San Joaquin Valley
Unified Air Pollution Control District

Best Performance Standard (BPS) x.x.xx

Date: 08/02/2011

Class	**VOC Control/Gas Disposal**	
Category	**Oil and Gas Production, Processing, and Refining**	
Best Performance Standard (in order of recommendation)	1) -Incineration in existing engine, boiler, etc that creates useful work – provided that equipment is available and practically capable of incinerating vapors (see equipment specific BPS for standards and requirements for new fired equipment) and currently burning fossil fuel; or, -Transfer to Sales Gas Line – provided that access to sales gas line infrastructure is available; or, -Reinjection to Formation – provided that access to a disposal well is available.	
	The following options supersede the BPS requirements above if: a) equipment listed above is not available; or, b) gas cannot safely be transferred to equipment listed above; or, c) used to control emergency gas releases. 2) -Incineration in new Thermal Oxidizer – see equipment specific Thermal Oxidizer BPS for standards and requirements for new equipment; or, -Incineration in New Flare with >98% TOC destruction efficiency, steam assist, air assist when steam is not available, or Coanda effect and equipped with non-continuous automatic electronic or ballistic ignition; or, -Incineration in Existing Thermal Oxidizer or Flare	
Percentage Achieved GHG Emission Reduction Relative to Baseline Emissions	**Gas-Fired Equipment**	**100%**
	Transfer to Sales Gas Line	**100%**
	Reinjection to Formation	**100%**
	New Thermal Oxidizer	**100%**
	New Flare	**1.5%**
	Existing Thermal Oxidizer or Flare	**0%**

District Project Number	S-1103964
Evaluating Engineer	Kristopher Rickards
Lead Engineer	Leonard Scandura, P.E.
Public Notice: Start Date	May 31, 2011
Public Notice: End Date	June 30, 2011
Determination Effective Date	August 2, 2011

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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 VOC control and gas disposal devices used in the petroleum industry 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 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 VOC Control/Gas Disposal Devices used in the Oil and Gas Production, Processing, and Refining

Phase	Description	Date	Description
1	Public Notice of Intent	9/28/10	The District's intent notice is attached as Appendix 1
2	BPS Development	01/12/11	See evaluation document.
3	Public Participation: Public Notice Start Date	5/31/11	A Draft BPS evaluation was provided for public comment (This Document)
4	Public Participation: Public Notice End Date	6/30/11	No comments were received

III. Class and Category

Gas disposal devices used to control VOC emissions in the petroleum industry are unique due to the inconsistent make-up of the gas including:

- Wide fluctuations in chemistry affecting Btu and methane content resulting in associated gas ranging from waste gas that must be disposed of or cleaned before being used, to sellable gas that can be sent directly into a gas sales line with negligible refinement.
- Explosive limits
- Contamination (H_2S)

In addition to the petroleum and other resources recovered in this industry having characteristics previously discussed the following must also be considered:

- The volume of VOC emissions that must be collected and reduced is unparalleled in any other industry.
- The size of the area over which the petroleum industry operates covers many square miles and equipment must often be operated at the site to contain or reduce emissions
- The remote locations the petroleum industry operates is often without established utilities and other resources (water, gas, electricity, etc.)

This BPS will apply to gas disposal methods and devices including carbon adsorption, reinjection to formation, gas transferred to pipeline, incineration in fired equipment, incinerators, thermal oxidizers, vapor combustors, and flares. Such control devices are used mainly to control the emissions of volatile organic compounds (VOC) and are also listed as Best Available Control Technology (BACT).

IV Public Notice of Intent

Prior to developing 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 sent on September 28, 2010 to individuals registered with the CCAP list server. The District's notification is attached as Appendix 1.

No comments were received during the initial public outreach.

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

For VOC Control and Gas Disposal Devices used in the Oil and Gas Production, Processing, and Refining Industry**,** the representative baseline operation is a mix of specialized methods and equipment used in the petroleum industry. The table below lists the principal sources of non-combustion greenhouse gas in this industry. Please note that capture of greenhouse gas is the focus of this performance standard as opposed to control since this evaluation is targeting how the captured gas is disposed of:

Equipment/Operation	Approximate # of Units	% of Total
Oilfield Uncontrolled Tanks (P/V vent only)	2,200[1]	5 %
Oilfield Controlled Tanks	1,000[1]	2 %
TEOR Wells with Closed Casing Vents (combined steam drive and cyclic wells)	17,054[2]	37 %
TEOR Wells (uncontrolled cyclic wells)	336[2]	1 %
TEOR Wells with Vapor Control (combined steam drive and cyclic wells)	25,161[2]	55 %
Total	**45,751**	**100 %**

1) Taken from the District's Permit Database, 2010
2) Taken from Rule 4401 staff report, 2006

Though previous versions of Rule 4401 did not require that closed casing systems vent only to tanks equipped with vapor control it was the District's practice to require this, as mentioned in the Rule 4401 staff report (2006). Please also note that although Rule 4401 is intended to reduce VOC emissions from production wells and frontline tanks, it also has the collateral impact of reducing CH_4 and CO_2, both of which are GHGs.

Therefore, all captured emissions from frontline tanks and wells will be considered to have been controlled by 99% through one of the following methods during the baseline period:

- 99% control of front line tank vapors serving wells with closed casing vents (District Practice).
- 99% control of well vapors through incineration, reinjection in disposal wells, or transfer of non condensable to sales line (BACT and Rule 4401).

The following is a complete list of control technologies that can serve as GHG control devices:

- Carbon adsorption
- Transfer to gas sales line
- Reinjection to formation
- Incineration in gas-fired equipment (e.g. steam generator, process heater, turbine, IC engine, etc.)
- Incineration in a thermal oxidizer (including incinerators, vapor combustion units (VCU), etc.)
- Incineration in a flare

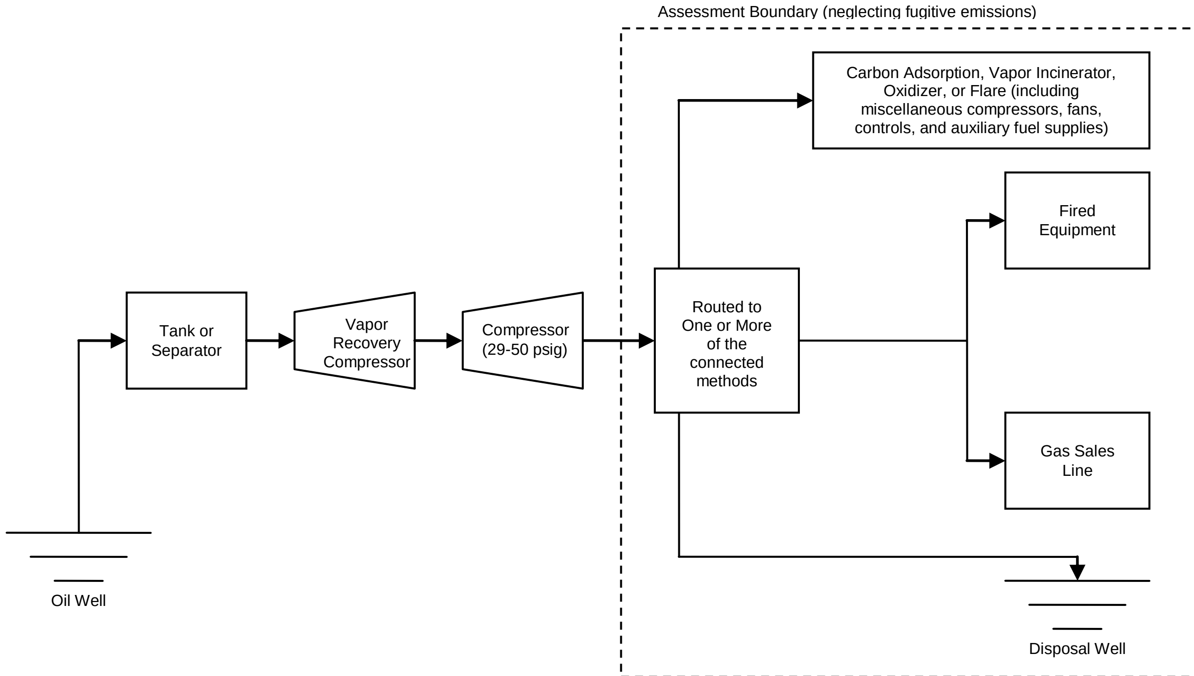
B. Basis and Assumptions

- All pipeline gas not combusted in gas-fired equipment will be combusted in other equipment (i.e. waste gas burned in fired equipment will entirely displace gas in fuel line that would otherwise be burned).
- Direct GHG emissions due to fugitive losses are not considered as this Best Performance Standard considers methods for disposing of captured gas only (fugitive emissions from components are covered under separate BPS).
- Flares during the baseline period are considered to be equipped with one continuously burning pilot flame (conservative estimate, EPA *Air Pollution Control Cost Manual* - Sixth Edition (EPA 452/B-02-001)).
- Typical pilot flames consume 70 scf/hr per pilot (EPA *Air Pollution Control Cost Manual* - Sixth Edition (EPA 452/B-02-001)) .
- Flares equipped with auto ignition/reignition will require a negligible amount of supplementary gas (Rule 4311 staff report, June 15, 2006) .
- Typical raw or produced gas composition by mole is 80% CH_4, 15% C_2H_6, and 5% C_3H_8 (CAPP, *Calculating Greenhouse Gas Emissions*, Guide, 2003-003, Section 1.7.3, April 2003).

- Direct emissions from flaring will be the sole result of 98% combustion of hydrocarbons and complete conversion to CO_2 (worst case for non-refinery flares[1]).
- All gas-fired equipment will oxidize 100% of fuel carbon[1]
- Indirect emissions created from energy required to compress gas for assisted flares will be considered negligible compared to direct emissions produced from combustion.
- From the District's fuel use records, the total fuel use for 18 typical petroleum industry (facilities with SIC codes 1311, 1321, 1389, 2911, and 5172) flares during 2004 was 545.7 MMscf/year.
- Fired equipment and thermal oxidizers will be considered either previously installed or installed in accordance with equipment specific BPS (i.e. all fired equipment and thermal oxidizers that have been or will be reviewed under separate equipment specific BPS will not be evaluated in this document).
- Variation in produced gas compression for all recipient equipment is negligible and will not be considered (as no change between equipment and no significant change in indirect emissions from driving compressors is relevant) based on the following:
    - Average disposal well head pressure is 29 psig (based on average pressure in disposal wells as reported to DOGGR from 2000-2010 for Kern County).
    - Typical gas sales line pressure in the field is 30-50 psi (WSPA and industry comments).
- Injection pressure in either a disposal well or gas sales line has not changed since the base line period.
- Increases in compressor efficiency and technology from the baseline period have been negligible.
- The GHG emission factor for natural gas combustion is 117 lb-CO_2e/MMBtu (or 53 kg-CO_2e/MMBtu) per CCAR document[2].
- Average Btu content of natural gas is 1,000 Btu/scf (District Practice)

[1] American Petroleum Institute *Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry*, August, 2009 (Section 4.0)
[2] California Climate Change Action Registry (CCAR), Version 3.1, January, 2009 (Appendix C, Tables C.7 and C.8)

- The assessment boundary for these operations is as follows:



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.

The resulting emissions factor is a combination of indirect emissions used to power electrical equipment and direct emissions from combustion of the gas stream. Since the purpose of these methods is disposing of gas only, the Unit of Activity is defined as:

$$Unit\ of\ Activity = \frac{lb\text{-}CO_2e}{standard\ cubic\ foot\ of\ gas\ disposed\ of}$$

D. Calculations

As explained in Step 4, below, only flare GHGs will be quantified. Indirect emissions from the operation of a flare are considered negligible.

The actual daily average of gas flared in 2004 (the most complete year of the baseline period the District has records for) is:

$$\frac{\left(\frac{545.7\,MMscf}{year}\right)}{18\,flares}\left(\frac{1\,year}{365\,days}\right)\frac{10^6\ scf}{MMscf} = 83{,}059\ \frac{scf}{flare-day}$$

The average scf of pilot fuel burned/scf of gas flared is then calculated as follows:

$$\frac{\frac{70\ scf\ of\ pilot\ fuel}{flare\text{-}hr}\left(\frac{24\,hr}{day}\right)}{\left(\frac{83{,}059\ scf}{flare\text{-}day}\right)} = 0.02\,\frac{scf\ of\ pilot\ fuel\,burned}{average\,scf\ of\ gas\ flared}$$

Assuming pilot fuel is comprised of natural gas we have, from assumptions above, 0.117 lb-CO_2e/scf of pilot fuel. Combining this with the previous calculated value yields the amount of GHG emitted from burning a pilot flame per scf of gas flared:

$$\frac{0.02\ scf\ pilot\ fuel}{scf\ of\ flared\ gas}\left(\frac{0.117\ lb-CO_2e}{scf\ of\ pilot\ fuel}\right) = 0.00234\,\frac{lb-CO_2e}{scf\ of\ gas\ flared}$$

From the generic speciation of produced gas, the following GHG emission factors from combustion are calculated.

lb-CH_4 from unburned CH_4:

$$\frac{0.80\ scf}{scf\ flare\ gas}\left(\frac{0.02\,scf\ unburned\,CH_4}{total\ scf\ CH_4}\right)\frac{lb-mole\,CH_4}{379.3\,scf\,CH_4}\left(\frac{16\ lb\ CH_4}{lb-mole\ CH_4}\right) = 0.00067\,\frac{lb-CH_4}{scf\ gas\ flared}$$

At 21 lb-CO_2e/lb-CH_4 the following lb-CO_2e from unburned gas flared is:

$$0.01417 \frac{lb\text{-}CO_2e}{scf\ gas\ flared}$$

lb-CO_2 from combustion of hydrocarbons in gas flared is calculated as:

$$\left\{\left[\frac{0.80\ lb\text{-}mole\ CH_4}{lb\text{-}mole\ gas\ flared}\left(\frac{1\ lb-mole\ C}{lb\text{-}mole\ CH_4}\right)+\frac{0.15\ lb\text{-}mole\ C_2H_6}{lb\text{-}mole\ gas\ flared}\left(\frac{2\ lb-mole\ C}{lb\text{-}mole\ C_2H_6}\right)+\right.\right.$$

$$\left.\left.\frac{0.05\ lb\text{-}mole\ C_3H_8}{lb\text{-}mole\ gas\ flared}\left(\frac{3\ lb-mole\ C}{lb\text{-}mole\ C_3H_8}\right)\right] x \frac{0.98\ lb-mole\ CO_2\ formed}{lb-mole\ C\ combusted}\right\}\left(\frac{lb-mole\ CO_2}{379.3\ scf\ CO_2}\right)\frac{44\ lb\ CO_2}{lb-mole\ CO_2}$$

$$= 0.14210 \frac{lb\text{-}CO_2e}{scf\ gas\ flared}$$

Baseline GHG emissions (BEF) are then calculated as:

BEF = 0.00234 + 0.01417 + 0.14210 = 0.15861 lb-CO_2e/scf gas flared

STEP 2. List Technologically Feasible GHG Emission Control Measures

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:

- Collected gas is required to have a minimum destruction efficiency of 99% (BACT and Rules 4401 and 4623).
- Oilfield operations involve controlling a wide variety of gas with varying chemical make-up, acidity, and explosive limits.
- Types of compressors and number of stages industry uses vary, depending on a wide chemical make-up of gas and of pressure.
- Equipment used to dispose of gas varies depending on location of equipment and geographic location of disposal wells and gas sales lines.

Based on a review of available technology and with consideration of input from industry, manufacturers, and other members of the public, the following is determined to be the technologically feasible GHG emission reduction measures for this class and category:

Table 2
Technologically Feasible GHG Control Measures for VOC Control/Gas Disposal Methods in the Oil and Gas Production, Processing, and Refining Industry

GHG Control Measures	Qualifications
Carbon Adsorption	Activated carbon canister and high efficiency fan and motor reduces indirect GHG emissions by reducing power demand
Transfer to Gas Sales Line	Provided gas sales line is available
Reinjection to Formation	Provided approved disposal well is available
Incineration in Gas-Fired Equipment (e.g. Steam Generator, Process Heater, Turbine, IC Engine, etc.)	Fired equipment will either be existing or installed according to separate equipment specific BPS
Thermal Oxidizer (e.g. incinerator, Vapor Combustion Unit, etc.)	Thermal oxidizer will either be existing or installed according to separate equipment specific BPS
Flare	Non-continuous pilot flame with auto ignition reduces auxiliary fuel required. Steam or air assisted when no steam is available, or Coanda effect combustion increases incineration efficiency and destruction of CH_4.

All control measures identified above are control equipment for criteria pollutants which meets current regulatory requirements. None of the identified control measures would result in an increase in emissions of criteria pollutants.

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 below. 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 technology is not achieved in practice:

- According to studies performed on carbon adsorption technology (including the chart below taken from a review of carbon adsorption used for VOC treatment (presented at the Annual EnviroExpo, Boston Massachusetts – May 2001) methane, which typically makes up the majority of gas in oilfield operations and also has a high potential CO_2 equivalency, being a light hydrocarbon is very poorly adsorbed. Due to carbon's poor ability to adsorb methane, this control technology's ability to capture GHG is virtually zero and cannot be recognized as an achieved-in-practice technology.

RELATIVE ADSORPTION RATE

Weaker ------------------------ Stronger

	MOLECULAR WEIGHT	BOILING POINT	CARBON CAPACITY %
NITROBENZENE	123	211 C	51
TETRACHLOROETHANE	166	147 C	40
TETRACHLOROETHYLENE	165	121 C	35
STYRENE	104	145 C	25
XYLENE	106	138 C	21
NAPATHYLENE	128	217 C	20
TOLUNE	92	111 C	20
BENZENE	78	80 C	12
MTBE	88	55 C	12
HEXANE	86	68 C	7
ETHLY ACRILATE	100	57 C	5
DIDHLOROETHANE	99	99 C	7
METHYL ETHYLKETONE	72	80 C	4
METHYLENE CHLORIDE	84	40 C	2
ACRILONITRILE	53	74 C	2
ACETONE	58	56 C	0.8
VINYLCHLORIDE	62	neg 14 C	0.7
CHLOROETHANE	64	12 C	0.5
BROMOTRIFLOROMETHANE	149	neg 58 C	0.13
METHANE	16	neg 161 C	0.0003

Based on a review of available technology and with consideration of input from industry, manufacturers and other members of the public, the following is 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 VOC Control/Gas Disposal Methods in the Oil and Gas Production, Processing, and Refining Industry

GHG Control Measures	Achieved-Qualifications
Transfer to Gas Sales Line	Provided gas sales line is available
Reinjection to Formation	Provided approved disposal well is available
Incineration in Gas-Fired Equipment (e.g. Steam Generator, Process Heater, Turbine, IC Engine, etc.)	Fired equipment will either be existing or installed according to separate equipment specific BPS
Thermal Oxidizer (e.g. incinerator, Vapor Combustion Unit, etc.)	Thermal oxidizer will either be existing or installed according to separate equipment specific BPS
Flare (Including Vapor Combustor)	Non-continuous pilot flame with auto ignition reduces auxiliary fuel required. Steam or air assisted when no steam is available, or Coanda effect combustion increases incineration efficiency and destruction of CH_4.

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

For each Achieved-in-Practice GHG emission reduction measure identified:

a. Quantify the potential GHG emissions per unit of activity (G_a)
b. Express the potential GHG emission reduction as a percent (G_p) of Baseline GHG emissions factor per unit of activity (BEF)

A. Basis and Assumptions:

- Since the difference in pressure that waste gas must be compressed to is negligible and it must be compressed for all control methods, indirect emissions from the compression of waste gas are not considered in this comparison between technologies and methods.
- New fired equipment will have an identical GHG reduction to existing fired equipment for the purposes of this evaluation since disposal of gas is considered a separate operation than the installation of fired equipment for any purpose that equipment was installed to serve (as such, equipment specific BPS determinations are evaluated separately). As the incineration of collected vapors in new or existing fired equipment will displace gas that would otherwise be burned, there is no increase in GHG emissions associated with incinerating collected vapors in such equipment.
- Incineration of gas in an incinerator, vapor combustor, or any similar type of equipment that incinerates vapors in an enclosed, possibly controlled environment is considered similar to that of a thermal oxidizer.
- As existing thermal oxidizers were not required to be equipped with any recuperative properties, this technology will be considered equivalent to that of a flare or vapor combustor for the purposes of this comparison.
- Percent usage of control technology and methods in industry has not changed since the baseline period.
- Heat energy content of associated gas, on average, is equivalent to natural gas.

B. Calculation of Potential GHG Emissions per Unit of Activity (G_a):

BPS for a flare will consist of options to flare gas in either an existing or new flare with G_a calculated as follows:

$G_{a\ (existing)}$ = 0.00234 + 0.01417 + 0.14210 = 0.15861 lb-CO_2e/scf flare gas

$G_{a\ (new)}$ = 0.01417 + 0.14210 = 0.15627 lb-CO_2e/scf flare gas

C. Calculation of Potential GHG Emission Reduction:

The following table compares VOC control methods used in industry with the volume of associated gas the devices dispose of:

Control type	% usage of the control device or method in the industry*	kg-CO_2e/ MMBtu**	Industry based average kg-CO_2e/MMBtu	GHG Emission reductions
Existing Flare (Including Vapor Combustors and Thermal Oxidizers)	10%	53	0.1 x 53 = 5.3	0***
Incineration in Existing or New Boiler, Engine, New Thermal Oxidizer, or Transfer to Gas Sales Line	80%	0	0.8 x 0 = 0	(5.3-0)/5.3 = 100%
Reinjection to Formation	10%	0	0.1 x 0 = 0	(5.3-0)/5.3 = 100%
Incineration in new Flare	N/A	N/A	N/A	1.5%****
		Total	**5.3**	

* District staff estimates of control device usage
** California Climate Change Action Registry (CCAR), Version 3.1, January, 2009 (Appendix C, Tables C.7 and C.8)
***For a flare, the comparison is not against the industry average emission factor (16.1) but against the status quo, which is the worst case scenario allowed (existing flare)
****See calculation below

GHG reduction from the installation of a new flare compared to an existing flare:

$$G_{p\,(new)} = (BEF - G_{a\,(new)}) / BEF = (0.15861-0.15627)/0.15861 = 1.5\%$$

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-CO_2e/scf)	Potential GHG Emission Reduction as a Percentage of the Baseline Emission Factor (G_p)
1	**Reinjection to Formation**	0	100.0%
2	**Gas-Fired Equipment**	0*	100.0%
3	**Transfer to Sales Gas Line**	0	100.0%
4	**New Thermal Oxidizer**	0*	100.0%
5	**New Flare**	0.15627	1.5%
6	**Existing Thermal Oxidizer or Flare**	0.15861	0.0%

†) See equipment specific BPS document for device specific GHG emissions

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".

A direct ordering of technology based on GHG reduction percentage is not only infeasible, given the varying and sometimes extreme conditions and circumstances that VOC control methods must be applied to, but can also be dangerous, jeopardizing equipment and life, when certain controls are not utilized.

To address safety concerns and control methods not being applicable to some situations, the following table has been modified to allow control methods out of the typical ranking order. Best Performance Standard (BPS) for this class and category is:

<table>
<tr><td rowspan="2">Best Performance Standard
(in order of recommendation)</td><td>1. -Incineration in existing engine, boiler, etc that creatures useful work – provided that equipment is available and practically capable of incinerating vapors (see equipment specific BPS for standards and requirements for new fired equipment) and currently burning fossil fuel; or,

-Transfer to Sales Gas Line – provided that access to sales gas line infrastructure is available; or,

-Reinjection to Formation – provided that access to a disposal well is available.</td></tr>
<tr><td>The following options supersede the BPS requirements above if: a) equipment listed above is not available; or, b) gas cannot safely be transferred to equipment listed above; or, c) used to control emergency gas releases.

2) -Incineration in new Thermal Oxidizer – see equipment specific Thermal Oxidizer BPS for standards and requirements for new equipment; or,

-Incineration in New Flare with >98% TOC destruction efficiency, steam assist, air assist when steam is not available, or Coanda effect and equipped with non-continuous automatic electronic or ballistic ignition; or,

-Incineration in Existing Thermal Oxidizer or Flare</td></tr>
</table>

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

If Achieved-in-Practice GHG control measures identified in Step 6 of this evaluation are found to have GHG control efficiencies less than that of the selected Best Performance Standard these will be eliminated in this step. However, all control methods listed in Step 6 are necessary based on various circumstances. Therefore, no measures listed in Step 6 will be eliminated.

VI. Public Participation

A Draft BPS evaluation was provided for public comment. Public notification was sent on May 31, 2011 to individuals registered with the CCAP list server.

No comments were received during the public notification period.

VII. Public Workshop

Prior to finalizing the development of BPS for this class and category, the District may conduct a public workshop.

VIII. Appendices

Appendix 1:	Public Notice of Intent: Notice
Appendix 2:	Comments Received During the Public Notice of Intent and Responses to Comments
Appendix 3:	Public Notification: Posting of Draft BPS
Appendix 4:	Comments Received on Draft BPS and Response to Comments

Appendix 1

Public Notice of Intent: Notice

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING

Notice of Development Of
Best Performance Standards

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

VOC Control/Gas Disposal Devices used in Petroleum Industry

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 (point sources including tanks, tank and casing vent vapor recovery disposal systems, etc.),
- Recommendations regarding technology, processes, or operational activities that were in operation during the 2002-2004 baseline period (injection to formation, incineration through various equipment – flares, steam generators, heaters, thermal oxidizers, etc.),
- Recommendations regarding technology, processes, or operational activities the District should consider when converting Baseline Emissions into emissions per unit of activity, and
- Aspects of operating the subject emissions source that are unique to your equipment,
- Proposals for basis to quantify GHG emissions (lb/lb VOC destroyed, lb/process throughput, lb/type of equipment, etc),
- Recommendations regarding technologies, processes, or operational activities currently in practice which should be evaluated by the District when establishing Best Performance Standards for the subject Class and Category (injection to formation, incineration through various equipment – flares, steam generators, heaters, thermal oxidizers, etc.), and
- Any other suggestions, comments, and or data (vapor analysis quantifying CO_2, methane, and non-methane components, throughput, etc).

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/bps/BPS_idx.htm .

Written comments regarding the subject Best Performance Standard should be addressed to Kristopher Rickards by email, Kristopher.Rickards@valleyair.org, or by mail at SJVAPCD, 34946 Flyover Court, Bakersfield, CA 93308. All comments must be received by **October 18, 2010**. For additional information, please contact Kristopher Rickards by e-mail or by phone at (661) 392-5611.

Appendix 2

Comments Received During the Public Notice of Intent and Responses to Comments

No comments were received during the initial noticing period.

Appendix 3

Public Notification: Posting of Draft BPS

The San Joaquin Valley Air Pollution Control District is soliciting public comments on the development of Best Performance Standards (BPS). This email is to advise you the proposed Draft BPS documents for VOC Control Technology – Oil Industry is available by clicking here.

Written comments regarding the subject Best Performance Standard should be addressed to Kristopher Rickards by email, Kristopher.Rickards@valleyair.org , or by mail at SJVUAPCD, 34946 Flyover Court, Bakersfield, CA 93308 and must be received by **June 30, 2011**. For additional information, please contact Kristopher Rickards by e-mail or by phone at (661) 392-5611.

Appendix 4

Comments Received on Draft BPS and Response to Comments

No comments were received during the final noticing period.