

Responses to Public Comments Received on Refinery Flare Minimization Plans (FMP)

#	Commenter	Agency/Group/ Industry	Date	Media	Comment	Response
1	Dr. Henry Clark	Richmond - Technical Director, West County Toxics Coalition	4/30/2007	Comment at Public Information Meeting	Effects of flaring are reflected by asthma in the community and health problems for children. Quantifying and monitoring reductions in flaring under Reg. 12-12 is a concern.	The District agrees that elevated levels of ozone and other air pollutants have health consequences and continues to consider and implement measures to address emissions from all sources of air pollutants including flares. Refinery flares are a source of ozone precursor emissions and other emissions of concern. To address these emissions, the District adopted Reg. 12-11 and Reg. 12-12 to monitor and control flaring. By minimizing flaring, the Flare Minimization Plans (FMP) will mitigate local and regional health effects from the use of refinery flares. In this regard it is important to remember that refinery flares are first and foremost safety devices that are intended to prevent emissions of air contaminants directly to atmosphere and/or catastrophic events both of which would have serious, adverse effects on air quality as well as the health and safety of refinery workers and surrounding communities.

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2	Dr. Henry Clark	Richmond - Technical Director, West County Toxics Coalition	4/30/2007	Comment at Public Information Meeting	Flaring has increased since rule adoption based on CBE's Report. Specifically, Chevron has flared more since the rule adoption in 2005 that he helped in getting the District to create.	<p>The District has analyzed emissions trends at the Chevron refinery since 2001 forward. The data in the period 2001 to 2003, was reported voluntarily by the facility to the District and was not based on district required monitoring but rather on engineering calculations. While the data from this period indicates a downward trend in non-methane hydrocarbon (NMHC) emissions, without the presence of District approved monitoring it must be regarded as approximate only.</p> <p>Since reporting commenced under Reg. 12-11, in December 2003, staff has been able to determine that total NMHC emissions from the Chevron facility increased from year 2004 to 2005 but decreased in 2006 (albeit to levels still in excess of 2004). This increase was largely due to major maintenance at the fluid catalytic cracking (FCC) unit in 2005 and other major maintenance at Chevron's hydrotreaters in 2006. The maintenance intervals for major refinery units are typically three to five years or more.</p> <p>Based on the commitments in Chevron's FMP, the District believes that both the frequency of and duration of flaring events</p>

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						<p>associated with major maintenance will decrease, with a resultant reduction in emissions from flaring. The District will continue to monitor these events very closely and will utilize emissions data reported under Reg. 12-11, annual FMP updates and causal analysis on reportable flaring events to ensure that both the number and duration of flaring events and emissions due to these activities continue to decrease.</p>

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3	Minister Thomas	Richmond - co-founder West County Toxics Coalition	4/30/2007	Comment at Public Information Meeting	Refineries need more compressors and back-up compressors to cope with flows to flares.	<p>The installation and use of compressors sufficient to handle non-emergency flows to flares has been a basic approach to flare gas recovery for each Bay Area refinery even prior to the adoption of Reg.12-12. All refineries have considered the feasibility and effectiveness of additional primary and back-up compressor capacity as part of the FMP development. The economics and effectiveness of adding sufficient compressor capacity to handle emergency flows is a much more complex issue, which has been addressed in each refinery's FMP. Typically a significant emergency flow could exceed the refinery's ability to use it as refinery fuel gas (particularly where the emergency disables refinery flare gas (RFG) consuming units) or to store the excess RFG for later use (due to practical and other considerations that limit a refinery's ability to create sufficient additional storage capacity). Where effective and feasible for specific applications, however, additional compressor capacity has been included in that refinery's FMP.</p>
4	Minister Thomas	Richmond - co-founder West County Toxics Coalition	4/30/2007	Comment at Public Information Meeting	Commenter is concerned about health of children and encourages Chevron to work with the community to minimize flaring.	See Response to Comment 1. See also Response to Comment 15.

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5	Carla Perez	Communities for a Better Environment (CBE) representative	4/30/2007	Comment at Public Information Meeting	<p>(1) Chevron's plan and presentation is not adequate. There has been an 80% increase in the number of flaring incidents since adoption of Reg. 12-12 as indicated by Reg. 12-11 monitoring and reporting and that flares not safe when their usage is increased.</p> <p>(2) Chevron's FMP must have enforceable measures to protect public health.</p>	<p>(1) See Response to Comment 2.</p> <p>(2) The FMP is enforceable in two ways. First, Chevron must implement the prevention measures in the plan and second, any flaring not consistent with the plan is prohibited by Reg. 12-12-301. In the future, additional measures may be required as new and improved technology becomes available.</p>

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6	Delphine Smith	Richmond Resident - CBE	4/30/2007	Comment at Public Information Meeting	<p>(1) The commenter and her child have asthma and asked for reduced flaring.</p> <p>(2) Concerned about plans to expand the refinery and the effects of emissions from the project on children.</p>	<p>(1) See Response to Comment 1.</p> <p>(2) As part of Reg. 12-12 the District has engaged the refineries on future projects. The District is monitoring each future refinery project to ensure that flaring minimization is incorporated into design and construction phases. Prevention measures developed as a part of this process will be included in the FMPs during the annual updates.</p>
7	Dr. Jeff Ritterman	Richmond - Contra Costa Health Services Public and Environmental Health Advisory Board & Physicians for Social Responsibility	4/30/2007	Comment at Public Information Meeting	<p>(1) Ozone causes lung injury and asthma.</p> <p>(2) Every other refinery has decreased its emissions except Chevron.</p> <p>(3) Challenged Chevron to emulate the standard set by the Shell refinery.</p>	<p>(1) See Response to Comment 1.</p> <p>(2) See Response to Comment 2.</p> <p>(3) The FMPs required under Reg. 12-12 (and other sources of information) will be used to establish a set of "best practices" for Bay Area refineries with regard to flare minimization. These "best practices" include equipment, practices and procedures to eliminate or reduce flaring with due regard for safe and reliable refinery operation. Each of the five Bay Area refineries is different in size and configuration, so not all "best practices" will be feasible for implementation at every refinery or for every refinery process or unit immediately. The District will continue to work with each facility to ensure they consider the need, effectiveness and feasibility of every "best practice" identified through the FMP process and implement those practices where appropriate.</p>

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8	Ruth Gilmore	Richmond Resident	4/30/2007	Comment at Public Information Meeting	<p>(1) Every other refinery has decreased its emissions except Chevron.</p> <p>(2) Challenged Chevron to emulate the standard set by the Shell refinery. Stated that because of refinery emissions she needs an air purifier. A good example of the impact of these emissions was the January incident at Chevron where 30 people went to the hospital.</p>	<p>(1) See Response to Comment 2.</p> <p>(2) See Response Comment 7, item (3).</p>
9	Greg Karras	Senior Scientist, CBE	4/30/2007	Comment at Public Information Meeting	<p>(1) Pg. 3-47 of the Admin draft EIR the Chevron Refinery had planned installation of a compressor at the Isomax unit to minimize flaring during startup and shutdown. Why was this compressor not included in FMP in March?</p>	<p>(1) Based on information submitted by Chevron (see Attachment A), the District has determined that addition of the proposed Isomax compressor would have no effect on flaring (i.e., it can neither increase or decrease flaring), and that the FMP contains all feasible prevention measures to minimize flaring for this unit.</p>

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9	Greg Karras	Senior Scientist, CBE	4/30/2007	Comment at Public Information Meeting	<p>(2) Stated that Chevron had had 14 times more compressor failure flaring events than any other facility. Question the adequacy of back-up capacity for both North and South Yard flare gas recovery systems.</p>	<p>(2) The District's examination of the reporting of causes of flaring under Reg. 12-11 and causal analysis on reportable flaring events under Reg. 12-12 reveals that Chevron has had a number of instances where flare gas recovery compressors were shut down, which resulted in flaring.</p> <p>Further investigation of these events indicates that they were largely associated with unit turnarounds (i.e., major maintenance activities). During unit turnarounds, gas composition is largely steam, nitrogen or hydrogen, each of which has the potential to damage flare gas recovery compressors. Use of the compressors to handle these gases would be counterproductive. Damage to compressors while trying to recover this gas would lead to extended periods of flaring due to their unavailability to handle routine flows.</p> <p>As part of its FMP, Chevron has committed to slow down process units and to look at minimizing purge rates when consistent with safe and reliable operation of the refinery in order to keep gases within the range that the refinery flare gas recovery compressors can handle. These FMP commitments will reduce this type of flaring in the future.</p>

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10	Greg Karras	Senior Scientist, CBE	4/30/2007	Comment at Public Information Meeting	(3) Chevron ignored requests by CBE for meetings on flare minimization. The District should not violate environmental justice principles by approving plan or taking longer than necessary to improve this plan to the highest standard.	(3) The District has determined that Chevron's FMP contains all feasible prevention measure to minimize flaring. Reg. 12-12 will bring about continual improvement by requiring the inclusion of additional feasible prevention measures ("best practices"). The District will continue to work with Chevron and the other Bay Area refineries to ensure they continue to implement best practices to minimize flaring.
11	Angelina Martinez	Resident of Hercules, CBE	4/30/2007	Comment at Public Information Meeting	(1) There are significant health problems from flaring; reducing flaring helps community health. (2) Supports CBE's request for additional and sufficient back-up compressors. Encourages Chevron to put money into back-up compressors.	(1) See Response to Comment 1. (2) See Response to Comment 3.

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12	Greg Karras continued	Senior Scientist, CBE	4/30/2007	Comment at Public Information Meeting	(1) Chevron has tied flare minimization to plans to expand refinery.	(1) The prevention measures in Chevron's FMP are not tied to future expansion. However, it is expected that future projects and other significant capital improvements may provide the opportunity to reduce flaring by inclusion of additional prevention measures that would not otherwise be feasible. Indeed, the District expects each refinery to look for such opportunities as a part of any future capital improvements and to include them in an FMP update if they are feasible in the context of the future project. In this situation, implementation of an additional prevention measure may be tied to the expansion or other capital project.

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13	Greg Karras continued	Senior Scientist, CBE	4/30/2007	Comment at Public Information Meeting	<p>2) Questions the sufficiency of having only a 4% margin for compressor capacity in the North Yard as during turnarounds flow rates vary more than 4%. Take for example the flaring event January 07 where the refinery South Yard compressor was not operating due to maintenance and the Process compressors used to back-up were not available. During the fire, he stated that Chevron was lucky the wind blew towards the bay.</p>	<p>(2) As part of commitments made in it's FMP, Chevron has stated that non-emergency flow to the K-1060 or K-1070 compressors in it's North Yard will not exceed 2.4 MMSCFD. This flow, with the additional 1.3 MMSCFD load from the RLOP unit on the K-1960 flare gas recovery compressor, comprises a total North Yard flare gas recovery system load of 3.7 MMSCFD. With either the K-1060 or K-1070 compressor (both with the capacity of 4.0 MMSCFD) acting as a dedicated back-up to the entire North Yard flare gas recovery system load, the District believes that Chevron has adequate capacity to handle non-emergency flows. However, in the event that this is not the case, the District will revisit the root cause(s) with the refineries as part of the causal analysis report and annual FMP update.</p>

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14	Greg Karras continued	Senior Scientist, CBE	4/30/2007	Comment at Public Information Meeting	CBE members smell sulfur constantly from the Chevron refinery and feel sick. This is borne out by at the statistics that show Chevron exceeds the threshold of 500 lbs of sulfur compounds on average 4 times a month since the adoption of Reg. 12-12. This represents an 80% increase, which is environmentally relevant.	The District believes that the refinery's FMP will continue to reduce both the number and duration of flaring incidents and the total emissions associated with flaring. The FMP will reduce all flaring emissions including sulfur. See also Response to Comment 1.
15	Greg Karras	Senior Scientist, CBE	5/31/07	CBE Letter (Comment 1)	Chevron FMP, South Yard flare gas recovery measure: Require an enforceable commitment to install equipment that increases South Yard dedicated back-up flare gas recovery compressor capacity by at least 2.35 million standard cubic feet per day before 2008.	As part of commitments made in it's FMP, the District required Chevron to install sufficient backup capacity for it's South Yard flare gas recovery compressors. Chevron intends to commission two compressors K242 and K252 each with a recovery capacity of 2MMSCFD. With either the K-242 or K-252 compressor or either the K-1171 or K-1171A acting as a dedicated back-up to the entire South Yard flare gas recovery system load, the District believes that Chevron has adequate capacity to handle non-emergency flows. However, in the event that this is not the case, the District will revisit the root cause(s) with the refineries as part of the causal analysis report and annual FMP update.

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16	Greg Karras	Senior Scientist, CBE	5/31/07	CBE Letter (Comment 2)	Chevron FMP, North Yard flare gas recovery measure: Require an enforceable commitment to install equipment that increases North Yard dedicated back-up flare gas recovery compressor capacity by at least four million standard cubic feet per day before 2008.	See Response to Comment 15.
17	Greg Karras	Senior Scientist, CBE	5/31/07	CBE Letter (Comment 4)	Chevron FMP, North Yard process compressor measures: Require an enforceable commitment to install equipment that increases North Yard dedicated process compressor capacity adequately to recover gases from planned startups and shutdowns of the Isomax and Fluid Catalytic Cracking (FCC) units by July 1, 2008.	See Response to Comment 9. Chevron's FMP contains a formal process for turnaround planning, which includes a commitment to implement operational changes to reduce flaring from the FCC during startup and shutdown including extending purge sequences when consistent with safe and reliable operations and to reduce emissions by minimizing impacts on the relief system by avoiding overloading of the available flare gas recovery system capacity.

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18	Greg Karras	Senior Scientist, CBE	5/31/07	CBE Letter (Comment 5)	Chevron and ConocoPhillips (CP) FMPs, operating measure: Require an enforceable commitment to employ operating procedures that adjust process rates to prevent and minimize flaring whenever this is consistent with safe and reliable operation	The District has determined that each FMP contains an enforceable commitment, though stated in different terms, to adjust production rates downwards consistent with safe and reliable refinery operation in order to minimize flaring.

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19	Greg Karras	Senior Scientist, CBE	5/31/07	CBE Letter (Comment 6)	Chevron, CP, Tesoro and Valero FMPs, operating measure: Require operating back- up flare compressors continuously when the units are not in maintenance.	<p>The District does not agree that continuous operation of back-up compressors is always the best practice for all refineries. By operating backup compressors in a non-continuous mode, facilities can ensure that if the primary compressor is shutdown by an event that damages the unit (e.g., a fuel or water slug), the back-up compressor is not exposed to the same event and it can be brought online to cover non-emergency vent gas flows while the primary is being repaired. It should be noted that the decision on how to operate backup compressor capacity is made by each facility based on conditions at the facility, best engineering and safety practices.</p> <p>Additionally, during non-emergency flows of vent gas to the flare recovery header, the loss of the primary flare gas recovery compressor does not necessarily lead to flaring. The flare gas recovery header pressure is slightly above atmospheric pressure while the water seal is set at a significantly higher pressure. There is therefore a period of time in the event of the unanticipated shutdown of a primary compressor before pressure in the flare gas recovery header exceeds the water seal pressure, which allows for the startup of the standby compressor.</p> <p>Based on available data and causal analysis reporting provided under Reg. 12-11 and Reg. 12-12, the District has determined that differences between the modes of operation of flare compressors (continuous versus non-continuous) does not significantly impact emissions.</p>

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20	Greg Karras	Senior Scientist, CBE	5/31/07	CBE Letter (Comment 7)	Chevron, CP, Shell, Tesoro, Valero FMPs, evaluation of measures: Clarify that the District is <i>not</i> approving evaluations that systematically underestimate local air quality benefits from the expeditious implementation of feasible prevention measures.	The District has and will continue to carefully scrutinize estimates of emissions reductions and air quality benefits of available prevention measures to ensure the adequacy of feasibility determinations.
21	Greg Karras	Senior Scientist, CBE	5/31/07	CBE Letter (Comment 8)	Chevron and CP FMPs, prevention measures identified in comments 1-5: Disapprove FMPs that fail to include enforceable commitments to implement all feasible prevention measures.	The District has determined that both the Chevron and CP FMPs include enforceable commitments to implement all feasible prevention measures on an expeditious schedule.

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22	Richard Zampa	Resident Adjacent to Refinery	4/23/2007	Comment at Public Information Meeting	Does the District monitor mercury emissions from flares.	At present the District does not monitor for mercury at refinery flares. However, the District does require monitoring of the flows going to flares for many other compounds (NMHC, H ₂ S, etc.) under Regulation 12-11. Based on the reporting under this regulation, the trend of emissions and flaring events at the CP refinery is down and less flaring means less emissions of all types, including any mercury, if present. Additionally, there are efforts underway by the Regional Water Quality Control Board to better characterize refinery mercury releases to the environment.
23	Richard Zampa	Tormey Resident Adjacent to Refinery	4/23/2007	Comment at Public Information Meeting	Can flares can be eliminated completely by increasing compressor capacity.	It is not possible to eliminate refinery flares completely. Flares are first and foremost devices to ensure the safety of refinery operations and personnel and the public. There will always be the potential for unscheduled emergency releases created by malfunctions or process upsets that can result in excess gases that cannot be recovered or used by the flare gas recovery compressor and/or the fuel gas system heaters and boilers. In these cases, the gases must be routed to the refinery flares for safe destruction. Use of a flare in such a situation has a better air quality outcome than direct release unburned of gases to the atmosphere.

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24	Jessica Tovar	CBE representative	4/23/07	Comment at Public Information Meeting	<p>(1) CP should install back-up flare gas recovery compressor capacity equal to existing flare gas capacity.</p> <p>(2) Is construction of another flare being approved.</p>	<p>(1) As part of its FMP, the District has required CP to commit to the installation of a 3.3 MMSCFD flare recovery compressor to back-up the primary flare gas recovery compressor. The District has determined that this compressor capacity is adequate to handle non-emergency flows to flares if the primary compressor is out of service for maintenance or is otherwise unavailable. See also Response to Comment 3.</p> <p>(2) Construction of another flare as part of CP's Clean Fuels Expansion Project has been proposed. This flare is a hydrogen and syngas flare at the Air Liquide Hydrogen Plant. The hydrogen plant is not a petroleum refinery and does not flare refinery gases and therefore is not subject to Reg. 12-12.</p>
25	Delphine Smith	CBE representative	4/23/07	Comment at Public Information Meeting	CP should have a dedicated back-up flare gas recovery (FGR) compressor.	See Response to Comment 24, item (1).

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26	Greg Karras	Senior Scientist, CBE	4/23/07	Comment at Public Information Meeting	<p>(1) Is CP indeed committed to an enforceable commitment to minimize flaring by reducing production rates?</p> <p>(2) Is CP committed to purchasing a dedicated back-up compressor for FGR? Will the capacity of the back-up compressor will be the same as that of existing compressor?</p>	<p>(1)The District has determined that each FMP contains an enforceable commitment, though stated in different terms, to adjust production rates downwards consistent with safe and reliable refinery operation in order to minimize flaring.</p> <p>(2) See Response to Comment 24, item (1).</p>
27	Aryeh Shell	CBE representative	4/23/07	Comment at Public Information Meeting	<p>The CP FMP needs to be based on existing conditions, not contingent on expansion project approval.</p>	<p>As part of its FMP, CP has committed to the installation of a 3.3 MMSCFD flare gas recovery compressor. This commitment is not contingent upon approval of their Clean Fuels Expansion Project.</p> <p>However, it is expected that future projects and other significant capital improvements may provide the opportunity to reduce flaring by inclusion of additional prevention measures that would not otherwise be feasible. In this situation, implementation of an additional prevention measure may be tied to the expansion or other capital project. Indeed, the District expects each refinery to look for such opportunities as a part of any future capital improvements and to include them in an FMP update if they are feasible in the context of the future project.</p>

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28	Greg Karras (Follow-up comment)	Senior Scientist, CBE	4/23/07	Comment at Public Information Meeting	(1) CP's emissions and other practices do not measure up to the efforts of the Shell refinery. CP's flare emissions data listed on BAAQMD website shows excess, sometimes beyond 500 lbs/day (2 days a month on average).	<p>(1) District staff has analyzed emissions trends at the ConocoPhillips refinery since 2001 forward. The data in the period 2001 to 2003, was reported voluntarily by the facility to the District and was not based on District monitoring. While the data from this period indicates a downward trend in non-methane hydrocarbon (NMHC) emissions, without the presence of District approved monitoring it must be regarded as approximate only.</p> <p>Since reporting commenced under the requirements of Reg. 12-11, in December 2003, staff has been able to determine that total NMHC emissions and SO₂ emissions from the CP facility has decreased each year.</p> <p>The District believes that based on the array of prevention measures in CP FMP and the facility's commitment to install a new compressor for flare gas recovery service the number and duration of flaring events and emissions due to flaring should continue to decrease.</p>
29	Greg Karras (Follow-up comment)	Senior Scientist, CBE	4/23/07	Comment at Public Information Meeting	(2) CP says they will rescind FMP package if permits for their expansion project are denied.	As part of its FMP, CP has committed to the installation of a 3.3 MMSCFD dual service flare gas recovery compressor. This commitment is not contingent upon approval of their Clean Fuels Expansion Project.

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30	Ed Addison	US EPA, Region IX	4/17/2007	Comment at Public Information Meeting	Would the flares collectively destroy vent gases from all units during a power outage?	Flares at refineries are sized in order to combust gas flows from all process units in the event of a catastrophic failure, which includes a refinery-wide power outage.
31	Ed Addison	US EPA, Region IX	4/17/2007	Comment at Public Information Meeting	Are the flares at Shell Martinez Refinery (SMR) interconnected?	Flares at the Shell refinery are organized into three individual flare systems. The systems are not interconnected.
32	Ed Addison	US EPA, Region IX	4/17/2007	Comment at Public Information Meeting	Do all flares take gas from anywhere in the refinery?	Flares at the Shell refinery are organized into three individual flare systems serving groups of specific units. The systems are not interconnected and cannot take gas from other units.
33	Greg Karras	Senior Scientist, CBE	4/17/2007	Comment at Public Information Meeting	Why did Shell chose the DC flare over the LOP flare for the OPCEN HC flare re-route project?	Shell stated this decision was based on proximity of the DC flare to the recovery compressors.
34	Greg Karras	Senior Scientist, CBE	4/17/2007	Comment at Public Information Meeting	Why is NO _x not a problem when 50% of the fuel is nitrogen?	NO _x is a pollutant of concern. Since December 2003, Shell has reduced both the magnitude and frequency of flaring from the Flexigas unit through both mechanical improvements and gas flow management. This is a trend that the District believes will continue as Shell seeks to further minimize flaring at its facility. By minimizing flaring at this unit, Shell will reduce the amount of NO _x emissions.

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35	Greg Karras	Senior Scientist, CBE	4/17/2007	Comment at Public Information Meeting	Can flexigas flaring be contained?	Shell's Flexigas unit creates large quantities of low quality British thermal unit (BTU), i.e., low energy gas. These gases are generally routed to heaters, however, when these heaters are out of service, the nature of gas generation and the quantity and quality of gas make it difficult for the facility to preclude flaring. Nevertheless, emissions from this flaring do not have a significant impact as an ozone precursor because of the high nitrogen and low hydrocarbon content of the gas and the flare's combustion efficiency. Shell has already minimized flaring from this process by improvements in mechanical systems and gas flow management. The District believes that Reg. 12-12 and Shell's FMP will continue to reduce what the number and duration of flaring incidents and the total emissions associated with flaring from this process.
36	Igor Skaredoff	CC Hazardous Materials Commission and resident of Martinez.	4/17/2007	Comment at Public Information Meeting	The District must discourage flaring. Shell's reliability and maintenance program works well. Shell's plan to load excess LPG in railcars is a good idea.	The District believes that Reg. 12-12 and the FMP's will further reduce both the number and duration of flaring incidents and the total emissions associated with flaring. The District agrees that Shell's FMP will promote reliability and utilize railcars to store liquid petroleum gas (LPG) as propane where possible.

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37	Ralph Sattler	Communities for a Safe Environment	4/17/2007	Comment at Public Information Meeting	Does the District require the facilities to measure the efficiency of the flares?	Measurement of flare tip combustion efficiency is not feasible due to their operation and the nature of the service (high temperature and their use for the destruction of hazardous gases). Based on EPA guidance and numerous flare combustion studies, the District assumes a 98% control efficiency for the combustion of organic gases in a flare tip when the BTU value of the gas is ≥ 300 btu/scf and mixing at the flare tip is adequate.
38	Ralph Sattler	Communities for a Safe Environment	4/17/07	Written comments	How often is the destruction efficiency of a flare measured/tested.	It is not possible to measure the destruction efficiency of flares. The District uses EPA guidance to estimate control efficiency.
39	Ralph Sattler	Communities for a Safe Environment	4/17/07	Written comments	Does Shell primarily burn butane in the Flexigas flare?	No. The composition of the gas burned in the Flexigas flare is 50% nitrogen, 23% carbon monoxide, 8% carbon dioxide, 15% hydrogen, 1% of methane and 0.5% non-methane hydrocarbons.
40	Ralph Sattler	Communities for a Safe Environment	4/17/07	Written comments	Does butane have any potential health or environment effects? Does it contribute to global warming or have a negative impact on the ozone layer?	Butane is not a hazardous air pollutant as defined by section 112(b) of the Clean Air Act, and it is not a toxic air contaminant as defined by BAAQMD Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants. It is not an ozone depleting compound or a greenhouse gas. It is a volatile organic compound, and as such, can contribute to ozone formation at ground level.

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41	Scott Anderson	Contra Costa County (CCC.) Resident (35 years)	4/19/07	Comment at Public Information Meeting	<p>(1) What is the contribution of refinery flare emissions to the overall emissions in the District?</p> <p>(2) Is there a list of all emissions in the District?</p> <p>(3) Are the same resources expended on the other areas with emissions comparable to refinery flares?</p>	<p>(1) Total VOC emissions in the Bay Area are approximately 500 tons/day. The District has regulatory authority over the 100 tons/day of VOC emitted by stationary sources. Currently total flare VOC emissions are 2.0 ton/day from all refineries (1.5 tons/day is non-methane organic compounds, 0.5 tons/day is methane).</p> <p>(2) The District and the State Air Resources Board maintain a comprehensive inventory of emissions from mobile and stationary sources within the District. Emission data for the Bay Area is available on the District's website at the following web address: http://www.baaqmd.gov/pln/emission_inventory.htm</p> <p>(3) The District faces many and varied challenges in addressing the sources of air pollution. Resources are directed to initiatives based on a number of factors including the need to handle the most serious health and welfare concerns (in terms of level of emissions and impacts) as quickly as possible.</p>

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42	George Smith	21 yr resident of CCC. Chemical Engineer	4/19/2007	Comment at Public Information Meeting	Tesoro's 2006 safety record should be congratulated. How are practices shared with other refineries?	See response to Comment 7, item (3).
43	Greg Karras	Senior Scientist, CBE	4/07	CBE Report – Flaring Prevention Measures	<p>(1) All Bay Area refiners should apply the flaring prevention measures that are in place at Shell. The Bay Area Air Quality Management District should identify the specific measures and episodic flaring reductions applicable to the Tesoro and Valero refineries and require them.</p> <p>(2) The Air District should require that Chevron and ConocoPhillips, at a minimum: install dedicated back-up compressor capacity and related equipment sufficient to prevent planned flaring and flaring caused by foreseeable and manageable malfunctions;</p>	<p>(1) See response to Comment 7, item (3).</p> <p>(2) See responses to Comments 13, 15 and 24.</p>

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44	Greg Karras	Senior Scientist, CBE	4/07	CBE Report – Flaring Prevention Measures	<p>(3) employ operating procedures that adjust process rates to prevent and minimize flaring whenever this is consistent with safe and reliable operation; and</p> <p>(4) reduce episodic flaring frequency by at least 65% and episodic flare emissions by 70-90%.</p>	<p>(3) See response to Comment 18.</p> <p>(4) Reg. 12-12 calls for the expeditious implementation of every feasible prevention measure appropriate for each refinery. These measures have been included in each FMP and will reduce both the number and duration of flaring events as well as emissions from flaring.</p>

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45	Greg Karras	Senior Scientist, CBE	4/07	CBE Report – Flaring Prevention Measures	<p>(1) Flare minimization plans should not allow planned flaring, flaring caused by foreseeable and preventable malfunctions, or flaring caused by failure to install and operate equipment that can manage foreseeable flare gas flows and quality. To ensure that flaring is limited to emergencies, the District should establish emission limits based on feasible measures.</p> <p>(2) Lack of such limits has predictably increased industry secrecy claims and the public resource burden to investigate causes of flaring.</p> <p>(3) At Chevron and ConocoPhillips, these limits should reduce episodic flaring frequency by at least 65% and emissions by 70-90%.</p>	<p>(1) Reg. 12-12 requires the expeditious implementation of every feasible prevention measure. The FMPs meet the standard established in the rule.</p> <p>(2) The FMPs include some confidential business information (CBI). State law requires the District to maintain the confidentiality of such information. Under Regs. 12-11 and 12-12, a refinery must prepare a causal analysis to determine the cause of a flaring event. These reports are available to the public, however, as with the FMPs, CBI is not disclosed.</p> <p>(3) As stated above, Reg. 12-12 calls for the expeditious implementation of every feasible prevention measure. These measures have been included in each refinery’s FMP. The FMPs are expected to reduce both the number and duration of flaring events as well as emissions from flaring, consistent with the regulation.</p>

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46	Greg Karras	Senior Scientist, CBE	4/07	CBE Report – Flaring Prevention Measures	The Bay Area Air Quality Management District should ensure that all potential flaring impacts of projects to expand dirty crude refining are analyzed and that all measures necessary to prevent non-emergency flaring are required through its public reviews of flare minimization plans.	<p>As part of Reg. 12-12, the District has engaged the refineries on future projects. The District is monitoring each refinery project to ensure that flaring minimization for the project as well as the refinery as a whole is incorporated into design and construction phases.</p> <p>District permit requirements ensure all construction projects at refineries impacting air quality meet District, State and Federal air quality regulations.</p>
47	Greg Karras	Senior Scientist, CBE	4/07	CBE Report – Flaring Prevention Measures	All refineries should apply all flaring prevention measures that are demonstrated in practice at another facility. California air districts should require each refinery in their districts to apply these measures. The California Air Resources Board should ensure that air districts take this action.	<p>Reg. 12-12 will be used to establish a set of "best practices" for Bay Area refineries with regard to flaring minimization. The District will work with each facility to ensure they achieve this standard with due regard for safety at their facilities. The District's rule applies to all five petroleum refineries in the Bay Area. See Response to Comment 7, item (3).</p> <p>The South Coast AQMD is the other air district in California with a number of petroleum refineries. That district has adopted its own rule to address emissions from flaring at petroleum refineries.</p>

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48	Greg Karras	Senior Scientist, CBE	4/07	CBE Report – Flaring Prevention Measures	The Bay Area Air District should enforce existing flare rule requirements for complete root cause analysis and refinery gas system audits; and should expand flare monitoring and reporting to include nitrogen compounds, air toxics, carbon dioxide, and hourly gas quality.	The District enforces the requirements of Reg. 12-12 with regard to causal analysis reporting for flaring events Additionally, current flare gas flow reporting from refinery facilities meets the requirements of Reg. 12-11.

Attachment A

From: Heath, Dave (David.Heath) [mailto:David.Heath@chevron.com]

Sent: Monday, July 09, 2007 8:47 AM

To: Damian Breen

Cc: Lizarraga, Teresa (HINK); Li, Juan (LJUA); Quiroz, Richard (RJQU); Farabee, David R.; Farrar, Mike (MikeFarrar); Chamberlin, Robert (RTCH); Heath, Dave (David.Heath)

Subject: Memo to BAAQMD on Isomax Startup Compressor

Dear Sirs,

We are writing to explain the design of the conceptual Isomax start-up compressor that was described in a draft Chevron document shared with the City of Richmond during preparation of an administrative draft of the EIR being prepared as part of the RENEWAL project permitting process. We believe this document should not have been released to the public as part of the process.

An Isomax start-up compressor has been contemplated from time to time for the purpose of simplifying the start-up, modestly reducing the start-up duration for the Isomax reactor loops, and freeing up booster compressor capacity and 20 plant capacity to maintain other plant feedrates. The startup compressor was contemplated for only plants with multiple reactors in series; this includes TKC, TKN and Iso reactors but does not include the RLOP nor D&R reactor systems.

The current start-up and shut-down process utilizes 20 plant and the hydrogen booster compressors. The booster compressors provide hydrogen recycle through the reactors during startup and shutdown processes; the flare gas recovery compressors are not used for recycle gas operation.

During start-up, one of the six booster compressors is used to introduce hydrogen and warm up the system as well as to provide hydrogen for sulfiding the reactor catalyst. During the sulfiding operation, DMDS is used to produce H₂S which sulfides the catalyst. The unreacted H₂S leaving the reactor is then removed through amine treating prior to recycling the hydrogen back through the booster compressors for further use. The amine effluent treating is required to prevent any contamination of the H₂S with the booster hydrogen which is consumed at other plants. During shut-down, the booster compressors are used to circulate hydrogen to cool down the reactor loop, the gases exiting the reactor are routed to the 20 plant/4 H₂S systems.

The startup compressor's justification has always been economics. The startup compressor eliminates the need to switch 20 plant and booster compressor from process service to recycle compressor service. 20 Plant is a amine treater that sweetens hydrocracker offgas and when it switches to startup service, the process gas production is reduced to fit within the remaining amine treaters at 4 and 5 H₂S; the reduction in gas production requires a curtailment of the other hydrocrackers operation. Similarly, Richmond has six booster hydrogen compressors at the Hydroprocessing complex, which compress low pressure hydrogen to the high pressure to be consumed in the Hydroprocessing divisions reactors. Switching a booster compressor to startup compressor operation forces a curtailment in the other hydroprocessing units due to a reduced high pressure hydrogen supply.

Thus, a dedicated start-up compressor would simplify the warm-up and sulfiding operation described above as well as reduce the need to curtail operations because 20 plant and a hydrogen booster compressor are switched to startup compressor operation.

There is little potential for flaring during the startup operations described above as it is done in a closed loop that does not require venting directly to the refinery flare gas recovery system. The time periods during which streams from this process are routed to the relief system are during the last steps of the shutdown processes when:

- the reactor loop is being prepared to be depressurized to atmospheric pressure to allow the reactor to be opened for maintenance, **and**

- the vessel is being purged with nitrogen, to pass the gas test for residual hydrocarbons required by Reg. 8-10 and safety regulations prior to opening it to the atmosphere,

These final steps of the clean-up process are where residual gases are routed to the flare gas recovery system and they would not be minimized or reduced by installing a dedicated start-up compressor.

We trust this information is sufficient for your needs. Please let us know if there is anything else you require.

Sincerely

D Heath

Dave Heath

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