



March 4, 2010
Via Email

Mr. Dave Warner
Director of Permitting
San Joaquin Valley
APCD Southern Region
1990 E. Gettysburg Ave.
Fresno, CA 93726-0244

RE: Comments on Best Performance Standards for Steam Generators

Dear Mr. Warner:

As requested by the District in the "Notice of Development" of Best Performance Standards (BPS) for Steam Generators, Vector Environmental is providing comments on the following issues: A) Scope of the class and category of equipment to be included; B) Procedures to be used when evaluating baseline emissions; C) Procedures to be used for converting baseline emissions to emissions per unit activity; and D) Technologies to be considered when evaluating best performance standards. Our comments are summarized on two attachments.

Attachment-I summarizes our recommendations on the procedures to be used for calculating changes in greenhouse gas (GHG) emissions from projects, for environmental review under the Districts "Climate Change Action Plan (CCAP)". These comments are general and are broadly applicable to the CCAP and determination of Best Performance Standards (BPS).

Attachment –II includes comments on procedures to use for assessing "unit of activity emission factors" (i.e. GHG process emission factors) for steam generators and comments on control technology and changes to design practices for the "Steam Generator BPS".

Some of the calculation procedures discussed in the comments are derived from similar procedures used for conducting applicability determinations under federal new source review. Nevertheless, the California Environmental Quality Act (CEQA) and NSR have the same goal; preventing adverse air quality effects. In light of the EPA proposal to regulate GHG emissions under Prevention of Significant Deteriorations (PSD) I believe that the proposals are justified and would ensure that the CCAP/BPS calculations would for the most part be consistent with federal PSD regulations.

Vector Environmental appreciates the opportunity provided by the District for commenting on the CCAP/BPS process. We look forward to discussing these issues with the District. If you or your staff have any questions regarding these comments please contact me at (661) 323-1477 x205.

Sincerely,

Michael V. Kelly

Michael V. Kelly
President, CEO

cc

Rick McVaigh, SJVAPCD
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Attachment-I

General Issues Applicable to the District
Climate Change Action Plan and Best Performance Standards

Attachment-I

General Issues for CCAP and BPS

A. General Considerations for Projects

Some of the projects listed below may be subject to the California Environmental Quality Act (CEQA) because their approval may require a discretionary decision. Nevertheless we believe that these projects should be presumed to comply with the District “Climate Change Action Plan” (CCAP) and BPS. These types of projects do not result in any increase in greenhouse gas (GHG) emissions; or in the case of fugitive VOC emissions we believe that they already include BPS.

- Transfer of ownership of existing emission unit with valid permit to operate.
- Transfer of location of an existing emission unit with a valid permit to operate within a stationary source; or between stationary sources.
- Clean fuel projects where a change in fuel type may require a permit modification but results in less GHG emissions. For these types of projects we believe that the emissions immediately before the fuel switch and the emissions immediately after the fuel switch should be compared, while holding all other process variables constant.
- Installation of control equipment required for generating emission reduction credits (criteria pollutants or GHG emissions) where there is no increase rated capacity of the basic equipment and the control equipment does not generate GHG emissions.
- Installation of control equipment required by a rule regulation or order where the GHG emissions from the control equipment were evaluated in the environmental documents prepared by the agency during rule making.
- Changes to the operating conditions on permits that do not increase GHG emissions or relax a condition previously agreed to in order to avoid a BPS analysis. For example change to permitted limits or operating conditions relating to the emissions of criteria pollutants such as NO_x, VOC, CO or particulate matter, provided the change is not related to an increase in rated capacity or an increase in the permitted operating schedule for equipment.

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- The “identical replacement” of an emission unit as defined in District Rule 2201. These projects do not result in a change in GHG emissions.
 - The “routine replacement” of an emission unit as defined in District Rule 2201. These projects do not result in a change in GHG emissions.
 - The installation of a “temporary replacement emission unit” as defined in District Rule 2201. These projects do not result in a change in GHG emissions.
 - Changes to fugitive VOC sources subject to permit requirements where components are subject to District leak detection and repair requirements or are subject to similar federal requirements. We believe that these types of changes (projects) already comply with BPS.

B. Scope of the BPS for Fuel Burning Equipment.

We generally believe that BPS for equipment should be narrowly constructed taking into account the type of fuel burned by the equipment; the heat input rating of the equipment; and the types of emission controls used by the equipment.

1. Category of Equipment

Equipment within the scope of the class should be subdivided into categories using a procedure similar to that historically used for assigning source classification codes (SCC). At a minimum we believe that equipment should be categorized based on the fuel type, heat input rating and emissions controls.

a. Equipment Fuel Type

With respect to the type of fuel burned by the equipment we believe that BPS should include the following categories

i. Equipment Using Biomass or Biogas as Fuel

The category would apply to emission units where at least 29% of the annual heat input to the unit is provided using biomass or biogas (i.e. carbon neutral fuels). Equipment included in this category would be deemed to be BPS compliant.

ii. **Fossil Fuel Fired Equipment**

For equipment, where more than 71% of the annual heat input is provided by fossil fuel the equipment would be categorized as follows:

- **Gaseous Fuel Fired Units**

- a. Units burning more than 50% PUC Quality natural gas
- b. Units burning 50% or less PUC quality natural gas
- c. Units burning biomass or biogas and gaseous fossil fuel

Note: Percentage is based on a volumetric basis.

- **Liquid Fueled Fired Units**

- a. Units burning liquid fuels (diesel, crude oil, etc).
- b. Units burning liquid fuels in combination with other fuels

- **Solid Fuel Fired Units**

- a. Units burning solid fuel (less than 29% biomass)
- b. Units burning solid fuels in combination with other fuels

C. **Calculating Changes in Green House Gas Emissions**

The California Air Resources Board (CARB) maintains the California Green House Gas (GHG) emission inventory. The current GHG emissions inventory includes years 1990 through 2006. The GHG inventory for years 2007 through 2009 are being compiled and will be added to the inventory as they are completed. These inventories represent actual emissions.

As part of the AB32 program, CARB has also prepared a "Business as Usual" (BAU) emission inventory for year 2020. The BAU inventory is used for assessing reduction in GHG emissions required by AB32. The Business as Usual inventory was estimated by projecting the three year average emissions for years 2002, 2003 and 2004 using sector specific growth factors, without consideration of GHG controls (i.e. grown but not controlled).

The BAU inventory includes the GHG emissions from all existing equipment in operation prior to 2004. Furthermore, since the emission were grown but not controlled it effectively includes GHG emissions from equipment installed after 2004 through 2020.

With respect to the California Environmental Quality Act (CEQA), which looks to the change in the environment caused by the project, the AB32 BAU inventory is relevant to the extent that: 1) projects must comply with AB32 requirements; 2) for projects that are subject to the AB32 cap-and-trade program, the reductions achieved by AB32 will render the cumulative GHG impacts less than significant.

With respect to the District CCAP and BPS procedures for calculating the change in GHG emission caused by a project, the BAU inventory is relevant to the extent that the emission controls in place prior to 2005 should be used for determining the appropriate discounting factors to apply to equipment, when projecting GHG emissions for future case analysis.

Before describing how GHG emissions should be calculated, we discuss several critical issues that are broadly applicable to the calculation of emissions. We believe that some of these issues will help ensure consistency with other regulatory programs. Then we consider procedures for calculation the change in GHG emissions attributed to a project.

D. Procedures Generally Applicable to BAU Emission Calculations

1. Only Include GHG Emissions Caused by the Project

Increases in GHG emissions should only be charged to a project to the extent that the project causes the emissions (i.e. but for causation). Where it can be shown that the emissions could result even in the absence of the project, then the emissions are not caused by the project and should not be included in the BPS analysis. We believe that such consideration is consistent with CEQA, which looks to the change in the environment (i.e. emissions) caused by the project.

2. Exclude Impacts from GHG Emissions Evaluated During Rulemaking

Increases in GHG emissions caused by an activity or control technique, where the GHG emissions from such activity were previously considered in an approved environmental document, should be excluded from the project analysis.

For example, emission increase caused by air pollution control equipment required by federal, state or local regulations should be excluded from the project analysis; provided the impacts from the GHG emissions were analyzed in environmental documents prepared by the agency during rulemaking.

3. Emergency Use only Equipment

When determining GHG emissions from emergency use only equipment the potential to emit for the equipment should be determined from inherent limitations applicable to such equipment and not the maximum rated capacity of the equipment.

Inherent design limitations include physical constraints as well as inherent limitations imposed by operating conditions. For example, emergency use only equipment may be permitted to operate at up to 100% of its rated capacity. However, the potential to emit for such equipment is inherently limited since it can only operate during emergencies. In such cases EPA has determined that the potential to emit for the unit may be based on an analysis of the patterns of use for similar types of equipment (not on the maximum rated capacity). With respect to BPS we believe that a similar process should be applied to calculating GHG emissions from emergency use only equipment.

4. Baseline Period for Calculations

The baseline period used for determining GHG emissions from existing equipment should be representative of the normal operation of the equipment during a business cycle. EPA has determined that a typical business cycle spans approximately 10 years. In their regulations they allow a 10 year “look back period” for establishing baseline emissions.

We recommend that the baseline period used for establishing emissions from existing equipment be calculated using a 24 consecutive month period, during the 0 year period immediately preceding the proposed change (i.e. project). A 10 year look back period would capture GHG emissions included in the State GHG emission inventory. It is also consistent with EPA guidance for determining representative baseline emissions.

5. Post Project Emissions

When determining post-project GHG emissions, the emissions should be calculated using either the projected emissions; or the potential to emit. Projected emissions would be defined to be maximum GHG emissions predicted to occur during any year within the five year period immediately following the proposed project.

We believe that the use of a five year period is justified for evaluating the GHG impacts from a project because projects that occur more than five years apart are typically unrelated. According to the EPA, based on their experience they concluded that changes that occur more that 2 to 3 year apart are likely to be unrelated, and changes that occur more than five years apart are unrelated.

E. Calculating Changes in GHG Emissions

For the purpose of determining the change in emissions caused by the project, four values must be determined: 1) the project baseline emissions; 2) the controlled and uncontrolled emissions from the project; 3) the amount of mitigation resulting from proposed controls or change to design practices; and 4) the change in GHG emissions caused by the project. We believe that the following calculation procedures should be used for determining such changes.

1. Determine Pre-Project GHG Emissions

a. Baseline for Emissions for New Units

For new equipment the GHG emission baseline is equal to zero.

b. Baseline Emissions for Existing Units

For existing equipment the emissions from each emission unit would be calculated using a 24 month consecutive period, during the ten year period immediately preceding the proposed change.

The baseline emissions would be discounted for any controls required by a rule regulation or order prior to 2005, applicable to the class or category of equipment if it would reduce the GHG emissions. The 2004 discount factor would also be applied to equipment installed after 2005 provided that such regulations were applicable to the class or category of equipment.

c. Determine Controlled and Uncontrolled GHG Emissions

After determining baseline emissions, the uncontrolled and controlled GHG emissions following the change would be calculated.

- i. Uncontrolled emissions would be calculated without consideration of any controls or design changes that would reduce green house gas emissions from the project¹. The uncontrolled level would subsequently be used for determining reductions brought about by mitigation measures included in the project.
- ii. Uncontrolled “BAU” emissions would be calculated taking into consideration control requirements in effect prior to 2005, where such requirements were applicable to the given class or category of equipment.
- iii. Controlled emissions would be calculated based on the GHG controls or changes to design practices proposed by the applicant or determined to be feasible mitigation for CEQA.

In any case the green house gas emissions following the proposed change would be calculated using a projected level of activity; or the potential to emit taking into consideration inherent design limitations as well as limitations imposed through enforceable by permit conditions.

If projected emissions are used then the approval of the project would be contingent on the requirement that the applicant maintain information needed to substantiate the actual GHG emissions from the project for a period of at least five years following the proposed change.

d. Determine GHG Reductions from Control or Design Practices

The third step in the procedure is to determine the level of BPS mitigation achieved through installation of GHG control equipment or achieved by changes in design practices.

¹ With respect to CEQA impact analysis conducted for purpose other than establishing BPS reductions, we believe that the uncontrolled emissions would be those emissions that would be caused by the project without consideration of controls or design practice changes.

i. Determining CEQA Mitigation

When preparing environmental documents, other than those for determining reductions for CCAP/BPS, the mitigation resulting from controls or design practice changes would be determined by taking the difference between the uncontrolled emissions and the controlled emissions. Other mitigation such as that provided through District approved emission reduction credits (ERC) or by Voluntary Emission Reduction Agreements (VERA) would also be included.

ii. Determining Mitigation for CCAP/BPS

When conducting CCAP/BPS analysis, the mitigation resulting from controls or design practice changes would be determined by taking the difference between the uncontrolled BAU emissions and the controlled emissions. Other mitigation such as that provided through District approved emission reduction credits (ERC) or by Voluntary Emission Reduction Agreements (VERA) would also be included. The total mitigation provided for the project would be compared to the 29% BPS threshold.

e. Determine Post-Project Increase in GHG Emissions

Finally, the increase in GHG emission caused by the project would be calculated by subtracting the total mitigation provided for the project from the total uncontrolled emissions; and then subtracting the baseline emission from the resulting intermediate value.

F. Determining GHG Process Factors

One of the purposes of the BPS is to encourage projects to operate as efficiently as possible so as to minimize greenhouse gas emissions per unit of activity. We support this concept.

When evaluating improvements in process performance, we recommend that the District consider how companies conducted similar types of projects in the past and compare past process emission factors (GHG emissions per unit of activity) to those resulting from the proposed project. As discussed previously, we believe that the baseline period for conducting such comparisons should be a 24 consecutive month period, during the 10 year period immediately preceding the proposed change.

Changes to design practices, operating techniques, fuel switches and a variety of other factors should be considered when evaluation BPS based on GHG emissions per unit of activity. More specific comments on the process emission factors for the “Steam Generator BPS” are included in Attachment-II.

G. Applicable Controls and Designs for BPS

When determining Best Performance Standards for a specific class and category of equipment two conditions must be satisfied: 1) The BPS should be based on cost effective controls and design practices shown to be achieved in practice for the class and category of equipment; and 2) the BPS must be economically feasible.

1. Achieved in Practice BPS

When establishing new BPS we recommend the District solicit stakeholder input through the “Notice of Development” process (or workshops) and establish a “list of candidate BPS” for a given class and category of equipment. Projects including “candidate BPS” would be evaluated the same as those that include an “achieved in practice BPS”. However, the District would not summarily require a “candidate BPS” as feasible mitigation for the purpose of CEQA. The status of a given “candidate BPS” would be converted to an “achieved in practice BPS” and would be applicable to other equipment provided:

- a. BPS emission level, control technique or design practice must have been achieved on the same class and category of equipment.
- b. The rating and capacity for the unit where the BPS was achieved must be approximately the same.
- c. At least one vendor must offer this equipment for regular or full-scale operation. A performance guarantee should be (but is not required to be) available with the purchase of the control technology.
- d. The BPS must have been installed and operated reliably at a commercial facility for at least 180 days.

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- e. The BPS must be verified to perform effectively over the range of operation expected for that class and category of source. The verification shall be based on a performance test or tests, when possible, or other performance data.
 - f. The resources and the availability of such resources (i.e. fuel, water) required for the BPS must be approximately the same.
 - g. The BPS must be economically feasible for the project and the cost burden resulting from the BPS must not render the project uneconomic.

H. Economic Considerations

CEQA requires that mitigation for projects be both technologically and economically feasible. We believe that in most cases, achieved in practice BPS established using the procedure described may be technologically feasible. However, mitigation measures must also be economically feasible.

As the District knows, economic feasibility and cost effectiveness are not the same. A control technique might be both achieved in practice and cost effective. Nevertheless it is not feasible mitigation if the cost burden imposed by such mitigation would render the project uneconomic.

Attachment-II

Comments on Best
Performance Standards for Steam Generators

Attachment-II

Best Performance Standards for Steam Generators

A. Scope of the BPS for Steam Generators

The BPS for “Steam Generators” should be applicable to those steam generators located at crude oil and natural gas production and processing facilities; or located at other facilities where the primary purpose of the unit is the production and use of steam for a purpose other than the conversion to mechanical or electrical energy.

B. Calculation Procedures

For a discussion on the procedures used for calculating GHG emissions for the purpose of CCAP and BPS see Attachment-I

C. GHG BPS Factors per Unit of Production

We believe that for oilfield steam generators the most appropriate unit of production factor for GHG emissions should be derived from the mass emissions (pounds) of GHG per barrel of steam. Baseline emissions would be calculated from historic production records (10 year look back) and historic steam-to-oil production ratios.

D. Controls and Design Changes for Steam Generators

We are opposed to the BPS examples included in the CCAP adopted by the District on December 17, 2009. As discussed previously we believe that a menu approach should be used for applying BPS to project. We believe that operators should receive credit for the types of activities:

1. Provide fuel saving credit for preheating feed water or using feed water having a temperature greater than the ambient temperature.
2. Provide fuel saving credit for improvement in process efficiency brought about by the redesign of steam generator convection systems.

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3. Provide credit for fuel switching or for use of a carbon neutral fuel such as biomass, or biogas; and credit for other fuels containing organic carbon (i.e. biodiesel, ethanol, etc.)
 4. Provide credit for operating equipment at less than 10% excess oxygen.
 5. Provide credit for reducing the quality of steam used in thermally enhanced oil recovery operations. Credits would be calculated relative to 100% steam quality.
 6. Provide credit for reducing electrical power consumption brought about by changes in equipment and instrumentation.
 7. Provide credit for reduction in the steam-to-oil ratio used for thermally enhanced oil recovery operation.