

**San Joaquin Valley
Unified Air Pollution Control District**

Best Performance Standard (BPS) x.x.xx

Date: 7-01-2010

Class	Thermally Enhanced Oil Recovery (TEOR) Wells
Category	<ul style="list-style-type: none"> - Components subject to Rule 4401 - Components not subject to Rule 4401
Best Performance Standard	<ul style="list-style-type: none"> - Components subject to Rule 4401: Minimize fugitive GHG emissions by applying leak standards and I&M requirements to components subject to Rule 4401 requirements - Components not subject to Rule 4401: Minimize fugitive GHG emissions by applying leak standards and I&M requirements to components not subject to Rule 4401 requirements
Percentage Achieved GHG Emission Reduction Relative to Baseline Emissions	<ul style="list-style-type: none"> - Components subject to Rule 4401: 28% - Components not subject to Rule 4401: 48%

District Project Number	C-1100392
Evaluating Engineer	Dolores Gough, P.E.
Lead Engineer	Leonard Scandura, P.E.
Initial Public Notice Date	April 20, 2010
Final Public Notice Date	May 14, 2010
Determination Effective Date	July 01, 2010

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I. Best Performance Standard (BPS) Determination Introduction

A. Purpose

To assist permit applicants, project proponents, and interested parties in assessing and reducing the impacts of project specific greenhouse gas emissions (GHG) on global climate change from stationary source projects, the San Joaquin Valley Air Pollution Control District (District) has adopted the policy: *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. This policy applies to projects for which the District has discretionary approval authority over the project and the District serves as the lead agency for CEQA purposes. Nonetheless, land use agencies can refer to it as guidance for projects that include stationary sources of emissions. The policy relies on the use of performance based standards, otherwise known as Best Performance Standards (BPS) to assess significance of project specific greenhouse gas emissions on global climate change during the environmental review process, as required by CEQA. Use of BPS is a method of streamlining the CEQA process of determining significance and is not a required emission reduction measure. Projects implementing BPS would be determined to have a less than cumulatively significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions, from business-as-usual, is required to determine that a project would have a less than cumulatively significant impact.

B. Definitions

Best Performance Standard for Stationary Source Projects for a specific Class and Category is the most effective, District approved, Achieved-in-Practice means of reducing or limiting GHG emissions from a GHG emissions source, that is also economically feasible per the definition of Achieved-in-Practice. BPS includes equipment type, equipment design, and operational and maintenance practices for the identified service, operation, or emissions unit class and category.

Business-as-Usual is - the emissions for a type of equipment or operation within an identified class and category projected for the year 2020, assuming no change in GHG emissions per unit of activity as established for the baseline period, 2002-2004. To relate BAU to an emissions generating activity, the District proposes to establish emission factors per unit of activity, for each class and category, using the 2002-2004 baseline period as the reference.

Category is - a District approved subdivision within a “class” as identified by unique operational or technical aspects.

Class is - the broadest District approved division of stationary GHG sources based on fundamental type of equipment or industrial classification of the source operation.

C. Determining Project Significance Using BPS

Use of BPS is a method of determining significance of project specific GHG emission impacts using established specifications. BPS is not a required mitigation of project related impacts. Use of BPS would streamline the significance determination process by pre-quantifying the emission reductions that would be achieved by a specific GHG emission reduction measure and pre-approving the use of such a measure to reduce project-related GHG emissions.

GHG emissions can be directly emitted from stationary sources of air pollution requiring operating permits from the District, or they may be emitted indirectly, as a result of increased electrical power usage, for instance. For traditional stationary source projects, BPS includes equipment type, equipment design, and operational and maintenance practices for the identified service, operation, or emissions unit class and category.

II. Summary of BPS Determination Process

The District has established TEOR wells as a separate class and category which requires implementation of a Best Performance Standard (BPS) pursuant to the District's Climate Change Action Plan (CCAP). The District's determination of the BPS for this class and category has been made using the phased BPS development process established in the District's Final Staff Report, *Addressing Greenhouse Gas Emissions under the California Environmental Quality Act*. A summary of the specific implementation of the phased BPS development process for this specific determination is as follows:

Table 1 BPS Development Process Phases for TEOR Wells			
Phase	Description	Date	Description
1	Public Notice of Intent	02/09/10	The District's intent notices are attached as Appendix 1.
2	BPS Development	04/15/10	See evaluation document.
3	Public Participation	04/20/10	A Draft BPS evaluation was provided for public comment. The District's notification is attached as Appendix 3.
4	Public Comments	05/14/10	No public comments were received by the District.
6	Finalization	06/22/10	The BPS established in this evaluation document is effective on the date of finalization.

III. Class and Category

This class and category applies to thermally enhanced oil recovery wells with vapor control or closed well vents. Sources of VOC as well as GHG emissions are from the casing vents and also from the oil and gas flowing through various components that are part of the piping from the wells to the emission control system. Components include, but not limited to, any valve, fitting, threaded connection, pump, compressor, pressure relief device, flange, process drain, sealing mechanism, hatch, sight glass, meter or seal fluid system in VOC service. VOC emissions from this source are currently limited by the application of leak standards and an inspection and maintenance (I&M) program required by District rule. The application of the rule requirements are expected to also limit GHG emissions, primarily methane.

Current rule exempt certain components such as pressure relief devices, pumps, and compressors that are enclosed and whose emissions are controlled with an operating VOC collection and control system, components buried below ground, those exclusively handling gas/vapor or liquid streams with a VOC content of 10% by weight or less.

The application of the I&M requirements specified in District rules subject to the rules and those components not subject to those rules will result in a reduction of fugitive GHG emissions. Therefore, the BPS considered for this class and category will apply for all components associated with light crude oil and natural gas production/processing, refineries, liquids processing and chemical plants, even those that are not subject to a particular rule requirement.

IV. Public Notice of Intent

Prior to the development of BPS for this class and category, the District published a Notice of Intent. Public notification of the District's intent to develop BPS for this class and category was initially sent on February 9, 2010 to individuals registered with the CCAP list server. Follow-up notices to provide clarification on information needed for BPS development, and extension of initial commenting period were also sent to individuals in the CCAP list. The District's notifications are attached as Appendix 1.

Comments received during the initial public outreach are presented in Appendix 2. These comments were considered in the development of this BPS as presented below.

V. BPS Development

STEP 1. Establish Baseline Emissions Factor for Class and Category

The Baseline Emission Factor (BEF) is defined as the three-year average (2002-2004) of GHG emissions for a particular class and category of equipment in the San Joaquin Valley (SJV), expressed as annual GHG emissions per unit of activity. The Baseline Emission Factor is calculated by first defining an operation which is representative of the average population of units of this type in the SJV during the Baseline Period and then determining the specific emissions per unit throughput for the representative unit.

A. Representative Baseline Operation

The equipment, *Steam Enhanced Crude Oil Production Wells with Vapor Control or with Closed Well Vents*, is evaluated under this class and category. For this equipment, the representative baseline operation is based on the number of components of wells that were regulated under the previous leak standard and Inspection & Maintenance (I&M) requirements of Rule 4401 that was in effect during 2002-2004. This rule applies to all steam-enhanced crude oil production wells and any associated vapor collection and control systems. The previous gas leak definition is a reading in excess of 10,000 ppmv, as

methane above background, using portable equipment measured in accordance with EPA Method 21. Repair period for any leak was within 15 days with possible extensions. Components include valves, flanges, connectors, open-ended lines, and others.

B. Basis and Assumptions

- *GHG emissions are stated as “CO₂ equivalent (CO₂e) which includes the global warming potential of methane and carbon dioxide emissions associated with gaseous fugitive emissions.*
- *Only direct GHG emissions [methane (CH₄) and carbon dioxide (CO₂)] are produced from the equipment/operation*
- *Fugitive CH₄ and CO₂ emissions will be reduced along with fugitive volatile organic compounds (VOCs) controls*
- *Fugitive gas is 50 % TOC (total organic compound), 31% of which is VOC (Rule 4401 Analysis Staff report assumption, 2006)*
- *Assuming TOC consists only of VOCs and GHG; then GHG is 69% of TOC*
- *The 69% GHG is broken down into approximately of 65.8% CH₄ & 3.2% CO₂ (projected using the ratio of CH₄ (78.8%) to CO₂ (3.8%) content of production gas as listed in the API Compendium manual)*
- *Average TOC EF from EPA’s Average Oil & Natural Gas Production Emission Factors (Table 6.12 API Compendium manual)*

C. Unit of Activity

To relate Business-as-Usual to an emissions generating activity, it is necessary to establish an emission factor per unit of activity, for the established class and category, using the 2002-2004 baseline period as the reference.

GHG emissions are expressed in metric tons CO₂e per well.

D. Calculations

1) Baseline GHG Emissions of Components subject to Rule 4401

Baseline emissions, as shown in the table below, were calculated using the average EPA emission factors, the number of components per well and the estimated percentages of CH₄ and CO₂ in fugitive gas. The number of components was taken from the Rule 4401 2006 Staff report and represents the baseline period of 2002-2004.

Best Performance Standard
 Class: Thermally Enhanced Oil Recovery (TEOR) Wells
 Category: Components subject or not to District Rule 4401
 Date: 7/01/2010

	# Comp/well ^A	Ave TOC EF (Mtons- TOC/hr/comp) ^B	CH ₄ EF (Mton/day/well) ^C	CO ₂ EF (Mton/day/well) ^C	CO ₂ e (Mtons/day/well) ^D
Open Vent Connected to Vapor Control					
Valves	4.7	4.50E-06	1.67E-04	2.89E-10	3.51E-03
Flanges	2.7	3.90E-07	8.31E-06	1.25E-12	1.75E-04
Connectors	24.6	2.00E-07	3.88E-05	2.98E-12	8.16E-04
Open-ended Lines	0.1	2.00E-06	1.58E-06	1.21E-12	3.32E-05
Others	0.1	8.80E-06	6.95E-06	2.35E-11	1.46E-04
Sub-Total	32.2				4.68E-03
Closed Vent					
Valves	1	4.50E-06	3.55E-05	6.14E-11	7.46E-04
Flanges	1	3.90E-07	3.08E-06	4.61E-13	6.47E-05
Connectors	2	2.00E-07	3.16E-06	2.43E-13	6.63E-05
Open-ended Lines	1	2.00E-06	1.58E-05	1.21E-11	3.32E-04
Others	0	8.80E-06	0.00E+00	0.00E+00	0.00E+00
Sub-Total	5				1.21E-03
Total					
					5.89E-03

^A average number of components per well from Rule 4401 analysis staff report - Appendix B, 11/14/2006

^B TOC average emission factors for oil and natural gas production (from API compendium)

^C Estimated based on listed assumptions;

$$\text{CH}_4 \text{ (ton/day/well)} = (\# \text{ comp})(\text{Ave TOC EF})(0.5 \text{ TOC})(0.658 \text{ CH}_4 \text{ or } 0.032 \text{ CO}_2) (24 \text{ hr/day})$$

^D CO₂e (ton/day/well) = (CH₄ x 21) + CO₂

2) Baseline GHG Emissions of Components not subject to Rule 4401 are taken from the 2009 American Petroleum Institute (API) as shown below

Equipment	CH ₄ Mton/hr	CO ₂ Mton/hr	CO ₂ e Mton/year	Comments	Reference
Heavy Crude Wellhead – Fugitive	6.63E-07	8.75E-08	0.123	based on 78.8% vol CH ₄ , 3.78% vol CO ₂	2009 API GHG compendium Tables 6-3, E-4
Light Crude Wellhead - Fugitive	1.56E-05	2.06E-06	2.888	based on 78.8% vol CH ₄ , 3.78% vol CO ₂	2009 API GHG compendium Tables 6-3, E-4
Average			1.506		

Equipment	CH ₄ Mton/mile-hr	CO ₂ Mton/mile-hr	CO ₂ e Mton/mile year	Comments	Reference
Oil Pump Stations	5.49E-08	7.24E-09	0.01	based on 78.8% vol CH ₄ , 3.78% vol CO ₂	2009 API GHG Compendium Table 6-3, E-4

STEP 2. List Technologically Feasible GHG Emission Control Measures

Currently facilities are required by District Rule 4401 to perform annual Inspection and Maintenance (I&M) for controlling VOC emissions. With the performance of I&M, fugitive methane will also be controlled. Therefore, annual I&M is achieved in practice for the control of GHGs as well.

Emissions from the components not subject to Rule 4401, i.e. produced liquid lines beginning at the well head, and components serving streams with VOC content < 10% by weight can also be controlled due to instituting an I&M program (using the same inspection frequencies specified in the requirements of 4401).

For the specific equipment or operation being proposed, all technologically feasible GHG emissions reduction measures are listed, including equipment selection, design elements and best management practices, that do not result in an increase in criteria pollutant emissions compared to the proposed equipment or operation. The following findings or considerations are applicable to this class and category:

a) *Technologically Feasible - Increased Inspection & Maintenance Frequency for Components Subject to Rule 4401 Requirements*

Current requirement is annual inspection and maintenance. Increasing I&M frequency should decrease direct GHG emissions but has not been achieved in practice. This control measure would not result in an increase in emissions of criteria pollutants.

b) *Technologically Feasible - Applying Leak Standards and I&M Requirements to Components Not Subject to Rule 4401 Requirements*

Applying leak standards and I&M requirements to components not subject to Rule 4401 requirements is expected to decrease GHG emissions. This control measure would not result in an increase in emissions of criteria pollutants.

Table 2 Technologically Feasible GHG Control Measures for TEOR Wells	
GHG Control Measures	Qualifications
<i>Increased I&M frequency for components subject to Rule 4401 requirements</i>	<i>Increasing I&M frequency for components subject to Rule 4401 requirements will reduce fugitive VOCs and GHG emissions</i>
<i>Applying leak standards and I&M requirements to components not subject to Rule 4401 requirements</i>	<i>Applying leak standards and I&M requirements to components not subject to Rule 4401 requirements will reduce fugitive VOCs and GHG emissions from those components</i>

STEP 3. Identify all Achieved-in-Practice GHG Emission Control Measures

For all technologically feasible GHG emission reduction measures, all GHG reduction measures determined to be Achieved-in-Practice are identified. Achieved-in-Practice is defined as any equipment, technology, practice or operation available in the United States that has been installed and operated or used at a commercial or stationary source site for a reasonable period of time sufficient to demonstrate that the equipment, the technology, the practice or the operation is reliable when operated in a manner that is typical for the process. In determining whether equipment, technology, practice or operation is Achieved-in-Practice, the District will consider the extent to which grants, incentives or other financial subsidies influence the economic feasibility of its use.

The following findings or considerations are applicable to this class and category:

- *Rule 4401 that included the provisions of the leak standards effective after 1/1/2009 was amended on December 14, 2006. Operators are required to perform all component inspections, with some exceptions, at least once a year. All affected units are expected to comply with the current rule requirements.*
- *Compliance with Rule 4401 will control fugitive VOCs as well as fugitive GHG emissions*
- *Application of the I&M to all components subject to Rule 4401, and to those components that are not subject to I&M requirements will limit VOCs as well as GHG emission*
- *Increasing the inspection and monitoring from the required annual frequency has not been implemented at this time. Therefore, this option can not be considered to be Achieved-in-Practice.*

Based on a review of available technology, the following are determined to be the Achieved-in-Practice GHG emission reduction measures for this class and category:

Table 3 Achieved-in-Practice GHG Control Measures for TEOR Wells	
GHG Control Measures	Achieved-Qualifications
<i>Minimize fugitive GHG emissions by applying leak standards and I&M requirements to components subject to Rule 4401 requirements</i>	<i>Current rule specifies a leak definition of 400 ppmv to 2,000 ppmv for the various components. Repair periods are also specified depending on the severity of the leak</i>
<i>Minimize fugitive GHG emissions by applying leak standards and I&M requirements to components not subject to Rule 4401 requirements</i>	<i>Current rule exempt certain components associated with TEOR wells but leak standards and I&M program are also applicable to these components to reduce GHG emissions</i>

STEP 4. Quantify the Potential GHG Emission and Percent Reduction for Each Identified Achieved-in-Practice GHG Emission Control Measure

A. Basis and Assumptions:

- *Fugitive gas and direct GHG emissions will be reduced similar to VOC emissions due to change in repair period and leak definition*
- *VOC emissions reduction for each type of component subject to Rule 4401 based on current leak standard is 19 to 56% (Rule 4401 analysis staff report)*
- *TOC average emission factor is adjusted based on the above VOC emissions reduction*
- *A control efficiency of 48% is assumed on TEOR well components not subject to Rule 4401 due to imposition of an I&M program*

B. Calculation of GHG Emissions

1) Current GHG Emissions from Components Subject to Rule 4401

	# Comp/well ^A	Adjusted TOC EF (Mtons- TOC/hr/comp) ^B	CH4 EF (Mton/day/well) ^C	CO2 EF (Mton/day/well _c)	CO2e (Mtons/day/well ^D)
Open Vent Connected to Vapor Control					
Valves	4.7	3.23E-06	1.20E-04	1.49E-10	2.52E-03
Flanges	2.7	2.62E-07	5.58E-06	5.62E-13	1.17E-04
Connectors	24.6	1.63E-07	3.16E-05	1.98E-12	6.64E-04
Open-ended Lines	0.1	1.34E-06	1.06E-06	5.44E-13	2.22E-05
Others	0.1	3.91E-06	3.09E-06	4.63E-12	6.48E-05
Sub-Total	32.2				3.39E-03
Closed Vent					
Valves	1	3.23E-06	2.55E-05	3.17E-11	5.36E-04
Flanges	1	2.62E-07	2.07E-06	2.08E-13	4.34E-05
Connectors	2	1.63E-07	2.57E-06	1.61E-13	5.40E-05
Open-ended Lines	1	1.34E-06	1.06E-05	5.44E-12	2.22E-04
Others	0	3.91E-06	0.00E+00	0.00E+00	0.00E+00
Sub-Total	5				8.55E-04
Total					4.24E-03

^A average number of components per well from Rule 4401 analysis staff report - Appendix B, 11/14/2006

^B Adjusted TOC average emission factors for oil and natural gas production (from API compendium) based on VOC reduction reported in Rule 4401 analysis staff report

^C Estimated based on listed assumptions; CH₄ (ton/day/well) = (# comp)(Ave TOC EF)(0.5 TOC)(0.658 CH₄ or 0.032 CO₂) (24 hr/day)

^D CO₂e (ton/day/well) = (CH₄ x 21) + CO₂

2) Current GHG Emissions from Components Not Subject to Rule 4401

Equipment	CO ₂ e Mton/year	Comments	Reference
Heavy Crude Wellhead – Fugitive	0.064	based on 78.8% vol CH ₄ , 3.78% vol CO ₂	2009 API GHG compendium Tables 6-3, E-4, and 48% reduction due to I&M
Light Crude Wellhead - Fugitive	1.502	based on 78.8% vol CH ₄ , 3.78% vol CO ₂	2009 API GHG compendium Tables 6-3, E-4, and 48% reduction due to I&M
Average	0.783		

Equipment	CO ₂ e Mton/mile year	Comments	Reference
Oil Pump Stations	0.005	based on 78.8% vol CH ₄ , 3.78% vol CO ₂	2009 API GHG compendium Tables 6-3, E-4, and 48% reduction due to I&M

C. Calculation of Potential GHG Emission Reduction as a Percentage of the Baseline Emission Factor

1) Components Subject to Rule 4401

$$\begin{aligned}
 \% \text{ Total Reduction} &= \text{GHG (baseline)} - \text{GHG (current)} / \text{GHG (baseline)} * 100\% \\
 &= (5.89\text{E-}03) - (4.24\text{E-}03) / (5.89\text{E-}03) * 100\% \\
 &= 28 \%
 \end{aligned}$$

2) Components Not Subject to Rule 4401 Requirements

A review of available references did not reveal a control efficiency due to instituting an annual (as specific in Rule 4401) I&M program.

The control efficiency for instituting an I&M program for such components is estimated to be twice the “increase” in control efficiency specified in the staff report for the 11/14/06 amendments to Rule 4401 for strengthening the I&M requirements in Rule 4401. The staff report estimated about 24% VOC emission reduction due to the rule amendments. Therefore, the corresponding reduction in GHG emissions is 48%.

This is a reasonable assumption as the components not subject to Rule 4401 are not currently subject to any I&M requirement. Imposing an I&M requirement for such components for the first time will likely result in a high level of control for such components.

STEP 5. Rank all Achieved-in-Practice GHG emission reduction measures by order of % GHG emissions reduction

Based on the calculations presented in Section II.4 above, the Achieved-in-Practice GHG emission reduction measures are ranked in the table below:

Table 4 Ranking of Achieved-in-Practice GHG Emission Control Measures			
Rank	GHG Control Measures	Potential GHG Emission per Unit of Activity (G_a) (lb-CO₂e/ton)	Potential GHG Emission Reduction as a Percentage of the Baseline Emission Factor (G_p)
1	<i>Minimize fugitive GHG emissions by applying leak standards and I&M requirements to components subject to Rule 4401 requirements</i>	0.0042 Mton-CO ₂ e per well-day	28%
	<i>Minimize fugitive GHG emissions by applying leak standards and I&M requirements to components not subject to Rule 4401 requirements</i>	0.783 Mton-CO ₂ e/yr 0.005 Mton-CO ₂ e/mile/yr	48%

STEP 6. Establish the Best Performance Standard (BPS) for this Class and Category

For Stationary Source Projects for which the District must issue permits, Best Performance Standard is – “For a specific Class and Category, the most effective, District approved, Achieved-In-Practice means of reducing or limiting GHG emissions from a GHG emissions source, that is also economically feasible per the definition of achieved-in-practice. BPS includes equipment type, equipment design, and operational and maintenance practices for the identified service, operation, or emissions unit class and category”.

Based on the definition above and the ranking of evaluated technologies, Best Performance Standard (BPS) for this class and category is determined as:

Best Performance Standard for TEOR Wells

- ***Components Subject to Rule 4401: Minimize fugitive GHG emissions by applying leak standards and I&M requirements to components subject to Rule 4401 requirements.***
- ***Components Not Subject to Rule 4401: Minimize emissions by applying leak standards and I&M requirements to components not subject to Rule 4401 requirements***

STEP 7. Eliminate All Other Achieved-in-Practice Options from Consideration as Best Performance Standard

The following Achieved-in-Practice GHG control measures identified and ranked in the table above are eliminated from consideration as Best Performance Standard since they have GHG control efficiencies which are less than that of the selected Best Performance Standard as stated in Step 6 of this evaluation:

No other Achieved-in-Practice options were identified.

VI. Public Participation

A Draft BPS evaluation was provided for public comment. Public notification was sent on April 20, 2010 to individuals registered with the CCAP list server. The District's notification is attached as Appendix 3

No comments were received during the public participation period.

VII. Appendices

- Appendix 1: Public Notice of Intent: Notices
- Appendix 2: Comments Received During the Public Notice of Intent
- Appendix 3: Public Participation: Notice

Appendix 1

Public Notice of Intent: Notices



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



Notice Of Development Of Best Performance Standards

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on development of Best Performance Standards for the following Stationary Source class and category of greenhouse gas emissions:

Oil and Gas Extraction, Storage, Transportation and Refining Operations

The District is soliciting public input on the following topics for the subject Class and Category of greenhouse gas emission source:

- Recommendations regarding the scope of the proposed Class and Category (Stationary GHG sources group based on fundamental type of equipment or industrial classification of the source operation),
- Recommendations regarding processes or operational activities the District should consider when establishing Baseline Emissions for the subject Class and Category,
- Recommendations regarding processes or operational activities the District should consider when converting Baseline Emissions into emissions per unit of activity, and
- Recommendations regarding technologies to be evaluated by the District, when establishing Best Performance Standards for the subject Class and Category.

Information regarding development of Best Performance Standard for the subject Class and Category of greenhouse gas emission source can be obtained from the District's website at http://www.valleyair.org/Programs/CCAP/CCAP_idx.htm.

Written comments regarding the subject Best Performance Standard should be addressed to Dolores Gough by email, Dolores.Gough@valleyair.org, or by mail at SJVUAPCD, 34946 Flyover Court, Bakersfield, CA 93308 and must be received by **February 23, 2010**. For additional information, please contact Dolores Gough by e-mail or by phone at (661) 392-5609.

Information regarding the District's Climate Action Plan and how to address GHG emissions impacts under CEQA, can be obtained from the District's website at http://www.valleyair.org/Programs/CCAP/CCAP_idx.htm.

From: Mark Montelongo
Sent: Tuesday, February 09, 2010 9:04 AM
To:
'Oil_and_Gas_Extraction_Storage_Transportation_and_Refining_Operations_BPS@lists.valleyair.org'
Subject: Notice of Development

The San Joaquin Valley Air Pollution Control District is soliciting public input on the development of Best Performance Standards. The Notice of Development for Oil and Gas Extraction, Storage, Transportation and Refining Operators is available [here](#).

Written comments regarding the subject Best Performance Standard should be addressed to Dolores Gough by email, Dolores.Gough@valleyair.org, or by mail at SJVUAPCD, 34946 Flyover Court, Bakersfield, CA 93308 and must be received by **February 23, 2010**. For additional information, please contact Dolores Gough by e-mail or by phone at (661) 392-5609.

From: Mark Montelongo
Sent: Friday, February 19, 2010 8:23 AM
To: 'Oil_and_Gas_Extraction_Storage_Transportation_and_Refining_Operations_BPS@lists.valleyair.org'
Cc: Arnaud Marjollet
Subject: Commenting Deadline - Oil & Gas Extraction, Storage, Transportation & Refining BPS

As a reminder, the San Joaquin Valley Air Pollution Control District is soliciting public input on the development of Best Performance Standards. The Notice of Development for Oil and Gas Extraction, Storage, Transportation and Refining Operators is available [here](#).

Written comments regarding the subject Best Performance Standard should be addressed to Dolores Gough by email, Dolores.Gough@valleyair.org, or by mail at SJVUAPCD, 34946 Flyover Court, Bakersfield, CA 93308 and must be received by **February 23, 2010**. For additional information, please contact Dolores Gough by e-mail or by phone at (661) 392-5609.

From: Mark Montelongo
Sent: Thursday, February 25, 2010 1:20 PM
To: 'Oil_and_Gas_Extraction_Storage_Transportation_and_Refining_Operations_BPS@lists.valleyair.org'
Cc: Arnaud Marjollet; Dan Barber
Subject: Extension of Commenting Period for Oil and Gas Extraction, Storage, Transportation and Refining Operations

The District is extending the initial commenting period regarding development of Best Performance Standards (BPS) for Oil and Gas Extraction, Storage, Transportation and Refining Operations. The information requested below will be used when establishing Best Performance Standards for this Class and Category:

- Types of equipment with fugitive emissions that were in operation during the baseline period (2002-2004)
- Aspects of operating the subject emissions source that are unique to your equipment
- Proposals for basis to quantify GHG emissions (lb/bbl oil, lb/process throughput, lb/equipment, etc)
- Vapor analysis quantifying CO₂, methane and non-methane components
- Technologies or operational activities currently in practice to which should be considered.
- Any other suggestions, comments, and or data

Written comments regarding the subject Best Performance Standard should be addressed to Dolores Gough by email, Dolores.Gough@valleyair.org, or by mail at SJVUAPCD, 34946 Flyover Court, Bakersfield, CA 93308 and must be received by **March 4, 2010**. For additional information, please contact Dolores Gough by e-mail or by phone at (661) 392-5609.

Appendix 2

Comments Received During the Public Notice of Intent

From: Joe Selgrath [mailto:selgrath@ix.netcom.com]
Sent: Monday, February 22, 2010 1:04 PM
To: 'Dolores Gough'
Subject: RE: BPS for Oil and Gas

Hi Dolores,

My comments follow:

-
- 1) Establishment of Best Performance Standards for the Oil and Gas sector is a daunting task. There are multiple types of equipment, facility design, and operational characteristics that make establishment of a "BPS" for the oil and gas sector difficult. We recommend that the District structure BPS following the existing categories and organization of the District's BACT guidelines.
 - 2) BPS is already in effect for new sources through the District's BACT guidelines. BACT standards achieve reductions in VOC from crude oil operations, and consequently, achieve reductions in methane through these same controls. BPS should be equivalent to BACT for that category and type of source.
 - 3) BPS needs to provide exemptions for small sources small sources of GHG emissions. EPA is proposing a threshold of 25,000 MT CO₂e, and a similar threshold should be part of any BPS determination.

Thanks

Joe Selgrath
EnviroTech Consultants, Inc.

From: Dennis_Champion@oxy.com [mailto:Dennis_Champion@oxy.com]
Sent: Monday, February 22, 2010 12:45 PM
To: Dolores Gough
Subject: RE: Greenhouse Gas_ Oil & Gas extraction_storage

Dolores:

This really is not much to work with. However...

1. In the Valley, fugitive monitoring is currently conducted for all sources > 30 API (cutoff for Rule 4409). Therefore, if this is mandated as a BPS, will current practices be included in the determination? If so, that will provide fugitive I&M for sources < 30 API. Also, Are these BPS for existing operations or for planned projects (i.e. - new steam flood). How are the BPS going to be implemented?
2. Except for small producers, you will not find a great deal of these tanks. Must be careful when making demands on the independents as the present exemptions are basically there in the rules for them (via Les Clark). Again, will operators get credit for what they are currently doing? Above and beyond?
3. I am not sure I know what you are talking about. Steam drive wells?
4. What are you going to do about a floating roof? Options?

Concerns:

1. BPS ultimately become regulations. This worries more than a small number of operators. Regulation through Policy is a disease.
2. Do operators receive credit for current activities under a BPS?
3. In other words, is BPS only for new projects? Can existing practices be utilized to supplement?

WCI is currently working on gas-actuated controllers. Are there other topics members can think of. Are you only looking at fugitives or combustion sources as well although not much to do here either). Where is gas vented? Most of these sources are already controlled.

PS - There was nothing really to comment on. We can sit down and develop something more substantive and distribute to any who have signed up. Then need to have meetings at specific times (telephone or otherwise) and set definitive schedules for deliverables. Need to integrate into and take credit for existing operations rather than creating more requirements.

Let me know what you think?

Dennis

From: Ludwick, John J. [mailto:jjl@bry.com]
Sent: Tuesday, February 23, 2010 3:09 PM
To: Dennis Roberts; Steven Roeder; James Harader; Dolores Gough
Cc: Boston, Robert E.
Subject: Comments on BPS

In my opinion the District can not receive adequate information to form BPS without first meeting with industry and their representatives to discuss what the baseline period equipment is. A blanket request for information will only create confusion and the submittal of information that can only be applied to a single company. Once the District understands the difference not only between industrial types, but the differences within the same industry, can the District begin receiving adequate information to form an achievable and economical BPS.

Thank you,

John Ludwick
Regulatory Compliance Specialist
Berry Petroleum Company
5201 Truxtun Avenue
Bakersfield, CA. 93309
Phone: (661) 616-3807
Cell: (661) 703-2920
Fax: (661) 616-3892



William Fall
Health, Environment, and
Safety Manager

San Joaquin Valley BU
Chevron North America
Exploration and Production
P.O. Box 1392
Bakersfield, CA 93302
Tel 661 654 7038
Fax 661 654 7606

23 February 2010

San Joaquin Valley Unified Air Pollution Control District
Mr. David Warner, Director, Permit Services
Attn: Dolores Gough
2700 M St. Suite 275
Bakersfield, CA 93301.

Re: Response to "Notice of Development of Best Performance Standards"

Via email: Delores.Gough@valleyair.org

Dear Mr. Warner:

Chevron USA, Inc. (Chevron) appreciates the opportunity to provide the San Joaquin Valley Unified Air Pollution Control District (District) with assistance in developing Best Performance Standards (BPS) for "Oil & Gas Extraction, Storage, Transportation and Refining Operations" as a part of the District's Climate Change Action Plan. The BPS development potentially will benefit California's ability to effect reductions in carbon dioxide emissions without unnecessary harm to the state's economy.

Chevron requests additional time to evaluate the details of your information request and prepare our response. Chevron can submit these comments to the District by 23 March 2010.

Thank you for this opportunity to participate in this important process. Please contact Spencer Hammond (Spence@chevron.com), telephone: (661) 302-4516, should you have questions.

Regards,

Sincerely,

A handwritten signature in black ink, appearing to read "W. R. Fall", written over a horizontal line.

for:

William R. Fall
Chevron Health, Environmental and Safety Manager

From: Dennis_Champion@oxy.com [mailto:Dennis_Champion@oxy.com]
Sent: Monday, March 01, 2010 5:23 PM
To: Dolores Gough
Cc: Arnaud Marjollet; dan.barber@valleyair.org
Subject: FW: Extension of Commenting Period for Oil and Gas Extraction, Storage, Transportation and Refining Operations

See my comments below.

Also, to the extent possible, the baseline should be moved back to the 1990 timeframe to match the timeframe of the AB32 baseline. Looking to another baseline could be counter-productive.

From: oil_and_gas_extraction_storage_transportation_and_refining_operations_bps@lists.valleyair.org [mailto:oil_and_gas_extraction_storage_transportation_and_refining_operations_bps@lists.valleyair.org]
Sent: Thursday, February 25, 2010 1:20 PM
To: Champion, Dennis
Cc: Arnaud Marjollet; Dan Barber
Subject: [Oil_and_Gas_Extraction_Storage_Transportation_and_Refining_Operations_BPS] Extension of Commenting Period for Oil and Gas Extraction, Storage, Transportation and Refining Operations

The District is extending the initial commenting period regarding development of Best Performance Standards (BPS) for Oil and Gas Extraction, Storage, Transportation and Refining Operations. The information requested below will be used when establishing Best Performance Standards for this Class and Category:

- Types of equipment with fugitive emissions that were in operation during the baseline period (2002-2004)
Tanks, engines, wells, loading racks, depurators, gasoline storage and dispensing, gas plants, vessels at various facilities, pipelines
- Aspects of operating the subject emissions source that are unique to your equipment
Light oil with associated gas requires substantially more oversight.
- Proposals for basis to quantify GHG emissions (lb/bbl oil, lb/process throughput, lb/equipment, etc)
The predominant emissions point from operations is fugitive emissions. The emissions are based on components. Therefore, emissions should be based on a component type similar to the CAPCOA/EPA guidance. Utilizing a basis such as lbm/bbl is misleading as the emissions are not affected by throughput. They are only affected by the gas quality.

- Vapor analysis quantifying CO₂, methane and non-methane components
The gas quality associated with a surface site is typically similar to other surface sites in the immediate area. However, the extent of difference between sites is generally marginal. Vapor analysis can be provided.
- Technologies or operational activities currently in practice to which should be considered.
A Fugitive Inspection and Maintenance program is best method to ensure leaks from fugitive components are identified and repaired. Also, training to stress sight, sound, and smell to the operators as well as the entire work force. The more eyes, ears, and noses the better. Finally, a good maintenance program is necessary to ensure program integrity.
- Any other suggestions, comments, and or data
As stated above, the best management practice is training to increase the amount of knowledgeable eyes, ears, and noses in the field.

Written comments regarding the subject Best Performance Standard should be addressed to Dolores Gough by email, Dolores.Gough@valleyair.org, or by mail at SJVUAPCD, 34946 Flyover Court, Bakersfield, CA 93308 and must be received by **March 4, 2010**. For additional information, please contact Dolores Gough by e-mail or by phone at (661) 392-5609.

From: Jerry Frost [mailto:jfrost@kernoil.com]
Sent: Thursday, March 04, 2010 5:02 PM
To: Dolores Gough
Subject: ::::BPS Refinery Storage and Fugitives – Comments

Dolores

Here are a few thoughts with regards to storage and fugitive sources at a refinery that may contribute to GHG emissions and some of the existing controls that should be considered as Best Performance Standards (BPS) mitigation measures.

Organic Liquid Storage Tanks: Rule 4623 requirements should be considered BPS for organic liquid storage tanks. Controls are based on tank size, throughput and vapor pressure. Current controls offer up to 99% control efficiency. In refinery operations, the methane content is 60% or less of the tank vapor phase. The following examples demonstrate that tank methane emissions are a very small and insignificant contributor of GHG emissions.

1. A 10,000 barrel tank on vapor recovery storing gasoline with a vapor pressure 7 RVP and assuming 100 turnovers per year only contributes 990 lbs of methane emissions per year.
2. A 10,000 barrel tank uncontrolled tank storing a low vapor pressure < 0.5 RVP and assuming 100 turnovers per year only contributes 3.8 lbs of methane emissions per year.

Existing Rule 4623 controls already reduce GHG emissions to the greatest extent possible. Kern recommends Organic Liquid Storage Rule 4623 be adopted as BPS for GHG emissions.

Fugitive Emissions: Rule 4455 is clearly the most stringent fugitive emissions rule in the country and already places significant control on GHG emissions. Quarterly inspections, one hour minimum repairs, and repairs to leak free condition between 2 to 7 days and requirements to replace chronic leakers with BACT components, have significantly reduced VOC and associated GHG emissions.

Existing Rule 4455 controls already reduce GHG emissions to the greatest extent possible. Kern recommends Fugitive Rule 4455 be adopted as BPS for GHG emissions.

Jerry Frost
Senior Environmental Regulatory Advisor
Kern Oil & Refining Company

Initial WSPA Response to SJVAPCD Information Request

General Policy Considerations

- The fugitive emissions (VOC) I&M program assures equivalent significant GHG emission reductions compared to standard of practice nationwide.
- Very small equipment should continue to be considered de minimis as is currently done with criteria pollutant policy. Specifically, some tanks including drain tanks and very small tanks are not currently controlled, are very small sources of emissions, and should retain an exclusionary element for certain conditions.
- Equipment in this category needs to be subdivided adequately to account for site and application variables.
- TEOR wells and tank VCS should allow combustion of waste gas, where possible, in available combustion equipment (consistent with criteria pollutant policy).
- Flaring is required in some situations, at least for emergency and backup purposes (consistent with criteria pollutant policy).
- Existing SJVAPCD fugitive emissions I&M reporting provides all this guidance the District needs to establish a GHG baseline.
- California ARB is also in the process of developing the same fugitive emission inventory information.

Technical Information to be Provided

For consistency and accuracy, it is recommended that SJVAPCD refer to established fugitive emissions programs with regard to this BPS category:

- It is suggested that the District utilize the information in the SJVAPCD fugitive emission I&M program.
- It is suggested that the District utilize the soon-to-be-completed California ARB AB 32 GHG-related equipment inventory.

OIL & GAS EXTRACTION, STORAGE, AND PRODUCTION BEST PERFORMANCE STANDARDS (BPS)

CCAP Staff Report

- Methane emissions shall be minimized by applying VOC leak standards to components handling methane – Using District Rules 4409 and 4455.
- Rule 4409 applies to component containing or contacting VOC streams at crude oil production and natural gas production and processing facilities.
- Rule 4455 applies to petroleum refineries, chemical plants and gas liquids processing facilities.
- Components – valves, pipes, flanges, pumps, etc.
- Leak standards range from 200 ppmv to 10,000 ppmv, depending on the type of component.
- Not applicable to components at oil/gas production facilities with a VOC content of 10% by weight or less or to natural gas processing facilities with a VOC content of less than 1% by weight.
- Not applicable to components handling commercial grade natural gas.

GHG Emission Reductions

- Reports indicate that Rules 4409 and 4455 result in a 60.2% reduction of fugitive VOC emissions from the baseline period of 2002-2004 (when there were no leak standards, inspections and monitoring requirements).

Mitigation Measures

- All equipment will be operated in accordance with manufacturer specifications and approved design specifications.
- Operations shall apply leak standards, inspections and monitoring plans according to Rules 4409 and 4455.

BPS Notice of Development

The information requested below will be used when establishing Best Performance Standards for this Class and Category:

- Recommendations regarding the scope of the proposed Class and Category (Stationary GHG sources group based on fundamental type of equipment or industrial classification of the source operation).
- Recommendations regarding processes or operational activities the District should consider when establishing Baseline Emissions for the subject Class and Category.
- Recommendations regarding processes or operational activities the District should consider when converting Baseline Emissions into emissions per unit of activity.
- Recommendations regarding technologies to be evaluated by the District, when establishing Best Performance Standards for the subject Class and Category.

-
- Types of equipment with fugitive emissions that were in operation during the baseline period (2002-2004).
 - Aspects of operating the subject emission source unique to your equipment.
 - Proposals for basis to quantify GHG emissions (lb/bbl oil, lb/process throughput lb/equipment, etc).
 - Vapor analysis quantifying CO₂, methane and non-methane components.
 - Technologies or operational activities currently in practice to which should be considered.
 - Any other suggestions, comments, and or data.

Appendix 3

Public Participation: Notice

From: Mark Montelongo
Sent: Tuesday, April 20, 2010 4:11 PM
To:
'Oil_and_Gas_Extraction_Storage_Transportation_and_Refining_Operations_BPS@lists.valleyair.org'
Subject: SJVAPCD-Proposed Draft Best Performance Standards (BPS)

The San Joaquin Valley Air Pollution Control District is soliciting public comment on the development of Best Performance Standards (BPS). This email is to advise you the Draft Proposed BPS documents for Oil & Gas Extraction, Storage, Transportation and Refining Operations are now available for your review.

- Draft Proposed BPS - Production/Processing/Refineries is available [here](#).
- Draft Proposed BPS - TEOR Wells is available [here](#).

Written comments should be addressed to Dolores Gough by email, Dolores.Gough@valleyair.org, or by mail at SJVAPCD, 34946 Flyover Court, Bakersfield, CA 93308 and must be received by May 11, 2010. For additional information, please contact Dolores Gough by e-mail or by phone at (661) 392-5609.