San Joaquin Valley
Air Pollution Control District

Policy for Modeling Intermittent Operating Units When Evaluating for CAAQS/NAAQS

Approved By: _____Signed_____   Date: **September 6, 2011**
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Director of Permit Services

Purpose:

The purpose of this guidance is to provide the rationale for exempting intermittent operating units from conducting short term (1, 3, 8, and 24 hour) ambient air quality analysis for either the state or national ambient air quality standard (CAAQS /NAAQS).

I. Applicability

This guidance applies to all intermittent units that operate no more than 200 hour per year, do not have a set operating schedule specified on their Authority To Construct or Permit to Operate, and implement Best Available Control Technology (BACT).

II. Definition

Intermittent Operating Units: units that do not have a set operating schedule specified on their Authority To Construct or Permit to Operate, only operate short periods of time during the year, and meet BACT requirements. For example:

- An emergency fire water pump driven by an approved tier diesel engine. This device must be tested for 30 minutes once per week to meet National Fire Protection Association codes.
- An auxiliary generator at a power plant may operate only once per month for 60 minutes, as required by the original equipment manufacturer to ensure reliability.

III. Background

On March 1, 2011 EPA provided additional clarification on intermittent operating sources that allows the reviewing agency, at their discretion, to exempt intermitted units from NO_2 and SO_2 modeling requirements. The clarification memorandum can be found at:
http://www3.epa.gov/scram001/guidance/clarification/Additional_Clarifications_AppendixW_Hourly-NO2-NAAQS_FINAL_03-01-2011.pdf

Please Note: This memorandum was specifically written to address PSD compliance with the new NO_2 and SO_2 1-hour NAAQS.

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Guidance was also provided on how intermittent unit(s) could be included in a modeling regime, if requested by the reviewing agency, by calculating an annual average hourly emission rate. This annual hourly average emission rate would replace the maximum hourly emission rate provided by the manufacturer when performing modeling.

For Example:
A 903 BHP emergency internal combustion engine is permitted to operate 200 hour per year for maintenance and test. The unit does not have a set operating schedule specified on their Authority To Construct or Permit to Operate. The manufacturer's maximum hourly NOx emissions rate is 4.2 g/BHP-hr or (1.054 g/sec)

> ### Calculation:
> $$AER = MER * (HrsOp / HrsYr)$$
> $$= 1.054 \text{ g/sec} * (200 \text{ hrs} / 8760 \text{ hrs per yr})$$
> $$= 0.024 \text{ g/sec (used in AERMOD)}$$
>
> Where:
> - AER = Annual average hourly emission rate (g/sec)
> - MER = Maximum hourly emission rate provided by the manufacture (g/sec)
> - HrsOp = Permitted hours of operation
> - HrsYr = Hours in a year (Default 8760)

- The calculated AER value would replace the MER in AERMOD and;
- The unit(s) would be modeled for every hour of the year(s)

IV. Justification

The following section provides the rationale used by the District to determine that short term impact from intermittent sources would not cause or contribute to an exceedance of a state or national AAQS.

a) It is unlikely that a unit would operate precisely during the hours of maximum (peak) modeled concentration. In fact, the maximum calculated probability that such event would occur is 2.34% based on 200 hours of operation. This probability only decreases as the number of hours of operation decrease. The probability range from 2.34% down to 0.57% is based on a maximum of 200 hours per year and a minimum of 50 hours per year.

  i) Probability Calculation = (Probability / [Total Probability]-Probability) *100

  For Example (Maximum Concentration):
  - Annual hours of Operation = 200 hours per year Or [Probability]
  - Total Probability = 8760 Hour per year

  Probability Calculation = (200 / (8760-200)) * 100
  = 2.34%

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ii) This means that the operation of the unit has a 2.34% chance of occurring during an hour where the model would predict the peak concentration for a given time period.

b) Modeling using EPA's alternative calculation method, as noted in the March 1, 2011 memorandum, will reduce the modeled concentration ranging from 97.72% (200 hours per year) to 99.43% (50 hour per year).

c) Applying the same assessment, from a) and b) above, to other time periods yields the same probability and reduction estimates.

For Example (3 Hour Block Average):
- Annual hours of Operation = 200 hours per year Or [Probability]
  or (200/3) or 66.67 - 3 Hour blocks per year
- Total Probability = (8760/3) or 2920 - 3Hour blocks per year

Probability Calculation = (66.67 / (2920-66.67)) * 100
= 2.34%

V. Conclusion
Based on the information provided in section IV above, it is highly unlikely that intermittent operating units will cause or contribute to an exceedance of a short term (1, 3, 8, and 24 hour) CAAQS or NAAQS. Therefore, the District concurs with EPA's conclusion that modeling such units is not necessary, and will not require intermittent units, as defined above, to perform a short term (1, 3, 8, and 24 hour) CAAQS/NAAQS analysis for permitting purposes.

VI. Guidance
When evaluating intermittent units to determine if such units would cause or contribute to an exceedance of a CAAQS or NAAQS for permitting purposes; staff will only evaluate pollutants that have long term impacts standards (annual) and short term (1, 3, 8, and 24 hour) impacts will not be evaluated.

Please Note: Short term (1, 3, 8, and 24 hour) standards may still need to be evaluated for non-NSR projects such as CEQA or special projects.