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Appendix D

Additional submitted attachment is included below.

COMMENTS REGARDING THE CORBY BATTERY ENERGY STORAGE SYSTEM PROJECT
STAFF ASSESSMENT
APPENDIX D / PUBLIC HEALTH - THE 0.7 PERCENT PROBABILITY STATEMENT
Docket No. 24-OPT-05

Staff Assessment Sections Affected:

Appendix D - Dispersion and Frequency Analysis (approximately pp. 25-26); Section 5.1 - Air Quality (p. 5.1-22); and Section 5.10 - Public Health (pp. 5.10-18 to 5.10-19).

Issue Presented

Staff states that, even if a BESS incident occurs, "the probability that nearby residents would experience notable but temporary symptoms is only 0.7 percent under worst-case meteorological conditions." (Staff Assessment, Air Quality, p. 5.1-22; Public Health, pp. 5.10-18 to 5.10-19.)

The calculation described in Appendix D appears to show something narrower. Staff modeled 43,824 individual hours of weather data and identified 301 hours in which the closest receptor exceeded the one-hour NO₂ AEGL-1 under the modeled release assumptions. Dividing 301 by 43,824 produces approximately 0.7 percent.

The concern is straightforward: the percentage of individual modeled hours that produced an exceedance is not necessarily the same as the probability that a nearby resident would be exposed to harmful concentrations, or experience symptoms, during a BESS incident.

I. The Modeled Release Lasts About Ten Hours, Not One Hour

Appendix D assumes that two LG racks off-gas over approximately ten hours. (Staff Assessment, Appendix D, pp. 6-7.) A ten-hour incident experiences a sequence of changing weather conditions. Wind speed and direction during the first hour may be very different from the conditions several hours later.

Appendix D does not appear to show that Staff tested possible incident start times and then followed each incident through the succeeding hours to determine how often the plume would reach a receptor during the full event.

That distinction matters. Dividing 301 individual exceedance hours by 43,824 total hours does not, without additional analysis, show how often a ten-hour incident would encounter one or more hours capable of producing an exceedance at a nearby receptor.

II. AERMOD Accounts for Wind, but the Question Is How Staff Used Changing Wind Over the Full Event

AERMOD does account for hourly wind speed, wind direction, and other meteorological conditions. The concern is therefore not that Staff ignored wind. The question is whether Staff followed the changing wind conditions over the approximately ten-hour release before describing 0.7 percent as the probability that residents would experience symptoms. A plume initially blowing away from a residence can later shift toward it, and the reverse can also occur.

For that reason, the 301 exceedance hours need context. Were they isolated hours or part of longer weather episodes? What wind speeds and directions occurred during those hours? How often did winds shift during successive hours? Those questions matter more to a multi-hour release than the simple percentage of all modeled hours that produced an exceedance.

III. Local Wind Conditions Make This More Than a Theoretical Question

Official Travis Air Force Base historical materials describe the area as a "wind-swept prairie" and state that strong prevailing winds nearly duplicated conditions at sea for Navy takeoff-and-landing practice. Travis environmental materials also describe an average annual wind speed of approximately 8 knots, higher summer averages of approximately 12 knots, and predominant winds from the southwest and west-southwest.

Members of our surrounding community have repeatedly been told over many years that the area's persistent winds were one reason the Travis location was advantageous for aviation and the official Travis history is consistent with that longstanding understanding.

The Travis information does not replace the meteorological data used for the Corby Project. It does, however, underscore why the actual Corby wind data deserve careful examination. Staff had five years - 43,824 hours - of meteorological data available. The relevant information includes not simply an average wind speed, but the range of wind speeds, wind directions, and, most importantly, the wind conditions during the 301 hours that actually produced modeled exceedances.

IV. The 301 Exceedance Hours Should Be Examined as a Sequence, Not Merely Counted

It matters whether the 301 exceedance hours were scattered one at a time across five years or clustered into multi-hour weather episodes. Both patterns produce the same calculation of 301 divided by 43,824, but they can have very different implications for a release lasting approximately ten hours.

For example, a group of consecutive exceedance-producing hours could overlap a substantial portion of one modeled incident, while isolated hours separated by days or months present a different event-level pattern. The published analysis does not appear to explain the temporal distribution of the 301 hours.

For this reason, the overall average wind speed is not the most important number. More useful information is what the wind was doing during the hours that produced exceedances and how those conditions changed over the duration of a complete incident.

V. An AEGL-1 Exceedance Is Not the Same Thing as a 0.7 Percent Probability of Symptoms

There is a second, separate issue with Staff's wording. AEGL-1 is a health-based concentration benchmark. It identifies a concentration above which members of the general population, including susceptible individuals, could experience notable discomfort, irritation, or other transient effects. It is not a numerical dose-response probability assigning a percentage chance that a particular person will develop symptoms.

For NO₂, the AEGL-1 numerical value is the same for the 1-hour, 4-hour, and 8-hour durations. The concern is therefore not simply that Staff selected the wrong AEGL-1 number for a longer release.

The more basic question is how Staff moved from a modeled frequency of AEGL-1 exceedances to a statement about the probability that residents would actually experience symptoms. Even if Staff had shown that a complete incident has a 0.7-percent chance of producing an AEGL-1 exceedance, that would not automatically establish that a resident has a 0.7-percent chance of experiencing symptoms.

VI. Staff's 0.7 Percent Statement Appears to Combine Different Questions

At least four different questions appear to be compressed into Staff's 0.7-percent statement:

1. How likely is a BESS incident to occur?
2. If an incident occurs, how likely is the plume to produce an AEGL-1 exceedance at a nearby receptor?
3. If an exceedance occurs at a receptor, is a resident actually present and exposed to that concentration?
4. If a resident is exposed, what is the likelihood that the exposure will cause symptoms?

These are not the same probability. If Staff combined an estimated incident frequency with the 0.7-percent hourly exceedance frequency to characterize overall public-health risk, the Staff Assessment does not appear to clearly show the calculation or the assumptions regarding event timing, wind sequence, receptor occupancy, exposure duration, or the relationship between an AEGL-1 exceedance and actual symptoms.

VII. Staff's Own Data Request Treated an AEGL-1 Exceedance as Material

Before the Staff Assessment was published, CEC Staff specifically requested modeling of worst-case maximum public-health impacts at the nearest sensitive receptors. In its July 31, 2025 revised data requests, Staff required dispersion modeling of potential thermal-runaway/fire pollutants using a well-validated model, with AERMOD and HARP2 identified as preferred models. Staff also required modeled toxic-air-contaminant concentrations to be compared with acute Reference Exposure Levels or, where an acute REL was unavailable, AEGL-1 as the threshold of significance. (CEC Data Request Emails, TN 265205, REV 1 DR WS/FP/PH-3 and -4.)

Staff's request went further. It stated that if exceedances occurred, the Applicant should provide a detailed Emergency Response Plan and identify the applicable regulatory notification requirements. Thus, before the final modeling results were reported, Staff itself treated the occurrence of an acute-health benchmark exceedance at sensitive receptors as information requiring additional public-health and emergency-response attention.

The Staff Assessment subsequently reports modeled AEGL-1 exceedances at nearby receptors, including the results discussed above. Against that background, the later 0.7-percent characterization is particularly important. If 0.7 percent represents only the percentage of individual modeled hours that produced an exceedance, it does not by itself answer the different question of how often a complete multi-hour incident would expose a nearby resident, much less the probability that the resident would experience symptoms.

This does not mean that every modeled exceedance necessarily results in injury. It does mean that Staff's own earlier data request treated exceedances as material enough to require further analysis. The Staff Assessment should therefore make clear what the 0.7-percent number actually measures and how it supports the less-than-significant public-health conclusion.

VIII. Why the Distinction Matters

Staff's modeling finds that a BESS incident could exceed the one-hour NO₂ AEGL-1 at the closest receptors within approximately 2,029 feet during worst-case meteorological conditions, and reports a maximum combined Hazard Index of 3.44 at the nearest sensitive receptor when compared with AEGL-1. (Staff Assessment, Public Health, p. 5.10-18.)

Staff then uses the 0.7-percent statement to help characterize the likelihood of public-health effects as very low. The basis for that number therefore matters to the significance determination.

This comment does not assert that AERMOD itself was improperly used or that all of Staff's modeled concentration results are invalid. The narrower concern is that the 0.7-percent probability statement used in Sections 5.1 and 5.10 may not be the statistic that Appendix D actually calculated.

If Corby's modeled non-fire release lasts approximately ten hours, the relevant public-health question is not answered merely by identifying the percentage of isolated hours in a five-year weather record that produced an exceedance. The duration of the release, sequence of wind speed and direction, clustering of exceedance-producing hours, actual exposure, and relationship between an AEGL-1 exceedance and reported symptoms remain separate analytical questions.

Questions Presented for the Administrative Record

1. Does the 0.7-percent figure represent only 301 modeled hourly exceedance cases divided by 43,824 modeled hours, or did Staff perform a separate calculation of the probability that a complete BESS incident would expose nearby residents?
2. If Staff performed an event-level calculation, where is that analysis disclosed, including the assumed incident start times, approximately ten-hour release duration, changing hourly weather, emission profile, and receptor concentrations?
3. How did Staff account for changing wind speed and direction during the approximately ten-hour non-fire release?
4. Were the 301 exceedance hours isolated or clustered into consecutive or multi-hour weather episodes?
5. What were the wind speeds and wind directions during the 301 hours that produced modeled AEGL-1 exceedances?
6. What were the minimum, mean, median, upper-percentile, and maximum hourly wind speeds in the five-year meteorological dataset used in Appendix D?
7. Did Staff evaluate whether a plume initially directed away from a sensitive receptor could shift toward that receptor later during the same multi-hour release?
8. Does Staff intend the 0.7-percent figure to represent the probability of an AEGL-1 concentration exceedance, the probability of actual human exposure, or the probability that an exposed resident will experience symptoms?
9. What analysis supports Staff's statement that the "probability that nearby residents would experience notable but temporary symptoms is only 0.7 percent," rather than the narrower statement that approximately 0.7 percent of individual modeled hours produced an AEGL-1 exceedance at the closest receptor under the modeled release assumptions?

10. If Staff combined an incident-frequency estimate with the 0.7-percent figure, what calculation was used and what assumptions were made about event timing, changing meteorology, receptor occupancy, indoor or outdoor exposure, sheltering, and exposure duration?
11. What source-term profile was used over the approximately ten-hour non-fire event, and did modeled emissions change over time as the rack off-gassing progressed?
12. Staff's July 31, 2025 revised data request stated that if modeled exceedances occurred, a detailed Emergency Response Plan and applicable regulatory notification requirements should be provided. How did Staff account for the modeled AEGL-1 exceedances when applying that earlier request in the Staff Assessment?
13. If Staff relied on the 0.7-percent figure to discount the significance of those exceedances, what analysis establishes that an hourly exceedance frequency is an appropriate measure of the likelihood of exposure during the approximately ten-hour modeled event?
14. Does Staff's less-than-significant public-health conclusion change if the 0.7-percent figure is an hourly exceedance frequency rather than an event-level probability of resident exposure or symptoms?

Conclusion

Appendix D appears to show that approximately 0.7 percent of the individual modeled hours at the closest receptor exceeded the one-hour NO₂ AEGL-1 under the modeled release assumptions. Staff then describes that number as the probability that nearby residents would experience symptoms if a BESS incident occurs. The published analysis does not clearly show how Staff got from the first statement to the second.

Several separate steps lie between those two statements: an incident must occur; the roughly ten-hour release must encounter a particular sequence of winds and weather; the plume must produce an AEGL-1 exceedance at a receptor; a resident must actually be exposed; and that exposure must result in symptoms.

The issue is therefore material, but it should be stated precisely. The available information raises a substantial question about whether Staff's 0.7-percent public-health characterization is supported by the calculation disclosed in Appendix D. Because Staff relies on that characterization in its less-than-significant public-health conclusion, the missing analytical connection should be identifiable in the record if it exists. The concern is strengthened by Staff's own July 31, 2025 data request, which treated modeled acute-health benchmark exceedances at sensitive receptors as requiring further emergency-response and notification information. The real-world incident record further supports keeping these concepts separate: outdoor containerized systems have experienced actual fire events and community protective actions, while large indoor BESS incidents demonstrate that emergencies can persist or recur over periods in which meteorological conditions change.

Sincerely,

Danielle Rupprecht