San Joaquin Valley
Air Pollution Control District

Zero Equivalency Policy
for
Greenhouse Gases

Approved By: Signed   Date: **March 24, 2010**
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              Director of Permit
              Services

Purpose:

The purpose of this policy is to detail how small increases in greenhouse gas (GHG) emissions for permitted sources are handled during the application review process. This policy establishes a level below which project specific increases in greenhouse gas emissions are considered equivalent to zero for District permitting purposes. Establishment of this policy maximizes reductions in GHG emissions and improves efficiencies in the permitting process by identifying projects which have no potential to achieve substantial GHG emission reductions.

I. Applicability

This guidance is to be followed when processing Authority to Construct (ATC) applications for projects with potential increases in greenhouse gas emission and the District serves as Lead Agency for CEQA purposes.

II. Background

The California Environmental Quality Act (CEQA) and CEQA Guidelines require agencies to adopt procedures and guidelines for implementing CEQA. Consistent with those requirements, the District adopted its *Environmental Review Guidelines* (ERG)*,* which provides District staff with guidance for streamlining the District's permitting process while assuring that environmental impacts related to District actions are thoroughly and consistently addressed. The ERG establishes specific District permitting actions which are ministerial approvals and not subject to CEQA; identifies specific permitting actions that have been determined to qualify for exemption under the "General Rule" that CEQA does not apply where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment; and identifies certain classes of projects that are most frequently categorically exempt from the provisions of CEQA.

On December 17.2009, the Valley Air District's Governing Board adopted the adopted the *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. The policy adopted December 17, 2009, applies to all District permitting projects that have an increase in GHG emissions, regardless of the magnitude of the increase. The adopted policy establishes the use of performance based standards (Best Performance Standards) as a means of determining the cumulative significance of project specific greenhouse gas emissions on global climate change. The policy requires District staff to establish Best Performance Standards (BPS) for each class and category of stationary source emissions and to evaluate the cumulative significance of project specific greenhouse gas emissions on global climate change. However, the policy also establishes that projects exempt from CEQA are not subject to further environmental review for greenhouse gas impacts.

It is conceivable that at least some projects which qualify for exemption per the District's adopted Environmental Review Guidelines will have some increase in greenhouse gas emissions. To ensure that these projects receive further environmental consideration and to ensure consistency in processing such ATC applications, this policy establishes a level of greenhouse emissions below which project specific increases in greenhouse gas emissions would be considered equivalent to zero for CEQA purposes. Projects with increases in greenhouse emissions that are non-zero would require further environmental review for greenhouse gas impacts.

To establish a zero equivalency level, the District considered greenhouse gas emissions associated with stationary sources that are so small that they are not subject to District prohibitory rules or District permit requirements. As indicated in the attached analysis, District staff evaluated greenhouse emissions from two permit-exempt emission sources; 5-mmbtu/hr gas-fired boilers and 50-horsepower diesel engines. The permit-exempt boiler has the potential to emit of more than 2,300 metric tons-CO_2e/year, while the permit-exempt internal combustion engine emitted slightly more than 230 metric tons-CO_2e/year

Therefore, choosing the more conservatively low of the two sources, the zero equivalency level is established at 230 metric tons-CO_2e/year.

III. Air District CEQA Implementation:

Greenhouse gas emissions of 230 metric tons-CO_2e/year or less are considered to be zero for District permitting purposes. When an Authority to Construct (ATC) application is received, and the District is the Lead Agency, District staff will follow established District policy and Environmental Review Guidelines to determine if the project is exempt from further environmental analysis. If the project would be exempt from further environmental review and if potential increases in stationary source greenhouse gas emissions are zero, the project will be determined to be exempt from further environmental review and the ATC will be processed consistent with existing District policies and procedures. Projects not meeting the above conditions will receive further environmental review, consistent with established District CEQA guidance.

Attachment A – GHG Emission Rate Evaluation for Two Permit-Exempt Equipment Categories

The District has evaluated potential greenhouse gas emissions from 1) internal combustion engines rated at 50 brake horsepower and 2) natural gas-fired boilers with a rated firing capacity of 5 MMBtu/hour.

50 bhp Internal Combustion Engine

Basis and Assumptions

- The engine is a compression-ignited unit fueled with diesel in agricultural equipment service.
- The engine operates at full rated power.
- Specific fuel consumption is 220 g/kWh (typical for engine type).
- Density of diesel fuel is 7.0 lb/gallon.
- Higher Heating Value (HHV) of diesel is 138,700 Btu/gallon.
- Engine operates 8,760 hours per year.
- Emission factors and global warming potentials (GWP) for diesel fuel are taken from the California Climate Change Action Registry (CCAR), Version 3.1, January, 2009 (Appendix C, Tables C.1, C.3 and C.6) :

  CO_2 10.15 kg/gallon (22.3 lb/gallon)
  CH_4 1.44 g/gallon (0.006 lb/gal)
  N_2O 0.26 g/gallon (0.001 lb/gal)

  GWP for CH_4 = 21 lb-CO_2e per lb-CH_4
  GWP for N_2O = 310 lb-CO_2e per lb-N_2O

Calculations

Diesel fuel consumption rate at full rated horsepower:

$$50 \text{ bhp} \times \frac{0.7456 \text{ kW}}{\text{hp}} \times \frac{220 \text{ g}}{\text{kWh}} \times \frac{1 \text{ lb}}{453.6 \text{ g}} \times \frac{\text{gal}}{7 \text{ lb}} = 2.58 \text{ gal/hour}$$

Hourly Emissions

CO_2 Emissions = 2.58 gal/hr x 22.3 lb/gal = 57.5 lb-CO_2e/hour
CH_4 Emissions = 2.58 gal/hr x 0.006 lb/gal x 21 lb-CO_2e per lb-CH_4 = 0.3 lb-CO_2e/hour
N_2O Emissions = 2.58 gal/hr x 0.001 lb/gal x 310 lb-CO_2e per lb-N_2O = 0.8 lb-CO_2e/hour

Total = 57.5 + 0.3 + 0.8 = 58.6 lb-CO_2e/hour

Annual Emissions

58.6 lb-CO_2e/hour x 8,760 hr/year ÷ 2,000 lb/ton = 257 short tons-CO_2e/year

Metric Conversion

257 short tons-CO_2e/year x 0.9072 metric tons/short ton = **233 metric tons**

January 24, 2012

5 MMBtu/hour Boiler

Basis and Assumptions

- The boiler is fired with natural gas at a rate of 5 MMBtu/hour (HHV)
- The boiler operates 8,760 hours per year and is in commercial/institutional service
- Emission factors and global warming potentials (GWP) are taken from the California Climate Change Action Registry (CCAR), Version 3.1, January, 2009 (Appendix C, Tables C.7 and C.8):

    CO2 53.06 kg/MMBtu (HHV) natural gas (116.7 lb/MMBtu)
    CH4 0.005 kg/MMBtu (HHV) natural gas (0.011 lb/MMBtu)
    N2O 0.0001 kg/MMBtu (HHV) natural gas (0.00022 lb/MMBtu)

    GWP for CH4 = 21 lb-CO_2e per lb-CH4
    GWP for N2O = 310 lb-CO_2e per lb-N2O

Calculations

Hourly Emissions

CO2 Emissions = 5.0 MMBtu/hr x 116.7 lb/MMBtu = 583.5 lb-CO_2e/hour
CH4 Emissions = 5.0 MMBtu/hr x 0.011 lb/MMBtu x 21 lb-CO_2e per lb-CH4 = 1.2 lb-CO_2e/hour
N2O Emissions = 5.0 MMBtu/hr x 0.00022 lb/MMBtu x 310 lb-CO_2e per lb-N2O = 0.3 lb-CO_2e/hour

Total = 583.5 + 1.2 + 0.3 = 585.0 lb-CO_2e/hour

Annual Emissions

585.0 lb-CO_2e/hour x 8,760 hr/year ÷ 2,000 lb/ton = 2,562 tons-CO_2e/year

Metric Conversion

2,562 short tons-CO_2e/year x 0.9072 metric tons/short ton = **2,324 metric tons**