative maximum seasonal hour-of-day values from the most recent three years. Staff used more realistic gap filling method following the 2011 CAPCOA Guidance Document to process the ozone background data. The worst-case total 1-hour NO_2 impact from staff's supplemental modeling analysis is lower than the worst-case total 1-hour NO_2 impact presented in the IS/PMND and lower than the 1-hour NO_2 CAAQS. Therefore, staff conservatively estimated the 1-hour NO_2 CAAQS impacts of the project during testing and maintenance in the IS/PMND.

[1] CAPCOA 2011, Modeling Compliance of the Federal 1-hour NO2 NAAQS, dated October 27, 2011. Available at: http://www.valleyair.org/busind/pto/tox_resources/CAPCOANO2GuidanceDocument10-27-11.pdf

[2] US EPA 2017, 40 CFR 51 Appendix W (Guideline on Air Quality Models) revised in 2017. Available at: https://www.epa.gov/sites/production/files/2020-09/documents/appw_17.pdf