SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report
Proposed Rule 1118.1 – Control of Emissions from Non-Refinery Flares

January 2019

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Executive Summary

South Coast Air Quality Management District (SCAQMD) Proposed Rule 1118.1 (PR1118.1) applies to RECLAIM and non-RECLAIM facilities that operate non-refinery flares predominately located at landfills; wastewater treatment plants; oil and gas production facilities; and facilities that handle organic liquids. The proposed rule will implement, in part, the 2016 Air Quality Management Plan Control Measure CMB-03 – Emission Reductions from Non-Refinery Flares and facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure to assist implementation of CMB-05 – NOx Reduction from RECLAIM Assessment.

The purpose of PR1118.1 is to reduce oxides of nitrogen (NOx) and volatile organic compounds (VOC) emissions from non-refinery flares and to encourage alternatives to flaring, such as energy generation, transportation fuels, or pipeline injection. The proposed rule will establish emission limits for NOx, VOC, and carbon monoxide (CO) for new, replaced, or relocated flares, and ~~a~~ establish a capacity threshold for existing flares. The capacity threshold will apply to all open flares and flares that combust digester gas, landfill gas, and gas produced from oil and gas production facilities (produced gas). The threshold varies for each source category based on a percent capacity (percent throughput or heat input per maximum rated capacity of the flare) that determines routine flaring. Open flares and flaring produced gas ~~has~~ have the lowest capacity threshold at 5 percent, flaring landfill gas is at ~~10~~20 percent, and flaring digester gas is at 70 percent. The different capacity thresholds seek maximum emission reductions that are cost effective. Flares that surpass the capacity threshold will be required to either reduce flaring below the capacity threshold (e.g., beneficial use of the gas that would otherwise be flared) or replace the flare with a unit complying with the proposed NOx emissions limits.

In addition, new and replaced flares at oil and gas production sites with emissions high enough to require them to monitor and report under the SCAQMD Annual Emission Reporting (AER) program will have additional limitations. The basis for using the AER emissions limits is to pursue the higher emitting facilities; further, the SCAQMD has historical throughput data from those facilities through their AER reports. Replaced flares at those facilities will have a throughput limit of 110 percent of the average annual throughput for the two calendar years immediately preceding the submittal of the flare application. The limit would allow existing sites to maintain operational levels with a slight growth opportunity. Since new flares that are not replacing an existing flare do not have historical throughput data, those flares will be limited to no more than 45 MMscf, which was derived based on the average throughput for all oil and gas production sites from 2015 ~~–~~to 2016, with a growth factor of approximately 10 percent.

Additionally, PR1118.1 establishes source test provisions for those flares subject to the emission limits or the low-emission exemption to ensure the limits are being met and the exemption is still applicable. Source tests will be required every five years. There are also monitoring, reporting, and recordkeeping provision for those flares subject to the capacity threshold limit and the low-use exemptions. Lastly, PR1118.1 provides several exemptions including flares that: are low-use or low-emitting; combust regeneration gas; combust only natural gas, propane, butane or a combination of propane or butane; have a various locations permit; are located at low throughput closed landfills; or are subject to another rule.

This ~~Draft S~~staff ~~R~~report is organized into five chapters and two appendices. Chapter 1 provides background information regarding PR1118.1, non-refinery flares, the various industries using non-refinery flares and discusses the availability of beneficial use technology to reduce throughput to flares. Chapter 2 provides an assessment of BARCT and NOx requirements in other jurisdictions. This assessment also covers Reasonably Available Control Technology and Reasonably Available Control Measures. Chapter 3 provides a summary of the proposed rule, which includes flare capacity thresholds and emission limits for new flares. Chapter 4 includes the socioeconomic impact assessment, draft findings, and the comparative analysis. There are two appendices: Appendix A includes the responses to comments and Appendix B includes the draft Rule 1118.1 forms. Lastly, the staff report ~~Chapter 5~~ contains ~~the~~a list of references.

Chapter 1

INTRODUCTION

In March 2017, the South Coast Air Quality Management District (SCAQMD) adopted the Final 2016 Air Quality Management Plan (2016 AQMP) which includes a series of control measures to achieve the National Ambient Air Quality Standards for ozone. Proposed Rule 1118.1– Control of Emissions from Refinery Flares (PR1118.1) will implement, in part, the 2016 AQMP Control Measure CMB-03 – Emission Reductions from Non-Refinery Flares and CMB-05 – Further NOx Reductions from RECLAIM Assessment. The proposed rule seeks to reduce oxides of nitrogen (NOx) and volatile organic compounds (VOC) emissions from flaring produced (e.g., process) gas, digester gas, landfill gas, and other combustible gases and vapors and to encourage alternatives to flaring. The proposed rule also contains a ~~carbon monoxide (~~CO~~)~~ limit, which is included to ensure proper combustion. PR1118.1 does not apply to flares at petroleum refineries, sulfur recovery plants, and hydrogen production plants subject to SCAQMD Rule 1118 – Control of Emissions from Refinery Flares (R1118). The non-refinery flares used at asphalt plants; biodiesel plants; hydrogen production plants fueled in part with refinery gas; petroleum refineries; and sulfur recovery plants that were previously subject to the Regional Clean Air Incentives Market (RECLAIM) program will be subject to Proposed Rule 1109.1 – Refinery Equipment (PR1109.1) upon adoption of that proposed rule.

In addition to CMB-03, the adoption resolution of the Final 2016 AQMP directed staff to transition RECLAIM program to a command-and-control regulatory structure requiring Best Available Retrofit Control Technology (BARCT) as soon as practicable. California State Assembly Bill 617, approved by the Governor on July 26, 2017, requires air districts to develop, by January 1, 2019, an expedited schedule for the implementation of BARCT no later than December 31, 2023, for facilities that are subject to a market-based compliance program. PR1118.1 applies to RECLAIM and non-RECLAIM facilities that operate non-refinery flares.

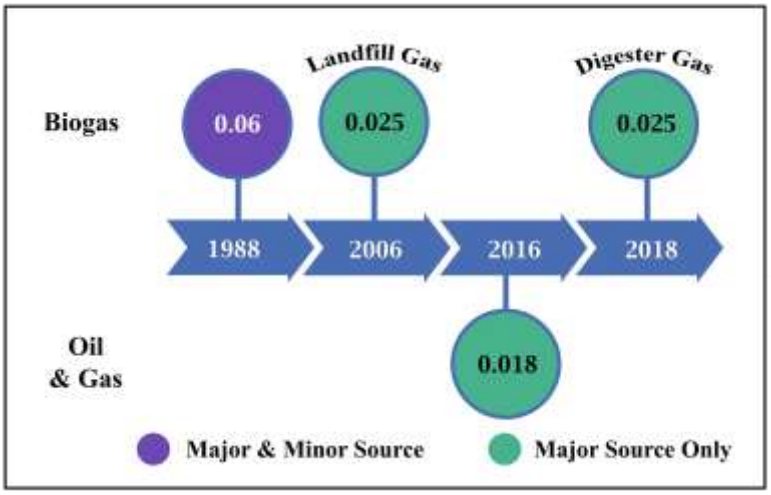
The objective of the proposed rule is to maximize emission reductions and to encourage beneficial use by providing a reasonable timeframe for affected facilities to make feasible, long-range decisions. The proposed rule includes NOx, VOC and CO emission limits that reflect BARCT standards and a capacity threshold that seeks to identify routine flaring. Flares that surpass the capacity threshold will be required to find alternative means (e.g., beneficial use) for excess flaring or reduce flare throughput, or to replace the equipment with a flare with lower emissions. The capacity threshold varies depending on the type of gas being flared (landfill, digester, produced) and the type of flare equipment (open flare versus shrouded flare). PR1118.1 provides exemptions for low-use and low-emitting flares, as well as certain other exemptions, such as flares that: combust regeneration gas; combust only natural gas, propane, butane or a combination of propane or butane; have a various locations permit; are located closed landfills that collect less than 2,000 MMscf per year; or are subject to another rule. Additionally, PR1118.1 establishes provisions for source testing, monitoring, reporting, and recordkeeping. PR1118.1 is expected to reduce 0.18 tons of NOx per day and 0.014 tons of VOC per day by July 1, 2024 from flares located at landfills, wastewater treatment plants, oil and gas production facilities, organic liquid loading, and organic liquid storage, based on flare replacement. Potential reductions could be greater based on facilities' pursuit of beneficial use instead of flaring. In addition, potential reductions could be

achieved sooner as there is typically a shorter compliance schedule for modifying or replacing flares.

BACKGROUND

A survey of SCAQMD permits for non-refinery flares indicate NOx emission rates from many facilities range between 0.018 to 0.15 pounds per million British Thermal Units (BTU). New and modified non-refinery flare emissions are currently regulated through the Best Available Control Technology (BACT) limits as determined in SCAQMD Rules 1303 and 1701, but there are currently no source-specific rules regulating NOx emissions from existing non-refinery flares. The first SCAQMD BACT NOx standard for flares was established in 1988 at 0.06 pounds per million British thermal unit (MMBtu). In 2016, advancements in flare technology allowed the NOx standard to be reduced to 0.018 pounds/MMBtu for oil and gas production. Similar flare technology advances for biogas combustion at landfill and wastewater treatment plants le~~a~~d to the 2018 update to 0.025 pounds/MMBtu. For major polluting facilities, these new BACT determinations serve as requirement pursuant to the United States Environmental Protection Agency (USEPA) Lowest Achievable Emission Rate (LAER) Policy. A facility is defined as a "major polluting facility" if it emits, or has the potential to emit, a criteria air pollutant at a level that equals or exceeds the emission thresholds specified in the federal Clean Air Act. BACT/LAER determinations are based on a permit-by-permit analysis of what is achieved in practice. For non-major polluting facilities, state law requires a more detailed analysis, including cost~~-~~-effectiveness. The non-major source BACT standard for biogas went into effect in 2000 and is 0.06 pounds/MMBtu. There is no non-major source standard for the oil and gas industry. Figure 1 outlines these standards in pounds/MMBtu on a timeline graph.

Figure 1: Flares BACT Requirements (pounds of NOx per MMBtu)



As a region in extreme non-attainment for ozone, SCAQMD is required by USEPA to adopt all ~~r~~Reasonably ~~a~~Available ~~c~~Control ~~m~~Measures (RACM) or ~~r~~Reasonably ~~a~~Available ~~c~~Control ~~t~~Technologies (RACT), particularly when adopted by other air agencies. In this case, two California air districts, San Joaquin Valley Air Pollution Control District (SJVAPCD) and Santa Barbara County Air Pollution Control District (SBCAPCD) have adopted rules for non-refinery flares. PR1118.1 also addresses the USEPA requirements for RACM/Best Available Control Measure (BACM) as (SJVAPCD) Rule 4311 – Flares includes emission limits for non-refinery

flares, and SBCAPCD Rule 359 – Flares and Thermal Oxidizers regulates the use of flares and thermal oxidizers for petroleum and transportation facilities. In addition, PR1118.1 is being developed to facilitate the transition of the NOx RECLAIM program to a command-and-control regulatory structure.

Rule Development

Staff initiated the rule development process in June 2017. Since 2017, staff conducted twenty site visits to better understand the need for flaring and the strides the affected industries have already made to reduce flaring. The initial rule language was distributed in March 2018 and the initial concept was to require flare replacement of older flares (20 years and older) unless they comply with the proposed beneficial use compliance targets (e.g., percent gas handling with beneficial use by a certain date). The beneficial use compliance option was modeled after the Bureau of Land Management (BLM) "Methane and Waste Prevention Rule,"[1] which requires between 85 ~~–~~and 98 percent of gas that would have been directed to a flare to be used beneficially. Stakeholders argued that they could not commit to the beneficial use targets, expressed a desire to keep existing flares needed for backup, and replacing back-up flare is not cost-effective to replace, so suggested the rule target routine flaring.

In response to the comments received from stakeholders, staff presented a different rule concept that would establish a capacity threshold, and if a flare surpasses the capacity threshold, action would be required. The proposed capacity threshold concept is established for each source category that would ultimately be applied to the type of gas being flared. The thresholds were determined by evaluating different percent capacities (e.g., usage compared to rated capacity), in each source category, and at what capacity the cost to replace the flare was feasible. Cost~~-~~-effectiveness is based on the capital costs, maintenance costs, and useful life and emission reduction achieved. The thresholds varied considerably due to:

- Cost of the flares
  - Flare costs were significantly higher for landfills and wastewater treatment plant than oil and gas production, and
- NOx emission reductions
  - The majority of PR1118.1 NOx emissions are from landfills.

Thus, the threshold to determine routine flaring and at what point a replacement is cost effective are different for each affected industry. The oil and gas threshold was calculated to be quite low (~~5%~~five percent) due to lower replacement costs and the typical practice using of flares with a high rated capacity. Landfills also were determined to be able to replace flares with a relatively low threshold (20~~%~~ percent) due to the larger amounts of potential emission reductions to be achieved. Wastewater flares have a high threshold (70~~%~~ percent) due to both the high flare costs and the low potential for emission reductions. The stakeholders maintained concern with the timeline for the requirements, particularly when many of the facilities require approval from municipal bodies to take any proposed actions. However, it was mutually agreed that the gas should be handled to benefit the operations and business. Staff worked to include longer timelines and more flexibility

[1] https://www.regulations.gov/document?D=BLM-2016-0001-9126

in the preliminary draft rule. Further details on the proposed rule language can be found in Chapter 3.

Challenges and Opportunities for Industries Subject To PR1118.1

The main source categories subject to PR1118.1 are landfills, wastewater treatment plants, oil and gas production, and organic liquid loading facilities. Table ~~I~~ 1 shows the number of flares at the different source categories, based on the flare gas combusted.

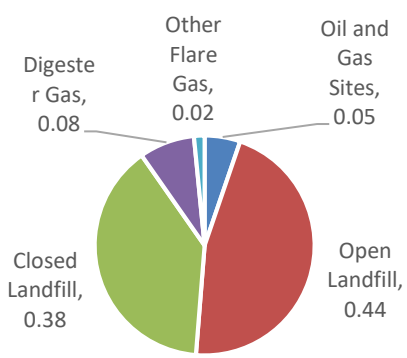
Table 1: Flares Subject to PR1118.1

Flare Gas	Number of Flares
Digester gas	65
Landfill gas	
Closed landfills	103
Open landfills	52
Produced gas	49
Other flare gas	17
Organic liquid handling	~~10~~9
TOTAL	~~296~~295

Landfills

Landfills generate the largest throughput of flared gas and highest NOx emission of the PR1118.1 universe. Landfills also generate landfill gas for many decades, even when closed and inactive. The breakdown of waste in landfills produces gases which vary depending on the type of waste deposited at the facility and contaminants including methane, carbon dioxide (CO2), sulfides, siloxane, and VOCs. These gases are produced by natural decomposition ~~and~~ that predominantly produces methane, in addition to other contaminants. Federal, state, and local regulations require the capture of landfill gas, which can generate several million cubic feet of landfill gas per landfill per day, which is primarily composed of methane and carbon dioxide, two potent greenhouse gases. These gases are pulled from beneath a landfill and are collected and combusted through a flare or used beneficially, such as power generation. The quality of landfill gas varies at each landfill, and can decompose at different rates, depending on pressure and temperature. Closed landfills experience decreasing quantity and quality (Btu per standard cubic foot (Btu/scf)) content over time and eventually, flaring is not feasible. In these situations, activated carbon may be used to replace flares. Potential beneficial uses of landfill gas includes the generation of electricity through micro-turbines, steam turbines, internal combustion engines (ICE), fuel cells, transportation fuel, or pipeline injection. The challenges associated with landfill gas includes the low Btu content and the expense to remove siloxane contamination, which can damage equipment or poison the catalyst used to control NOx emissions.

Figure 2 - NOx Emissions (tpd) - Three-Year Average 2015 - 2017



Some landfills also have private or municipal electricity generating facilities that beneficially utilizes the landfill gas. These facilities may also have small flares used during the cleaning of regenerative catalysts. The catalysts are used to clean the landfill gas, and they typically have two catalysts that cycle between cleaning the landfill gas and regenerating the catalyst. The flares are used to combust the regeneration gas needed to purge the catalyst. Figure 2 provides a breakdown of NOx emissions (over 3 ~~yr.~~year period) for each affected source category highlighting the highest emissions

from landfills compared to the other non-refinery industries flaring.

Wastewater ~~t~~Treatment ~~p~~Plants and ~~d~~Digester ~~g~~Gas

Wastewater treatment plants and gas produced through anaerobic decomposition in a digester generate the second highest volume of gas flared and the volume could increase due to organic waste diversion, as the State strives to meet the ~~seventy-five (~~75~~)~~ percent recycling, composting, or source reduction of waste goal by 2020 under Assembly Bill 341 (AB 341, Chesbro, Chapter 476, Statutes of 2011). These waste diversion efforts may eventually decrease landfill gas, but will lead to additional biogas at wastewater treatment plants and other digesters receiving the organic waste. An example is California Senate Bill 1383 (SB 1383) (Chapter 395, Statutes of 2016) Short-lived climate pollutants: methane emissions: dairy and livestock: organic waste: landfills~~,~~ for organic waste methane emission reductions. These reductions would divert food wastes, currently disposed of at landfill, to anaerobic digesters or composting facilities. In November, staff received comments from the Southern California Alliance of Publicly Owned Treatment Works (SCAP) and California Association of Sanitation Agencies (CASA) regarding new research indicating facilities combusting digester gas from food waste or using thermophilic digestion may potentially increase ammonia emissions resulting in higher NOx emissions from the flare. As a result, PR 1118.1 was revised to retain the NOx limit of 0.06 pounds per million Btu for flares operated at minor sources combusting digester gas

Figure 3: Flare Throughput (MMscf/year) - Three-Year Average 2015 - 2017

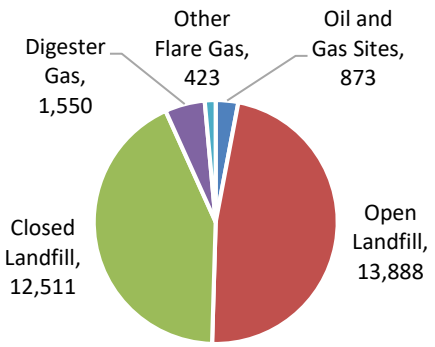
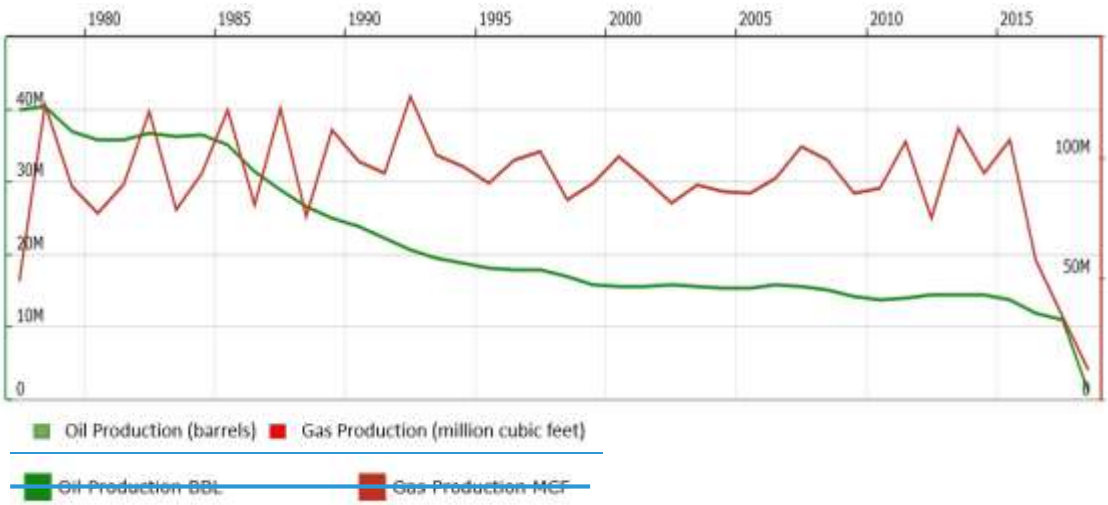


Figure 3 breaks down the affected industry per annual throughput demonstrating the same trend as NOx emissions. Anaerobic decomposition produces a flammable gas composed of methane, hydrogen sulfide, CO2, and siloxane. As with landfill gas, the siloxane contaminant is the most challenging and costly to remove. Digester gas is relatively low Btu, ranging from 500 to 600 Btu/scf. Wastewater treatment facilities have a high energy demand; therefore, many facilities utilize the digester gas for power generation using turbines, ICE, or boilers to make steam for heating digesters.

Oil and ~~g~~Gas ~~e~~Extraction

The third largest volume of gas is generated from oil and gas extraction. This source category has seen significant declines since 2015, reflecting the decrease in the cost of a barrel of oil (see Figure 4). The oil industry is cyclical and world oil prices are currently increasing. An increase in demand will lead to an increase in drilling and produced gas, ultimately leading to increased flaring and NOx emissions.

Figure 4: Los Angeles County Oil and Gas Production by Year[2]



Oil extraction produces oil, produced gas, water, and other contaminants. The produced gas is naturally occurring and of relatively high Btu, around 900 Btu/scf. The produced gas requires gas treatment to remove sulfides, water, CO2 and other contaminants. Some facilities beneficially use the produced gas to generate energy or inject the gas into a pipeline. Pipeline injection is cost effective for companies that have connections nearby, or can inter-connect to another company's pipeline or through a municipal connection. There can be interruptions to pipeline injection due to pipeline curtailment;~~,~~ this occurs when the utility has to perform maintenance or upgrades on their end of the connection and cannot accept the gas. During the rulemaking process, one stakeholder requested that the SCAQMD establish a cap for facilities that replace or install new flares to ensure that routine flaring is minimized. As a result, staff added a provision for oil and gas production sites with emissions over four tons per year that establishes an annual throughput limit of 110 percent of the average throughput over the past two calendar years for replacement flares and an annual throughput limit of 45 million standard cubic feet for new flares. Produced gas in not considered Renewable Natural Gas (RNG) so incentives are not available to assist in conversion or capture; however, the Southern California Gas Company has a tariff program to assist companies generating produced gas to install skid-mounted units for gas clean-up and develop connection to existing natural gas pipelines. Similar to landfills, there are opportunities to use the gas to generate energy through fuel cells and micro-turbines as well as to fuel transportation. There are some companies that operate portable equipment designed to clean up the gas on-site and sell to third party customers.

Organic Liquid Handling and Other Flaring

The remaining categories of flares ~~are~~ have the lowest throughput. Organic liquid handling, which includes two subcategories: organic liquid storage and organic liquid loading. Organic liquid storage includes, but is not limited to, tank farms and pipeline breakout stations. Organic liquid loading includes, but is not limited to, bulk terminal, marine, railcar, and truck loading. The remaining flares fall under the default category referred to as "Other Flaring." Other flaring includes any flaring from sources other than landfill gas, digester gas, gas produced from oil and

[2] http://www.drillingedge.com/california/los-angeles-county

gas production, or gases generated from organic liquid handling. The volume of gas flared and the NOx emissions are low for these source categories. Some of these facilities will be subject to ~~p~~Proposed Rule 1109.1 upon adoption of that rule, if the flare is located at a refinery or refinery related facility. Those flares will be exempt from ~~to refinery activity and not~~ PR1118.1. The majority of flares in this source category are air pollution control devices required to destroy the fugitive emissions from tanks, railcars, and bulk terminals for loading organic liquids. Some of the vapors sent to the flare have a low heating value,~~;~~ therefore, may require the use of ~~assist~~ additional gas to facilitate combustion. Challenges with this source category includes less opportunities for beneficial use and a lack of market incentives.

Market Based Incentives

Market based incentives are available to encourage the beneficial use of biogas, which includes digester gas from wastewater treatment plants and landfill gas. Wastewater treatment plants and landfills have a constant supply of gas, but produce low-quality gas, often about half the heating value of pipeline quality natural gas, and with significant contamination. The most problematic contaminants are siloxanes, which are used in a variety of personal care products, such as deodorants, shampoos, skin creams, and hair styling products. Siloxanes get washed down the drain to end up at wastewater treatment plants and are usually found in product containers that get sent to landfills. Siloxanes are costly to remove from the gas stream and are harmful to combustion equipment and post combustion control equipment used to control NOx emissions, such as catalyst. Federal and State market based programs provide revenue sources from selling biogas as a transportation fuel. These programs include the Low Carbon Fuel Standard (LCFS) in California and the federal Renewable Fuel Standard (RFS) Program. Under these programs, credits are generated for the sale of renewable transportation fuels and, depending on market prices, have provided funding for equipment and lower fuel costs. In addition, future legislation may change the minimum higher heating value and/or maximum siloxane requirements making it easier for pipeline injection and for facilities to use biogas for transportation fuels.

Beneficial Use Opportunities

PR1118.1 seeks to encourage alternatives to flaring, while at the same time, allowing an existing flare to be maintained if the flare throughput is reduced below capacity thresholds established in the rule. Flare throughput reduction can be achieved by harnessing and conditioning the waste gas for a variety of uses. Alternatives to flaring include utilizing fuel cells to create electricity and hydrogen; using micro-turbines and boilers to create power for the facility; using boilers for heat in anaerobic digesters; selling the gas to be used in transportation; converting the gas to liquids for transportation; and/ -or natural gas pipeline injection. Sites such as oil and gas facilities that do not produce enough gas or are not located near appropriate pipelines for injection could route the gas towards power generation, such as micro-turbines, and/or capture for use in transportation. The flare gas has value and most facilities strive to maximize the use of the gas; the following sections highlight some of the beneficial use options.

Fuel Cells

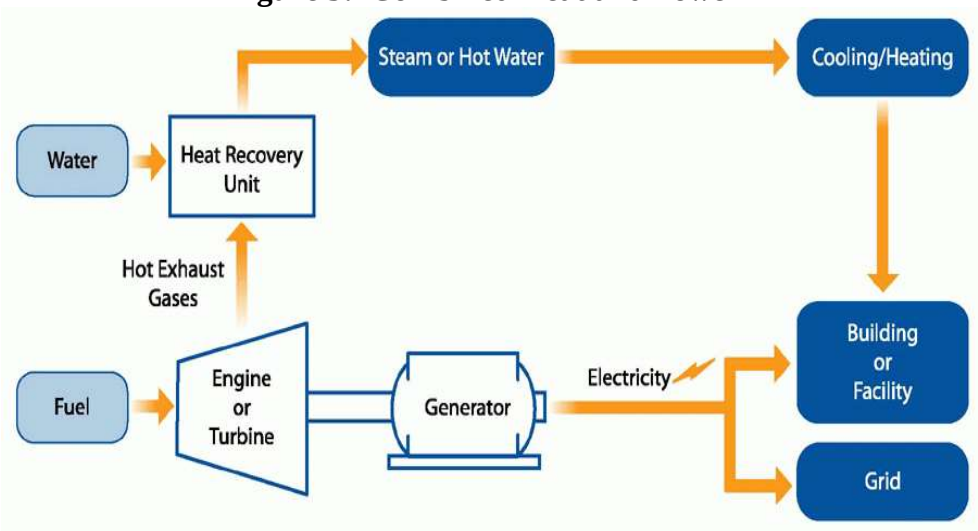
Fuel cells use a chemical reaction, rather than combustion, to generate electricity. They are very efficient and the fuel cells do not produce NOx emissions, though a small amount of NOx can be produced from associated fuel burners. Fuel cells can utilize biogas or produced gas as the fuel, but the contaminants, especially the siloxanes in biogas, must be removed as they will poison the

catalyst. Fuel cells represent a great opportunity for beneficial use and NOx emission reductions but the technology, and the associated gas clean-up, is costly.

Combined Heat and Power

Combined heat and power (CHP) is an efficient technology that generates electricity and captures the heat that would otherwise be wasted to provide useful thermal energy, such as steam or hot water (see Figure 5). Nearly two-thirds of the energy used by conventional electricity generation is wasted in the form of heat discharged to the environment.

Figure 5: Combined Heat and Power[3]



Boilers

New power producing technologies, such as the organic Rankine cycle (ORC), has shown the ability to consume the gas that would otherwise be flared and provide a co-benefit by producing power. This technology utilizes heat recovery from gas combustion to operate the ORC loop to make power. For an oil and gas facility, for example, this is accomplished by installing a skid-mounted boiler on site to combust the gas and provide hot water for the ORC. The amount of power generated is not a high enough quantity to sell to the grid, but will be able to meet some of the facility's power needs and/or heat needs. These boilers emit either 9 ppm (at 3 percent oxygen) or 5 ppm (at 3 percent oxygen with selective catalytic reduction), depending on the size, which will result in 40 to 67 percent less NOx emissions than an ultra-low-NOx flare. For a wastewater treatment facility that currently utilizes boilers for providing heat to the anaerobic digesters, the same boiler can be utilized to process any excess gas that would otherwise be flared. In addition, a landfill can potentially utilize this technology to generate electricity from landfill gas that would otherwise be flared.

[3] "Combined Heat and Power (CHP) Partnership", United States Environmental Protection Agency, available at https://www.epa.gov/chp/what-chp

Micro-turbines and Turbines

Micro-turbines and turbines can be powered by gas that would otherwise be flared to generate power. Most systems require gas cleanup but there are facilities with regenerative thermal oxidation that can be used to produce power without the necessity of biogas cleanup. These technologies can be used at each of the source categories and are especially useful at landfills with low methane content.

Calabasas Landfill Micro Turbines

Gas Recovery, Compression, and Transportation

Another alternative to flaring is to compress the gas that would otherwise be flared and either use it on-site or transport the gas for sale or use at another location. The gas can be cleaned up prior to compression and used to create a transportation fueling station or the compressed gas can be transported and injected into the pipeline. This type of system is useful when a natural gas pipeline is not readily accessible.

Gas-to-Bioplastic

The largest component of flare gas is usually methane and that methane can be converted into a bioplastic. Carbon is captured from methane using a bio-catalyst and results in the combination of carbon with hydrogen and oxygen to produce a biopolymer.

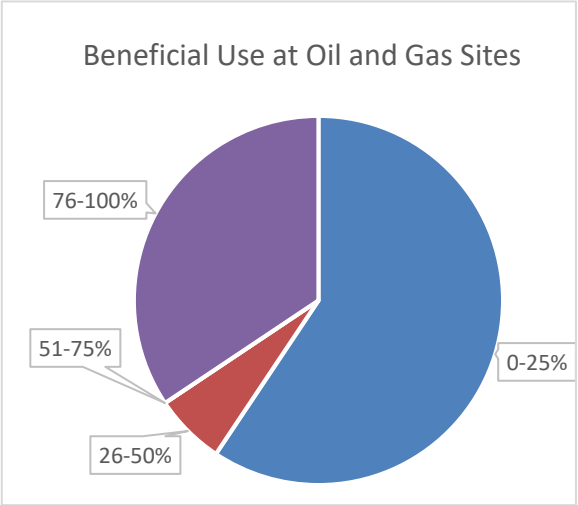
Gas-to-liquids

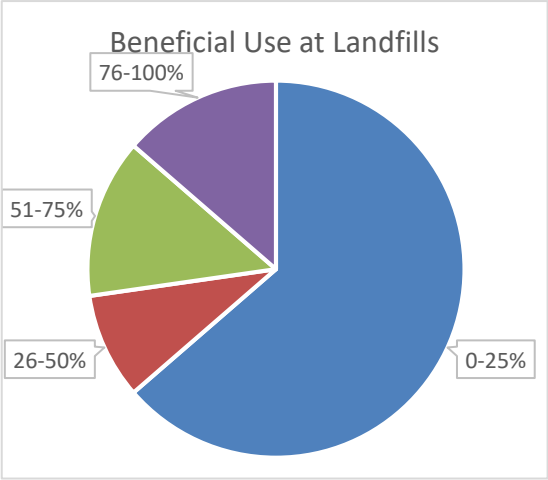
Flare gas can also be converted to liquid fuels and sold as transportation fuel or energy generation. This is a way to reduce or eliminate flaring while making a profit from the gas that would otherwise be flared.

Beneficial Use in the SCAQMD

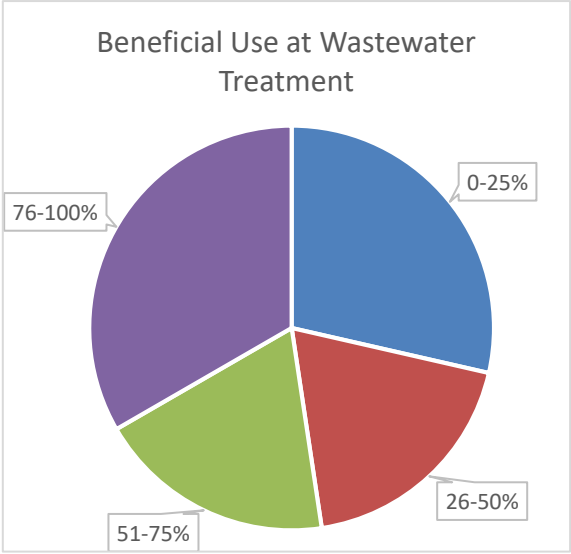
During the rule development process, staff conducted numerous site visits of the potentially affected facilities. During this time, staff learned of the many different types of beneficial use projects within each of the source categories. The pie charts below show the percent of gas that is used beneficially at each of the major source categories subject to PR 1118.1. For example, the 76 – 100 percent segment in purple represents the number of facilities that are beneficially using between 76 to 100 percent of the total gas generated at the facility.

Most oil and gas sites that produce significant quantities of gas have incorporated beneficial use alternatives to reduce the amount of gas flared. Due to the high quality of produced gas, there are considerable opportunities for beneficial use, including pipeline injection or energy production (e.g., turbines, fuel cells, etc.). While some sites are remote without a large energy demand, some sites are more energy intensive which makes it more cost effective to implement beneficial use projects that provide energy to the site or surrounding sources.





Landfills are not energy intensive and there is significant cost to clean up the landfill gas to remove contaminants, specifically siloxanes. However, due to the large quantity of landfill gas consistently produced, there are many landfills that beneficially use the gas to generate energy that powers surrounding residences.



Wastewater treatment plants are also energy intensive and the gas also requires significant treatment to remove contaminants, such as siloxanes. On-site power generation is a common beneficial use of digester gas. Power can be generated from fuel cells, turbines, micro-turbines, internal combustion engines, and boilers. With the diversion of food wastes to existing digesters at wastewater treatment plants in the near future, it is anticipated more digester gas will be generated which should result in more beneficial use projects. Flaring for organic liquid storage and organic liquid loading was also evaluated for beneficial use. The opportunities were not as evident largely due to the low volume of gas generated and diversity of the gas stream. The main application for these source categories is emission controls of vapors created from the transfer or storage of organic liquids. Potentially, vapors could be liquefied and recovered for re-use; however, at this time, such a requirement might not be cost effective due to the low-volume and low-emissions.

PUBLIC PROCESS

The development of PR1118.1 – Control of Emissions from Non-Refinery Flares was conducted through a public process. SCAQMD held nine Working Group Meetings at the Headquarters in Diamond Bar on August 25, 2017, October 24, 2017, January 10, 2018, March 8, 2018, April 4, 2018, June 12, 2018, July 25, 2018, ~~and~~ September 11, 2018 and November 15, 2018. The Public Workshop was held on October 17, 2018 with an additional Public Consultation ~~m~~Meeting on October 30, 2018. Staff presented PR1118.1 at the October 19, 2018 and December 19, 2018 Stationary Source Committee ~~m~~Meetings.

The Working Group is composed of representatives from potentially affected businesses, environmental groups, public agencies, consultants, and the general public. The purpose of the working group meetings is to discuss proposed concepts and work through the details of staff's proposal and address key issues. Separate stakeholder meetings and 20 site visits were conducted that focused on specific stakeholder issues.

Chapter 2

BARCT ASSESSMENT

Staff conducted an assessment of BARCT for non-refinery flares. BARCT is defined in the California Health and Safety Code Section 40406 as "an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source." Consistent with ~~s~~State law, BARCT emission limits take into consideration environmental impacts, energy impacts, and economic impacts. In addition to NOx reductions sought in the proposed rule, SCAQMD, through the California Environmental Quality Act (CEQA) process, identified potential environmental and energy effects of the proposed rule. Economic impacts are assessed at the equipment category level by a review of cost-effectiveness and incremental cost-effectiveness contained in this report and at the macro level as part of the ~~S~~socio~~-~~economic assessment contained in a separate report.

The RECLAIM Working Group raised a concern as to the scope of "best available retrofit control technology" that the SCAQMD must impose for all existing stationary sources after RECLAIM has ended pursuant to Health & Safety Code §40440(b)(1). Stakeholders have argued that use of the word "retrofit" precludes the SCAQMD from requiring an emissions limit that can only be cost-effectively met by replacing the basic equipment with new equipment. Staff disagrees with this position, the use of the term "retrofit" does not preclude replacement technology. Public policy, case law, the statutory framework, and a review of dictionary definitions all support this view.

The on-line Merriam-Webster Dictionary defines "retrofit" in a manner that does not preclude replacing equipment. That dictionary establishes the following definition for retrofit: "1) to furnish (something, such as a computer, airplane, or building) with new or modified parts or equipment not available or considered necessary at the time of manufacture, 2) to install (new or modified parts or equipment) in something previously manufactured or constructed, 3) to adapt to a new purpose or need: modify."[1]~~.~~ This definition does not preclude the use of replacement parts as a retrofit.

The on-line Dictionary.com is more explicit in allowing replacement parts. It includes the following definitions for retrofit as a verb: "1) ~~T~~to modify equipment (in airplanes, automobiles, a factory, etc.) that is already in service using parts developed or made available after the time of original manufacture, 2) ~~T~~to install, fit, or adapt (a device or system) or use with something older; to retrofit solar heating to a poorly insulated house, 3) (of new or modified parts, equipment, etc.) to fit into or onto existing equipment, 4) ~~T~~to replace existing parts, equipment, etc., with updated parts or systems."[2]~~.~~ This definition clearly includes replacement of existing equipment within the concept of "retrofit." Accordingly, the use of the term "retrofit" can include the concept of replacing existing equipment.

Moreover, the statutory definition of "best available retrofit control technology" does not preclude replacing existing equipment with new cleaner equipment. Section 40406 provides: "As used in

[1] https://www.merriam-webster.com/dictionary/retrofit
[2] http://www.dictionary.com/browse/retrofit

this chapter, 'best available retrofit control technology' means an emission limitation that is based on the maximum degree of emission reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source." Thus, it is clear that BARCT is an emissions *limitation*, and is not limited to a particular technology, whether add-on or replacement. Thus, retrofit technology does not preclude replacement technologies.

Public policy also supports staff's position. The argument suggesting replacement equipment is precluded would have an effect contrary to the purposes of BARCT. For example, staff has proposed a BARCT that may be more cost-effectively ~~be~~ met for diesel fueled engines by replacing the engine with a new Tier IV diesel engine, rather than installing additional add-on controls on the current engine, which may be many decades old. If the SCAQMD were precluded from setting BARCT for these sources, the oldest and dirtiest equipment could continue operating for possibly many more years, even though it would be cost-effective and otherwise reasonable to replace those engines. There is no policy reason for insisting that replacement equipment cannot be an element of BARCT as long as it meets the requirements of the statute including cost-effectiveness.

The case law supports an expansive reading of BARCT. In explaining the meaning of BARCT, the California Supreme Court held that BARCT is a "technology-forcing standard designed to compel the development of new technologies to meet public health goals." *American Coatings Association v. South Coast Air Quality Mgt. Dist.*, 54 Cal. 4th 446, 465 (2012). In fact, the BARCT requirement was placed in state law for the SCAQMD in order to "encourage more aggressive improvements in air quality" and was designed to augment rather than restrain the SCAQMD's regulatory power. *American Coatings, supra*, 54 Cal. 4th 446, 466. Accordingly, BARCT may actually be more stringent than BACT, because BACT must be implemented today by a source receiving a permit today, whereas BARCT may, if so specified by the SCAQMD, be implemented a number of years in the future after technology has been further developed. *American Coatings, supra*, 54 Cal. 4th 446, 467.

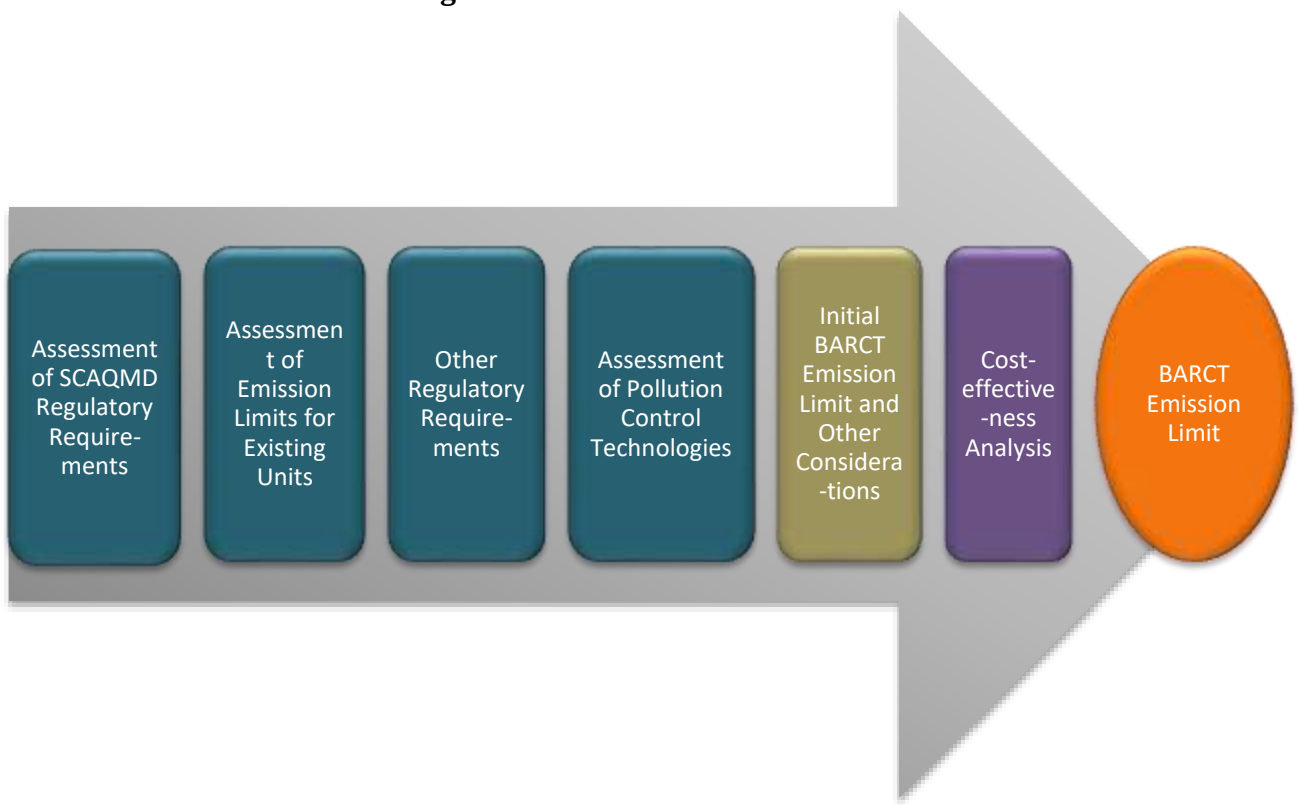
The Supreme Court further held that when challenging the SCAQMD's determination of the scope of a "class or category of source" to which a BARCT standard applies, the challenger must show that the SCAQMD's determination is "arbitrary, capricious, or irrational." *American Coatings, supra*, 54 Cal. 4th 446, 474. Therefore, the SCAQMD may consider a variety of factors in determining which sources must meet any particular BARCT emissions level. If, for example, some sources could not cost-effectively reduce their emissions further because their emissions are already low, these sources can be excluded from the category of sources that must meet a particular BACT. Therefore, the SCAQMD may establish a BARCT emissions level that can cost-effectively be met by replacing existing equipment rather than installing add-on controls, and the SCAQMD's definition of the category of sources which must meet a particular BARCT is within the SCAQMD's discretion as long as it is not arbitrary, capricious, or irrational.

Lastly, public policy supports SCAQMD's position that BARCT can include equipment replacement, and even if it was concluded that BARCT cannot encompass equipment replacement, BARCT is not a limitation on SCAQMD authority. The SCAQMD retains broad statutory authority to adopt emission-control requirements for stationary sources, and that authority may require equipment replacement, as long as the requirement is not arbitrary and capricious.

The steps for a BARCT analysis (see Figure 6) consist of:

- Assessment of SCAQMD Regulatory Requirements
- Assessment of Emission Limits for Existing Units
- Other Regulatory Requirements
- Assessment of Pollution Control Technologies
- Initial BARCT Emission Limit and Other Considerations
- Cost-effectiveness Analysis
- Final BARCT Emission Limit

Figure 6: BARCT Assessment



Assessment of SCAQMD Regulatory Requirements

As part of the BARCT assessment, staff reviewed existing SCAQMD regulatory requirements that affect NOx emissions at non-refinery flare facilities. SCAQMD Rule 1147 – NOx Reductions from Miscellaneous Sources (Rule 1147) applies to gaseous and liquid fuel fired combustion equipment and includes incinerators, afterburners, thermal oxidizers, and other combustion equipment, including flares. The NOx emission limits in Rule 1147 are the following:

Table 2: Rule 1147 NOx Emission Limits

Equipment Category	NOx Emission Limit ppm @ 3% O2 dry, or Pound/MMBtu		
	Process Temperature		
	≤ 800°F	> 800°F and >1200°F	≥1200°F
Other Unit	30 ppm or 0.036 lb/MMBtu	30 ppm or 0.036 lb/MMBtu	60 ppm or 0.008 lb/MMBtu

Rule 1147 indicates the emission limits only apply to burners in units fueled by 100 percent natural gas. The flares subject to PR1118.1 are typically not 100 percent natural gas, but rather biogas or produced gas, although the facilities may use natural gas as assist gas (additional gas needed to allow for combustion). Affected facilities primarily use their flares to destroy combustible vapors or gases in the waste stream; therefore, the Rule 1147 emission limits do not apply.

Other Regulatory Requirements

As part of the BARCT assessment, staff examined NOx limits (see Table 3) for non-refinery flares promulgated by other regulatory agencies. Staff reviewed Santa Barbara County Air Pollution Control District (SBCAPCD) Rule 359 – Flares and Thermal Oxidizers and San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 4311 – Flares. The SJVAPCD rule is applicable to both refinery and non-refinery flares. SBCAPCD is applicable to oil and gas production, non-emergency refining, and transportation industries. It excludes emergency flares and includes thermal oxidizers.

In contrast, PR1118.1 is only applicable to *non-refinery* flares. SCAQMD Rule 1118 applies to flares at refineries, hydrogen plants, and sulfur recovery units flares used for emergencies and uncontrolled release of gases and vapors from process upsets or planned turn-around and start-ups.

Table 3: Other Jurisdiction Flare Emission Limits

Heat Release Rate (MMBtu/hr)	SBCAPCD Effective June 1994		SJVAPCD Effective June 2009	
	NOx (lb/MMBtu)	VOC (lb/MMBtu)	NOx (lb/MMBtu)	VOC (lb/MMBtu)
<10	0.0952	0.0051	0.0952	0.0051
10-100	0.1330	0.0027	0.1330	0.0027
>100	0.5240	0.0013	0.5240	0.0013

Assessment of Pollution Control Technologies

As part of the BARCT assessment staff conducted a technology assessment to evaluate NOx pollution control technologies for non-refinery flares. Staff reviewed scientific literature, vendor information, and strategies utilized in practice. The technologies are presented below along with the applicability for use with various types of flare gas from industries generating combustible gases or vapors.

Flare Technology

Open Flares

Open Flare

A flare is a control device that is utilized to control a VOC stream by piping it to a burner that combusts the VOC containing gases. Early flares were designed as elevated, candlestick-type flares that have an open flame with a specially designed burner tip, and auxiliary fuel to achieve nearly 98 percent VOC destruction. The destruction efficiency is driven by flame temperature, residence time in the combustion zone, and turbulent mixing of the components. Complete combustion results in the conversion of all the VOCs to carbon dioxide and water but also results in the emission of NOx, sulfur oxides (SOx), and ~~carbon monoxide~~CO. Open flares have a high rated capacity and long service life. They are low-cost, simple to use, and reliable but they are also noisy, emit smoke, heat radiation, and light. There are few open flares remaining in the SCAQMD. Table 4 shows the number of open flares understood to still be operating in the SCAQMD jurisdiction and the total estimated emissions. Open flares cannot be source tested due to the open flame and absence of a stack. Unless there was a specified NOx permit limit, a default emission factor was used to estimate the emissions. Both the USEPA's AP-42[3] Compilation of Air Pollutant Emission Factors and Rule 1118 use 0.068 pounds/MMBtu as the default emission factor for an open flare.

Table 4: Non-Refinery Open Flares in the SCAQMD

Number of Open Flares	Estimated NOx Emissions (tpd)	Annual Throughput (MMscf)
11	0.02	418

Enclosed Flares

Enclosed Ground Flare

To mitigate the noise and the visible pollution of the open flame, most non-refinery flares in operation today are enclosed ground flares. In an enclosed flare, the burners are shrouded in a stack that is internally insulated. This stack provides wind protection and reduces noise, luminosity, and heat radiation. Enclosed flares generally have less capacity than open flares, but they are reliable and straightforward to operate. The majority of non-refinery flares subject to PR1118.1 are enclosed ground flares. NOx emissions for ~~E~~enclosed ~~F~~flares may be higher than open flares, but most meet the 1988 BACT NOx limit of 0.06 pounds/MMBtu.

[3] USEPA AP-42 - Compilation of Air Pollutant Emission Factors, available at https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors

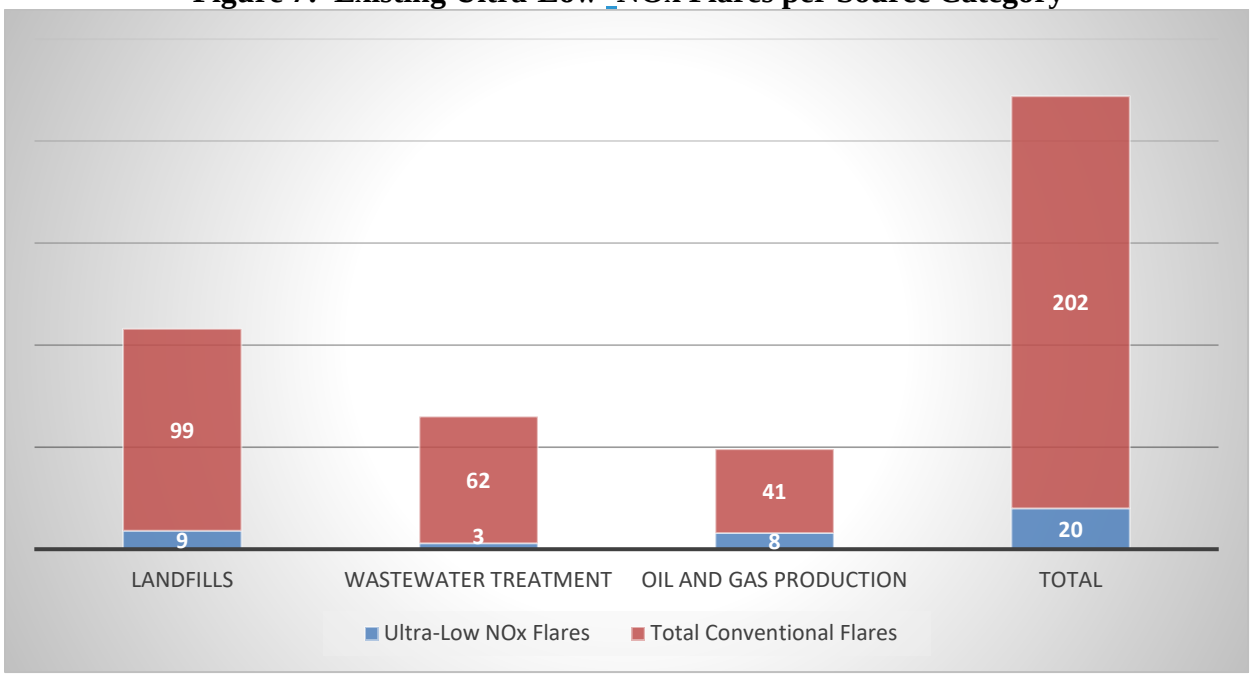
Ultra-Low-~~-~~NOx Flares

The new generation of ultra-low-NOx flare utilizes a pre-mixed gas stream with air-assist combustion and is designed with ultra-low-~~-~~NOx burners resulting in decreased NOx and VOC emissions. These ultra-low-NOx flares can achieve NOx emissions of less than 0.025 pounds per Million Btu (see Table 5). The technology has been available for almost a decade. There are two major manufactures of these ultra-low-~~-~~NOx flares. John Zink Hamworthy Combustion (John Zink) produces Zink Ultra Low Emissions (ZULE®) flare, which electronically control air-to-fuel ratio within the enclosed flare to provide more efficient destruction and less NOx emissions without an increase of ~~carbon monoxide~~CO emissions. The other ultra-low-NOx flare is the Certified Ultra-Low Emissions Burner (CEB®) produced by the Aereon Corporation. It incorporates the premixing of gases and patented wire mesh burner technology that allows for more surface area, resulting in more efficient combustion and retention of heat, with a decrease of NOx emissions. Due to the added complexity in the design of the ultra-low-NOx flares, some stakeholders have experienced reliability issues. This is especially true of the early generation flares installed that do not combust a constant gas flow. More recently, Perennial Energy has introduced an ultra-low-NOx ~~F~~flare, with guarantees of 0.025 pounds of NOx per MMBtu and 0.06 pounds of CO per MMBtu. These flares have a smaller footprint, 100~~%~~ percent stainless steel burners, and use technology that involves automatic air fuel ratio controls with proprietary burner technology.

Ultra-Low-NOx Flare

The following chart shows ~~U~~ultra-~~L~~low-~~-~~NOx flares and conventional flares that are currently installed at landfills, wastewater treatment plants, and oil and ~~their~~ gas sites. This demonstrates the technology is commercially available, achieved in practice, and thus is feasible.

Figure 7: Existing Ultra-Low-NOx Flares per Source Category



Other Flares

For the Other flaring category, John Zink produces a NOxSTAR Vapor Combustion System capable of reducing emissions for marine terminal loading ~~and unloading~~ by meeting a stringent 99.99 percent destruction efficiency and a 0.02 pounds/MMBtu NOx emission. CEB® flares have also been permitted and installed for use for organic liquid handling.

Table 5: NOx Emissions for Currently Available Control Technology

Manufacturer	Flare	Manufacturer Guaranteed NOx Emissions (lb/MMBtu)
Aereon	CEB®	0.018
John Zink	ZULE®	<0.02
John Zink	NOxSTAR	<0.02
Perennial	Ultra-Low-NOx	<0.02

Cost-Effectiveness Analysis

Cost-effectiveness was examined for flares in each source category. Cost-effectiveness is measured in terms of control costs (dollars) per air emissions reduced (tons). If the cost per ton of emissions reduced is less than the maximum feasible cost-effectiveness, then the control method is considered to be cost effective. The 2016 AQMP established a cost-effectiveness threshold of $50,000 per ton of NOx reduced.

The discounted cash flow method (DCF) was used to determine cost-effectiveness. The DCF method calculates the present value of the control costs over the life of the equipment by adding the capital cost to the present value of all annual costs and other periodic costs over the life of the equipment. A real interest rate of four percent, and a 25-year equipment life is used. The cost-effectiveness is determined by dividing the total present value of the control costs by the total emission reductions in tons over the same 25-year equipment life.

To estimate the cost of an ultra-low-NOx flare, staff consulted a variety of vendors and input from stakeholders. Flare installation costs are site specific and staff received a wide variety of estimates, which varied significantly by source category. To account for the variety of data and establish a consistent threshold per source category, staff averaged the capital cost (equipment plus installation) and operation and maintenance cost per industry, to estimate the cost of flare replacement, as seen in Table 6.

Table 6: Cost Estimates for Ultra-Low-NOx Flares

Flare Gas	Size (MMBtu/hr)	Flare Type	Capital Cost	Annual Cost
Digester Gas	27 x 3 Flares*	CEB® 800	$654,767	$100,000
	42.6 x 3 Flares*	ZULE®	$603,933	$100,000
	39.33	ZULE®	$1,520,000	$100,000
	12	CEB® 350	$298,800	$28,290
	40	CEB® 1200	$448,200	$42,435
Average:			**$769,375**	**$74,145**
Landfill Gas	75.6	ZULE®	$1,758,339	$121,867
	167	ZULE®	$1,386,400	$219,850
	120	ZULE®	$2,573,208	$305,515
	12	CEB® 350	$622,910	$35,362
Average:			**$1,585,214**	**$170,649**
Produced Gas	40	CEB® 1200	$410,000	$30,000
	17	CEB® 500	$420,000	$19,000
	3.4	CEB® 100	$235,000	
	40	CNTOX8	$1,190,000	$42,000
	27	CEB® 800-CA	$350,000	$30,000
Average:			**$521,000**	**$30,250**

* Costs listed represent the cost per flares.

Averaging these costs provide a fair and balanced value to account for the wide range of data provided and various types of operational needs. PR1118.1 seeks to reduce routine flaring and staff used the percent of the total flare capacity utilized by each flare as a surrogate to determine what would be considered routine use. For this analysis, staff evaluated the cost-effectiveness at different thresholds to determine the most appropriate threshold. When determining the number of flares that would be impacted, staff did not include flares that already meet proposed limits or are eligible for the proposed rule exemptions. The emission reductions were calculated using a

three-year annual average throughput (2015 – 2017) and the difference between the flare's current NOx permit concentration limit and the proposed emission limit.

Table 7 reports the findings of the analysis for each source category, at different thresholds of the percent capacity of a flare utilized, with the corresponding emission reductions and the estimated cost per ton of NOx reduced. To achieve the rule objectives, and ensure any action taken (e.g., replace the flare) would be cost effective and thus, economically feasible, staff chose the threshold based on maximum reduced emissions at a feasible cost-effectiveness. For landfills, the initial evaluation of cost-effectiveness showed ten percent to be above the $50,000 per ton of NOx removed. The changes to the flares affected, which resulted from updated data and changes to the applicable exemptions, now show ten percent is below the $50,000 threshold; however, staff is not proposing to lower the threshold because there would not be additional NOx emission reductions at the lower threshold. PR1118.1 does not contain a Capacity Threshold for other flaring or organic liquid handling, such as bulk loading at marine terminals, railcars, or truck racks, tank degassing, etc. This is because, in part, there are not as many feasible opportunities for beneficial use, the gas streams are diverse, and emissions and throughput are low and intermittent. The emission limits in PR1118.1 for other flaring is 0.06 pounds/MMBtu. This is the BACT limit for biogas that was established in 1988 and represents NOx limits for conventional flares, and should therefore be achievable for conventional flare installation. For organic liquid handling, the limit referenced is the current BACT standard with which new flares currently have to comply.

Table 7: Capacity Threshold Ranges with Cost-Effectiveness

	Capacity Threshold	# flares exceeding threshold	Emission Reductions (tpd)	Estimated Cost Effectiveness
Oil and Gas	3%	9	0.016	$57,985
	5%	**5**	**0.012**	**$43,979**
	10%	4	0.009	$47,225
	20%	3	0.008	$41,348
Landfills	10%	17	0.16	$49,259
	20%	**17**	**0.16**	**$49,259**
	30%	14	0.13	$48,948
	40%	10	0.10	$48,412
Wastewater and Digester Gas	30%	9	0.02	$95,063
	40 or 50%	3	0.009	$70,417
	60%	2	0.008	$52,813
	70%	**1**	**0.007**	**$30,178.85**

Table 8 lists the BARCT emission limit recommendations, which reflect current BACT limits that have been proven to be technologically and economically feasible, and thus qualify for BARCT

BARCT Emission Limit Recommendation

Table 8: Recommended BARCT Emission Limits

Flare Gas	pounds/MMBtu		
	NOx	CO	VOC
Digester gas:			
Major facility	0.025	0.06	0.038
Minor facility	0.06	N/A	N/A
Landfill gas	0.025	0.06	0.038
Produced gas	0.018	0.01	0.008
Other flare gas	0.06	N/A	N/A
Organic liquid Handling:			
Organic liquid storage	0.25	0.37	N/A
	pounds/1,000 gallons loaded		
Organic liquid loading	0.034	0.05	N/A

Organic liquid handling is separated into organic liquid storage and organic liquid loading. The limits are based on BACT standards adopted by the Sacramento ~~Air pollution Control District~~ Metropolitan Air Quality Management District. The limits are equivalent, but, reported with different units for more- accurate applicability and ease of recordkeeping and enforcement. The pounds/MMBtu was calculated based on pounds/1,000 gallons loaded. Emissions are typically calculated based on 1,000 gallons loaded for bulk terminals, marine vessels, trucks, and rail cars as the liquid product is being transferred and can be quantified. For tank farms and pipeline transfer stations, where organic liquids are not being loaded, the pounds per MMBtu is more meaningful. There are many facilities with both tank vapors and truck racks routed to the same flare; however, since the two limits are equivalent, the rule allows a facility to demonstrate compliance with either limit.

Chapter 3

PROPOSED RULE 1118.1

Purpose (Subdivision (a))

The purpose (subdivision (a)) of this rule is to reduce NOx and VOC emissions from flaring produced gas, digester gas, landfill gas, and other combustible gases or vapors and encourage alternatives to flaring.

Applicability (Subdivision (b))

PR1118.1 applies to owners and operators of flares that require a SCAQMD permit at facilities, including, but not limited to, oil and gas production, wastewater treatment facilities, landfills, organic liquid handling.

Definitions (Subdivision (c))

PR1118.1 adds the following definitions to clarify and explain key concepts. Please refer to PR1118.1 for each definition.

Proposed Definitions:

- Annual Throughput
- Biogas
- Capacity
- Capacity Threshold
- Digester Gas
- Facility
- Flare
- Flare Replacement
- Flare Station
- Heat Input
- Landfill Gas
- Major Facility
- Minor Facility
- Notification of Annual Percent Capacity Greater Than Threshold
- Notification of Flare Inventory and Capacity
- Notification of Flare Throughput Reduction
- Notification of Increments of Progress
- Notification of Intent
- Open Flare
- Organic Liquid
- Organic Liquid Loading
- Organic Liquid Storage
- Other Flare Gas
- Oxides of Nitrogen (NOx)
- Percent Capacity
- Pipeline Breakout Station
- Produced Gas

Protocol
Publicly-Owned Facility
Regenerative Adsorption System
Regeneration Gas
Relocate
Utility Pipeline Curtailment
Volatile Organic Compounds (VOC)

Flare Definition (~~p~~Paragraph (c)(10))

PR1118.1 defines the term flare as a combustion device that oxidizes combustible gases or vapors, where the combustible gases or vapors being destroyed are routed directly into the burner without energy recovery. Prior to the development of the flare definition in PR1118.1, there was no established definition of a flare. During the rule process, it became clear that there was no consensus between the following control devices: afterburner, flare, incinerator, or thermal oxidizer. The primary challenge was flares (under this proposed rule definition) might have been permitted as an afterburner or thermal oxidizer in the past because equipment descriptions on permits varied depending on use and the application submitted by the facility. The proposed definition also includes a clarification that flares do not recover energy. This is to distinguish a flare from a burner installed in a device that generates electricity or uses heat to generate steam, etc. A notice was sent to all potentially affected permit holders to make them aware of the rule making so they can participate in the process if the facility believe their equipment qualifies as a flare in accordance with the proposed rule definition. In addition, permitting staff has committed to address the permitting discrepancies with the facilities. For clarification purposes, the following is a brief summary of typical attributes of the different control devices:

Flares

- Primary application: to burn gases capable of sustaining combustion (>300 Btu/scf)
- Waste stream routed directly to the burner
- Open or enclosed
- Enclosed flares feature vertical stack open to the atmosphere
- Ultra-~~L~~low-~~-~~NOx flares include:
    - Fuel pre-mixing
    - Combustion blowers
    - Temperature controls provided by actuated dampers

Thermal Oxidizers

- Primary application: to burn gases that cannot sustain combustion (<300 Btu/scf)
- Typical thermal oxidizer configurations include:
    - Horizontal combustion chamber followed by vertical stack
    - Combustion chamber not open to the atmosphere, need to maintain temperature
    - Combustion blowers
    - Temperature controls
    - Heat recovery

Afterburners

- Primary application: to burn gases that cannot sustain combustion (<300 Btu/scf)
- Fuel gas routed to burner, waste stream fed into chamber above the flame
- Typical afterburners include:
  - Enclosed vertical stack open to the atmosphere
  - Ground level

Incinerators

- Primary application: to combust organic substances contained in waste materials
- Waste material converted into ash, flue gas, and heat

Requirements (Subdivision (d))

PR1118.1 requires owners or operators that install a new flare or replaces or relocates an existing flare to meet the emission limits listed in Table 1 – Emission Limits of the proposed rule (see Table 9). The emission limits are based on staff's BARCT assessment, which reflects h the current BACT limits.

New flares installed at oil and gas production sites that have estimated annual emission of any of the following: four or more tons of ~~sulfur oxides~~SOx, VOCs, NOx, specific organics, particulate matter (PM); or 100 tons per year or more of CO will have further limitations. The throughput to flares that are replaced will be limited to 110 percent of the average throughput for the prior two calendar years immediately preceding the submittal of the permit for the flare being replaced. This proposed limitation is in response to concerns raised;~~,~~ staff considered various approaches to limit net increases in gases flared. Following flare replacement, flares would no longer be subject to the Table 2 – Annual Capacity Thresholds limiting routine flaring. The 110 percent limit; therefore, seeks to preclude a facility from installing a new flare and increasing the amount of gas flared from replaced flares at oil and gas production facilities. For new flares there is no prior flare throughput activity to establish a limit; therefore, staff is proposing a fixed throughput limit based on the average throughput from oil and gas production subject to PR1118.1 in 2015 and 2016. That average, 40 MMscf/year, would be given a one-time growth factor of approximately 10 percent to set a fixed limit of 45 MMscf/year for new flares that is not replacing an existing flare. Throughput associated with source tests or utility pipeline curtailment will not be included when calculating the throughput limitations above, provided the facility is able to provide documentation that substantiates the throughput sought to be excluded.

Table 9: PR1118.1's Table 1 – Emission Limits

Flare Gas	pounds/MMBtu		
	NOx	CO	VOC
Digester gas[1]:			
Major facility	0.025	0.06	0.038
Minor facility	0.06	N/A	N/A
Landfill gas	0.025	0.06	0.038
Produced gas	0.018	0.01	0.008
Other flare gas	0.06	N/A	N/A
Organic liquid handling:			
Organic liquid storage	0.25	0.37	N/A
	pounds/1,000 gallons loaded		
Organic liquid loading	0.034	0.05	N/A

1. Table 1 – Emission Limits shall continue to apply unless amended or otherwise superseded following a technology assessment, caused to be performed by the Executive Officer, to determine potential alternative limits appropriate for digester gas generated from food waste diverted from landfills.

In October, 2018, the Southern California Alliance of Publicly Owned Treatment Works (SCAP) informed SCAQMD of the potential increase of ammonia from thermophilic anaerobic digestion and the digestion of food wastes. Digester gas burned from these types of digesters may result in higher NOx emissions.[1] The data originated from northern California and shared through California Association of Sanitation Agencies (CASA).~~.~~ Both organizations urged SCAQMD to consider an updated emission limit once a determination is made whether ammonia concentrations will increase from digestion of food wastes or thermophili~~c~~ce digestion. Footnote 1 of Table 1 – Emission Limits, reflects this request and staff's response. Staff will include language in the Board Resolution committing to conduct a technology assessment and report back to the Stationary Source Committee within 12 months of rule adoption. Digestion of food waste is of particular concern, due to ~~Senate Bill~~SB 1383[2] which mandates food waste diversion from landfills to either composting or anaerobic digestion with the goal of beneficially using the biogas. It is anticipated that about 75 percent capacity of that waste diverted as part of ~~Senate Bill~~ SB 1383 will be diverted to existing wastewater treatment plants.

The new data presented by SCAP and CASA requires further studies and affects wastewater facilities throughout California, as the provisions of SB 1383 require the diversion of food wastes to either anaerobic digesters or composting. The SCAQMD will work with the waste water industry, California Air Pollution Control Officers Association (CAPCOA), and applicable state

[1] "Ammonia in Biogas/Digester Gas: Fuel-born NOx Emissions at Flares SCAQMD PR1118.1," Black & Veatch Presentation at SCAQMD (October 2018)
[2] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383

agencies to assess this potential issue. Facilities with existing flares may demonstrate compliance with the emission limits contained in Table 1 – Emission Limits by performing a source test or by submitting a prior source test that meets specified criteria. Demonstrating compliance with Table 1 – Emission Limits pursuant to a source test must be repeated every five years.

PR1118.1 establishes capacity thresholds (see Table 10) to identify routine flaring that will apply to existing flares that cannot demonstrate compliance with Table 1 – Emission Limits. Facilities will be required to monitor flare throughput on a monthly basis. At the end of each calendar year, the facility must determine if the percent capacity is greater than the PR1118.1 Table 2 – Annual Capacity Thresholds. If a flare has an annual percent capacity that is greater than the applicable capacity threshold for two consecutive years, the facility must decide to reduce its throughput to below the capacity thresholds, e.g., through a beneficial use project, or replace the equipment with a flare that meets PR1118.1 Table 1 – Emission Limits.

Table 10: PR1118.1's Table 2 – Annual Capacity Thresholds

Flare Gas	Threshold
Any gas combusted in an open flare	5%
Digester gas	70%
Landfill gas	20%
Produced gas	5%

Subdivision (d) also contains the compliance schedule for flares that have an annual percent capacity that is greater than the capacity threshold for two consecutive years. The schedule allows additional time for flare throughput reduction, as one objective of the rule is to encourage alternatives to flaring.

To comply with the tiered schedule and alert SCAQMD staff as to the facility's activity, status, compliance option, increment of progress, etc., the following new forms have been developed and draft versions provided in the Appendix to this Staff Report:

- Notification of Flare Inventory and Capacity
- Notification of Annual Percent Capacity Greater Than Threshold
- Notification of Intent
- Notification of Flare Throughput Reduction
- Notification of Increments of Progress

All ~~but~~ the notifications other than the Notification of Flare Inventory and Capacity would be subject to the administrative fee pursuant to Rule 301(x) – Permitting and Associated Fees and the forms will be available on the SCAQMD website. Staff will amend Rule 301 to include a reference to Rule 1118.1. The next amendment to Rule 301(x) will occur prior to July 2019, other than the Notification of Flare Inventory and Capacity, all other notification in PR1118.1 will occur after January 30, 2020. Therefore, all but one notification fee can be included in Rule 301(x) before any notification would be required by the Rule1118.1. There will be no fee for the one-time Notification of Flare Inventory and Capacity.

PR1118.1 includes an initial Notification of Flare Inventory and Capacity which must be submitted within 30 days of rule adoption *(See draft notification form in Appendix page B-1)*. As stated above, there will be no fee associated with this form as Rule 301 will not be amended to include Rule 1118.1 prior to the due date of the form. This notification will be a one-page form for the facility to fill out and submit. It will contain a list of flares at the facility, the permit number, the date of installation, type of gas combusted, maximum rated capacity of each flare, the description of flow meter, information from the manufacturer's nameplate, and the date of the last source test. This information is critical for rule implementation and enforcement. The affected facilities will be required to submit a signed, hardcopy of the Notification of Flare Inventory and Capacity to the SCAQMD because there is not adequate time to develop an approvable electronic system for the notification submittal. Staff will work to provide an option for facilities to electronically submit the subsequent notifications.

Each year any facility that has an annual percent capacity greater than the applicable capacity threshold has to submit a Notification of Annual Percent Capacity Greater Than Capacity Threshold to the SCAQMD within 30 days from the end of the second consecutive calendar year the annual percent capacity is greater than the applicable capacity threshold *(See draft notification form in Appendix page B-12)*. The notification will alert staff in Planning, Engineering, and Enforcement. It will be a violation if the facility's flare percent capacity is greater than the capacity threshold and the facility does not submit the notification. If a flare has an annual percent capacity greater than the applicable capacity threshold for two consecutive years, the facility has 60 days to submit a Notification of Intent to inform the SCAQMD if the facility will pursue flare throughput reduction or flare replacement *(See draft notification form in Appendix page B-3)*. All notifications other than the notification of flare inventory and capacity will be subject to notification fees pursuant to Rule 301(x) – Permitting and Associated Fees and Notification Forms will be available on the SCAQMD website.

If pursuing flare replacement, the ~~a~~ facility must submit a flare permit application within six months, Publicly-Owned Facilities have one year, from the end of the second consecutive calendar year the annual percent capacity ~~–~~is greater than the applicable capacity threshold~~ for two consecutive years,~~. The permit submission must follow~~ing~~ standard SCAQMD permit application ~~submittal~~ requirements (e.g., fees). The facility has 18 months to install the flare after the SCAQMD permit was issued, with a potential 12 month extension upon Executive Officer approval. Approval of a time extension will be based on the submission containing sufficient details justifying the basis for the request, and demonstrating that the specific circumstances necessitate the additional time, such as providing detailed schedules, engineering designs, construction plans, permit applications, purchase orders, economic burden, and technical infeasibility.

If pursuing flare throughput reduction, the facility must submit a Notification of Flare Throughput Reduction within six months;~~,~~ Publicly-Owned Facilities have one year, from the end of the second consecutive calendar year the annual percent capacity~~ that~~ is greater than the applicable capacity threshold (*see draft notification form in Appendix page B-4)*. The notification will include the following information:

- Alternative method(s) to reduce flaring below threshold and timetable to implement. This should include a detailed description of the beneficial use project including flare gas

recovery, such as energy production, transportation fuels or production of Renewable Natural Gas.

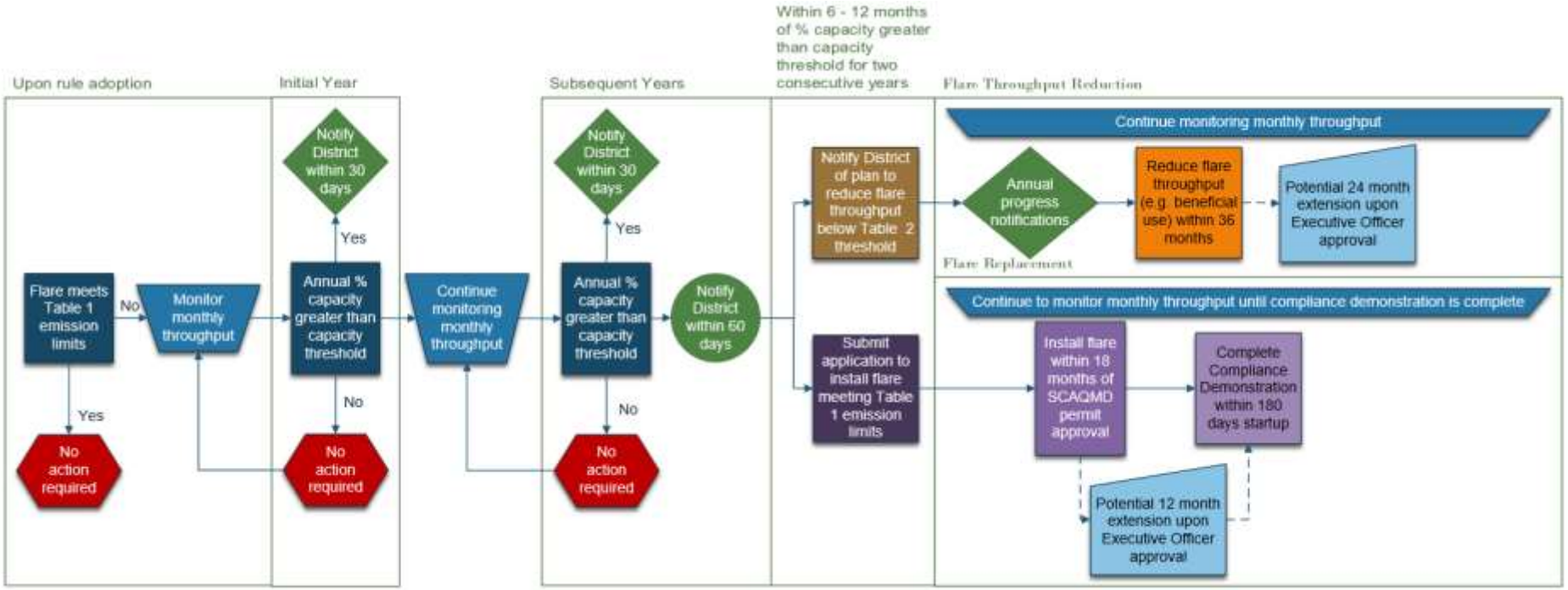
- Annually the facility shall report to the SCAQMD on the progress achieving the flare reduction.

The facility has 36 months from the second consecutive year the flare surpassed the capacity threshold to reduce flare throughput below the threshold, with a potential 12 month extension upon Executive Officer approval. Notifications of Increments of Progress, documenting actions taken to reduce flare throughput or incorporate flare gas reduction, will have to be submitted every 12 months from the end of the second consecutive year the annual percent capacity is greater than the applicable capacity threshold *(See draft notification form in Appendix page B-5).* PR1118.1 includes an extension provision that allows for one 24-month extension upon Executive Officer approval. Approval of a time extension will be based on the submission containing sufficient details justifying the basis for the request, and demonstrating that the specific circumstances necessitate the additional time, such as providing detailed schedules, engineering designs, construction plans, permit applications, purchase orders, economic burden, and technical infeasibility. If a facility cannot achieve that deadline, they have the option to seek a variance from the SCAQMD Hearing Board, an independent administrative law panel, for any further extensions.

PR1118.1 also includes a change of compliance pathway provision. This provision will provide flexibility if a facility chooses either flare replacement or throughput reduction but during the execution of the project decides to pursue the other compliance pathway. This will only be allowed one time and the deadline for project completion will be within 36 month from the end of the second consecutive calendar year the annual percent capacity is greater than the applicable capacity threshold. The extension provision will not apply if a facility changes the compliance pathway; however, a facility could seek relief from the Hearing Board.

The following flowcharts demonstrate the rule requirements:

Figure 8: PR1118.1 Requirements



Extension Provision (Subdivision (e))

An owner or operator may submit a request to the Executive Officer at least 60 days prior to the scheduled deadline to complete either the flare throughput reduction or flare replacement. The Executive Office will review the requests and approve or reject based on information included in the request. The owner or operator can request one 12-month extension if pursuing flare replacement and one 24-month extension if pursuing flare throughput reduction. This provision is not available to a facility that elects to change pathways pursuant to paragraph (d)(6).

Source Tests (Subdivision (f))

PR1118.1 contains source test requirements to ensure flares meet emission or exemption limits and must be conducted using SCAQMD test protocols and standardized methodology. Source tests are only required in PR1118.1 for flares complying with the emission limits in Table 1 – Emission Limits or are demonstrating they meet the 30 pound NOx emissions per month exemption in subparagraph (h)(2)(A). Source tests are required to be conducted within 12-months of rule adoption for existing flares and according to the conditions in the permit to construct a new flare, and then at least once every five years thereafter. Source testing protocols must be approved by the SCAQMD at least 90 days prior to the source test. Approved source test protocols do not have to be resubmitted once approved. Source tests conducted prior to rule adoption may be allowed to satisfy the source test requirements upon SCAQMD approval.

The following test methods must be used to determine the NOx, VOC, and CO concentrations:

- SCAQMD Method 100.1 – Instrumental Analyzer Procedures for Continuous Gaseous Emission Sampling for NOx and CO concentrations, and
- SCAQMD Method 25.1 or 25.3 – Determination of VOC Emissions from Stationary Sources for VOC concentration.

The gas composition shall be determined according to the following methods:

- ASTM Method D-3588 – Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels;
- ASTM D1945 – Standard Test Method for Analysis of Natural Gas by Gas Chromatography; or
- ASTM D7833 – Standard Test Method for Determination of Hydrocarbons and Non-Hydrocarbon Gases in Gaseous Mixtures by Gas Chromatography.

Monitoring, Recordkeeping, and Reporting Requirements (Subdivision (g))

The Monitoring, Recordkeeping, and Reporting Requirements (MRR) of subdivision (g) are divided into two sections, the first section addresses how facilities must comply with the capacity threshold provision and the second section contains general MRR requirements. For the percent capacity determination, facilities must install fuel meters and monitor the throughput to the flare or flare stations monthly. Monthly throughput records must be maintained and can be recorded in either units of volume (MMscf/hour) *(See Appendix page B-6)* or heat input (MMBtu/hour) *(See Appendix page B-7)*. Either metric, not both, can be used for monthly throughput determinations, but the same metric must be used throughout the calendar year. The following shows the percent capacity calculations by both volume and heat input:

Figure 9: Percent Capacity Calculations

By volume:

$$Percent\ Capacity_{MMscf} = \frac{Total\ Annual\ Throughput\ \left(\frac{MMscf}{year}\right) \Big/ x\ \frac{hour}{year}}{\text{Capacity (MMscf/hour)}}\ x\ 100\%$$

By heat input:

$$Percent\ Capacity_{MMBtu} = \frac{Total\ Annual\ Heat\ Input\ \left(\frac{MMBtu}{year}\right) \Big/ x\ \frac{hour}{year}}{\text{Capacity (MMBtu/hour)}}\ x\ 100\%$$

x = the time period in hours/year that records are required to be maintained and recorded.

Exemptions (Subdivision (h))

PR1118.1 exempts flares subject to other SCAQMD rules including:

- Flares subject to Rule 1118 - Control of Emissions from Refinery Flares and flares that are anticipated to be subject to Proposed Rule 1109.1. This includes all flares located at asphalt plants; biodiesel plants; hydrogen production plants fueled in part with refinery gas; petroleum refineries, and sulfur recovery plants, and hydrogen production plants, and
- Rule 1147 where only natural gas is routed directly to the burner.

PR1118.1 also has low-use exemptions, including flares:

- At landfills that ~~that~~ generate less than 2,000 MMscf/year and have either ceased accepting waste or is classified by California Department of Resources Recycling and Recovery as an Inert Waste Disposal Site or an Asbestos Contaminated Waste Disposal Site. These landfills have declining gas quality and quantity, so installing a new flare is not reasonable.
- That emit less than 30 pounds of NOx each calendar month. In the event the flares exceed this limit, it will be subject to the provisions of subdivision (d), or
- That are used 200 hours or less per calendar year, or the fuel use equivalent to 200 hours per calendar year. In the event the flares exceed this limit, it will be subject to the provisions of subdivision (d)

PR1118.1 also includes the following exemptions:

- Flares with a various locations permit as these flares can serve as a temporary solution to new operations not producing the quantity or quality to meet the proposed emission limits.
- Flares combusting regeneration gas. Regeneration gas is produced when impurities are being removed from landfill or digester gas. The gas clean up system usually employs two catalyst beds to clean the gas, one catalyst bed is actively cleaning the biogas while

the other catalyst bed is being regenerated. The gas used to clean/regenerate the catalyst cannot be used beneficially and is directed to a small flare. These flares only exist at facilities engaging in a beneficial use projects such as power generation. In the spirit of encouraging beneficial use, these flares will be exempt. However, these flares are only exempt when combusting regeneration gas. Most regeneration flares are fueled with biogas to maintain the flame and the regeneration gas is routed in above the flare. If there is no regeneration gas being combusted and the flare is solely combusting biogas, the flare will be subject to the rule requirements.

- Flares where only butane or propane, or a combination of butane and propane, is routed directly into the burner.
- Open flares are exempt from the source test requirements since they cannot be source tested.
- The throughput, heat input, NOx emission, and time accrued during source testing does not have to be included in the percent capacity, the 30 pounds/month, or 200 hour calculations.

POTENTIALLY IMPACTED FACILITIES

There are ~~154~~153 facilities and ~~296~~295 flares that are potentially applicable to Proposed Rule 1118.1. These facilities were identified in SCAQMD permitting and AER systems as operating a flare; however, the list may not include those facilities permitted as an afterburner or thermal oxidizer yet meet the PR1118.1 definition of a flare. Thus, this list may not be all inclusive. Of the ~~154~~ 153 facilities, ~~21~~20 facilities are currently in the NOx RECLAIM program. Staff identified 16 facilities and ~~25~~ 23 flares that potentially will be required to take action as their current flare activity surpasses the applicable capacity threshold. Of those 16 facilities, one is currently in the NOx RECLAIM program. The following is the list of potentially impacted flares:

Table 11: Existing Flares that Surpass the Proposed Capacity Threshold Based on 2015 – 2017 Throughput

	Facility ID	Facility Name	Gas Flared	Number of Flares Impacted
1	150400	BREITBURN OPERATING L.P.	Produced gas	1
2	150209	BREITBURN OPERATING L.P.	Produced gas	1
3	150201	BREITBURN OPERATING L.P.	Produced gas	1
4	172872	BREITBURN OPERATING L.P.	Produced gas	1
5	119219	CHIQUITA CANYON LLC	Landfill Gas	1
6	139865	CITY OF BURBANK WATER AND POWER	Landfill Gas	1
7	13662	CITY OF WHITTIER LANDFILL	Landfill Gas	1
8	9163	INLAND EMPIRE UTILITIES AGENCY	Digester Gas	1
9	45262	LA COUNTY SANITATION DISTRICT - SCHOLL CANYON	Landfill Gas	4

	Facility ID	Facility Name	Gas Flared	Number of Flares Impacted
10	69646	ORANGE COUNTY WASTE & RECYCLING - FRANK R. BOWERMAN	Landfill Gas	3
11	52753	ORANGE COUNTY WASTE & RECYCLING - PRIMA DESHECHA	Landfill Gas	1
12	74413	REDLANDS CITY - CALIFORNIA STREET LANDFILL	Landfill Gas	1
13	156312	ROSECRANS ENERGY	Produced gas	1
14	7068	SAN BERNARDINO COUNTY SOLID WASTE MANAGEMENT	Landfill Gas	2
15	50299	SAN BERNARDINO COUNTY SOLID WASTE MANAGEMENT - MID VALLEY	Landfill Gas	2
16	49111	SUNSHINE CANYON LANDFILL	Landfill Gas	1
			Total Flares	~~25~~23

The following is the list of facilities identified as having non-refinery flares in the SCAQMD.

Table 12: Facilities with Non-Refinery Flares in the SCAQMD

	Facility ID	Facility Name	# of Flares	Gas Flared
1	16642	ANHEUSER-BUSCH LLC., (LA BREWERY)	1	Digester Gas
2	89186	COCA-COLA	1	Digester Gas
3	13596	COLTON CITY WASTEWATER	1	Digester Gas
4	2537	CORONA CITY, DEPT OF WATER & POWER	1	Digester Gas
5	109608	CR & R INC	1	Digester Gas
6	7417	EASTERN MUNICIPAL WATER DIST	1	Digester Gas
7	19159	EASTERN MUNICIPAL WATER DIST	1	Digester Gas
8	10983	EASTERN MUNICIPAL WATER DIST.	1	Digester Gas
9	1703	EASTERN MUNICIPAL WATER DISTRICT	1	Digester Gas
10	13088	EASTERN MUNICIPAL WATER DISTRICT	2	Digester Gas
11	147371	INLAND EMPIRE UTILITIES AGENCY	1	Digester Gas
12	9163	INLAND EMPIRE UTL AGEN, A MUN WATER DIS	1	Digester Gas
13	1179	INLAND EMPIRE UTL AGEN, A MUN WATER DIS	1	Digester Gas
14	22674	L.A. COUNTY SANITATION DIST VALENCIA PLT	3	Digester Gas

	Facility ID	Facility Name	# of Flares	Gas Flared
15	800214	LA CITY, SANITATION BUREAU (HTP)	6	Digester Gas
16	10245	LA CITY, TERMINAL ISLAND TREATMENT PLANT	2	Digester Gas
17	800236	LA CO. SANITATION DIST	12	Digester Gas
18	94009	LAS VIRGENES WATER DIST.	3	Digester Gas
19	155877	MILLERCOORS, LLC	1	Digester Gas
20	17301	ORANGE COUNTY SANITATION DISTRICT	3	Digester Gas
21	29110	ORANGE COUNTY SANITATION DISTRICT	3	Digester Gas
22	14898	PALM SPRINGS WASTEWATER	1	Digester Gas
23	20604	RALPHS GROCERY CO	1	Digester Gas
24	12923	RIALTO CITY	1	Digester Gas
25	9961	RIVERSIDE CITY, WATER QUALITY CONTROL	3	Digester Gas
26	11301	SAN BERNARDINO CITY MUN WATER DEPT (WRP)	1	Digester Gas
27	20237	SAN CLEMENTE CITY, WASTEWATER DIV	1	Digester Gas
28	51304	SANTA MARGARITA WATER DIST	1	Digester Gas
29	181040	SANTA MARGARITA WATER DIST	1	Digester Gas
30	13433	SO ORANGE CO WASTEWATER AUTHORITY-RTP	2	Digester Gas
31	3866	SO ORANGE CO. WASTEWATER AUTHORITY	1	Digester Gas
32	10198	VALLEY SANITARY DIST	1	Digester Gas
33	150667	VENTURA FOODS	1	Digester Gas
34	20561	WATSON LAND COMPANY	1	Digester Gas
35	118526	WESTERN MUNICIPAL WATER DIST.	1	Digester Gas
36	50402	YUCAIPA VALLEY WATER DISTRICT	1	Digester Gas
37	140373	AMERESCO CHIQUITA ENERGY LLC	1	Landfill Gas
38	173846	AZUSA LAND RECLAMATION,INC	1	Landfill Gas
39	113518	BREA PARENT 2007,LLC	1	Landfill Gas
40	119219	CHIQUITA CANYON LLC	2	Landfill Gas
41	139865	CITY OF BURBANK/WATER AND POWER	1	Landfill Gas
42	42086	CITY OF UPLAND LANDFILL	1	Landfill Gas
43	13662	CITY OF WHITTIER LANDFILL	1	Landfill Gas
44	45262	LA COUNTY SANITATION DIST SCHOLL CANYON	12	Landfill Gas
45	42514	LA COUNTY SANITATION DIST (CALABASAS)	9	Landfill Gas

	Facility ID	Facility Name	# of Flares	Gas Flared
46	50418	O C WASTE & RECYCLING, OLINDA ALPHA	2	Landfill Gas
47	69646	OC WASTE & RECYCLING, FRB	5	Landfill Gas
48	52753	OC WASTE & RECYCLING, PRIMA DESHECHA	1	Landfill Gas
49	74413	REDLANDS CITY (CALIFORNIA ST LANDFILL)	1	Landfill Gas
50	15793	RIV CO, WASTE RESOURCES MGMT DIST, LAMB	1	Landfill Gas
51	6979	RIV CO., WASTE MGMT, BADLANDS LANDFILL	2	Landfill Gas
52	7068	SAN BER CNTY SOLID WASTE MGMT	2	Landfill Gas
53	50299	SAN BER CNTY SOLID WASTE MGMT MID VALLEY	3	Landfill Gas
54	49111	SUNSHINE CANYON LANDFILL	4	Landfill Gas
55	139938	SUNSHINE GAS PRODUCERS LLC	1	Landfill Gas
56	113674	U S A WASTE OF CAL(EL SOBRANTE LANDFILL)	1	Landfill Gas
57	800209	BKK CORP (EIS USE)	10	Landfill Gas (closed)
58	3530	CALMAT PROPERTIES CO (HEWITT PIT LANDFIL	1	Landfill Gas (closed)
59	183607	CARSON RECLAM -TETRATECH	2	Landfill Gas (closed)
60	181904	CHANDLER'S RECYCLING	1	Landfill Gas (closed)
61	57769	CITY OF RIVERSIDE (TEQUESQUITE LANDFILL)	2	Landfill Gas (closed)
62	135369	CORONA DWP LANDFILL	1	Landfill Gas (closed)
63	176967	COYOTE CANYON ENERGY LLC	2	Landfill Gas (closed)
64	145144	ENI OIL & GAS	1	Landfill Gas (closed)
65	79324	HIGHGROVE LANDFILL	1	Landfill Gas (closed)
66	77033	INDUSTRY CITY,CIVIC RECREATIONAL IND AUT	1	Landfill Gas (closed)
67	49805	LA CITY, BUREAU OF SANIT(LOPEZ CANYON)	7	Landfill Gas (closed)
68	42949	LA CITY, PUB WKS DEPT, SANITATION BUREAU	2	Landfill Gas (closed)
69	95566	LA CITY, TOYON CANYON LANDFILL	1	Landfill Gas (closed)
70	24520	LA CNTY SANITATION DISTRICT-PALOS VERDES	8	Landfill Gas (closed)
71	25070	LA CNTY SANITATION DISTRICT-PUENTE HILLS	26	Landfill Gas (closed)
72	42633	LA COUNTY SANITATION DISTRICTS (SPADRA)	6	Landfill Gas (closed)
73	21189	LACO SAN DISTRICT - MISSION CYN	2	Landfill Gas (closed)
74	60384	LOS ANGELES BY-PRODUCTS	2	Landfill Gas (closed)

	Facility ID	Facility Name	# of Flares	Gas Flared
75	104086	MM LOPEZ ENERGY LLC	1	Landfill Gas (closed)
76	84157	MONTEBELLO CITY	1	Landfill Gas (closed)
77	35102	MOUNTAIN GATE COUNTRY CLUB	1	Landfill Gas (closed)
78	106164	OC WASTE - VILLA PARK	1	Landfill Gas (closed)
79	181426	OC WASTE & RECYCLING, COYOTE	3	Landfill Gas (closed)
80	52743	OC WASTE & RECYCLING, SANTIAGO	3	Landfill Gas (closed)
81	53860	PICK YOUR PART AUTO WRECKING	1	Landfill Gas (closed)
82	68609	PICK YOUR PART AUTO WRECKING	1	Landfill Gas (closed)
83	60302	RIV CO WASTE MGMT (EDOM HILL)	1	Landfill Gas (closed)
84	11434	RIV. CO. WASTE RES. MGR. DBL BUT.	1	Landfill Gas (closed)
85	60315	RIVERSIDE CO - COACHELLA	1	Landfill Gas (closed)
86	5112	RIVERSIDE CO. - MEAD VALLEY	1	Landfill Gas (closed)
87	73884	RIVERSIDE CO. WASTE - ELSINORE	1	Landfill Gas (closed)
88	135173	RIVERSIDE CO. WASTE MGT.	1	Landfill Gas (closed)
89	50297	RIVERSIDE COUNTY WASTE MANAGEMENT	1	Landfill Gas (closed)
90	165241	RIVERSIDE COUNTY, CORONA	1	Landfill Gas (closed)
91	58044	SAN BER CNTY SOLID WASTE MGMT - COLTON	2	Landfill Gas (closed)
92	7371	SAN BER CNTY SOLID WASTE MGMT-MILLIKEN	2	Landfill Gas (closed)
93	7699	SYUFY ENT.	1	Landfill Gas (closed)
94	50310	WASTE MGMT DISP &RECY SERVS INC (BRADLEY	2	Landfill Gas (closed)
95	14914	CAL CARBON	1	Other Flaring
96	11245	HOAG HOSPITAL	1	Other Flaring
97	42630	PRAXAIR	1	Other Flaring
98	108742	REMO INC	1	Other Flaring
99	176823	RIALTO BIOENERGY FACILITY, LLC	1	Other Flaring
100	5973	SO CAL GAS CO	1	Other Flaring
101	8582	SO CAL GAS CO	1	Other Flaring
102	800127	SO CAL GAS CO	2	Other Flaring
103	800128	SO CAL GAS CO	2	Other Flaring
104	169754	SO CAL HOLDING, LLC	1	Other Flaring
105	158910	RANCHO LPG HOLDINGS, LLC	1	Other Flaring - Butane
106	44454	STRUCTURAL COMPOSITES IND	1	Other Flaring - Butane
107	12332	GATX CORPORATION	2	Other Flaring - Propane
108	11998	GOODRICH CORPORATION	1	Other Flaring - Propane
109	88359	ALAMITOS COMPANY	1	Produced Gas

	Facility ID	Facility Name	# of Flares	Gas Flared
101	54349	ANGUS PETROLEUM	1	Produced Gas
111	166073	BETA OFFSHORE	2	Produced Gas
112	107551	BOLSA LEASE	1	Produced Gas
113	120098	BREITBURN ENERGY CO.	1	Produced Gas
114	150209	BREITBURN OPERATING L.P.	1	Produced Gas
115	150400	BREITBURN OPERATING L.P.	1	Produced Gas
116	150201	BREITBURN OPERATING LP	3	Produced Gas
117	151539	BREITBURN OPERATING LP	1	Produced Gas
118	172872	BREITBURN OPERATING LP	1	Produced Gas
119	174544	BREITBURN OPERATING LP	2	Produced Gas
120	185578	BRIDGE ENERGY, LLC	1	Produced Gas
121	103480	BRIDGEMARK CORPORATION	1	Produced Gas
122	148894	CALIFORNIA RESOURCES PRODUCTION CORP	1	Produced gas
123	151899	CALIFORNIA RESOURCES PRODUCTION CORP	1	Produced gas
124	109719	COOK ENERGY, INC. KERN LEASE	1	Produced gas
125	143741	DCOR LLC	1	Produced gas
126	175154	FREEPORT-MCMORAN OIL & GAS	1	Produced gas
127	175191	FREEPORT-MCMORAN OIL & GAS	2	Produced gas
128	124723	GREKA OIL & GAS	1	Produced gas
129	13627	HILLCREST BEVERLY	1	Produced gas
130	151532	LINN OPERATING, INC	4	Produced gas
131	131425	MATRIX OIL CORPORATION - RIDEOUT HEIGHTS	2	Produced gas
132	165900	PROS INCORPORATED	2	Produced gas
133	156312	ROSECRANS ENERGY	1	Produced gas
134	184301	SENTINEL PEAK RESOURCES LLC	2	Produced gas
135	45086	SIGNAL HILL PETROLEUM INC	1	Produced gas
136	166595	SO CAL HOLDING, LLC	1	Produced gas
137	83509	THE TERMO CO	1	Produced gas
138	800330	THUMS LONG BEACH	1	Produced gas
139	800325	TIDELANDS OIL PRODUCTION CO	1	Produced gas
140	68112	TIDELANDS OIL PRODUCTION COMPANY, ETAL	1	Produced gas
141	106844	VINTAGE PRODUCTION CALIFORNIA	1	Produced gas
142	144681	WARREN E & P, INC.	2	Produced gas
143	149027	WARREN E & P, INC.	2	Produced gas
144	86463	WEAVER & MOLA DEVELOPMENT (BRINDLE AND THOMAS	1	Produced gas

	Facility ID	Facility Name	# of Flares	Gas Flared
145	800022	CALNEV PIPE LINE, LLC, COLTON STATION	1	Organic Liquid Handling
146	800372	EQUILON	1	Organic Liquid Handling
~~**147**~~	~~124808~~	~~INEOS POLYPROPYLENE~~		~~Organic Liquid Handling~~
~~**148**~~**147**	800057	KINDER MORGAN LIQUIDS TERMINALS, LLC CARSON TERMINAL	1	Organic Liquid Handling
~~**149**~~**148**	800056	KINDER MORGAN LIQUIDS TERMINALS, LLC LA HARBOR TERMINAL	1	Organic Liquid Handling
~~**150**~~**149**	800129	SFPP, L.P. Colton Terminal	1	Organic Liquid Handling
~~**151**~~**150**	800279	SFPP, L.P. Orange Terminal	1	Organic Liquid Handling
~~**152**~~**151**	800278	SFPP, L.P. Watson Station	1	Organic Liquid Handling
~~**153**~~**152**	176377	TESORO LOGISTICS MARINE TERMINAL 2	1	Organic Liquid Handling
~~**154**~~**153**	137722	VOPAK TERMINAL LONG BEACH INC,A DELAWARE	1	Organic Liquid Handling
		Total	~~296~~295	

EMISSION INVENTORY AND EMISSION REDUCTIONS

Staff estimates the current NOx emission inventory for non-refinery flares to be approximately one ton per day. The emission inventory was estimated using a three-year average flare throughput and the NOx permit limit. The three-year average throughput was to address year-to-year variations and staff used 2015 – 2017 as it is the most recent and complete verifiable dataset available. The throughput was obtained through data reported by the facilities in their Annual Emission Reports (AER). If AER data was not available, staff relied on Rule 1150.1 Annual Reports which contained throughput data for landfills. Staff also conducted outreach to the flare owners to obtain missing data points. For some flares, throughput information was not available so staff did not include any emissions from those facilities in the inventory; thus, the inventory is likely under estimated. In addition, as discussed earlier, the emissions from oil and gas production have been much higher in the past due to production levels and price of barrel. Further, some old permits did not include NOx limits for flares. In those cases, staff defaulted shrouded flares to 0.06 pounds/MMBtu, the BACT limit from 1988, and open flares to 0.068 pounds/MMBtu, based on the default limit in Rule 1118. To convert the throughput, reported in Million Standard Cubic Feet (MMscf), to MMBtu, staff used the following default heating values:

Table 13: Default Heating Values

Flare Gas	Heating Value (Btu/scf)
Digester Gas	600
Produced Gas	1,000
Landfill Gas	
Open Landfill	500
Closed Landfill	400
Other Flaring	900

Staff determined the VOC inventory based on the emissions reported in AER, using a two year average from 2015 and 2016 (2017 data was not available). The estimated inventory is 0.45 ~~tpd~~ tons per day and the emission reductions are approximately 0.014 ~~tpd~~tons per day.

To determine the potential emission reductions, staff determined which flares surpass the PR1118.1 Table 2 – Annual Capacity Thresholds in. For each flare, staff determined:

- Maximum rated capacity based on permit descriptions (scf/minute or MMBtu/hr),
- Throughput or heat capacity based on the three-year throughput data and default Btu values, and
- Percent capacity.

For flares that surpass the proposed capacity thresholds, staff calculated the emission reduction if the flare was replaced with an ultra-low-~~-~~NOx flare meeting the PR118.1. Table 1 – Emission Limits. Staff excluded flares that already meet the emission limits and flares eligible for the exemptions (e.g., flares at closed landfills generating less than 2,000 MMscf/year, low-use flares or low-emitting flares). Staff estimates there will be ~~28~~23 affected flares that will need to take action generating approximately 0.18 tons of NOx reduced per day. These reductions are an underestimation, since it assumes the continuance of flaring, however, more reductions are achieved if all the gas is handled beneficially and without NOx emissions. The following table estimates the emissions reductions per source category:

Table 14: Emission Reductions by Source Category

Gas Flared	Number of Affected Flares	NOx Reductions (tpd)	VOC Reductions (tpd)
Produced Gas	5	0.012	0.0015
Landfill Gas	19	0.16	0.012
Digester Gas	1	0.007	0.0004
TOTAL	**23**	**0.18**	**0.014**

INCREMENTAL COST-EFFECTIVENESS

Health and Safety Code Section 40920.6 requires an incremental cost-effectiveness analysis for BARCT rules or emission reduction strategies when there is more than one control option which would achieve the emission reduction objective of the proposed amendments, relative to ozone, CO, ~~sulfur oxides~~SOx, ~~oxides of nitrogen~~NOx, and their precursors. Incremental cost-effectiveness is the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control options as compared to the next less expensive control option.

Incremental cost-effectiveness is calculated as follows:

Incremental cost-effectiveness = $(C_{alt} - C_{proposed}) / (E_{alt} - E_{proposed})$

Where:

$C_{proposed}$ is the present worth value of the proposed control option;
$E_{proposed}$ are the emission reductions of the proposed control option;
C_{alt} is the present worth value of the alternative control option; and
E_{alt} are the emission reductions of the alternative control option

PR1118.1 only requires flares that surpass the Table 2 Annual Capacity Threshold to be replaced or for flare throughput be reduced. The progressively more stringent control option is to require all flares emitting higher than the Table 1 – Emission Limits to be replaced if they do not meet any of the proposed exemptions.

Produced Gas

The proposed control option will impact five flares at oil production sites, ~~will~~ cost a total of $4,967,840, and achieve 113 tons of NOx emission reduction over the estimated 25 year life of the flares. The progressively more stringent control option would impact approximately 28 ~~landfill~~ flares at oil production sites, would cost a total of $27,819,902, and achieve 272 tons of NOx emission reduction over the 25 year life of the flares. The incremental cost-effectiveness for replacing all higher emitting flares is $143,927 per ton of NOx reduced as calculated below.

Incremental cost-effectiveness = ($27,819,902 – $4,967,840) / (272 – 113) = $143,927 per ton of NOx reduced. Thus, the progressively more stringent control option was not chosen.

Landfills

The proposed control option will impact 19 landfill flares, ~~will~~ cost a total of $80,770,898, and achieve 1,627 tons of NOx emission reduction over the 25 year life of the flares. The progressively more stringent control option would impact approximately 34 landfill flares, would cost a total of $144,537,397, and achieve 1,916 tons of NOx emission reduction over the 25 year life of the flares. The incremental cost-effectiveness for replacing all higher emitting flares is $220,445 per ton of NOx reduced as calculated below.

Incremental cost-effectiveness = ($144,537,397 – $80,770,898) / (1,916 – 1,627) = $220,445 per ton of NOx reduced. Thus, the progressively more stringent control option was not chosen.

Wastewater Treatment Plants and Digesters

The proposed control option will impact ~~1~~ one flare combusting digester gas, ~~will~~ cost a total of $1,927,674, and achieve 64 tons of NOx emission reduction over the 25 year life of the flares. The progressively more stringent control option would impact approximately 45 ~~landfill~~ flares that combust digester gas, ~~would~~ cost a total of $86,745,335, and achieve 401 tons of NOx emission reduction over the 25 year life of the flares. The incremental cost-effectiveness for replacing all higher emitting flares is $251,218 per ton of NOx reduced as calculated below.

Incremental cost-effectiveness = ($86,745,335 – $1,927,674) / (401 – 64) = $251,218 per ton of NOx reduced. Thus, the progressively more stringent control option was not chosen.

Chapter 4

RULE ADOPTION RELATIVE TO COST-EFFECTIVENESS

On October 14, 1994, the Governing Board adopted a resolution that requires staff to address whether rules being proposed for amendment are considered in the order of cost-effectiveness. The 2016 Air Quality Management Plan (AQMP) ranked, in the order of cost-effectiveness, all of the control measures for which costs were quantified. It is generally recommended that the most cost-effective actions be taken first. Proposed Rule 1118.1 implements Control Measure CMB-03 and CMB-05. The 2016 AQMP ranked Control Measure CMB-03 ninth and CMB-05 sixth in cost-effectiveness. Further, proposed PR1118.1 has been designed to consider the cost-effectiveness triggering action on behalf of the affected facility.

SOCIOECONOMIC ASSESSMENT

A Draft Socioeconomic Impact Assessment is prepared and it is scheduled to be released on December 5th, 2018 prior to the SCAQMD Governing Board Hearing on PR1118.1, which is anticipated to be heard on January 4th, 2019.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

PR1118.1 is considered a "project" as defined by the California Environmental Quality Act (CEQA) and the SCAQMD is the designated lead agency. Pursuant to SCAQMD's Certified Regulatory Program (CEQA Guidelines Section 15251(l); codified in SCAQMD Rule 110) and CEQA Guidelines Section 15070, the SCAQMD has prepared an Environmental Assessment (EA) for PR1118.1, which is a substitute CEQA document, prepared in lieu of a Negative Declaration with no significant impacts. The EA is a public disclosure document intended to: 1) provide the lead agency, responsible agencies, decision makers and the general public with information on the environmental impacts of the proposed project; and 2) be used as a tool by decision makers to facilitate decision making on the proposed project.

The environmental analysis in the Draft EA concluded that PR1118.1 would not generate any significant adverse environmental impacts. Because PR1118.1 is not expected to have statewide, regional, or area-wide significance, a CEQA scoping meeting was not required pursuant to Public Resources Code Section 21083.9(a)(2). Further, since no significant adverse impacts were identified, an alternatives analysis and mitigation measures were not required pursuant to CEQA Guidelines Section 15252(a)(2)(B). The Draft EA was released for a 32-day public review and comment period from October 26, 2018 to November 27, 2018, and three~~two~~ comment letters were received during the public comment period on the analysis presented in the Draft EA. Responses to the letters have been prepared and are included in Appendix E to the Final EA.

The Final EA has been included as an attachment to the Governing Board package. Prior to making a decision on the adoption of PR1118.1, the SCAQMD Governing Board must review and certify the Final EA, including responses to comments, as providing adequate information on the potential adverse environmental impacts that may occur as a result of adopting PR1118.1.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings

California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing, and in the staff report.

Necessity

Proposed Rule 11118.1 is needed to comply with USEPA RACM/BACM requirements and to establish BARCT requirements for non-refinery flares, including facilities that will be transitioning from RECLAIM to a command-and-control regulatory structure.

Authority

The SCAQMD Governing Board has authority to adopt amendments to Proposed Rule 1118.1 pursuant to the California Health and Safety Code Sections 39002, 40000, 40001, 40440, 40702, 40725 through 40728, and 41508.

Clarity

Proposed Rule 1118.1 is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency

Proposed Rule 1118.1 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

Non-Duplication

Proposed Rule 1118.1 will not impose the same requirements as any existing state or federal regulations. The proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the SCAQMD.

Reference

In proposing Rule 1118.1, the following statutes which the SCAQMD hereby implements, interprets, or makes specific are referenced: Health and Safety Code sections 39002, 40000, 40001, 40702, 40440(a), and 40725 through 40728.5.

COMPARATIVE ANALYSIS

The following comparative analysis has been prepared pursuant to Health and Safety Code Section 40727.2, which requires a comparative analysis of a proposed rule with any Federal or District rules and regulations applicable to the same source.

Table 15: PR1118.1 Comparative Analysis

Rule Element	PR1118.1	Rule 1147	SJVAPCD Rule 4311	SBCAPCD Rule 359	40 CFR Part 60 Subpart WWW	43 CFR Parts 3100, 3160 and 3170
Applicability	This rule applies to owners and operators of flares that require a SCAQMD permit at facilities, including, but not limited to, oil and gas production, wastewater treatment facilities, landfills, organic liquid loading stations, and tank farms.	This rule applies to manufacturers, distributors, retailers, installers, owners, and operators of ovens, dryers, dehydrators, heaters, kilns, calciners, furnaces, crematories, incinerators, heated pots, cookers, roasters, fryers, closed and open heated tanks and evaporators, distillation units, afterburners, degassing units, vapor incinerators, catalytic or thermal oxidizers, soil and water remediation units and other combustion equipment with nitrogen oxide emissions from natural gas that require a District permit and are not specifically required to comply with a nitrogen oxide emission limit by other District Regulation XI rules.	This rule is applicable to operations involving the use of flares	Applies to the use of flares and thermal oxidizers at oil and gas production sources, petroleum refinery and related sources, natural gas services and transportation sources, and wholesale trade in petroleum/petroleum products.	Applies to each municipal solid waste landfill that commenced construction, reconstruction, or modification after July 17, 2014.	This final regulation aims to reduce the waste of natural gas from mineral leases administered by the Bureau of Land Management
Requirement	Emission limits: Digester gas (minor) – NOx limit 0.06 lbs/MMBtu Digester gas (major) – NOx limit: 0.025 lbs./MMBtu; CO limit: 0.06 lbs./MMBtu; VOC limit: 0.038 lbs./MMBtu Landfill gas – NOx limit: 0.025 lbs./MMBtu; CO limit: 0.06 lbs./MMBtu; VOC limit: 0.038 lbs./MMBtu Produced gas – NOx limit:0.018 lbs./MMBtu;	NOx Emission Limits: Afterburner, Degassing Unit, Remediation Unit, Thermal Oxidizer, Catalytic Oxidizer or Vapor Incinerator: $\leq$800° F: 60 ppm or 0.073 lb/mmBtu; > 800° F and <1200° F: 60 ppm or 0.073 lb/mmBtu	Flame shall be present at all times combustible gases are present; equipped with automatic ignition or pilot flame; capable of detecting flame presence; emission limits; flare minimization plan.	Planned flaring shall not include sulfur compounds exceeding 239 ppmv; flares shall be smokeless; continuous flame monitoring for pilot; flare minimization plan; emission mitigation plan; emission and operational limits.		This rule requires operators to take various actions to reduce waste of gas, establishes clear criteria for when flared gas will qualify as waste.

Rule Element	PR1118.1	Rule 1147	SJVAPCD Rule 4311	SBCAPCD Rule 359	40 CFR Part 60 Subpart WWW	43 CFR Parts 3100, 3160 and 3170
	CO limit: 0.01 lbs./MMBtu; VOC limit: 0.008 Other flare gas – NOx limit: 0.06 lb./MMBtu; CO limit: N/A; VOC limit: N/A; Other organic liquid storage – NOx limit: 0.25 lb./MMBtu; CO limit:0.37 lb./MMBtu; VOC: N/A; Organic liquid loading – NOx 0.034 lbs./1,000 gallons loaded; CO limit: 0.05 lbs./1,000 gallons loaded; VOC: N/A					
Reporting	Notification of annual percent capacity > applicable flare gas; Notification of change to flare throughput reduction; Notification of flare inventory and capacity; Notification of flare throughput reduction; Notification of increments of progress annually; Notification of intent required if percent capacity is greater than threshold listed in Table 2 for 2 consecutive years.. One time extension requests must be in writing	Source test shall have been conducted no more than ninety (90) days prior to the date of submittal to the Executive Officer.	Unplanned flare reporting within 24 hours; flaring events reported annually; annual monitoring report.	Source test results for NOx and VOC; sulfur content; monthly volumes of gas flared; annual summary of gas released and exceedances of monthly volume allowances.	Daily written reports or quarterly electronic reports	Provisions specifying when operators must measure the volume of gas vented or flared, and requiring operators to report volume of gas vented or flared. Submit waste minimization plan.
Monitoring	Fuel meter are required, and source tests must be conducted 5-year. Landfill gas may use portable nondispersive infrared detector or equivalent as approved by Executive Officer and calibrated per	Owners or operators of units with installed calibrated non-resettable totalizing time or fuel meters may elect to comply with the requirements of (c)(6) by demonstrating each calendar month that	NOx and VOC emissions monitored, including, hydrogen sulfide through annual monitoring report and flare minimization plan. Continuous analyzers gathers data and colorimetric tubes for hydrogen sulfide.	Monitor of gases flared during planned and unplanned flaring events; monitoring of volume of gas flared during an emergency.	Collection and control design system design plan; install oxygen meter; monthly gauge pressure at gas collection header and well; monitor surface concentrations	Requires use of an instrument-based approach to leak detection. The final rule allows operators to use optical gas imaging equipment, portable analyzers.

Rule Element	PR1118.1	Rule 1147	SJVAPCD Rule 4311	SBCAPCD Rule 359	40 CFR Part 60 Subpart WWW	43 CFR Parts 3100, 3160 and 3170
	manufacturer's specifications. Heat input In lieu of recorded field data, heat input may be estimated using the following default heat input values: Flare (Btu/scf) Digester gas 600 Landfill gas 500 Produced gas 1,000	monthly NOx emissions are less than 22 pounds or less. Monthly emissions with a time meter shall be calculated using the unit's maximum hourly emission rate in pounds multiplied by the hours of operation each calendar month.	Video monitoring is also conducted at refineries.			
Recordkeeping	Maintain records for 5 years; conduct monthly capacity threshold analysis and maintain for 5 years	Monthly recordkeeping of unit use documenting average emissions of less than one pound per day calculated based on a unit-specific non-resettable time meter or a non-resettable unit fuel meter with fuel use corrected to standard temperature and pressure.	Recordkeeping is required for five years, and includes compliance determination, source testing results, emergency flaring data, annual throughput, copy of flare management plan, and copy of annual reports and monitoring data.	A record of monitored volumes shall be kept by the owner or operator of the flare or thermal oxidizer.	Annual emission rate; recordings exceeding 500 ppm; flare temperature ,	Annual record of volume of gas flared or vented.
Fuel Restrictions	Exempts natural gas, propane and butane; regeneration gas; refinery gas	Yes (exempts landfill, digester or other combustible gas or vapor)	Landfill Gas	Sulfur compounds are exempted	None	Produced gas only

APPENDIX A – COMMENTS AND RESPONSES

Public Workshop Comments

Staff held a Public Workshop on October 17, 2018 to provide a summary of PR1118.1. The following is a summary of the comments received and staff's response.

Public Workshop Commenter #1: David Rothbart – Southern California Alliance of Publicly Owned Treatment Works (SCAP)

The commenter expressed the following:

1. Asked whether there were NOx limits for biogas in other air district jurisdictions' non-refinery flare rules.

2. Requested minor source wastewater treatment plants be subject to the 0.06 lb/MMBtu NOx emission limit similar to current BACT limits for minor sources.

3. Asked that a CEQA analysis be conducted for food waste digestion and thermophilic digestion.

Response to Public Workshop Comment 1-1

Biogas is a mixture of different gases produced by the breakdown of organic matter typically generated from sewage and waste (e.g., municipal, green, food). There are other air districts in California that regulate biogas. Both Santa Barbara County Air Pollution Control District (SBCAPCD) – Rule 359 and San Joaquin Valley Air Pollution Control District (SJVAPCD) – Rule 4311 define "Gaseous Fuel," as including landfill, sewage digester, or waste gas. However, Rule 4311 exempts landfills already regulated by Rule 4642 – Solid Waste Disposal Sites. SBCAPCD has no exemptions for landfills and also regulates thermal oxidizers.

Response to Public Workshop Comment 1-2

Due to the recent issues raised regarding potential NOx impacts from upcoming food waste diversion from landfills to digesters, staff has changed the rule proposal to allow a higher NOx limit for minor source wastewater treatment plants and will conduct a technology assessment within 12 months of rule adoption to investigate this potential issue and determine if any further action, such as establishing a new limit, needs to be taken.

Response to Public Workshop Comment 1-3

As stated above, staff will investigate potential NOx impacts that result in food waste diversion pursuant to SB 1383 that seeks to divert food waste from landfills to digesters for beneficial use. The implementation of this state law, its impacts, and other existing requirements will occur regardless of this rule. Since PR1118.1 is not proposing or requiring food waste diversion it is not part of the project description under CEQA. Issues pertaining to food waste diversion would have been part of CEQA analysis for the approval of any implementing regulations for SB 1383.

Public Workshop Commenter #2 – Steve Jepsen – Executive Director, SCAP

The commenter echoed David Rothbart's concerns expressed the following:

1. Concerns over regulating wastewater industry considering the low NOx emissions.
2. Concerns over NOx impacts from food waste diversion and thermophilic digestion
3. Concern over the time line for flare replacement and flare throughput reduction

Response to Public Workshop Comment 2-1

The SCAQMD has been designated an extreme non-attainment for ozone that is comprised of both VOC and NOx emissions and, therefore, SCAQMD rules must achieve all possible emission reductions. Further, this rule will serve as a backstop to limit NOx emission increases in the future. The intent of SB 1383 is for environmentally beneficial uses of biomethane, so increased flaring from food diversion would be contradictory to the state law goals. Without capacity threshold limits on existing flares, there is no assurance the increased gas generation will not lead to increased flare throughput. Under PR1118.1, if the flaring is determined to be routine, there are requirements in place to either reduce the flare throughput or replace the flare with a cleaner flare. Since the public workshop, staff has decided to grant minor sources flaring digester gas the same limit as current minor source BACT.

Response to Public Workshop Comment 2-2

As mentioned in Response 1-2 staff has committed to a technology assessment for food diversion and thermophilic digestion.

Response to Public Workshop Comment 2-3

PR1118.1 includes many opportunities for stakeholders to plan and prepare for flare replacement or flare reduction. Initially, the rule allows two years to measure and determine if the flare exceeds the Table 2 – Annual Capacity Thresholds that would deem the flaring activity as routine, which was a rule objective. Many facilities might already be aware they are currently flaring routinely so can begin the process to replace or reduce the flare throughput prior to reaching that two year threshold. After a flare's annual percent capacity is greater than the applicable Table 2 – Annual Capacity Threshold for two consecutive years, the facility has 6 months to submit the Notification of Intent which identifies the compliance option to be taken. Flare replacement is to be completed within 18 months of issuance of an SCAQMD permit and flare reduction is to be completed within 36 months of surpassing the Table 2 – Annual Capacity Threshold for two consecutive calendar years. The rule also includes an extension provision to allow for one 12 month extension for flare replacement and one 24-month extension for flare throughput reduction. In addition, staff is proposing to extend the timeline for permit submittal or flare throughput reduction notification to 12 months for publicly-owned facilities which tend to be subject to longer decision-making processes. Staff strove to provide sufficient timelines and flexibility to accommodate the stakeholder requests.

Public Workshop Commenter #3 – Chuck Helget – Director, Republic Services

The commenter expressed the following:

1. Cost-effectiveness calculated at 25 year equipment life; his industry uses 15 years.

2. Beneficial use was not clear in rule; commenter wanted to know if existing equipment would qualify.

Response to Public Workshop Comment 3-1

Based on currently available data, flares at affected facilities have a very long service life, in many cases much longer than 25 years. The ultra-low-NOx flares meeting the lower emission limits are more complex, but in comparison to other combustion equipment, are still relatively basic combustion units. The cost-effectiveness calculation considers the 25 years as the service life of the initial equipment as well as the cost for maintenance and upgrades during that same period.

Response to Public Workshop Comment 3-2

Currently, and with rule implementation, any facility has the option to handle their gas beneficially. The flare reduction provision in the proposed rule does not require the installation of an additional beneficial use project, but is an option for the owner/operator to handle gas beneficially and lower use of flare to meet the capacity thresholds. Routing additional gas to existing equipment to reduce flaring throughput would also satisfy the flare reduction requirement.

Public Workshop Comment #4 – Kathy Obergfell – R.A. Nichols Engineering

The commenter expressed the following:

1. For the "other flare" category, there are a wide range of differences between applications and the limits expressed by the marine terminal BACT used in the proposed rule language. The BACT standard should be used for new flare installation in the other flare category.

Response to Public Workshop Comment 4-1

The "other flaring" category was created to regulate flaring not at landfills, wastewater treatment, or oil/gas production sites. During rule development, stakeholders highlighted the variety of diverse sources that be characterized as "other flaring" such as loading and unloading of organic liquids, degassing of storage tanks, tank farms, marine terminals, etc. Staff recognizes the challenges with organic liquid handling particularly when the products can vary. There are promising new technologies that could achieve lower NOx emission but at this time there is limited data to validate the effectiveness of the new technology in all applicable applications. Staff is proposing to separate out "other flaring" from organic liquid loading and organic liquid storage. The NOx limits will reflect current BACT standards. No VOC limits will be included as those operations already have VOC limits in other SCAQMD rules.

- Rule 1149: "In lieu of meeting the requirements of paragraph (c)(2), drain-dry breakout tanks shall be maintained in a vapor tight condition outside the tank shell while the roof is resting upon its support legs and shall be monitored monthly. Records shall be maintained pursuant to paragraph (c)(11)."

- Rule 462: "Each vapor recovery and/or disposal system shall reduce the emissions of VOCs to 0.08 pound or less per thousand gallons (10 grams per 1,000 liters) of organic liquid transferred."

Public Workshop Comment #5 – Susan Stark – Marathon Petroleum

Commented that she agrees with Ms. Obergfell to use BACT for new flare limits.

Response to Public Workshop Comment #5

Please see Response to Public Workshop Comment 4-1.

Public Workshop Comment #6 – Bridget McCann, Western States Petroleum Association

Commented that she submitted written comments and is willing to discuss further.

Response to Public Workshop Comment #6

Please see response to written comment letter #3.

Written Comments

Comment Letter #1

Comment Letter 1

CALIFORNIA RESOURCES CORPORATION

September 13, 2018

Wayne Nastri, Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: PROPOSED RULE 1118.1. CONTROL OF EMISSIONS FROM NON-REFINERY FLARES

Dear Mr. Nastri:

California Resources Corporation (CRC) respectfully submits the following comments on Proposed Rule 1118.1 under development by the South Coast Air Quality Management District (SCAQMD). 1-1

(d)(2) Table 2 – Capacity Thresholds by Gas Flared: CRC recommends amending the Process Gas capacity threshold to 20% instead of 5%. As discussed in the working group meetings, the Percent Capacity is based on the Cost Effectiveness threshold of $50,000 per ton of NOx reduced. We believe that the flare cost data used in the evaluation is not representative of the total capital costs. Attachment B shows that the cost of the flare alone is $490,000. A conservative estimate of the capital costs of a flare is $1,190,000 which includes the cost of the flare, engineering, construction and miscellaneous piping, fittings and meters. Annual operating costs are approximately $50,000 for maintenance, testing and parts. With the revised Total Costs, the rule exceeds the $50,000 threshold for cost effectiveness.

CRC respectfully recommends amending the Process Gas Capacity threshold to 20%.

Table 2 - Capacity Thresholds by Gas Flared

Flare Gas	Threshold
Any gas combusted in an open flare	5%
Digester gas	70%
Landfill gas	20%
Process gas	~~5%~~ 20%

Present Worth Value (PWV)	Cost Effectiveness						
PWV = Capital Investment + (Annual O&M x PVF)		Total Costs (PWV x # of affected flares)	CE at 5% Lifetime Reduction	Total Costs (PWV x # of affected flares)	CE at 20% Lifetime Reduction	Total Costs (PWV x # of affected flares)	CE at 30% Lifetime Reduction
$ 1,048,745	AQMD Costs	$ 5,243,725	$ 47,887.90	$ 3,146,235	$ 43,099.11	$ 1,048,745	$ 229,861.92
$ 1,971,000	CRC Actual Costs	$ 9,855,000	$ 90,000.00	$ 5,913,000	$ 81,000.00	$ 1,971,000	$ 432,000.00

Sincerely,

Kristy Monji
Environmental Specialist
Kristy.Monji@crc.com

CALIFORNIA RESOURCES CORPORATION

Attachment B:

ATTACHMENT B – Pricing & Terms

COYOTE NORTH QUOTATION NUMBER: 20131031-169, REV. 3
QUOTATION DATE: January 31, 2014

COYOTE NORTH LTD. CNTOX8 INCINERATOR SYSTEM
(Based on the Quotation Description and Attachment A – Product Specifications)

AVAILABILITY: 10-12 weeks after receipt of order.

1. **Sub-Total / Coyote North Ltd., CNTOX8 Incinerator System:** **$USD 460,000 each**
   (Ex-works: Enid, OK. All applicable shipping, taxes, duties, and fees are cost +10%.)

2. **Sub-Total / Startup Costs:** **$USD 9,000**
   Onsite field installation and start-up technicians @ $USD 750 each per day per person,
   Budget of 6 days 2 Techs on site

3. **Travel Technician:** **$USD 1,300**
   Travel Days of technicians @ $USD 325 each per day per person,
   Budget of days 2 Techs Travel

4. **Travel:** **$USD 4,200**
   Air Travel for 2 Technicians to and from Bakersfield, CA.

5. **Vehicle Costs:** **$USD 1,200**
   Average Rental cost of $150 per day @ 8 days

6. **Subsistence:** **$USD 2,560**
   Average Room cost of $160 per day per Technician @ 8 days

7. **Commissioning and operations spare parts** **$USD 2,560**
   Operating spare parts

8. **Shipping of Incinerator from factory to site** **$USD 12,000 each**
   Permitted loads, over height and over width. One load per Incinerator.

TERMS:
- 15% Upon Submittal of Drawings
- 35% Upon Contractors Ordering of Major Components
- 25% Upon Company's Approval of Fabrication
- 15% Upon Delivery to Site Location
- 10% Upon Commissioning and Start up

PRICE VALIDITY:
The pricing in this quotation is valid for 60 days from the quotation date.

Response to Comment Letter 1

Response to Comment 1-1:

Staff communicated with a former employee of Coyote North, the manufacturer of the flare cited in the comment letter, to verify and better understand the information provided but was informed the company is no longer in existence. It should be noted the cost quotes were based on a project located outside the SCAQMD region which may or may not be applicable for this region. The cost-effectiveness data and analysis for PR1118.1 were based on local installation reflecting local needs. Notwithstanding the above, staff included that data point in the calculation with a slight change to the projected cost for source testing, as the proposed rule requires only one source test every five years and the quote included annual source testing. Even with this value included, the original 5% five percent threshold still is under the $50,000 per ton of NOx reduced which is the cost-effectiveness threshold approved under the 2016 AQMP. Thus, staff is not proposing to change the capacity threshold for produced gas.

Comment Letter #2

Comment Letter 2

Yorke ENGINEERING, LLC
www.YorkeEngr.com

October 17, 2018

Mr. Steve Tsumura
Air Quality Specialist
South Coast Air Quality Management District (SCAQMD)
21865 Copley Drive
Diamond Bar, CA 91765
Work: (909) 396-2549
E-mail: STsumura@aqmd.gov

Subject: Proposed Rule 1118.1 – Control of Emissions from Non-Refinery Flares Preliminary Analysis for Hoag Hospital (Facility ID 11245) Based on September 21, 2018 Draft Rule Language

Dear Mr. Tsumura:

On behalf of Hoag Hospital (Facility ID 11245), Yorke Engineering, LLC is submitting this follow-up letter to the one previously submitted on September 19, 2018 illustrating the unique case of the flare at Hoag Hospital in Newport Beach and the impacts of PR1118.1. This analysis is based on draft rule language dated September 21, 2018 and our conversations on October 2 and 3, 2018.

UPDATED HISTORY

The City of Newport Beach has had a combustible and noxious gas problem dating back to the 1920's.[1] Much of the area was afflicted with noxious odors due to hydrogen sulfide, and the threat of fire from methane accumulation. According to historical documentation, the source of the methane was not known as the geological nature of the rocks leads to the potential for natural leakage of methane. A flare was installed around 1977 to mitigate this nuisance.

Hoag is a non-profit hospital operating on land which contains a few abandoned oil and gas wells that originate from as early as the 1920's. Methane and hydrogen sulfide have plagued the area since and the odors were a distinctive feature of the nearby sections of Pacific Coast Highway.

According to SCAQMD Permit Application Number 08514A, the flare began operation in 1977, per City of Newport Beach Utilities Director Joseph Devlin. In 1980, the City of Newport Beach attained a Permit to Operate from SCAQMD. In 1985, a change of ownership application was submitted, transferring the flare to Hoag as Hoag purchased the land from the City of Newport Beach for their Cogeneration Plant. The property already had gas wells operating with the flare to combust the gas.

On September 2, 1980, Frank Maccioli of SCAQMD made the following historical observation of the flare operated by the City of Newport Beach (Attachment 1):

[1] Wright, Merrill E. "Gas Leaks in Newport Beach." *Division of Environmental Geosciences, American Association of Petroleum Geologists, Pacific Section*, vol. 74, 18 May 1996. http://www.searchanddiscovery.com/pdfz/documents/2007/07014priority/fields%20of%20la%20basin/01.pdf.html

LOS ANGELES/ORANGE COUNTY/RIVERSIDE/VENTURA/SAN DIEGO/FRESNO/BERKELEY/BAKERSFIELD
31726 Rancho Viejo Road, Suite 218 ▼ San Juan Capistrano, CA 92675 ▼ Tel: (949) 248-8490 ▼ Fax: (949) 248-8499

> *The enforcement file shows a history of several odor complaints in the area prior to the installation of the subject equipment. Investigations into the source of this odor by the City of Newport Beach determined that it was due to 'seepage' through the ground from a buried source of natural gas with a relatively high H_2S fraction.*

As such, Hoag recognized the necessity to continue operating the flare. Given the high hydrogen sulfide content of the gas, Hoag installed Sulfatreat scrubbers in1998 to remove hydrogen sulfide from the gas prior to combustion. At that time, the flare was also moved from its original location from where the Hoag Conference Center is to its current location. To appease local residences, Hoag also had the flare equipped with a shroud to hide visible flames. A letter dated September 17, 1997 from Joseph M. Tramma of SCAQMD was sent to a local townhome association stating the flare at Hoag was in compliance with all SCAQMD Rules and Regulations. The letter is provided as Attachment 2.

From August 2004 through December 2011, Hoag was able to use the gas beneficially in their boilers located at the Upper Plant. However, naturally occurring subterranean pressures have decreased over time, preventing the gas from reaching the Upper Plant, even with augmentation from dual blowers. Boiler technicians attempted to tune the boiler using the naturally occurring methane but were unable to get the boilers to fire. As such, Hoag now combusts gas in the flare at the Cogeneration Plant. Hoag is not able to pump the gas to the Upper Plant boilers without expensive upgrades to the blowers and the entire piping infrastructure. Hoag estimates the piping length to be approximately 3,000 feet with an elevation gain of about 50 feet from the wells to the Upper Plant boilers.

Hoag upgraded the boilers in 2013 as required by SCAQMD Rule 1146 with new low-NOx burners. The burners are designed to produce low NOx emissions from natural gas combustion. It is not clear whether the new burners would be able to efficiently combust the low-grade naturally occurring methane. The gas has continued to be flared at the Cogeneration Plant since 2012.

Hoag operates a boiler and three cogeneration engines at the Cogeneration Plant. However, the flare gas is not viable for use in the engines because they require high quality natural gas. The Cogeneration Plant boiler has a low-NOx burner designed for natural gas combustion and not for low-grade fuels such as the natural occurring methane. Moreover, the cogen boiler is a back-up used to produce steam during engine downtime and is not online frequently enough to be a consistent source for combusting the flare gas.

UPDATED RULE IMPACT ANALYSIS

Based on an October 2, 2018 phone conversation between Corey Luth of Yorke Engineering, LLC and Mike Krause, Heather Farr, and Steve Tsumura of SCAQMD, the SCAQMD is now considering the gas to be considered "Other Flare Gas" for rule applicability purposes. Mr. Krause acknowledges that the situation at Hoag is an "interesting story." However, we maintain the naturally occurring methane flared at Hoag should be uniquely classified in Table 2 of the proposed rule language dated September 21, 2018. The purpose of the flare at Hoag is to control potential odors and mitigate health risks and fire hazards. Imposing overly-restrictive emission limits may needlessly force the facility to incur excessive costs in the future to upgrade the equipment. In addition, it may cause compliance issues in the future as the composition of the gas is highly variable. A subset of gas analysis results is provided in Attachment 3. Emission guarantees from flare manufacturers may be impossible to achieve and demonstrate via source testing. We request 2-1

that an additional category be added to Table 2 named "Naturally occurring methane" with a capacity threshold of 100%, or a by-name exemption in subdivision (h). 2-2

In the October 2, 2018 phone call, Best Available Control Technology (BACT) emission limits were discussed. SCAQMD stated that the flare should have been subject to the 0.06 lb/MMBTU NOx limit in the past. However, in the Rule Evaluation for A/N 329157, it is acknowledged by the SCAQMD that there is no specific BACT listed for this type of waste gas flare. There were no rules enforcing an emission limit on the flare. As such, the source test conducted in 1998 should only be viewed for baseline informational purposes. 2-3

Per a phone conversation between Corina Chang and Corey Luth of Yorke Engineering, LLC and Mr. Tsumura of SCAQMD on October 3, 2018, Mr. Tsumura is placing phone calls to Varec Biogas and its parent company Westech Industrial to discuss whether the flare is open or enclosed. Prior to receiving calls back from the two companies, Mr. Tsumura stated that, based on the pictures provided by the facility, it appears to be an enclosed flare.

Preliminary cost-effectiveness studies show that it is not economically feasible to replace the flare or pump the flare gas to the Upper Plant for combustion in the boilers; see September 19, 2018 letter. Cost effectiveness estimates are well above the $50,000 per ton NOx reduced, which is the cost threshold documented in the 2016 Air Quality Management Plan (AQMP). Even if the flare is modified at a later date the costs to replace the burner are still not cost effective. 2-4

CONCLUSION

We request that PR1118.1 include a separate gas category in Table 2 for "naturally occurring methane" with a capacity threshold of 100%, or a by-name exemption in subdivision (h). Hoag operates a flare as a service to the citizens of Newport Beach to mitigate odors, health risk, and fire hazards. Preliminary cost studies indicate that replacing the flare and beneficial use of the gas are not cost effective. In addition, the quality and variability of the gas composition make meeting emission guarantees practically impossible.

In Attachment 4, we have a marked-up version of PR1118.1 with our proposed edits to Table 2 and subdivision (h).

Should you have any questions or comments, please contact me at (949) 556-7074.

Sincerely,

Corey Luth
Engineer
Yorke Engineering, LLC
CLuth@YorkeEngr.com

cc: Erik Lidecis, Hoag
Duane Suby, Hoag
Peter Moore, Yorke Engineering
Corina Chang, Yorke Engineering
Dixie Richards, Yorke Engineering

Attachments:

1. Frank Maccioli SCAQMD Field Report
2. Letter from Mr. Joseph Tramma (September 4, 1997)
3. Gas Analysis Results
4. Marked-up PR1118.1
5. Gas Leaks in Newport Beach, Merrill E. Wright

ATTACHMENT 1 - FRANK MACCIOLI SCAQMD FIELD REPORT

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DIVISION···FIELD REPORT

NAME OF APPLICANT: CITY OF NEWPORT BEACH	DATE OF INSPECTION: 9-2-80
MAILING ADDRESS: 3300 NEWPORT BLVD., NEWPORT BEACH, CA. 92663	PERMIT APPL. NO.: 085114A
EQUIPMENT LOCATION (ADDRESS): 4006 W. COAST HWY., NEWPORT BEACH CA. 92663	A.P.C.D. ZONE NO.

REASON PERMIT IS REQUIRED: NEW CONSTRUCTION (✓) CHANGE OF OWNERSHIP ( ) CHANGE OF LESSEE ( ) CHANGE OF LOCATION ( ) EQUIPMENT ALTERATION ( )

DATE CONSTRUCTION AUTHORIZED: —— BY —— TIME SPENT MAKING INSPECTION: FROM 9:30 AM TO 10:30 AM

USUAL OPERATING SCHEDULE FOR THIS EQUIPMENT: 24 HR/DAY, 7 DAY/WK, 50 WK/YR

WEATHER: CLOUDY WIND: SW 0-5 ESTIMATED COST: BASIC EQUIPMENT: $ 20,000 A.P.C. EQUIPMENT: $ 5,000

NAMES & TITLES OF PERSONS CONTACTED BY ENGINEER: JOSEPH DEVLIN, UTILITIES DIRECTOR; J. BECKWITH, G. ZEBAL

FOR DUST & FUME PROBLEMS ONLY: PROCESS* WEIGHT (S) N/A LBS./HR. ALLOWED LOSSES: N/A LBS./HR. ESTIMATED LOSSES: N/A LBS./HR.

OFFICIAL EQUIPMENT DESCRIPTION, *CALCULATION OF PROCESS WEIGHT(S), PROCESS DESCRIPTION AND FINDINGS:

EQUIPMENT DESCRIPTION

FLARE, NATURAL GAS, WITH ONE BURNER, VAREC, 4" DIAMETER, AND ONE 15 H.P. COMPRESSOR ~~AND~~ VENTING THREE GAS WELLS.

See description on instructions to Permit Section

BACKGROUND

This equipment is owned and operated by the City of Newport Beach. An N/A was issued on 7-17-80 by Inspector Novak. The contact persons for this inspection were Mr. Joseph Devlin and Mr. J. Beckwith of the City of Newport Beach, and Mr. George Zebal, an engineering consultant for the city responsible for most of the design and maintenance of the equipment. The applicant name was confirmed, and it was stated by Mr. Devlin that this system has been in operation since 1977. The facility is located at the base of a hillside below a hospital and across a highway near a residential area. The enforcement file shows

RECOMMENDED DISPOSITION: (✓) APPROVE FOR PERMIT ( ) APPROVE FOR PERMIT SUBJECT TO CONDITIONS LISTED BELOW. ( ) HOLD. SEE EXPLANATION BELOW. ( ) DENY PERMIT.

REVIEWING ENGINEER: (✓) I CONCUR WITH RECOMMENDATIONS ( ) I DO NOT CONCUR WITH RECOMMENDATIONS ( ) SEE COMMENTS ON ATTACHED PAGE — FJM 10/8/80

SIGNATURE Frank J. Maccioli

PAGE 1 OF 7 PAGES 16-50D106 R2-55-M

South Coast Air Quality Management District
Engineering Division....Field Report

NAME OF APPLICANT	APPL. NO.	INSPECTION DATE
CITY OF NEWPORT BEACH	085144	9-2-80

a history of several odor complaints in the area prior to installation of the subject equipment. Investigations into the source of this odor by the City of Newport Beach determined that it was due to "seepage" through the ground from a buried source of natural gas with a relatively high H_2S fraction.

PROCESS DESCRIPTION

The subject equipment essentially pumps gas from the ground and burns the gas. The facility has three "wells" consisting of three 2" diameter, perforated PVC pipes manifolded into the air intake of a compressor system which consists of a M/D Pneumatics compressor, Serial No. 2596 A79, equipped with a 15 H.P. Kewman motor, Serial No. J1236428. The compressor system is preceded by a Roy E. Hanson water dropout chamber, Serial No. 170829. Water condensation is removed by manually activating a small drain valve at the bottom of the tank.

The outlet of the compressor is connected to a Burgess-Manning Silencer, Model No. BEO-3. Gas flow then continues through a gas flow measuring device, consisting of an ITT Barton Differential Pressure Unit, Serial No. 202A-138103, 0-1000 psi range.

Gas flow then goes through a Varec Flame Arrestor, 4" diameter, and into a Varec Burner which is located approximately 25 feet above ground. Also present next to the

SIGNATURE Frank J. Macciola

PAGE 2 OF 7 PAGES 50D107

South Coast Air Quality Management District
Engineering Division....Field Report

NAME OF APPLICANT	APPL. NO.	INSPECTION DATE
CITY OF NEWPORT BEACH	085141A	9-2-80

flame arrestor is a 1" diameter Varec Flame check. According to Mr. Zebal, however, this device serves no real purpose any more since it was originally installed in conjunction with an automatic flame lighting unit which no longer is present. There is no water or steam injection system to the burner.

The system uses no supplemental natural gas or combustion air. Two safety devices are present which can turn off the flame. If the water level in the dropout chamber exceeds a certain level, gas flow is shut off and the flame goes out. Similarly, a temperature sensing device in the compressor system shuts off the pump when the gas temperature exceeds 175 °F.

Re-lighting the flame is done by lighting a "wick" at the end of a very long pole and holding this at the tip of the burner until the flame is lit.

A drip tank that appears on the blueprints submitted with the application is no longer in use.

The subject equipment was in operation at the time of the inspection and no visible emissions were observed. The flame was invisible, however, its warmth could be felt at the base of the burner, and objects viewed through the flame were distorted due to the effect of heat on the atmosphere.

According to Mr. Zebal, the facility originally had five wells, however, two of them went dry. Each of the

SIGNATURE Frank J. Mercuri

PAGE 3 OF 7 PAGES 50D107

ATTACHMENT 2 - LETTER FROM MR. JOSEPH TRAMMA (SEPTEMBER 4, 1997)

South Coast
Air Quality Management District
21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 · http://www.aqmd.gov

September 17, 1997

Mr. Bowie Houghton, President
Newport Beach Townhouse Owners' Association
C/O Gill Management Company
2872 West DeVoy Drive
Anaheim, CA. 92804

Dear Mr. Houghton:

I am responding to your letter, dated September 4, 1997, regarding Hoag Memorial Hospital Presbyterian's (Hoag) proposal to locate a waste gas flare adjacent to their parking lot in the vicinity of 4400 West Coast Highway, Newport Beach, California. Hoag filed Application No. 329157 with the South Coast Air Quality Management District (AQMD) requesting a permit to construct and operate a waste gas flare on June 18, 1997. The proposed flare will replace existing equipment located at the opposite end of the parking lot. The proposed flare will be enclosed so that visible flame will not extend from the flare exhaust and will meet the Best Available Control Technology standard for nitrogen oxide emissions that has been established for landfill and digester gas flares. Hoag's proposal also includes a scrubbing system that will remove more than 99% of the sulfur compounds contained in the waste gas prior to incineration in the flare. Implementation of the sulfur removal system, along with an efficient high temperature flare operation will significantly reduce methane gas emissions and hydrogen sulfide odors noted from the existing flare. Our engineers evaluated the proposal, and determined that the expected air contaminant emissions, including toxic compounds, discharged from the flare would comply with the Rules and Regulations of the South Coast Air Quality Management District (AQMD). The AQMD is required to grant a permit to construct and operate for equipment and processes that are determined to comply with all applicable rules and regulations.

Your questions concerning truck access, traffic and artificial lighting at night for the proposed project do not fall under the purview of the AQMD, and would be best directed to the local city or county planning agency. In response to your request, this letter serves to notify you that a Permit to Construct will be issued to Hoag Memorial Hospital Presbyterian for the installation of a waste gas collection, treatment and flaring system as described in AQMD Application No. 329157.

Thank you for your information pertaining to this project, and if you have further questions, please contact me at (909) 396-2652 or Mr. Gaurang Rawal at (909) 396-2543.

Very truly yours,

Joseph M. Tramma
Air Quality Analysis and Compliance Supervisor
Public Facilities Team

JMT:GCR

CC: D. Russell, AQMD
Certified Mail with Return Receipt.

1947 • 1997 50 YEARS OF PROGRESS TOWARD CLEAN AIR
CLEAN AIR IS EVERY BODY'S BUSINESS

ATTACHMENT 3 – GAS ANALYSIS RESULTS

GILWELL RESEARCH, INC.
[illegible] W. SIXTEENTH STREET
LONG BEACH, CALIFORNIA 90813
[illegible] 436 4254

August 25, 1975

City of Newport Beach
3300 Newport Blvd.
Newport Beach, CA 92660

RECEIVED
SEP 4 1980
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ANAHEIM OFFICE

Attention: Mr. Kenneth L. Perry

Gentlemen:

Shown below are the results of analysis on a gas sample taken August 19, 1975 in the Balboa Cove housing area.

	Mol. %
Oxygen	.088
Nitrogen	7.640
Carbon Dioxide	10.381
Hydrogen Sulfide	.004
Methane	81.756
Ethane	.060
Propane	.003
Iso-Butane	.001
N-Butane	.003
Iso-Pentane	.005
N-Pentane	.005
Hexane	.007
Heptane	.028
Octane	.018
Nonane +	.001
Specific Gravity (air = 1)	.688
B.T.U./cu. ft.	832.

Respectfully submitted,

A. O. Byrd

A. O. Byrd

lc

At Virgil Howell's house. # 45 Balboa Coves KLP.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 7	PAGE 4
STATIONARY SOURCE COMPLIANCE DIVISION	APPL NO 329157	DATE 8/29/97
PERMIT APPLICATION EVALUATION AND CALCULATIONS	PROCESSED BY GCR	CHECKED BY

Recently, concerns were raised regarding the applicability of Rule 431.1 for the sulfur content of the waste gas being burned in existing flare that may have approx. 4000 ppm of H_2S. District Prosecutors Office was contacted for the interpretation and applicability of Rule 431.1, and it was determined that the operations will be subject to Rule 431.1. A waste gas sample analysis run by the AQMD Source Testing branch confirmed H_2S level in excess of 3500 ppm (Source Test Report No. 97-0026).

On May 14, 1997, a meeting between Hoag Memorial Hospital representatives (and Counsel) and Distrct staff and Counsel was conducted at the District headquarter. As a result it was agreed to have HOAG expedite the proposed construction project to bring the source in Rule 431.1 compliance, minimize potential violations of Rule 402 and Health and Safety Code Section 41700. In the meantime, District to prepare and file for the order for abatement (stipulated O/A). District had filed a petition for an Order for Abatement under O/A # 4444-1 (scheduled hearing date of July 15, 1997). For further details please refer to the Order for Abatement Case No. 4444-1.

Upon approval and issuance of this new Permit to Construct (A/N 329157), previously issued P/C under A/N 320316 will be cancelled.1

PROCESS DESCRIPTION:

Proposed new construction consists of waste gas collection from the existing well #5, #3, #7A and Balboa Cove well. Two identical gas blower packages, No. 1 and No. 2 (one being a stand by unit) will be installed for gas transport through the sulfur treatment scrubber unit and finally to the new flare. Maximum waste gas flows, over a twenty year period and including future tie-ins from support services buildings , is estimated at 20,100 SCFH (335 scfm), average being 8,500 SCFH (140 scfm). Typical waste gas sample analysis (composite sample), September 3, 1996, used for the project design is (given by applicant);

COMPONENT	MOL. %
METHANE	61.9
CARBON DIOXIDE	14.2
OXYGEN	0.5
NITROGEN	23.0
HYDROGEN SULFIDE	0.4 (4000 ppm)
	TOTAL = 100%

Note: Aromatic and chlorinated hydrocarbons' analysis indicates some of the toxic compounds at level below detection level (< 1.0 PPB), and Benzene = 30.8 PPB. (Please refer to letter from GeoScience Analytical Inc., dated September 5, 1996, Table-3).

Mol. Wt. = 22.9
Specific Gravity = 0.79
BTU/SCF (HHV) = 627.5

Max. waste gas rate (Flare design) = 20,100 SCFH = 335 scfm.

GeoScience Analytical, Inc. "established March 1981"

608 HAILEY COURT SIMI VALLEY, CA 93065 (805) 526-6532 FAX 583-8081 EMAIL GEOSCI10@AOL.COM

September 1, 2015

Hoag Memorial Hospital Presbyterian
One Hoag Drive
Newport Beach, CA 92658-6100

Attn.: Tim Caldwell
Supervisor Plant Operations

RE: Gas Flare Chemical Composition

Dear Mr. Caldwell:

On August 20, 2015 GSA personnel collected flare gas for chemical speciation in a Certified Laboratory under Chain-of-Custody. Samples were collected and analyzed in accordance with EPA and ASTM methodology specifically described in the attached Case Narrative.

Flare gas was analyzed for Fixed Gases, hydrogen sulfide and C1-C6+ hydrocarbons. A complete laboratory report is attached hereto. The following table summarizes the gas composition identified by the subject report:

Compound	Concentration (ppmV)
Methane	698,000.0
Ethane	1,400.0
Propane	36.0
n-Butane	12.0
n-Pentane	ND
n-Hexane	ND
n-Hexane plus	24.0
Hydrogen	ND
Oxygen	156,000.0
Argon	11,300.0
Nitrogen	135,000.0
Carbon Monoxide	ND
Carbon Dioxide	15.6
Hydrogen Sulfide	0.0077

Methods, laboratory analytical data, QA/QC and Chain-of-Custody are attached hereto.

Sincerely yours,

Louis J. Pandolfi
President

Environmental Audits Hazardous Gas Mitigation Litigation Consulting Petroleum Geochemistry

ATTACHMENT 4 – MARKED-UP PR1118.1

(Adopted TBD)
(09/21/2018)

PROPOSED RULE 1118.1. CONTROL OF EMISSIONS FROM NON-REFINERY FLARES

(a) Purpose

The purpose of this rule is to reduce NOx and VOC emissions from flaring produced gas, digester gas, landfill gas, and other combustible gases or vapors and to encourage alternatives to flaring.

(b) Applicability

This rule applies to owners and operators of flares that require a SCAQMD permit at facilities, including, but not limited to, oil and gas production, wastewater treatment facilities, landfills, organic liquid loading stations, and tank farms.

(c) Definitions

(1) ANNUAL THROUGHPUT means the volume of gas or vapor in million standard cubic feet (MMscf) that is combusted in a flare or flare station in one calendar year, excluding gas used solely to maintain the pilot light.

(2) ASSIST GAS means a higher heating value gas required for complete combustion of the gas or vapor stream being routed to the flare burner.

(3) BIOGAS includes digester gas or landfill gas produced by the breakdown of organic matter in the absence of oxygen.

(4) CAPACITY is the maximum volumetric flow rate of gas or vapor that the flare or flare station is rated to process in units of scf per minute or the maximum heat input rate the flare or flare station is rated to process in units of million British thermal units (MMBtu) per hour.

(5) CAPACITY THRESHOLD is the percentage of the capacity used to flare gas and is the metric used to define when an owner or operator of a flare or flare station must take action to reduce NOx emissions and/or reduce the throughput to the flare.

(6) DIGESTER GAS means a gas produced from either mesophilic or thermophilic digestion of biodegradable waste, consisting of methane, carbon dioxide and traces of other contaminant gases.

(7) FACILITY is as defined by Rule 1302 – Definitions.

1118.1 - 1

Rule 1118.1 (Cont.) **(TBD)**

(B) Flare replacement or modification pursuant to paragraph (d)(4).

Table 2 - Capacity Thresholds by Gas Flared

Flare Gas	Threshold
Any gas combusted in an open flare	5%
Digester gas	70%
Landfill gas	20%
Produced gas	5%
Naturally Occurring Methane	**100%**

(3) An owner or operator that submitted a Statement of Intent to reduce the flare throughput shall complete the following pursuant to the schedule set forth in Table 3, with potential extension(s) pursuant to subdivision (e):

(A) Submit a notification to the Executive Officer that includes the following:

(i) Alternative method(s) to reduce flare throughput below Capacity Threshold; and

(ii) Timetable to implement and operate the alternative method.

(B) Submit increments of progress reports which shall include:

(i) Actions completed;

(ii) Actions yet to be completed; and

(iii) Any changes to the original notification.

(C) Reduce the percent capacity of the flare or flare station below the Table 2 thresholds.

(D) The notification submitted under subparagraph (d)(3)(A)shall be considered a plan within the meaning of Rule 306 – Plan Fees.

Table 3

Requirement	Schedule
Submit notification pursuant to paragraph (d)(3)(A)	6 months from surpassing the annual Capacity Threshold for two consecutive years
Submit increments of progress reports pursuant to (d)(3)(B)	12 months from surpassing the annual Capacity Threshold for two consecutive years, and annually thereafter, until flaring is reduced below Table 2 threshold
Reduce flaring below Table 2 thresholds	36 months from surpassing the annual Capacity Threshold for two consecutive years

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Rule 1118.1 (Cont.) **(TBD)**

(2) An owner or operator of a flare subject to this rule that emits less than 30 pounds per calendar year shall not be required to meet the emission limits in Table 1 provided:

(A) The flare has a permit that specifies conditions that limits the applicable NOx emissions; and

(B) The flare operates in compliance with the permit condition;

(C) This exemption shall no longer apply in the event the flare surpasses the 30 pound per month NOx emission limit.

(3) An owner or operator of a flare subject to this rule that operates less than 200 hours per calendar year shall not be required to meet the emission limits in Table 1 provided:

(A) The flare has a permit that specifies conditions that limits the operating hours; and

(B) The flare operates in compliance with the permit condition;

(C) This exemption shall no longer apply in the event the flare surpasses the 200 hours per calendar year.

(4) An owner or operator of an open flare shall not be required to conduct source testing pursuant to subdivision (f).

(5) Throughput, heat input, NOx emissions and time accrued during source testing pursuant to subdivision (f) maybe omitted from the calculation of percent capacity pursuant to subparagraph (g)(1)(D), emissions pursuant to paragraph (h)(2), or hours pursuant to paragraph (h)(3).

(6) **The facility operator of Hoag Hospital in Newport Beach.**

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ATTACHMENT 5 – GAS LEAKS IN NEWPORT BEACH, MERRILL E. WRIGHT

GAS LEAKS IN NEWPORT BEACH

Merrill E. Wright
Consultant
Huntington Beach, California

INTRODUCTION

The City of Newport Beach has had combustible and noxious gas problems for years. The origin probably lies in the 1920's. Various areas in the city have been affected either by the odor of hydrogen sulphide or from the threat of fire from methane accumulation. Usually the problem has been odor, but some buildings have burned.

Almost all of the affected areas have had hydrocarbon mining or oil well drilling near them. In some instances the wells are leaking. In others there is a question as to the source, but the geological nature of the rocks leads to natural leakage potential.

Limited production took place in and around the city (Fig 1). One oil field is still active on the western edge of the city, where a fire flood was instituted many years ago (Fig. 2). One oil field belongs to the City of Newport Beach and has 15 producing wells (DOGGR, 1995).

None of the productive areas addressed here were very commercial. Most wells were shallow and produced low-gravity oil. Water had a tendency to break through early in the production and drown out the well. Down hole heaters were tried in a number of wells but were found to be a marginal solution at best. The gas leakage areas generally have the poorest, or the oldest abandoned wells. The oldest abandoned wells (1929) have plugs that fit those less demanding times and requirements (Parker, 1943). With the exception of the still-active oil fields, the earlier wells were drilled between 1925 and 1926, with the last wells drilled in 1948. The productive interval was from 650 feet to 1,600 feet. Most of the wells were completed with a surface casing and a water string cemented at the top of the best cored oil show. A slotted liner of varying lengths was set across the productive interval. Sand problems, from the lack of gravel packing and large perforations were common.

The main productive interval is the Miocene "C" sands (Ingram, 1968). This sand interval occurs below a thick shaley interval termed the "C" shale, which is probably the cap for the accumulation. Gas production was not mentioned frequently in the well production histories, but most of the wells flowed for a short time during the initial production phase. The drive mechanism at this shallow depth, must have been solution gas.

All of the oil fields in Newport Beach are on or near the Newport-Inglewood fault zone. Fault branches run near all of the gas leakage areas. Most of the smaller production pools appear to be either fault-trap accumulations or permeability change traps. The Mesa pool to the north is composed of both, a permeability barrier on the south with a fault to the east. The dip is to the north-west with an oil/water contact. The surficial deposits are composed of a thin subareal Holocene sand and shale cover over Pleistocene terrace deposits. Where they are exposed, Miocene outcroppings are grey, silty, poorly-bedded shale that is soft and unctuous (greasy feeling) when found moist. Diatomaceous layers are interspersed among more dense lithologies. The upper sands are typical near beach or river deposits, composed of fine to coarse-grained, granitic source arkosic sands with pebble layers and shell beds.

At Broad Street and Holmwood Drive the source of gas may be either a distant well leak feeding this up dip location, or a natural leak in the out-cropping of the Mesa sand (Zebal, 1975).

At 35th Street and Marcus Avenue a well is almost certainly the cause of the gas leak. A 1926 well produced briefly just 40 feet from the vent.

At the base of the cliff below Hoag Memorial Hospital, there are five old wells that may cause all of or

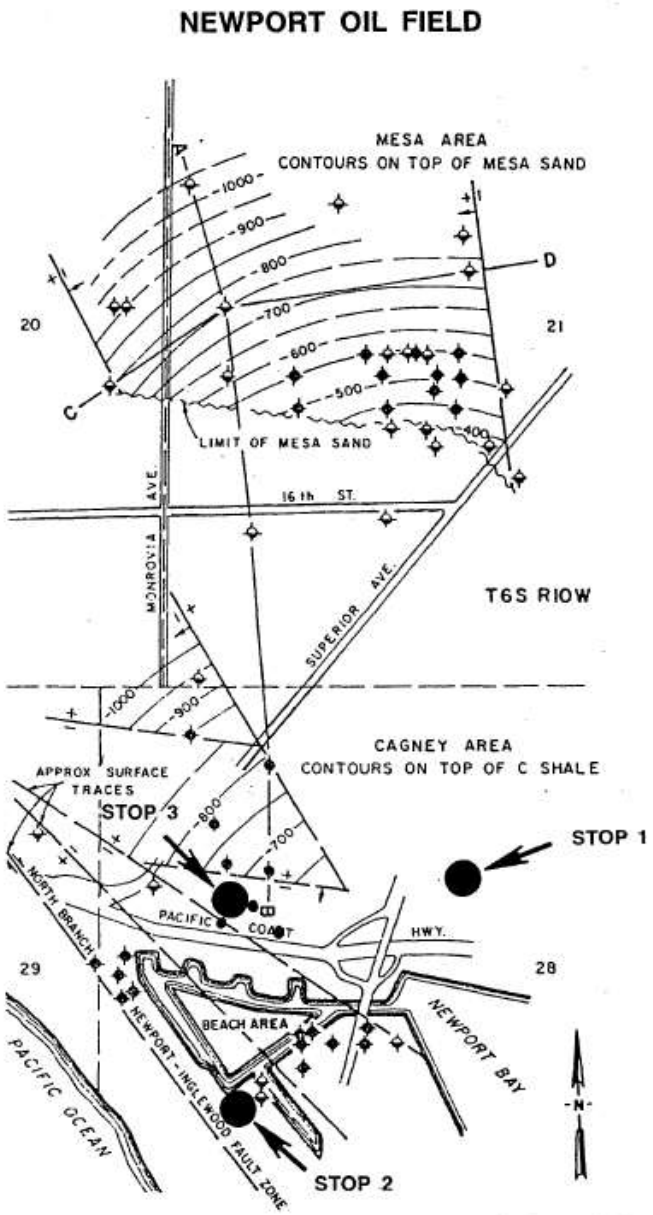

Figure 1. Map of the Newport Oil Field. Three gas leaks are indicated as stops 1, 2, and 3. Contours are on the top of the Mesa Sand and the "C" Shale. This map is modified from Division of Oil and Gas, 1984.

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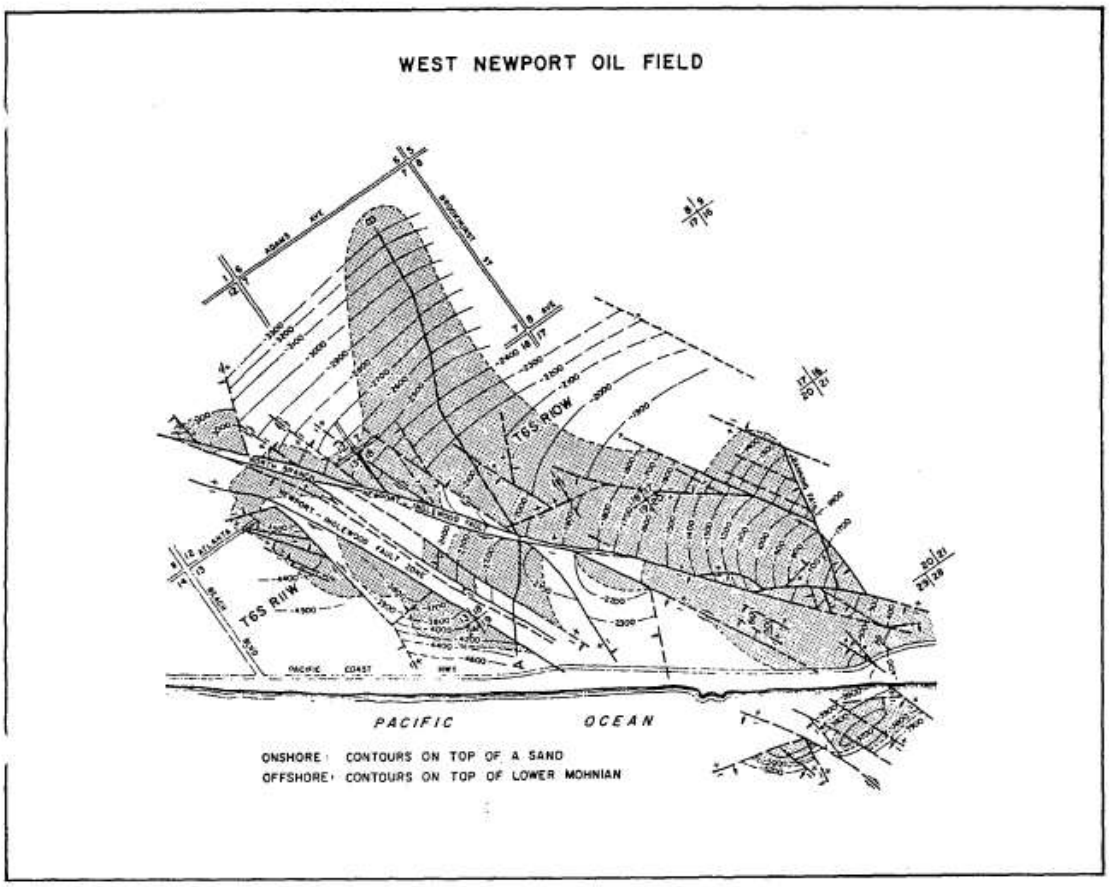

Figure 2. Map of the West Newport Oil Field. The contours are on the top of the "A" Sand and the top of the Lower Mohnian. The map is from Division of Oil and Gas, 1984.

part of the gas leak. One well was abandoned in 1933. The gas leakage problem, however, probably predates the well. This dry hole did have gas and oil shows. The hydrocarbon intervals were not very carefully sealed off in the abandonment.

FIRST STOP-BROAD STREET AND HOLMWOOD DRIVE

The pipe with a box on it next to the olive tree is a low-volume and low pressure continuing emanation that has burned for at least 25 years (Fig. 3). The burning controls the noxious odor of the hydrogen sulphide that is produced with the methane. The nearest well was a dry hole located 700 feet to the west. The nearest productive well was Sunset Pacific Co. "Strobridge B" #1 which is located 2,700 feet to the northwest. The productive Mesa pool was in this area, and generally fans out to the north-west from this well (Fig. 1). The field was a small shallow pool that encompassed only 25 acres. When it was fully developed it contained 13 productive wells and approximately the same number of surrounding dry holes. The productive interval was the upper Miocene Mesa sand at a depth of 600 feet to 450 feet. The

3

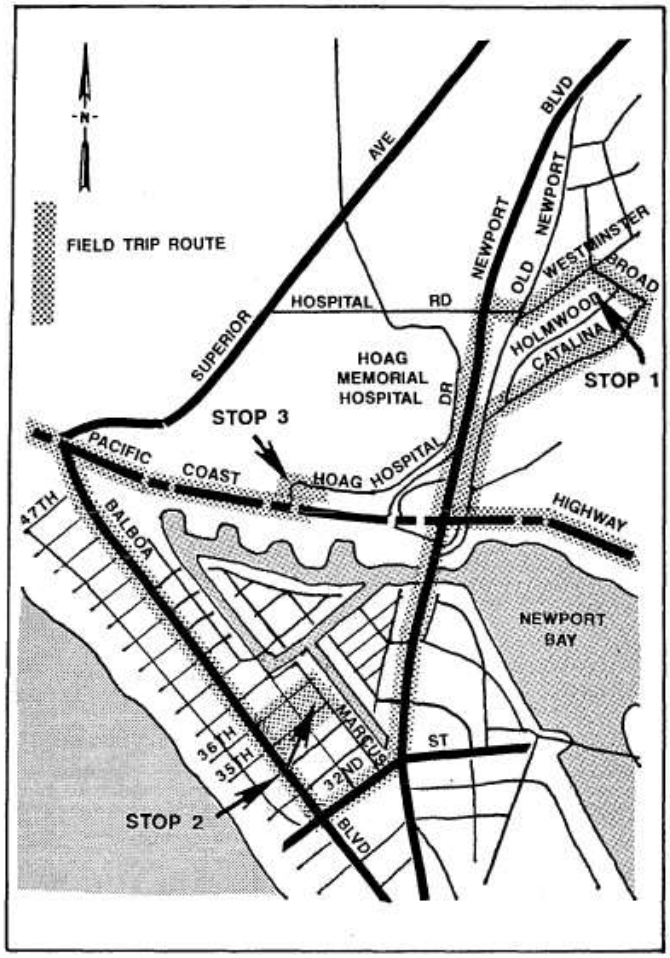

Figure 3. Map of the Newport Bay area showing the location of the methane gas leaks. Stop 1 is a low-volume and low-pressure burn stack. Stop 2 is a gas vent in a high density residential area. Stop 3 is the 90 mcf flare at Hoag Hospital.

the structure is homocline. The limit to the north-west is an oil water contact. The cumulative production is 33,697 barrels of oil, and production peaked at 14,000 barrels of oil per day in 1926.

The environmental solution to this leakage is to continue the burning and maintain the vault. Sealing off this vent will result in break-out at another possibly more dangerous location.

STOP 2 - 35TH ST. AND MARCUS AVE.

This vent is the southern-most gas problem within Newport Beach (Fig. 3). The area had six productive wells and two dry holes within an 800 foot radius. The main leak of both combustible gas and hydrogen sulphide is associated with the locale near the Louis F. Dekay & Son #1 well. The 1925 well history gives its location as approximately the edge of the

4

second house from the corner of 35th Street and Marcus Avenue. Nothing has caught fire here, but the odor of hydrogen sulphide is very strong and annoying at times. Gas levels as high as 65% by volume were measured in the pipeline trenching dug in the alley.

The well was completed as a Miocene"C" sand producer. It produced for two months at a rate of 3 to 5 barrels per day of 8° API gravity oil. It was deemed uneconomic to continue production. In 1929 the well was abandoned. A wooden plug was placed at 80 feet and cement placed on top. The top of the cement was found at 125 feet. Oil field rubble was thrown in the hole and a surface plug was placed from 46 feet up to the cut-off depth at 20 feet. The leak is mainly in the alley between 35th and 36th Street. A passive collection system was laid under the alley in the form of perforated PVC pipe. This is connected to a passive flare that vents at the top of a metal light standard. The system is helpful but it does not get all of the gas out from under the alley and the adjacent houses. Gas enters the garages and houses from cracks in the slab floors and around plumbing pipes. In 1995 one house was found unsafe for occupancy because of high methane levels.

The best solution for solving this gas problem is to reenter the well, clean it out, and plug off the lower section. This is not possible because of the residences and the power line configuration. One house would have to be removed and the other would have to have a hole torn in it. The well location has not been accurately determined. Soil penetrating devices such as radar and cesium vapor detectors have all failed because of the depth and interference. This leak needs an extraction compressor system to bring it under control.

STOP 3 - GAS FLARE ON THE HOAG MEMORIAL HOSPITAL PROPERTY

This is the largest gas leakage problem and the most extensive recovery and disposal system in Newport Beach (Fig. 3). Methane and hydrogen sulphide have plagued the area since the 1930's, possibly since the 1920's. The odor has been a distinctive feature of Pacific Coast Highway from the arches bridge to Balboa Boulevard. The property on the north side of Pacific Coast Highway was heavily excavated during the 1950's for freeway fill dirt when it belonged to Cal Trans.

In the 1980's Hoag Memorial Hospital purchased the land and the wells which were operated by the City of Newport Beach. They are now operated by the hospital. The sandy Pleistocene upper formation was excavated down to Miocene silty shale.

In 1976, after years of exposure to hydrogen sulphide and combustible gas, five exploratory wells were drilled to determine the extent of the gas accumulation and to be completed as extraction points if gas was found. The recovered production was flared in a burning stack. A precedent for flaring the gas was set in the 1960's when two flares were active on the south side of Pacific Coast Highway, just behind the car rental agency. The wells were connected to a buried perforated PVC collection system under the street and within the residential area. Four ornamental lamps at separate properties were also installed and burned within the housing tract. Three of the five wells were completed. Each encountered a significant gas flow composed of both hydrogen sulphide and combustible gas. Well #1, with the largest vertical section of gas, penetrated the sand at 15 feet and was completed and cased to 42 feet. Deeper penetration to the base of the gas sand was prevented by hole caving.

The gas sand is a slightly moist, grey to bluish grey, very soft and friable, fine to coarse grained sand with some shells and rounded pebbles. Some portions have a yellow sulfur tinge. Number 1 was abandoned in 1989 so that Pacific Coast Highway could be widened. It was replaced by well #6 which penetrated the same gas sand and was completed to 56 feet. Caving prevented deeper penetration. No water table was encountered.

Well #3 was drilled to a depth of 99 feet entirely in the Miocene shale except for four feet of gas sand from 83 to 87 feet. A slightly gas bearing water sand was encountered at 96 feet. In 1989 this well was redrilled for the widening. It was relocated approximately 30 feet to the north and completed in the same sand as wells #1 and #6. Number 5 is still producing. It was drilled to 100 feet and completed in 30 feet of the same sand. It is the only remaining steel liner well.

Nearby there are five other abandoned oil wells. Four wells produced in the forties and fifties. The fifth is a 1933 dry hole that is poorly abandoned and may be a contributor to the leakage. The production interval is not sealed off and even though it was abandoned as a dry hole it did penetrate hydrocarbon bearing zones. The other wells were properly abandoned in 1972.

The three Hoag wells produce 90 MCF of gas per day, all of which is flared from the stack near well

#5. The wells have produced at the same approximate rate since 1976. Until recently, the hydrogen sulphide content of the gas has precluded commercial use. Table 1 gives the gas content at this location.There is a project underway to treat the gas and remove the sulfur. The scrubbers are the tan colored vessels near the flare. When the gas is clean it will be shipped to the hospital boiler room and be used to make heat. The addition of a few more wells could further mitigate this area's gas problem. Carlson (1996) reviews DOGGR's current policy for venting soils in residential areas.

GAS CONTENT IN ppm/v/v C1-C5

WELL	METHANE	ETHANE	PROPANE	BUTANE	PENTANE	CO2	O2	N	H2S
5	702K	499	26	7.3	3.4	156K	7.5K	130K	>100
6	681K	461	24	5.4	2.2	164K	4.0K	128K	>100
7	30K	29	1.4	0.9	0.3	13K	190K	723K	56

Table 1. Gas composition at the Hoag Hospital site on Pacific Coast Highway.

REFERENCES

Carlson, K. M., 1996, Oil Fields in Transition - A Look at California's Oil Well Plugging and Abandonment and Construction Site Plan Review Programs, *in* Clarke, D. D., Otott, G. E., and Phillips, C. C., Old Oil Fields and New Life: A Visit to the Giants of the Los Angeles Basin, Guidebook, Division of Environmental Geology, Pacific Section, American Association of Petroleum Geologists, and the Society of Petroleum Engineers, in press.

Division of Oil and Gas, 1984, California Oil and Gas Fields; Volume II, publication n. TR12. Division of Oil , Gas, and Geothermal Resources of the California Department of Conservation (DOGGR), 1995, 1994 Annual Report of the State Oil and Gas Supervisor; The Eightieth Annual Report: 181 p.

Ingram, W. L., 1968, Newport Oil Field: California Division of Oil and Gas, Summary of Operations --- California Oil Fields, v. 54, no. 2, part 2.

Parker, F. S., 1943, Newport Oil Field: *in* California Division of Mines and Geology Bulletin 118 Chapter VIII, p. 332-334.

Zebal, G.P., and Associates, 1975, Industrial Utilization of Geology: Unpublished report for the City of Newport Beach.

6

Response to Comment Letter 2

Response to Comment 2-1:

As noted by the commentator, abandoned oil and gas wells on the Hoag Hospital have created a conduit for "seepage" of methane and hydrogen sulfide, thus generating odor complaints (as highlighted in the SCAQMD Engineering Report). Flaring is an effective method to mitigate the odor issue, but, as is the concern and basis for PR1118.1, flaring generates NOx emissions that the SCAQMD is seeking to control pursuant to the directive in the 2016 AQMP. However, since the submittal of this comment letter, SCAQMD staff amended the definition of "Produced Gas" to be consistent with Rule 1148.1 and the BACT determinations of produced gas. This modification defines produced gas generated from the production, gathering, separation, or processing of crude oil. Since Hoag Hospital, who is responsible for these flares, is not extracting or producing crude oil, flaring would no longer be characterized as "produced gas." Hoag Hospital flaring would now be more appropriate to classify as "other flare gas," which has no Table 2 – Annual Capacity Threshold. Thus, the existing flaring at Hoag Hospital would not be subject to recordkeeping or source testing until it is decided to replace with new flare. In other words, Hoag Hospital may continue to operate under the existing permit conditions; however, a new or relocated flare will need to comply with Table 1 – Emission Limits. According to their existing permit, their existing flare has been retrofitted with an ultra-low-NOx flare that already meets the proposed limit in Table 1 – Emission Limits of PR1118.1 of 0.06 pound/MMBtu so no further action would be required at this time.

Comment Letter #3

Comment Letter 3

WSPA

Bridget McCann
Manager, Southern California Region

October 16, 2018

Michael Krause
Manager, Planning and Rules
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Via e-mail at: mkrause@aqmd.gov

Re: WSPA Comments on Proposed Rule 1118.1
Control of Emissions from Non-Refinery Flares

Dear Mr. Krause,

Western States Petroleum Association (WSPA) appreciates this opportunity to provide feedback on South Coast Air Quality Management District (SCAQMD or District) Proposed Rule 1118.1, Control of Emissions from Non-Refinery Flares. The District has stated that this proposed rulemaking is part of the District's larger project to transition facilities in the Regional Clean Air Incentives Market (RECLAIM) program to a command-and-control structure (i.e., the "RECLAIM Transition Project").

WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that are within the purview of the RECLAIM Program administered by the South Coast Air Quality Management District (District or SCAQMD) and some of them will be impacted by PR1118.1. We have several comments concerning the proposed rulemaking.

On September 21, 2018, the District released preliminary draft rule language and a preliminary Draft Staff Report for PR1118.1, Control of Emission from Non-Refinery Flares. While this rule does not apply to refinery flares, it does apply to flares operating at non-refinery oil and gas production sites. The District has estimated that 288 flares will be subject to this rule, 49 of which burn process gas.[1]

Rule 1118.1(d)(2) would require that existing flares at oil and gas production sites installed prior to the date of adoption of the rule will need to either demonstrate compliance with the emission limits in Table 1 of the rule, or limit use of the flare to less than or equal to 5% of the flare capacity. The proposed emission limits for produced gas are listed in Table 1 below:

Table 1: Proposed Rule 1118.1 Emission Limits for Produced Gas

[1] SCAQMD Preliminary Draft Staff Report, Proposed Rule 1118.1, September 2018, Table 1: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1118.1/pr1118-1-pdsr.pdf?sfvrsn=6

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Mr. Krause, SCAQMD
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	Emission Limit (lb/MMBtu)		
	NOx	CO	VOC
Produced Gas	0.018	0.06	0.008

SCAQMD anticipates that six (6) process gas flares at oil and gas production sites are used above the 5% capacity threshold.[2]

We have the following comments on the preliminary proposed rule language:

1. **Annual heat input should be defined.** WSPA believes this term needs to be defined in rule, as it is used to determine percent capacity by heat input in section (g). 3-1
2. **The process for extensions needs to be clarified.** SCAQMD has included an extension provision in the rule language, but has not included information on what the process will be if an extension is not granted. This should be clarified in the proposed rule language. 3-2
3. **The District Proposal is not cost effective for oil and gas flares.** SCAQMD's analysis uses an average capital cost of $545,000 along with expected NOx emission reductions at variable capacity thresholds to determine the cost effectiveness of flare replacement.[3] As the result of a confidential, de-identified and aggregated member projected cost survey, WSPA projects that the actual capital cost of a typical flare replacement at a (non-refinery) oil and gas facility is likely to be in the range of $1,200,000 to $1,900,000. Using the District's Discounted Cash Flow method, a real interest rate of four percent, and a 25-year equipment life, along with the average annual cost ($32,350), and the emission reductions expected at a 5% capacity threshold presented in the AQMD Staff Report,[3] the cost effectiveness for flare replacement at (non-refinery) oil and gas facilities would be between $80,000 and $113,000 per ton of NOx reduced. The 2016 AQMP established a cost-effectiveness threshold of $50,000 per ton of NOx reduced. Therefore, replacement of flares at (non-refinery) oil and gas facilities would not be cost effective at the 5% capacity threshold. Using the emission reductions expected for the flares operating at or above 20% capacity,[3] we estimate that cost effectiveness would be reduced to between $70,000 and $99,000; still exceeding the District's cost effectiveness threshold. As such, the District's proposal should be revised to exclude (non-refinery) oil and gas flares. 3-3
4. **The requirement for existing flares combusting other flare gas needs to be clarified.** WSPA suggests that the regulatory wording be changed as follows (in bold, underlined italics) so that the requirement for existing other flares is clear:

[2] SCAQMD Preliminary Draft Staff Report, Proposed Rule 1118.1, September 2018, Table 11: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1118.1/pr1118-1-pdsr.pdf?sfvrsn=6

[3] SCAQMD Preliminary Draft Staff Report, Proposed Rule 1118.1, September 2018, Table 7: http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1118.1/pr1118-1-pdsr.pdf?sfvrsn=6

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Mr. Krause, SCAQMD
October 16, 2018
Page 3

(d)(2) An owner or operator of a flare or flare station ***in the categories listed in Table 2 and*** installed prior to [date of adoption] shall: (the rest of the language in (d)(2) can remain the same since Table 2 does not include other flare gas). 3-4

5. **NOx and CO Limits for New and Replaced Flares in the Other Category.** WSPA requests that source materials that substantiate emission limits and cost effectiveness be shared with stakeholders. District Staff agreed to share source materials with stakeholders for the Proposed Rule 1109.1 working group process, and source materials should be available to stakeholders in all RECLAIM landing rule working groups. 3-5

For WSPA's concerns regarding replacement as a requirement for BARCT, please refer to the attached comments that were previously submitted to SCAQMD on behalf of WSPA by Latham & Watkins on August 15, 2018. 3-6

For WSPA's concerns regarding permitting timelines and monitoring, reporting, and recordkeeping, please refer to WSPA's previous comments on the RECLAIM Transition, including the attached comments that were submitted to SCAQMD on behalf of WSPA by Latham & Watkins on September 7, 2018.

WSPA appreciates the opportunity to provide comments related to PR 1118.1. We look forward to continued discussion of this important rulemaking. If you have any questions, please contact me at (310) 808-2146 or via e-mail at bridget@wspa.org.

Sincerely,

Cc:

Dr. Philip Fine, SCAQMD
Steven Tsumura, SCAQMD
Tom Umenhofer, WSPA
Christine Zimmerman, WSPA

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LATHAM&WATKINS LLP

August 15, 2018

VIA EMAIL

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: SCAQMD Staff Proposal to Require Equipment Replacement as BARCT

Dear Dr. Fine:

We are submitting these comments on behalf of our client Western States Petroleum Association ("WSPA") on an important issue that has arisen in connection with the transition of the Regional Clean Air Incentives Market ("RECLAIM") program to a command-and-control regulatory structure. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the RECLAIM program.

South Coast Air Quality Management District ("SCAQMD") staff has recently taken the position that a best available retrofit control technology ("BARCT") standard may require total replacement of the emitting piece of equipment. SCAQMD staff has articulated this position in various meetings and documents produced in connection with the RECLAIM transition. The most detailed explanation of the staff's position of which we are aware is contained in the July 2018 Draft Staff Report in support of proposed amendments to SCAQMD Rule 1135 ("Rule 1135 Staff Report") at pages 2-1 through 2-2. 3-7

In the Rule 1135 Staff Report, staff makes two arguments in support of its position. First, it cites to dictionary definitions of "retrofit" and concludes that "replacement" is not specifically excluded from those definitions. Second, it cites to a California Supreme Court case, *American Coatings Ass'n v. South Coast Air Quality Mgt. Dist.*, 54 Cal 4th 446 (2012), for the proposition that a BARCT standard may require replacement of the emitting equipment in its entirety. We provide a response to each of these arguments below.

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LATHAM&WATKINS LLP

"Common Sense Definition" Argument

The SCAQMD's "common sense definition" argument is flawed in that it focuses on whether or not "replacements" are specifically excluded from the definitions of "retrofits," as opposed to whether or not they are included within the definition. The SCAQMD's backward approach to interpreting dictionary definitions is non-sensical. Under this approach, because the definition of "apple" does not specifically exclude "orange," an orange may be an apple notwithstanding the fact that the definition of apple clearly does not include orange. When one focuses on what is included within the definitions of "retrofit," as opposed to what is not excluded, it is clear that while replacement of certain elements of any particular object may be a "retrofit," replacement of the object in its entirety is not.

One of the definitions relied upon by the SCAQMD is the following from the on-line Merriam-Webster Dictionary: 3-7 Cont

> 1: to furnish (something, such as a computer, airplane, or building) with new or modified parts or equipment not available or considered necessary at the time of manufacture, 2: to install (new or modified parts or equipment) in something previously manufactured or constructed, 3: to adapt to a new purpose or need: modify.

This definition makes clear that a "retrofit" involves an existing object – "(something, such as a computer, airplane, or building)" – upon which the act of retrofitting occurs, and which continues to exist following that action. The Rule 1135 Staff Report states: "This definition does not preclude the use of *replacement parts* as a retrofit." (emphasis added). This statement is true, but it does not support the position taken by the SCAQMD that a retrofit may include the replacement of the entire object that is the subject of the retrofit. Note that in the case of BARCT, we are discussing retrofitting a piece of equipment and thus, the second of the definitions in Merriam Webster, "to install (new or modified parts or equipment) in something previously manufactured or constructed," is the most applicable definition. When one retrofits equipment, such as a heater, the parts, such as a burner, may be updated, but the original heater itself remains.

It becomes even more clear that the staff's interpretation of the term "retrofit" is incorrect when one considers the definition of the term "replace" from the same source:

> 2: to take the place of especially as a substitute or successor.

The distinction between these two terms is clear – in the case of "retrofit," the pre-existing object that is the subject of the action continues to exist following the action, but in an altered state; whereas, in the case of "replace," the pre-existing object of the action no longer exists following the action. So, if you replace a heater, the original heater no longer exists.

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The other definition relied upon by the staff is from the on-line Dictionary.com:

> 1. To modify equipment (in airplanes, automobiles, a factory, etc.) that is already in service using parts developed or made available after the time of original manufacture, 2. To install, fit, or adapt (a device or system) or use with something older; to retrofit solar heating to a poorly insulated house, 3. (of new or modified parts, equipment, etc.) to fit into or onto existing equipment, 4. To replace existing parts, equipment, etc., with updated parts or systems.

Again, this definition makes clear that a retrofit involves the modification of existing equipment (e.g., airplane, automobile, factory), which continues to exist following such action. To the extent that the term "replacement" is used in the definition, it clearly refers to the replacement of *some element* of that object (e.g., parts of an airplane, equipment in a factory), and not to replacement of the entire object altogether. 3-7 Cont

And again, the distinction between the two terms becomes even clearer when one considers the definition of "replace" from the same source:

> 1: to assume the former role, position, or function of; substitute for (a person or thing), 2: to provide a substitute or equivalent in the place of.

"Replace" and "retrofit" are different terms with different meanings, and to suggest that the use of one term somehow includes the other, without some explicit statement of intent to do so, simply ignores the distinction between the two terms.

Furthermore, both "retrofit" and "replace" or "replacement" are terms commonly used in air quality statutes and regulations, and the difference between the terms is well understood. When a statute or regulation is intended to require, or apply to, "replacements," that intention is typically clear on its face. When a legislative body means "replacement," it says so explicitly, and to suggest that the California legislature intended to include "replacement" within the scope of a definition that uses the term "retrofit," flies in the face of the distinction between these two terms that is embodied throughout the universe of air quality statutes and regulations. If the legislature had intended that equipment be replaced, they would have used the word "replacement" (best available replacement control technology). The SCAQMD staff cannot ignore the word "retrofit" in the term "best available retrofit control technology." It is a fundamental principle of statutory interpretation that each term be given meaning.

"*American Coatings*" Argument

Neither the language from the *American Coatings* decision quoted in the Rule 1135 Staff Report, nor anything else in the decision, supports the proposition that a BARCT standard may require the replacement of the primary emitting equipment to which the standard is being applied. In fact, this issue is not even addressed in the case.

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The *American Coatings* case addresses the issue of whether or not there are certain circumstances where an adopted BARCT standard may be more stringent than the currently applicable best available control technology ("BACT") standard for the same class or category of source. The court concludes that it is acceptable for an adopted BARCT standard *with a future compliance date* to be more stringent than the BACT standard that exists at the time the more stringent BARCT standard is adopted. *American Coatings, 467.* In explaining its decision, the court pointed out that a BARCT standard with a future compliance date need not be met until some point in the future after which advances in technology have occurred; whereas, a BACT standard must be met immediately in order for a source to obtain a pre-construction permit. The court also pointed out that BARCT standards with future compliance dates that could not be achieved as of the date of adoption are consistent with the concept that BARCT standards may be "technology-forcing." 3-7 Cont

The Rule 1135 Staff Report correctly articulates the *American Coatings* holdings described above but does not contain any analysis to support the staff's position that a BARCT standard can require the complete replacement of the emission unit. It simply includes the following conclusory statement: "Therefore, the SCAQMD may establish a BARCT emissions level that can cost-effectively be met by replacing existing equipment rather than installing add-on controls . . ." Rule 1135 Staff Report, p. 2-2. The staff report is devoid of any legal analysis or authority, including the *American Coatings* decision, that supports this conclusion.

Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 401-8105 or by email at michael.carroll@lw.com, or Bridgit McCann of WSPA at (310) 808-2146 or by email at bmccann@wspa.org.

Sincerely,

Michael J. Carroll
of LATHAM & WATKINS LLP

cc: Cathy Reheis-Boyd, WSPA
Patty Senecal, WSPA
Bridgit McCann, WSPA
Wayne Nastri, SCAQMD
Barbara Baird, SCAQMD

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033950-0007

September 7, 2018

VIA EMAIL

Dr. Philip Fine
Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Proposed Amended Rules 2001 and 2002

Dear Dr. Fine:

We are submitting these comments on behalf of our client Western States Petroleum Association ("WSPA") on the most recent round of proposed amendments to South Coast Air Quality Management District ("SCAQMD") Rules 2001 and 2002. The amendments are being proposed in connection with the transition of the Regional Clean Air Incentives Market ("RECLAIM") program to a command-and-control regulatory structure. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in five western states including California. WSPA has been an active participant in air quality planning issues for over 30 years. WSPA-member companies operate petroleum refineries and other facilities in the South Coast Air Basin that will be impacted by the transition out of the RECLAIM program.

General Comments

The proposed amendments to Rules 2001 and 2002 are primarily interim measures intended to establish new eligibility criteria for exiting RECLAIM, provide opt-out procedures, and address, on a temporary basis, unresolved issues surrounding compliance of new source review ("NSR") for former RECLAIM facilities once they have transitioned out of the RECLAIM program. As WSPA and others have expressed in numerous meetings, workshops and hearings conducted in connection with the RECLAIM transition, we have serious concerns about the lack of clarity surrounding NSR in a post-RECLAIM regime.

We believe current SCAQMD staff's ("staff") proposed approach is premature, as staff has not addressed all of the underlying issues surrounding a RECLAIM sunset. RECLAIM is a comprehensive, complex program that was adopted as a whole. In the development of RECLAIM, staff not only determined current and future effective best available retrofit control

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technology ("BARCT"), but also examined and addressed NSR, reviewed socioeconomic impacts, mitigated implications of emissions trading, resolved enforcement and monitoring issues, and understood a host of other consequences of adopting such a program. This comprehensive approach ensured the overwhelming success of the RECLAIM program as it was designed. In contrast for this rulemaking, staff is dismantling the RECLAIM program without analyzing any of the consequences of the proposed approach. Most importantly, staff has not addressed NSR, nor the environmental and socioeconomic impacts of a RECLAIM sunset.

Our strong preference is that staff prioritizes resolution of the NSR issues and conduct an analysis of the entire RECLAIM transition project comparable with the same full analysis that was done during the implementation of RECLAIM before initiating rulemaking. There is no evidence that this has been done to date. We believe that addressing fundamental programmatic issues that will affect all former RECLAIM facilities, such as NSR, early in the transition process, and then moving on to the more narrowly applicable landing rules, would result in a more orderly and efficient transition in the following ways: 3-8 Cont

- It would provide facilities with an understanding of the NSR requirements and procedures that will apply to modifications required to comply with updated BARCT rules. It is not possible to develop a final and comprehensive plan for implementing new BARCT requirements without knowing the NSR requirements and procedures and how those will impact post-RECLAIM operating permits.

- It would result in a more efficient use of staff resources. For example, the proposed amendments to Rules 2001 and 2002 are essentially "stop-gap" measures that are necessary because the NSR and other programmatic issues remain unresolved. If the NSR and other programmatic issues were addressed, it would not be necessary to develop and implement such measures.

- It would avoid the current ad hoc, piecemeal approach to the RECLAIM Transition Project which results in additional confusion and uncertainty. This is illustrated by the fact that staff's positions with respect to certain issues related to the proposed amendments to Rules 2001 and 2002 are quite different than positions taken when these two rules were amended in January of this year in what we view as a rush to get the RECLAIM transition process underway.

- It would avoid legal vulnerabilities that we believe are inherent in the current ad hoc, piecemeal approach because the environmental and socioeconomic assessments of incremental rulemaking are disjointed and incomplete.

Should the District continue with this piecemeal approach, we offer the comments set forth below on the proposed amendments:

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Specific Comments on Proposed Amended Rule 2002(f)(11) – "Stay-In" Provision

The proposed amendments to Rule 2002 would allow facilities to remain in the RECLAIM program, and thereby avail themselves of the RECLAIM NSR program set forth in SCAQMD Rule 2005 for some period of time. Our understanding, which was confirmed by staff during the RECLAIM Working Group meeting on August 9, 2018, is that the decision of whether or not to remain in the RECLAIM program is completely within the discretion of the facility (assuming the facility meets the specified criteria). Some of the language in the proposed amendments could be read to grant the Executive Officer discretion (beyond merely confirming that the facility meets the specified criteria) to decide whether or not the facility may remain in the program. The following proposed changes are intended to better reflect staff's intent. 3-8 Cont

(11) An owner ~~of~~ **or** operator of a RECLAIM facility that receives an initial determination notification may elect **that** ~~for~~ the facility ~~to~~ remain in RECLAIM **by submitting** ~~if~~ a request to the Executive Officer to remain in RECLAIM ~~is submitted~~, **together with** ~~including~~ any equipment information required pursuant to paragraph (f)(6).

(A) Upon **receiving a request to remain in RECLAIM and any equipment information required pursuant to paragraph (f)(6),** ~~written approval by~~ the Executive Officer **shall notify the owner or operator in writing** that the facility shall remain in RECLAIM **subject to the following**:

(i) The facility shall remain in RECLAIM until a subsequent notification is issued to the facility that it must exit by a date no later than December 31, 2023.

(ii) The facility is required to submit any updated information within 30 days of the date of the subsequent notification.

(iii) The facility shall comply with all requirements of any non-RECLAIM rule that does not exempt NOx emissions from RECLAIM facilities.

Specific Comments on Proposed Amended Rule 2002(f)(10) – "Opt-Out" Provision

Proposed Amended Rule 2002 includes an "opt-out" provision for those facilities that may be ready to voluntarily exit RECLAIM prior to the time that they might otherwise be transitioned out. The current staff proposal differs from previous proposals in that it places

certain restrictions on facilities after they have exited the program that we believe are unfair and unwarranted. Specifically, proposed paragraph (f)(10)(B) would prohibit such facilities from taking advantage of otherwise available offset exemptions in SCAQMD Rule 1304. In the event that an NSR event requiring offsets were to occur after the facility exited the RECLAIM program, it would be required to obtain emission reduction credits on the open market, which the staff acknowledges are "scarce." (July 20 Preliminary Draft Staff Report, p. 8).[1] We believe that it is unnecessary, unfair, and possibly contrary to state law, to deny former RECLAIM facilities advantages that they would otherwise be entitled to and that are available to all other non-RECLAIM facilities. 3-8 Cont

The Preliminary Draft Staff Report expresses concern that the potential impacts associated with emission increases from facilities that might exit the RECLAIM program, even if limited to the 37 facilities the staff initially identified as eligible to exit, could impose a demand on Rule 1304 offset exemptions that could approach or surpass the cumulative emissions increase thresholds of SCAQMD Rule 1315. (Preliminary Draft Staff Report, p. 8). In other words, staff is concerned that if former RECLAIM facilities were permitted to utilize Rule 1304 offset exemptions, the demand on the SCAQMD's internal emission offset bank, which supports the offset exemptions, might exceed previously analyzed levels. This concern seems inconsistent with positions taken by staff in connection with the January 2018 amendments to these two rules, and with more recent statements by staff suggesting that it believes the internal emission offset bank is the most viable source of emission offsets for former RECLAIM facilities on a long-term basis.

The January 2018 amendments established the criteria and procedures pursuant to which eligible facilities would be identified and exited from RECLAIM. According to the Final Staff Report, ". . . the proposed amendments would remove approximately 38 facilities from NOx RECLAIM." (January 5 Final Staff Report, p. 2).[2] Staff determined that the impact of exiting the initial round of facilities, including impacts associated with reduced demand for RTCs, would be minimal:

> Given the analysis above and the fact that the 38 facilities—which are potentially ready to exit out of the NOx RECLAIM program into command-and-control—account for about one percent of NOx emissions and NOx RTC holdings in the NOx RECLAIM universe, staff concludes that the potential impact of PAR 2002 on the demand and supply of NOx RTC market is expected to be

[1] References herein to "July 20 Preliminary Draft Staff Report" refer to the Preliminary Draft Staff Report, Proposed Amendments to Regulation XX- Regional Clean Air Incentives Market (RECLAIM), Proposed Amended Rules 2001 – Applicability and 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), dated July 20, 2018.

[2] References herein to "January 5 Final Staff Report" refer to the Final Staff Report Proposed Amendments to Regulation XX – Regional Clean Air Incentives Market (RECLAIM) Proposed Amended Rules 2001 – Applicability and 2002 – Allocations for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), dated January 5, 2018.

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> minimal and large price fluctuations in the NOx RTC market are unlikely to result directly from the potential exit of the 38 directly affected facilities out of the NOx RECLAIM program. Therefore, PAR 2002 would have minimal impacts on the existing facilities that are not yet ready to exit the NOx RECLAIM program. (January 5 Final Staff Report, p. 12.)

To support its conclusion that exiting the initial round of facilities from the program would have minimal impacts as a result of foregone market demand for RTCs, staff analyzed three scenarios in which NOx emissions from the subject facilities were: i) 5% below 2015 NOx emissions; ii) the same as 2015 NOx emissions; and iii) 5% above 2015 NOx emissions. (January 5 Final Staff Report, p. 11). Staff determined that foregone market demand for RTCs associated with exiting the initial group of facilities under each of the three scenarios would be 0.073 tons per day (TPD), 0.080 TPD, and 0.086 TPD, respectively. Based on this analysis, staff concluded that the anticipated future demand for NOx RTCs associated with the exiting facilities was minimal, and that eliminating that demand would not materially impact the remaining market. In other words, staff concluded that the exiting facilities would have a negligible demand for RTCs in the future, including RTCs required to satisfy NSR requirements. As stated in the Summary of the Proposal: 3-8 Cont

> Considering the past market behavior by these facilities, staff concludes that the potential impact of PAR 2002 on the demand and supply of NOx RTC market is expected to be minimal and large price fluctuations in the NOx RTC market are unlikely to result directly from the potential exit of these facilities out of the NOx RECLAIM program. (Summary of Proposal, Agenda Item No. 18, January 5, 2018, p. 3.)

Notably, staff did not even address the impact that the January 2018 amendments might have on the internal bank even though those amendments were intended to result in precisely the situation about which staff is now expressing concern – the removal of 38 facilities from the RECLAIM program that would then be eligible to take advantage of offset exemptions in Rule 1304 like any other RECLAIM facility.

In contrast with the January 2018 Final Staff Report, the July 2018 Preliminary Draft Staff Report expresses serious concerns about the potential for increased NOx emissions from facilities exiting the program, stating that "[e]ven among the first 37 facilities identified that may be eligible to exit, any impacts from potential emissions increases are unknown and if significant enough, can approach or surpass the cumulative emissions increase thresholds of Rule 1315." (July 2018 Preliminary Draft Staff Report, p. 8).

Clearly, the conclusions reached by staff in the January 2018 Final Staff Report, upon which the Governing Board relied when it adopted the current versions of Rules 2001 and 2002, are inconsistent with the concerns being raised by staff in the current proposal. Either staff erred in January by underestimating the impacts on the RECLAIM market and failing to even analyze

the potential impacts on the internal bank, or it is overstating the potential impacts associated with the current proposal. In either case, this inconsistency illustrates the problem with undertaking the RECLAIM transition in an ad hoc, piecemeal fashion.

California Environmental Quality Act Considerations

WSPA and others have expressed concerns regarding the "piecemeal" manner in which the California Environmental Quality Act ("CEQA") analysis for the RECLAIM transition is being conducted. ". . . CEQA's requirements 'cannot be avoided by chopping up proposed projects into bite-size pieces which, individually considered, might be found to have no significant effect on the environment or to be only ministerial.' [Fn. omitted.]" *Lincoln Place Tenants Assn. v. City of Los Angeles* (2005) 130 Cal.App.4th 1491,1507 quoting *Plan for Arcadia, Inc. v. City Council of Arcadia* (1974) 42 Cal.App.3d 712, 726. Staff explained its CEQA strategy for the RECLAIM transition in an April 25, 2018 letter to the Los Angeles County Business Federation in which it stated: 3-8 Cont

> The potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in Program Environmental Impact Report (PEIR) certified in March, 2017 . . . In other words, the environmental impacts of the entire RECLAIM Transition project . . . were analyzed in the 2016 AQMP and the associated PEIR, which was a program level analysis . . . Since the SCAQMD has already prepared a program-level CEQA analysis for the 2016 AQMP, including the RECLAIM Transition, no additional program-level analysis is required and further analysis will be tiered off the 2016 AQMP PEIR. (http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/regxx/aqmd-response-letter-to-bizfed-042518.pdf?sfvrsn=6).

Consistent with the staff's explanation described above, SCAQMD staff has prepared a Draft Subsequent Environmental Assessment ("Draft SEA") to analyze environmental impacts from the proposed amendments to Rules 2001 and 2002. (http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects). The Draft SEA attempts to tier off of the March 2017 Final Program Environmental Impact Report for the 2016 AQMP and tries to obscure the issue by citing to several other previously certified CEQA documents, including the December 2015 Final Program Environmental Assessment completed for the amendments to the NOx RECLAIM program that were adopted on December 4, 2015, and the October 2016 Addendum to the December 2015 Final Program Environmental Assessment completed for amendments to Rule 2002 to establish criteria and procedures for facilities undergoing a shutdown and for the treatment of RTCs. Consistent with the staff's earlier explanation, the Draft SEA states:

> "The decision to transition from NOx RECLAIM into a source-specific command-and-control regulatory structure was approved by the SCAQMD Governing Board as control measure CMB-05 in

> the 2016 AQMP and the potential environmental impacts associated with the 2016 AQMP, including CMB-05, were analyzed in the Final Program EIR certified in March 2017. This Draft SEA relies on the analysis in the March 2017 Final Program EIR for the 2016 AQMP." (Draft SEA, p. 2-5).

The proposed amendments to Rules 2001 and 2002 implement that portion of control measure CMB-05, written after the Governing Board's adoption of the 2016 AQMP that calls for the transition of the RECLAIM program to a command and control regulatory structure. As stated in the July 2018 Preliminary Draft Staff Report, "Proposed Amended Rules 2001 and 2002 will continue the efforts to transition RECLAIM facilities to a command-and-control regulatory structure . . ." (July 2018 Preliminary Draft Staff Report, p. 2). The problem with the proposal to tier the CEQA analysis for the currently proposed amendments to Rules 2001 and 2002 off from the March 2017 Final Program EIR for the 2016 AQMP is that control measure CMB-05 as proposed at the time the March 2017 Final Program EIR was prepared did not include a transition out of the RECLAIM program. That language was added well after the CEQA analysis was complete. Furthermore, no additional CEQA analysis was conducted to address the changes to CMB-05. 3-8 Cont

The Final Draft 2016 AQMP, which was ultimately presented to the SCAQMD Governing Board, was released in December 2016. Control measure CMB-05 called for an additional five tons per day of NOx reductions from sources covered by the RECLAIM program by the year 2031. CMB-05 also called for convening a Working Group to consider replacing the RECLAIM program with a more traditional command-and-control regulatory program, but did not include a mandate to undertake such a transition. SCAQMD Governing Board action on the Final Draft 2016 AQMP was noticed for February 3, 2017. When the 2016 AQMP item came up on the agenda, SCAQMD staff made a presentation, as is typical. No substantive questions were asked of the staff by Board Members, and no Board Members indicated an intention to offer amendments to the staff proposal. The public was then provided an opportunity to comment, and approximately five hours of public comment ensued.

Following the close of the public comment period, Board Member Mitchell stated her intention to introduce amendments to the staff proposal for control measure CMB-05 that would: i) accelerate the additional five TPD of reductions to 2025 from 2031; and ii) transition to a command-and-control program as soon as practicable. Board Member Mitchell did not provide any specific proposed language and did not make a formal motion to amend the staff proposal. For reasons that are not relevant here, action on the item was continued to the March 3, 2017 Governing Board hearing. The Governing Board stated its intention not to take additional public comment on the item at the March 3, 2017 hearing.

At the hearing on March 3, 2017, Board Member Mitchell introduced the following amendments to CMB-05 that included a direction to staff to develop a transition out of the RECLAIM program:

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> BE IT FURTHER RESOLVED, that the SCAQMD Governing Board does hereby direct staff to modify the 2016 AQMP NOx RECLAIM measure (CMB-05) to achieve the five (5) tons per day NOx emission reduction commitment as soon as feasible, and no later than 2025, and to transition the RECLAIM program to a command and control regulatory structure requiring BARCT level controls as soon as practicable and to request staff to return in 60 days to report feasible target dates for sunsetting the RECLAIM program.

There was no Board Member discussion of the proposed amendments, and they were approved on a vote of 7-6.

3-8 Cont

The CEQA analysis supporting the 2016 AQMP commenced with a Notice of Preparation of a Draft Environmental Impact Report ("EIR") released on July 5, 2016. The Draft EIR was released on September 16, 2016, with the comment period closing on November 15, 2016. In mid-November 2016, four public hearings related to the AQMP were held in each of the four counties within the SCAQMD territory, at which comments on the Draft EIR were taken. After incorporating comments and making minor textual changes, the Final EIR was released in January 2017. No material changes or additional analysis were undertaken subsequent to the release of the Final EIR, which was certified by the Governing Board on March 3, 2017 as the March 2017 Final Program Environmental Impact Report for the 2016 AQMP, upon which staff now seeks to rely.

Thus, the transition out of the RECLAIM program, which the currently proposed amendments to Rules 2001 and 2002 seek to implement, was not included in the version of CMB-05 presented to the Governing Board as part of the 2016 AQMP. The March 2017 Final Program EIR for the 2016 AQMP, which was completed in January 2018, did not analyze the transition of the RECLAIM program because that was not prescribed by the CMB-05 measure at that time. Therefore, tiering off of the March 2017 Final Program EIR for the 2016 AQMP to support rule amendments that seek to implement the transition is not possible since there is no analysis from which to tier off. In the absence of a program level CEQA analysis that includes the RECLAIM transition, staff's segmented analysis of each proposed rulemaking action in the transition process constitutes classic "piecemealing" contrary to the requirements of CEQA.

Staff's attempt to tier without having completed a programmatic analysis of the RECLAIM Transition Project ignores the fact that RECLAIM is a comprehensive program that includes an assessment of BARCT for all of the sources in the program. It was adopted as a whole, a single package, not as a series of individual rules and regulations. There are no separate BARCT regulations in the RECLAIM program. Because RECLAIM allows for BARCT to be implemented on an aggregate basis, all BARCT determinations had to be made together. Furthermore, all RECLAIM rules are dependent upon one another, and none of these can stand alone. By attempting to analyze the impact of a single RECLAIM rule, i.e., BARCT determination, staff is ignoring the interdependency of the program, and thus, improperly disregarding the impacts of the comprehensive program.

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In the draft SEA, staff claims that it is speculative to determine what BARCT may be for all the various sources under the RECLAIM program. This underscores the fact that a comprehensive program transitioning RECLAIM sources to command and control rules was never developed or analyzed. Rather, staff is piecemealing the analysis of the RECLAIM transition. Such an approach has been rejected by the courts: "Instead of itself providing an analytically complete and coherent explanation, the FEIR notes that a full analysis of the planned conjunctive use program must await environmental review of the Water Agency's zone 40 master plan update, which was pending at the time the FEIR was released. The Board's findings repeat this explanation. To the extent the FEIR attempted, in effect, to tier from a *future* environmental document, we reject its approach as legally improper under CEQA." *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 440 [emphasis in original]. 3-8 Cont

Furthermore, RECLAIM is an emissions trading program. It allows facilities to choose to implement specific controls or to purchase emissions credits. Staff's piecemealing of the analysis does not account for those facilities that have implemented other means to comply with the program and the additional impacts the transition to individual command and control rules may have on these facilities. Additionally, these impacts cannot be captured in a single rule analysis. Rather, staff's piecemealing further ignores the impacts on facilities that are subject to multiple BARCT determinations.

Health & Safety Code Section 39616

The current staff proposal for amending Rule 2002 to prevent former RECLAIM facilities from accessing offset exemptions in Rule 1304 would place former RECLAIM facilities at a significant disadvantage relative to other non-RECLAIM facilities. California Health & Safety Code Section 39616(c)(7) prohibits imposing disproportionate impacts, measured on an aggregate basis, on those stationary sources included in the RECLAIM program compared to other permitted stationary sources. Creating a new category of sources without access to either RTCs or Rule 1304 offset exemptions to satisfy NSR requirements runs afoul of this prohibition.

Statement Pertaining to SCAQMD Rule 1306

The July 2018 Preliminary Draft Staff Report contains the following statement: "Moreover, Rule 1306 – Emission Calculations would calculate emission increases of exiting RECLAIM facilities based on actual to potential emissions, thereby further exacerbating the need for offsets." (Preliminary Draft Staff Report, p. 8). It is not clear why this would be the case. Furthermore, it is premature to make such assertions outside the context of an overall analysis of what the NSR requirements for former RECLAIM facilities might be. This is a critical issue that must be addressed in the overall development of the NSR program for former RECLAIM facilities.

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Conclusion

Thank you for considering these comments. We look forward to continuing to work with you on these rulemakings which are critically important to stakeholders as well as the regional economy. If you have any questions, please contact me at (714) 401-8105 or by email at michael.carroll@lw.com or Bridget McCann of WSPA at (310) 808-2146 or by email at bmccann@wspa.org. 3-8 Cont

Sincerely,

Michael J. Carroll
of LATHAM & WATKINS LLP

cc: Cathy Reheis-Boyd, WSPA
Patty Senecal, WSPA
Bridget McCann, WSPA
Wayne Nastri, SCAQMD
Barbara Baird, SCAQMD
Michael Krause, SCAQMD

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Response to Comment Letter 3

Response to Comment 3-1:

Staff appreciates the suggestion and since this comment letter, the definition of heat input has been added to PR1118.1, and the commentator is correct that the total annual heat input is a calculated field in determining percent capacity. Staff has provided a discussion of how that is calculated in the staff report and created a recordkeeping form the facilities can use to calculate their total annual heat input.

Response to Comment 3-2:

The commentator raises an important clarity and potential enforcement issue. Since this comment letter, definitive timelines as to the extensions provided by the SCAQMD have been added to the proposed rule. Just for clarification purposes, staff envisions any denial of time extension would be based on the absence of sufficient details identifying the reason(s) a time extension is needed and the reasons for denying an extension would identify missing data required to approve an extension. Ultimately, after the extension time offered by staff, the owner/operator always has the option to seek a variance from the Hearing Board for more time.

Response to Comment 3-3:

A capital cost estimate identifies the cost of flare, engineering, and installation. Cost estimates received from local oil and gas facilities for ultra-low-NOx flare installation was not in the $1,200,000 to $1,900,000 range. However, staff did use one value in that range based on a comment letter provided by California Resources Corporation (comment letter 1) and the average still proved the 5%five percent threshold to be cost effective. Regarding exempting oil and gas production, staff believes there are opportunities that are technically and economically feasible to reduce NOx emissions; it is a goal set forth in the 2016 AQMP; and the U.S. Environmental Protection Agency is seeking a rule to comply with Reasonably Available Control Measures (RACM)/Reasonably Available Control Technology (RACT) requirements.

Response to Comment 3-4:

Staff agrees with the suggestion and has changed the proposed rule language to address the comment. The intent was not to require *existing* "other flares" to meet the Table 1 NOx emissions limits or track their percent capacity.

Response to Comment 3-5:

Since this comment letter, the proposed NOx emission limits for "other flares" has been changed to meet current BACT limits.

Response to Comment 3-6:

Please see rResponse to cComment 3-7 and 3-8.

Response to Comment 3-7:

This August 2018 comment letter on the RECLAIM program has been previously responded to by SCAQMD staff. Please see SCAQMD response http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/regxx/18_response-100318_michael-carroll-letter-(barct-vs-bact).pdf?sfvrsn=4.

Response to Comment 3-8:

This September 2018 comment letter on the RECLAIM program was previously responded to by SCAQMD staff. Please see Final Subsequent Environmental Assessment for Proposed Amended Regulation XX – Regional Clean Air Incentives Market (RECLAIM): Proposed Amended Rule 2001 – Applicability and Proposed Amended Rule 2002 – Allocation for Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx), Appendix C, page 216 of the PDF, page C-13 of the document (http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2018/2018-oct5-032.pdf?sfvrsn=7).

Comment Letter #4

Comment Letter 4

Michael Krause
Manager, Planning and Rules
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Via e-mail at: mkrause@aqmd.gov

Re: Proposed Rule 1118.1 -
Control of Emissions from Non-Refinery Flares

Dear Mr. Krause,

Marathon Petroleum appreciates this opportunity to comment on South Coast Air Quality Management District (SCAQMD) Proposed Rule 1118.1, Control of Emissions from Non-Refinery Flares. We understand that non-refinery flares located at refineries will be regulated under the upcoming rule 1109.1, while non-refinery flares under the Other Flare Gas category would be covered under PR 1118.1. Following are our comments concerning the proposed rulemaking.

Existing flares in the Other Flare Gas category

The most recent version of the draft rule language in (d)(2) seemed to inadvertently change the expectations for existing flares in the Other Flare Gas category, and differed from the discussion during the September Working Group meeting. To clarify the proposed rule language, we suggest that the regulatory wording be changed as follows in red:

> (d)(2) An owner or operator of a flare or flare station in the categories listed in Table 2 and installed prior to [date of adoption] shall:

4-1

New / replaced flares in the Other Flare Gas category

- Emission Limits: According to the draft staff report, the NOx and CO limits for new / replaced flares in the Other Flare Gas category are based on emission limits included in recently permitted marine loading facilities. However, to our knowledge, these levels have yet to be demonstrated at these facilities. Additionally, these emission limits have not been demonstrated to be feasible when applied to other types of operations included in the Other Flare Gas category, such as truck loading or tank degassing.

4-2

SCAQMD
Michael Krause
Proposed Rule 1118.1
Page 2

- Cost-effectiveness: SCAQMD is basing the cost-effectiveness for these limits on produced gas flares, which are designated as being the most similar to Other Flares. We understand that WSPA is commenting that the costs in the draft staff report are significantly under-estimated for produced gas flares. 4-2 Cont

Due to these questions, Marathon requests that SCAQMD make available the reference materials staff used to demonstrate feasibility and to calculate cost-effectiveness of the emission limits for new Other Gas Flares in the various types of operations covered by this category.

A recommended alternative to setting specific emission limits for Other Flares that are new or being replaced is to require that this category of flares meet Best Available Control Technology standards in effect at the time of permitting.

RECLAIM

PR 1118.1 is included among the RECLAIM transition rules, and the draft staff report discusses RECLAIM issues such as whether Best Achievable Retrofit Control Technology includes replacement of equipment. Marathon refers to letters submitted previously by WSPA on a variety of RECLAIM topics and requests that those topics be considered in rule development on all RECLAIM transition rules, including PR 1118.1. We are glad to provide copies of those letters if needed. 4-3

We would like to thank staff for their willingness to meet and discuss issues, and we look forward to continuing to work with SCAQMD as this rule continues development. We would be happy to answer any questions regarding our comments.

Sincerely,

Susan Stark

Susan Stark
Manager, Policy and Regulatory Affairs

Cc: Dr. Philip Fine, SCAQMD
Steven Tsumura, SCAQMD
Robert Nguyen, Marathon
Donna DiRocco, Marathon
Ruthanne Walker, Marathon

Response to Comment Letter 4

Response to Comment 4-1:

Staff agrees with the suggestion and since this comment letter, the proposed rule has been modified accordingly. Please see Response to Comment 3-5.

Response to Comment 4-2:

The lower emission limits proposed in the preliminary rule were based on an existing permitted unit; however, that unit has not completed the source test to demonstrate compliance. As such, SCAQMD staff has decided to propose limits that reflect current BACT determination. BACT may consider the unit permitted at 30 ppm in the future.

Regarding the cost of the flares, staff relied on local installation and annual maintenance costs for the oil and gas analysis as provided by existing permitted units in the oil and gas industry, then averaged to generate a value to apply to the cost-effectiveness calculation. The costs provided by WSPA were based on an installation located outside of the SCAQMD and were considerably higher than the feedback staff received from local oil and gas sites. In addition, the manufacturer of the higher cost flare is not known to be in business to corroborate the costs. Nonetheless, staff included the capital cost in the collection of data points used to derive the average cost. Please see Response to Comment 3-3.

Response to Comment 4-3:

SCAQMD has received the previous comment letters on the RECLAIM program referenced by the commentator and responses have been prepared. Please see SCAQMD response http://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/regxx/18_response-100318_michael-carroll-letter-(barct-vs-bact).pdf?sfvrsn=4.

Comment Letter #5

Comment Letter 5

CALIFORNIA ASSOCIATION of SANITATION AGENCIES

1225 8th Street, Suite 595• Sacramento, CA 95814 • TEL: (916) 446-0388 • www.CASAweb.org

October 19, 2018

Mr. Steve Tsumura, Air Quality Specialist
Planning, Rule Development and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Dear Mr. Tsumura:

The California Association of Sanitation Agencies (CASA) appreciates the opportunity to provide comments on proposed South Coast AQMD Rule 1118.1 covering non-refinery flares. CASA is an association of local agencies, engaged in advancing the recycling of wastewater into usable water, as well as the generation and reuse of renewable energy, biosolids, and other valuable resources. Through these efforts, we help create a clean and sustainable environment for Californians.

CASA recommends the approach advanced by the Southern California Alliance of POTWs (SCAP) in which the District would adopt a limit of 0.06 lb NOx/MMBtu and temporarily exempt any facility co-digesting food waste or digesting at thermophilic temperatures. The rationale is based on the following:

1. CASA has been working proactively with CalRecycle, the California Air Resources Board, and others in order to maximize the use of the existing anaerobic digestion infrastructure at wastewater treatment plants for the receipt of food waste for co-digestion and thereby diverting it from landfills. CASA has conservatively estimated that more than 75% of the food waste currently landfilled could be accepted using this infrastructure, but only if assurance exists that the biogas and biosolids produced can be effectively utilized and recycled. Flares are a last resort for biogas produced at wastewater treatment plants but are mandatory emergency outlets. 5-1
2. Black & Veatch (BV) recently identified the potential for higher ammonia concentrations in digester gas as the result of food waste digestion or thermophilic digestion, which could make the proposed Rule 1118.1 limit unachievable for such facilities. I am including a link to a presentation which Joerg Blischke (BV) recently provided to the SCAQMD 1118.1 team outlining those issues. https://casaweb.org/wp-content/uploads/2018/10/10-19-18-NH3-in-BG_Fuel-born-NOx-Emissions-at-Flares_SCAP-Meeting-w_SCAQMD-12Oct18_BV_FINAL2.pdf
3. Air Districts throughout California have expressed interest in adopting the limits set in SCAQMD Rule 1118.1. Whatever is done in the South Coast could have far reaching and unintended consequences statewide.

4. As mentioned above, wastewater treatment plants already attempt to maximize beneficial use of produced biogas, but flares will always be needed for standby/emergency purposes. These flares must be 100% reliable. Our members have reported that the proposed 0.025 lb NOx/MMBtu flares have not been reliable, so as essential public service providers we have concerns about this technology.

5-1 Con't

For all of the reasons stated above, we respectfully request the SCAQMD establish an achievable NOx limit for flares until we can fully assess the potential impact of food waste co-digestion and thermophilic digestion. Specifically, we request the rule establish a 0.06 lb NOx/MMBtu limit and temporarily exempt any facility co-digesting food waste or those digestion systems operating in the thermophilic temperature range.

Thank you again for the opportunity to provide these comments and we stand ready to work proactively with the District in developing needed information on the impacts of receiving food waste for co-digestion or for operating at thermophilic temperatures. Please feel free to contact me at gkester@casaweb.org or at 916-844-5262 to discuss these issues or to answer any questions.

Sincerely,

Greg Kester

Greg Kester
Director of Renewable Resource Programs

cc: Michael Krause – SCAQMD
Heather Farr – SCAQMD
Philip Fine – SCAQMD
Susan Nakamura – SCAQMD
Steve Jepsen – SCAP
David Rothbart – LACSD
Bobbi Larson – CASA
Sarah Deslauriers - CASA

Response to Comment Letter 5

Response to Comment 5-1:

Staff acknowledges there is a concern that food waste digestion may cause an increase in ammonia generation, but there is not sufficient information at this time to draw a firm conclusion on the impacts of food digestion. Staff agrees more research is necessary. To ensure PR1118.1 is not a road block to the efforts to maximize the use of existing anaerobic digestion for food diversion, emission limits will reflect current BACT limits for major polluting facilities and minor facilities.

Thermophilic digestion is a newer digestion process that requires higher temperature, produces more biogas, and recent research suggests generates increased ammonia concentrations. Thermophilic digestion is a separate issue from the state goals of food waste diversion as there are other means and processes for digestion. Research is needed specifically on thermophilic digestion to determine conclusively if this process results in combustion equipment exceeding permit limits or whether there is a need to establish new BACT determinations.

Due to the uncertainty, staff is proposing to include a Resolution to work with the CAPCOA, applicable state agencies, and the waste management industry to conduct a technological and cost assessment within 12 months of rule adoption. Staff will also resolve to amend the rule if a determination is made that the BACT NOx limits need to be modified or a new category created.

Comment Letter #6

Comment Letter 6

October 26, 2018

Attention: Mr. Steve Tsumura
Planning, Rule Development and Area Sources
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-0944

Subject: Comments on the PR 1118.1

Dear Sir:

Per our discussion on September 26, 2018, comments are provided by Envent Corporation for the definition of flare and other issues related to the Proposed Rule 1118.1 (PR1118.1) as follows:

Comment 1: *The flare definition in PR1118.1 is too broad (or too loose), covering some unintentional sectors including thermal oxidizers and similar air pollution control devices.* The flare definition in PR1118.1 is different from the flare definitions in the rules of USEPA and other Air Districts. The flare definition in PR1118.1 is even different from the one in SCAQMD Rule 1118. Similar rules from other Air Districts define flares as "a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix control or for temperature control". Some of the definitions of flares from other Air Districts describe the combustion air as uncontrolled ambient air or uncontrolled volume of air. In fact, some of the other Air Districts' rules do provide an entirely separate definition of thermal oxidizer. Thermal Oxidizers and other similar air pollution control devices operate with very high VOC destruction efficiency and are different from flares in design and operation. Attached is a sample CARB test result on thermal oxidizer for your reference. The purpose of PR1118.1 is to regulate the emissions generated from actual flares, but not air pollution control devices which are regulated by other rules. We respectfully disagree that the existing flare definition of PR1118.1 does include thermal oxidizers in the grouping as flare and urge SCAQMD to remain consistent with the rule language from SCAQMD, surrounding Air Districts, and USEPA by adopting the same definition. 6-1

Please find the attached documents for your review:

- 40 CFR Part 60 Subpart Ja (60.101a)
- 40 CFR Part 63 Subpart CC (63. 641)
- BAAQMD Regulation 12-11
- BAAQMD Regulation 12-12
- SCAQMD Rule 1118
- SJVAPCD Rule 4311

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- SBCAPCD Rule 359
- Sample CARB Test Result

Comment 2: *The Capacity Threshold requirement is not practical for a mobile rental device operated per a fixed location permit.* If a "flare" (read: Thermal Oxidizer) is permitted by a various locations permit, then under (h)(1)(E) of PR1118.1, it is exempt. However, if the same "flare" (read: Thermal Oxidizer) has a fixed location permit, it is subject to PR1118.1. The operation of a rental device, even if by a fixed location permit, is non-routine just the same as the one operated by a various locations permit. The emissions from the source(s) have no beneficial use for either case because their occurrence is sporadic, they vary in composition, they vary by heating value, and are generally considered a waste product. Moreover, the capital expenditure to route vapors to a receiving facility is not practical for such inconsistent use. 6-2

Comment 3: *The applicability of PR1118.1 to organic bulk terminal loading and tank farms should be modified due to the fact that the potential impact is very minimal.* In general, air pollution control devices are used to destruct fugitive emissions from the source. Based on the analysis conducted by the Air District and shown in Preliminary Draft Staff Report, "The volume of gas flared and the NOx emissions are low for this source category. … Some of the vapors sent to the flare have a low heating value, therefore, may require the use of assist gas to facilitate combustion. Challenges with this source category includes the less opportunities for beneficial use and no market incentives." 6-3

Comment 4: *To comply with PR1118.1 is too costly for a short term project.* A cost effectiveness analysis was conducted to justify the investment in low-NOx flare for a short term (2-year) project. The same method (Discounted Cash Flow Method) applied in PR 1118.1 Preliminary Draft Staff Report ("Report") was utilized in the analysis below. In addition, all the information, like capital cost and annual cost related to low-NOx flares were obtained from the Report. The result shows the cost per ton of emissions reduced is at the range of $126,000 - $423,000 which is larger than the maximum feasible cost effectiveness. The 2016 AQMP establishes a cost-effectiveness threshold of $50,000 per ton of NOx reduced. For a long term (25-year) project, it is feasible to install a low-NOx flare. However, this is not the case for a short term project. The details of the analysis are provided in Table 1 for reference. 6-4

Table 1. Cost Effectiveness Analysis

Unit	Low NOx Unit Capital Cost	Low NOx Unit Annual Cost (PV)	Project Duration (yrs est.)	Capital Cost + Present Value	Permitted NOx (tons/yr)	Low NOx Unit (tons/yr)	Emission Reduction (tons/project)	Estimated Cost Effectiveness ($/ton)
EMECS 70	$758,339.00	$229,852.70	2	$988,191.70	7.3	6.132	2.336	$423,027.27
EMECS 42	$410,000.00	$56,582.84	2	$466,582.84	2.75	0.91152	3.677	$126,893.64

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In addition to the modification of the flare definition used in PR1118.1, we are seeking the exemption of fixed-location permitted air pollution control devices operated in organic liquid terminal loading or tank farms. Should you have any questions regarding our comments, you may contact me by any of the following means: 6-5

Phone: (562) 997-9465, Extension 156.
Email: Jerry.Ren@Envent.net

Sincerely,

Jerry Ren

Jerry Ren
Senior Compliance Engineer
Envent Corporation

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CFR › Title 40 › Chapter I › Subchapter C › Part 60 › Subpart Ja › Section 60.101a

40 CFR 60.101a - Definitions.

§ 60.101a Definitions.

Terms used in this subpart are defined in the Clean Air Act (CAA), in § 60.2 and in this section.

Air preheat means a device used to heat the air supplied to a process heater generally by use of a heat exchanger to recover the sensible heat of exhaust gas from the process heater.

Ancillary equipment means equipment used in conjunction with or that serve a refinery process unit. *Ancillary equipment* includes, but is not limited to, storage tanks, product loading operations, wastewater treatment systems, steam- or electricity-producing units (including coke gasification units), pressure relief valves, pumps, sampling vents and continuous analyzer vents.

Cascaded flare system means a series of flares connected to one flare gas header system arranged with increasing pressure set points so that discharges will be initially directed to the first flare in the series (*i.e.,* the primary flare). If the discharge pressure exceeds a set point at which the flow to the primary flare would exceed the primary flare's capacity, flow will be diverted to the second flare in the series. Similarly, flow would be diverted to a third (or fourth) flare if the pressure in the flare gas header system exceeds a threshold where the flow to the first two (or three) flares would exceed their capacities.

Co-fired process heater means a process heater that employs burners that are designed to be supplied by both gaseous and liquid fuels on a routine basis. Process heaters that have gas burners with emergency oil back-up burners are not considered co-fired process heaters.

Coke burn-off means the coke removed from the surface of the FCCU catalyst by combustion in the catalyst regenerator. The rate of coke burn-off is calculated by the formula specified in § 60.104a.

Contact material means any substance formulated to remove metals, sulfur, nitrogen, or any other contaminant from petroleum derivatives.

Corrective action means the design, operation and maintenance changes that one takes consistent with good engineering practice to reduce or eliminate the likelihood of the recurrence of the primary cause and any other contributing cause(s) of an event identified by a root cause analysis as having resulted in a discharge of gases from an affected facility in excess of specified thresholds.

Corrective action analysis means a description of all reasonable interim and long-term measures, if any, that are available, and an explanation of why the selected corrective action (s) is/are the best alternative(s), including, but not limited to, considerations of cost effectiveness, technical feasibility, safety and secondary impacts.

Delayed coking unit means a refinery process unit in which high molecular weight petroleum derivatives are thermally cracked and petroleum coke is produced in a series of closed, batch system reactors. A *delayed coking unit* includes, but is not limited to, all of the coke drums associated with a single fractionator; the fractionator, including the bottoms receiver and the overhead condenser; the coke drum cutting water and quench system, including the jet pump and coker quench water tank; and the coke drum blowdown recovery compressor system.

Emergency flare means a flare that combusts gas exclusively released as a result of malfunctions (and not startup, shutdown, routine operations or any other cause) on four or fewer occasions in a rolling 365-day period. For purposes of this rule, a flare cannot be categorized as an *emergency flare* unless it maintains a water seal.

Flare means a combustion device that uses an uncontrolled volume of air to burn gases. The *flare* includes the foundation, flare tip, structural support, burner, igniter, flare controls, including air injection or steam injection systems, flame arrestors and the flare gas header system. In the case of an interconnected flare gas header system, the *flare* includes each individual flare serviced by the interconnected flare gas header system and the interconnected flare gas header system.

Flare gas header system means all piping and knockout pots, including those in a subheader system, used to collect and transport gas to a flare either from a process unit or a pressure relief valve from the fuel gas system, regardless of whether or not a flare gas recovery system draws gas from the *flare gas header system*. The *flare gas header system* includes piping inside the battery limit of a process unit if the purpose of the piping is to transport gas to a flare or knockout pot that is part of the flare.

Flare gas recovery system means a system of one or more compressors, piping and the associated water seal, rupture disk or similar device used to divert gas from the flare and direct the gas to the fuel gas system or to a fuel gas combustion device.

Flexicoking unit means a refinery process unit in which high molecular weight petroleum derivatives are thermally cracked and petroleum coke is continuously produced and then gasified to produce a synthetic fuel gas.

Fluid catalytic cracking unit means a refinery process unit in which petroleum derivatives are continuously charged and hydrocarbon molecules in the presence of a catalyst suspended in a fluidized bed are fractured into smaller molecules, or react with a contact material suspended in a fluidized bed to improve feedstock quality for additional processing and the catalyst or contact material is continuously regenerated by burning off coke and other deposits. The unit includes the riser, reactor, regenerator, air blowers, spent catalyst or contact material stripper, catalyst or contact material recovery equipment, and regenerator equipment for controlling air pollutant emissions and for heat recovery. When *fluid catalyst*

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CFR › Title 40 › Chapter I › Subchapter C › Part 63 › Subpart CC › Section 63.641

40 CFR 63.641 - Definitions.

§ 63.641 Definitions.

All terms used in this subpart shall have the meaning given them in the Clean Air Act, subpart A of this part, and in this section. If the same term is defined in subpart A and in this section, it shall have the meaning given in this section for purposes of this subpart.

Affected source means the collection of emission points to which this subpart applies as determined by the criteria in § 63.640.

Aliphatic means open-chained structure consisting of paraffin, olefin and acetylene hydrocarbons and derivatives.

Annual average true vapor pressure means the equilibrium partial pressure exerted by the stored liquid at the temperature equal to the annual average of the liquid storage temperature for liquids stored above or below the ambient temperature or at the local annual average temperature reported by the National Weather Service for liquids stored at the ambient temperature, as determined:

(1) In accordance with methods specified in § 63.111 of subpart G of this part;

(2) From standard reference texts; or

(3) By any other method approved by the Administrator.

Assist air means all air that intentionally is introduced prior to or at a flare tip through nozzles or other hardware conveyance for the purposes including, but not limited to, protecting the design of the flare tip, promoting turbulence for mixing or inducing air into the flame. *Assist air* includes premix assist air and perimeter assist air. *Assist air* does not include the surrounding ambient air.

Assist steam means all steam that intentionally is introduced prior to or at a flare tip through nozzles or other hardware conveyance for the purposes including, but not limited to, protecting the design of the flare tip, promoting turbulence for mixing or inducing air into the flame. *Assist steam* includes, but is not necessarily limited to, center steam, lower steam and upper steam.

Boiler means any enclosed combustion device that extracts useful energy in the form of steam and is not an incinerator.

By compound means by individual stream components, not by carbon equivalents.

Car-seal means a seal that is placed on a device that is used to change the position of a valve (e.g., from opened to closed) in such a way that the position of the valve cannot be changed without breaking the seal.

Center steam means the portion of assist steam introduced into the stack of a flare to reduce burnback.

Closed blowdown system means a system used for depressuring process vessels that is not open to the atmosphere and is configured of piping, ductwork, connections, accumulators/knockout drums, and, if necessary, flow inducing devices that transport gas or vapor from a process vessel to a control device or back into the process.

Closed vent system means a system that is not open to the atmosphere and is configured of piping, ductwork, connections, and, if necessary, flow inducing devices that transport gas or vapor from an emission point to a control device or back into the process. If gas or vapor from regulated equipment is routed to a process (e.g., to a petroleum refinery fuel gas system), the process shall not be considered a closed vent system and is not subject to closed vent system standards.

Combustion device means an individual unit of equipment such as a flare, incinerator, process heater, or boiler used for the combustion of organic hazardous air pollutant vapors.

Combustion zone means the area of the flare flame where the combustion zone gas combines for combustion.

Combustion zone gas means all gases and vapors found just after a flare tip. This gas includes all flare vent gas, total steam, and premix air.

Connector means flanged, screwed, or other joined fittings used to connect two pipe lines or a pipe line and a piece of equipment. A common connector is a flange. Joined fittings welded completely around the circumference of the interface are not considered connectors for the purpose of this regulation. For the purpose of reporting and recordkeeping, connector means joined fittings that are accessible.

Continuous record means documentation, either in hard copy or computer readable form, of data values measured at least once every hour and recorded at the frequency specified in § 63.655(i).

Continuous recorder means a data recording device recording an instantaneous data value or an average data value at least once every hour.

Control device means any equipment used for recovering, removing, or oxidizing organic hazardous air pollutants. Such equipment includes, but is not limited to, absorbers, carbon adsorbers, condensers, incinerators, flares, boilers, and process heaters. For miscellaneous process vents (as defined in this section), recovery devices (as defined in this section) are not considered control devices.

Cooling tower means a heat removal device used to remove the heat absorbed in circulating cooling water systems by transferring the heat to the atmosphere using natural or mechanical draft.

Cooling tower return line means the main water trunk lines at the inlet to the cooling tower

before exposure to the atmosphere.

Decoking operations means the sequence of steps conducted at the end of the delayed coking unit's cooling cycle to open the coke drum to the atmosphere in order to remove coke from the coke drum. *Decoking operations* begin at the end of the cooling cycle when steam released from the coke drum is no longer discharged via the unit's blowdown system but instead is vented directly to the atmosphere. *Decoking operations* include atmospheric depressuring (venting), deheading, draining, and decoking (coke cutting).

Delayed coking unit means a refinery process unit in which high molecular weight petroleum derivatives are thermally cracked and petroleum coke is produced in a series of closed, batch system reactors. A *delayed coking unit* includes, but is not limited to, all of the coke drums associated with a single fractionator; the fractionator, including the bottoms receiver and the overhead condenser; the coke drum cutting water and quench system, including the jet pump and coker quench water tank; and the coke drum blowdown recovery compressor system.

Delayed coker vent means a miscellaneous process vent that contains uncondensed vapors from the delayed coking unit's blowdown system. Venting from the *delayed coker vent* is typically intermittent in nature, and occurs primarily during the cooling cycle of a delayed coking unit coke drum when vapor from the coke drums cannot be sent to the fractionator column for product recovery. The emissions from the decoking operations, which include direct atmospheric venting, deheading, draining, or decoking (coke cutting), are not considered to be *delayed coker vents*.

Distillate receiver means overhead receivers, overhead accumulators, reflux drums, and condenser(s) including ejector-condenser(s) associated with a distillation unit.

Distillation unit means a device or vessel in which one or more feed streams are separated into two or more exit streams, each exit stream having component concentrations different from those in the feed stream(s). The separation is achieved by the redistribution of the components between the liquid and the vapor phases by vaporization and condensation as they approach equilibrium within the distillation unit. Distillation unit includes the distillate receiver, reboiler, and any associated vacuum pump or steam jet.

Emission point means an individual miscellaneous process vent, storage vessel, wastewater stream, equipment leak, decoking operation or heat exchange system associated with a petroleum refining process unit; an individual storage vessel or equipment leak associated with a bulk gasoline terminal or pipeline breakout station classified under Standard Industrial Classification code 2911; a gasoline loading rack classified under Standard Industrial Classification code 2911; or a marine tank vessel loading operation located at a petroleum refinery.

Equipment leak means emissions of organic hazardous air pollutants from a pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, or instrumentation system "in organic hazardous air pollutant service" as defined in this section. Vents from wastewater collection and conveyance systems (including, but not limited to wastewater drains, sewer vents, and sump drains), tank mixers, and sample valves on storage tanks are not equipment leaks.

Flame zone means the portion of a combustion chamber of a boiler or process heater occupied by the flame envelope created by the primary fuel.

Flare means a combustion device lacking an enclosed combustion chamber that uses an uncontrolled volume of ambient air to burn gases. For the purposes of this rule, the definition of *flare* includes, but is not necessarily limited to, air-assisted flares, steam-assisted flares and non-assisted flares.

Flare purge gas means gas introduced between a flare header's water seal and the flare tip to prevent oxygen infiltration (backflow) into the flare tip. For a flare with no water seal, the function of *flare purge gas* is performed by flare sweep gas and, therefore, by definition, such a flare has no *flare purge gas*.

Flare supplemental gas means all gas introduced to the flare in order to improve the combustible characteristics of combustion zone gas.

Flare sweep gas means, for a flare with a flare gas recovery system, the gas intentionally introduced into the flare header system to maintain a constant flow of gas through the flare header in order to prevent oxygen buildup in the flare header; *flare sweep gas* in these flares is introduced prior to and recovered by the flare gas recovery system. For a flare without a flare gas recovery system, *flare sweep gas* means the gas intentionally introduced into the flare header system to maintain a constant flow of gas through the flare header and out the flare tip in order to prevent oxygen buildup in the flare header and to prevent oxygen infiltration (backflow) into the flare tip.

Flare vent gas means all gas found just prior to the flare tip. This gas includes all flare waste gas (*i.e.*, gas from facility operations that is directed to a flare for the purpose of disposing of the gas), that portion of flare sweep gas that is not recovered, flare purge gas and flare supplemental gas, but does not include pilot gas, total steam or assist air.

Flexible enclosure device means a seal made of an elastomeric fabric (or other material) which completely encloses a slotted guidepole or ladder and eliminates the vapor emission pathway from inside the storage vessel through the guidepole slots or ladder slots to the outside air.

Flexible operation unit means a process unit that manufactures different products periodically by alternating raw materials or operating conditions. These units are also referred to as campaign plants or blocked operations.

Flow indicator means a device that indicates whether gas is flowing, or whether the valve position would allow gas to flow, in a line.

Force majeure event means a release of HAP, either directly to the atmosphere from a pressure relief device or discharged via a flare, that is demonstrated to the satisfaction of the Administrator to result from an event beyond the refinery owner or operator's control, such as natural disasters; acts of war or terrorism; loss of a utility external to the refinery (*e.g.*, external power curtailment), excluding power curtailment due to an interruptible service agreement; and fire or explosion originating at a near or adjoining facility outside of the refinery that impacts the refinery's ability to operate.

REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
RULE 11
FLARE MONITORING AT PETROLEUM REFINERIES

(Adopted June 4, 2003)

12-11-100 GENERAL

12-11-101 Description: The purpose of this rule is to require monitoring and recording of emission data for flares at petroleum refineries.

12-11-110 Exemption, Organic Liquid Storage and Distribution: The provisions of this rule shall not apply to flares or thermal oxidizers used to control emissions exclusively from organic liquid storage vessels subject to Regulation 8, Rule 5 or exclusively from loading racks subject to Regulation 8 Rules 6, 33, or 39.

12-11-111 Exemption, Marine Vessel Loading Terminals: The provisions of this rule shall not apply to flares or thermal oxidizers used to control emissions exclusively from marine vessel loading terminals subject to Regulation 8, Rule 44.

12-11-112 Exemption, Wastewater Treatment Systems: The provisions of this rule shall not apply to thermal oxidizers used to control emissions exclusively from wastewater treatment systems subject to Regulation 8, Rule 8.

12-11-113 Exemption, Pumps: The provisions of this rule shall not apply to thermal oxidizers used to control emissions exclusively from pump seals subject to Regulation 8, Rule 18. This exemption does not apply when emissions from a pump are routed to a flare header.

12-11-114 Limited Exemption, Total Hydrocarbon and Methane Composition Monitoring and Reporting: The provisions of Sections 12-11-401.2, 401.3, 401.5, 502.2 and 502.3 that require monitoring and reporting of total hydrocarbon and methane composition shall not apply to a flare that exclusively burns flexicoker gas with or without supplemental natural gas, provided that the owner or operator demonstrates by weekly sampling and analysis, verified by the APCO, that the methane content and the non-methane content of the vent gas flared are less than 2 percent and 1 percent by volume, respectively.

12-11-200 DEFINITIONS

12-11-201 Flare: A combustion device that uses an open flame to burn combustible gases with combustion air provided by uncontrolled ambient air around the flame. Flares may be either continuous or intermittent and are not equipped with devices for fuel-air mix control or for temperature control. This term includes both ground and elevated flares.

12-11-202 Flare Monitoring System: All sample systems, transducers, transmitters, data acquisition equipment, data recording equipment, video monitoring equipment, and video recording equipment involved in flare monitoring.

12-11-203 Flaring: A high-temperature combustion process used to burn vent gases.

12-11-204 Gas: The state of matter that has neither independent shape nor volume, but tends to expand indefinitely. For the purposes of this rule, "gas" includes aerosols and the terms "gas" and "gases" are interchangeable.

12-11-205 Petroleum Refinery: A facility that processes petroleum, as defined in the North American Industrial Classification Standard No. 32411, and including any associated sulfur recovery plant.

12-11-206 Pilot Gas: The gas used to maintain the presence of a flame for ignition of vent gases.

12-11-207 Purge Gas: The gas used to prevent air backflow in the flare system when there is no vent gas.

Bay Area Air Quality Management District June 4, 2003

12-11-3

REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
RULE 12
FLARES AT PETROLEUM REFINERIES

(Adopted July 20, 2005)

12-12-100 GENERAL

12-12-101 Description: The purpose of this rule is to reduce emissions from flares at petroleum refineries by minimizing the frequency and magnitude of flaring. Nothing in this rule should be construed to compromise refinery operations and practices with regard to safety.

12-12-110 Exemption, Organic Liquid Storage and Distribution: The provisions of this rule shall not apply to flares or thermal oxidizers used to control emissions exclusively from organic liquid storage vessels subject to Regulation 8, Rule 5 or exclusively from loading racks subject to Regulation 8 Rules 6, 33, or 39.

12-12-111 Exemption, Marine Vessel Loading Terminals: The provisions of this rule shall not apply to flares or thermal oxidizers used to control emissions exclusively from marine vessel loading terminals subject to Regulation 8, Rule 44.

12-12-112 Exemption, Wastewater Treatment Systems: The provisions of this rule shall not apply to thermal oxidizers used to control emissions exclusively from wastewater treatment systems subject to Regulation 8, Rule 8.

12-12-113 Exemption, Pumps: The provisions of this rule shall not apply to thermal oxidizers used to control emissions exclusively from pump seals subject to Regulation 8, Rule 18. This exemption does not apply when emissions from a pump are routed to a flare header.

12-12-200 DEFINITIONS: For the purposes of this rule, the following definitions apply:

12-12-201 Emergency: A condition at a petroleum refinery beyond the reasonable control of the owner or operator requiring immediate corrective action to restore normal and safe operation that is caused by a sudden, infrequent and not reasonably preventable equipment failure, natural disaster, act of war or terrorism or external power curtailment, excluding power curtailment due to an interruptible power service agreement from a utility.

12-12-202 Feasible: Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

12-12-203 Flare: A combustion device that uses an open flame to burn combustible gases with combustion air provided by uncontrolled ambient air around the flame. This term includes both ground-level and elevated flares. When used as a verb, the term "flare" means the combustion of vent gas in a flare.

12-12-204 Flare Minimization Plan (FMP): A document intended to meet the requirements of Section 12-12-401.

12-12-205 Gas: The state of matter that has neither independent shape nor volume, but tends to expand indefinitely. Gas includes aerosols and the terms "gas" and "gases" are interchangeable.

12-12-206 Petroleum Refinery: A facility that processes petroleum, as defined in the North American Industrial Classification Standard No. 32411 and including any associated sulfur recovery plant.

12-12-207 Prevention Measure: A component, system, procedure or program that will minimize or eliminate flaring.

12-12-208 Reportable Flaring Event: Any flaring where more than 500,000 standard cubic feet per calendar day of vent gas is flared or where sulfur dioxide (SO_2) emissions are greater than 500 pounds per day. For flares that are operated as a backup,

(Adopted February 13, 1998)(Amended November 4, 2005)

RULE 1118. CONTROL OF EMISSIONS FROM REFINERY FLARES

(a) Purpose and Applicability

The purpose of Rule 1118 is to monitor and record data on refinery and related flaring operations, and to control and minimize flaring and flare related emissions. The provisions of this rule are not intended to preempt any petroleum refinery, sulfur recovery plant and hydrogen production plant operations and practices with regard to safety. This rule applies to all flares used at petroleum refineries, sulfur recovery plants and hydrogen production plants.

(b) Definitions

For the purpose of this rule, the following definitions shall apply:

(1) CLEAN SERVICE FLARE is a flare that is designed and configured by installation to combust only natural gas, hydrogen gas and/or liquefied petroleum gas, or any other gas(es) with a fixed composition vented from specific equipment which has been determined to be equivalent and approved in writing by the Executive Officer.

(2) EMERGENCY is a condition beyond the reasonable control of the owner or operator of a flare requiring immediate corrective action to restore normal and safe operation, which is caused by a sudden, infrequent and not reasonably preventable equipment failure, natural disaster, act of war or terrorism or external power curtailment, excluding power curtailment due to an interruptible power service agreement from a utility. For the purpose of this rule, a repetitive event from the same equipment caused by poor maintenance, or a condition caused by operator error that results in a flare event shall not be deemed an emergency.

(3) EMERGENCY SERVICE FLARE is a flare other than clean service flare that is designed and configured by installation to combust only vent gases as a result of any situation arising from sudden and unforeseeable events beyond the reasonable control of the owner or operator of the gas flare which require immediate corrective action to restore normal and safe operation including emergency process upset condition, equipment malfunction or breakdown, electrical power failure, steam failure, cooling

air or water failure, instrument air failure, reflux failure, heat exchanger tube failure, loss of heat, excess heat, fire and explosion.

(4) ESSENTIAL OPERATIONAL NEED is an activity determined by the Executive Officer to meet one of the following:

(A) Temporary fuel gas system imbalance due to:

(i) Inability to accept gas compliant with Rule 431.1 by an electric generation unit at the facility that produces electricity to be used in a state grid system, or

(ii) Inability to accept gas compliant with Rule 431.1 by a third party that has a contractual gas purchase agreement with the facility, or

(iii) The sudden shutdown of a refinery fuel gas combustion device for reasons other than poor maintenance or operator error;

(B) Relief valve leakage due to malfunction;

(C) Venting of streams that cannot be recovered due to incompatibility with recovery system equipment or with refinery fuel gas systems, including supplemental natural gas or other gas compliant with Rule 431.1 that is used for the purpose of maintaining the higher heating value of the vent gas above 300 British Thermal Units per standard cubic foot. Such streams include inert gases, oxygen, gases with low or high molecular weights outside the design operating range of the recovery system equipment and gases with low or high higher heating values that could render refinery fuel gas systems and/or combustion devices unsafe;

(D) Venting of clean service streams to a clean service flare or a general service flare;

(E) Intermittent minor venting from:

(i) Sight glasses;

(ii) Compressor bottles;

(iii) Sampling systems; or

(iv) Pump or compressor vents; or

(F) An emergency situation in the process operation resulting from the vessel operating pressure rising above pressure relief devices' set points, or maximum vessel operating temperature set point.

Rule 1118 (Cont.) **(Amended November 4, 2005)**

(5) FLARE is a combustion device that uses an open flame to burn combustible gases with combustion air provided by uncontrolled ambient air around the flame. This consists of both ground and elevated flares. When used as a verb means the combustion of vent gases in a flare device.

(6) FLARE EVENT is any intentional or unintentional combustion of vent gas in a flare. The flare event ends when the flow velocity drops below 0.12 feet per second or when the owner or operator can demonstrate that no more vent gas was combusted based upon the monitoring records of the flare water seal level and/or other parameters as approved by the Executive Officer in the Flare Monitoring and Recording Plan. For a flare event that continues for more than 24 hours, each day of venting of gases shall constitute a flare event.

(7) FLARE GAS RECOVERY SYSTEM is a system comprised of compressors, pumps, heat exchangers, knock-out pots and water seals, installed to prevent or minimize the combustion of vent gas in a flare.

(8) FLARE MINIMIZATION PLAN is a document intended to meet the requirements of subdivision (e).

(9) FLARE MONITORING SYSTEM is the monitoring and recording equipment used for the determination of flare operating parameters, including higher heating value, total sulfur concentration, standard volumetric flow rate, and/or on/off flow indication.

(10) GENERAL SERVICE FLARE is a flare that is not defined in paragraphs (b)(1) or (b)(3) that is designed and configured by installation to combust vent gases as a result of any situation including, but not limited to, relief of excess operating pressures, tank vapor displacement, start-ups, shutdowns, process unit turnarounds and blowdowns, and scheduled and unscheduled maintenance and clean up.

(11) HYDROGEN PRODUCTION PLANT is a facility that produces hydrogen by steam hydrocarbon reforming, partial oxidation of hydrocarbons, or other processes, using refinery fuel gas, process gas or natural gas, and which supplies hydrogen for petroleum refinery operations.

(12) NATURAL GAS is a mixture of gaseous hydrocarbons, with at least 80 percent methane (by volume), and of pipeline quality, such as the gas sold or distributed by any utility company regulated by the California Public Utilities Commission.

1118 - 3

RULE 4311 FLARES (Adopted June 20, 2002; Amended June 15, 2006; Amended June 18, 2009)

1.0 Purpose

To limit the emissions of volatile organic compounds (VOC), oxides of nitrogen (NOx), and sulfur oxides (SOx) from the operation of flares.

2.0 Applicability

This rule is applicable to operations involving the use of flares.

3.0 Definitions

3.1 Air-Assisted Flare: a combustion device where forced air is injected to promote turbulence for mixing and to provide combustion air.

3.2 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).

3.3 Air Resources Board (ARB): as defined in Rule 1020 (Definitions).

3.4 British Thermal Unit (Btu): the amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

3.5 Calendar Day: any day starting at twelve o'clock AM and ending at 11:59 PM.

3.6 Coanda Effect Flare: A flare in which the high pressure flare gas flows along a curved surface inspirating air into the gas to promote combustion.

3.7 Emergency: any situation or a condition arising from a sudden and reasonably unforeseeable and unpreventable event beyond the control of the operator. Examples include, but are not limited to, not preventable equipment failure, natural disaster, act of war or terrorism, or external power curtailment, excluding a power curtailment due to an interruptible power service agreement from a utility. A flaring event due to improperly designed equipment, lack of preventative maintenance, careless or improper operation, operator error or willful misconduct does not quality as an emergency. An emergency situation requires immediate corrective action to restore safe operation. A planned flaring event shall not be considered as an emergency.

3.8 Enclosed Flare: a flare composed of multiple gas burners that are grouped in an enclosure, and are staged to operate at a wide range of flow rates.

3.9 EPA: United States Environmental Protection Agency.

3.10 Feasible: Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

3.11 Flare: a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix control or for temperature control.

3.12 Flare Event: any intentional or unintentional combustion of vent gas in a flare. The flare event ends when the flow velocity drops below 0.12 feet per second or when the operator can demonstrate that no more vent gas was combusted based upon the monitoring records of the flare water seal level and/or other parameters as approved by the APCO in the Flare Monitoring and Recording Plan. For a flare event that continues for more than one calendar day, each calendar day or venting of gases shall constitute a separate flare event.

3.13 Flare Gas: gas burned in a flare.

3.14 Flare Minimization Plan (FMP): a document intended to meet the requirements of Section 6.5 of this Rule.

3.15 Flare Monitoring System: all flare monitoring and recording equipment used for the determination of flare operating parameters. Flare monitoring and recording equipment includes, but is not limited to, sample systems, transducers, transmitters, data acquisition equipment, data recording equipment, and video monitoring equipment and video recording equipment.

3.16 Flexigas: a low BTU fuel gas produced by gasifying coke produced in a fluid-bed Coker. Due to the air used in the gasifying process, Flexigas is approximately 50% nitrogen.

3.17 Gaseous Fuel: any gases used as combustion fuel which include, but are not limited to, any natural, process, synthetic, landfill, sewage digester, or waste gases. Gaseous fuels include produced gas, pilot gas and, when burned, purge gas.

3.18 MMBtu: million British thermal units.

3.19 Non-Assisted Flare: a combustion device without any auxiliary provision for enhancing the mixing of air into its flame. This definition does not include those flares that by design provide excess air at the flare tip.

RULE 359. FLARES AND THERMAL OXIDIZERS. (Adopted 6/28/1994)

A. Applicability

The provisions of this Rule shall apply to the use of flares and thermal oxidizers at oil and gas production sources (SIC code 13), petroleum refinery and related sources (SIC code 29), natural gas services and transportation sources (SIC code 49) and wholesale trade in petroleum/petroleum products (SIC code 51). This Rule shall, on the date of its adoption, supersede the fuel combustion provisions of Rule 311 only insofar as these fuel combustion provisions apply to flares and thermal oxidizers.

B. Exemptions

1. The provisions of this Rule shall not apply to the burning of sulfur, hydrogen sulfide, acid sludge or other sulfur compounds in the manufacturing of sulfur or sulfur compounds. For oil and gas sources (SIC Code 13) that recover sulfur as a by-product of gas treating/sweetening processes, the exemption for manufacturing shall apply only to those specific processes, e.g., sulfur recovery plant.

2. The provisions of this Rule, with the exception of Section D.2 (Technology Standards), shall not apply to the burning of any gas with a net heating value of less than 300 British Thermal Unit (Btu) per standard cubic foot (scf) provided the fuel used to incinerate such gas does not contain sulfur compounds in excess of the following:

   a. 15 grains/100 cu.ft. (calculated as H_2S at standard conditions) in the Southern Zone, and

   b. 50 grains/100 cu.ft. (calculated as H_2S at standard conditions) in the Northern Zone of Santa Barbara County.

3. The provisions of this Rule, with the exception of Sections D.1 (Sulfur Content in Gaseous Fuels), D.2 (Technology Standards), G (Monitoring and Recordkeeping) and H (Reporting) shall not apply to flare or thermal oxidizer units rated, per their operating permits, at 1.7 MMBtu/hour or less. However, if the total cumulative rating of all such rated units at a source exceeds 5 MMBtu/hr, then the exemption shall not apply.

4. The following are exempt only from Section D.3 (Flare Minimization Plan) of this Rule:

   a. Flare and thermal oxidizer units rated, per their operating permits, at less than 15 MMBtu/hour. However, if the total cumulative rating of all such rated units at a source exceeds 50 MMBtu/hr, then this exemption shall not apply.

   b. Flares and thermal oxidizers whose flaring operations solely consist of planned, continuous flaring due to the non-availability of a produced gas pipeline outlet.

C. Definitions

For purposes of this Rule, the following definitions shall apply. See Rule 102 (Definitions) for definitions that are not restricted to interpretation of this Rule only.

"**Burn**" means combustion of any fuel including a gaseous fuel, whether for useful heat or by incineration without heat recovery.

"**Day**" or "**days**" means calendar day(s) unless otherwise stated.

"**Emergency**" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the permittee, including acts of God. An emergency situation requires immediate corrective action to restore normal, safe operation. It also causes an exceedance of an emission standard or a limit stipulated in this Rule, due to unavoidable increases in emissions attributable to the emergency situation only. Events which have been deemed as planned events (for definition, see later in this section) by a federal regulatory agency shall be precluded from being considered as emergency events.
"Emergency Flare Event" means the combustion (flaring) of gaseous fuels caused by an emergency event.

"**Flare**" means a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix control or for temperature control.

"**Flare Gas**" means produced gas or natural gas burned in a flare or thermal oxidizer.

"**Gaseous fuel**" means gases used as combustion fuel which include, but are not limited to, any natural, process, synthetic, landfill, sewage digester, or waste gases. Gaseous fuel includes produced gas, pilot gas and, when burned, purge gas.

"**Month**" or "**monthly**" means calendar month or refers to calendar month.

"**Net heating value**" means the heating value of the flare gas being combusted, as specified under 40 CFR 60.18(f)(3) [1992 Edition].

"**Northern Zone of the Santa Barbara County**" means that portion of Santa Barbara County described in Section 60103(b) of Title 17 of the California Administrative Code as written on December 21, 1968 (Register 68, No.48). The Northern Zone also includes (a) State waters and, (b) those areas of the OCS waters for which the District has been designated the corresponding onshore area by the USEPA -- which are located offshore of that portion of Santa Barbara County lying north of the latitude of the mouth of Jalama Creek.

"**Pilot Gas**" means gas that is used to ignite or continually ignite flare gas. Pilot gas may be PUC-quality gas, liquefied petroleum gas (LPG) or produced gas.

"**Planned Flaring**" means a flaring operation that constitutes a designed and planned process at a source, and which would have been reasonably foreseen ahead of its actual occurrence, or is scheduled to occur. Planned flaring includes, but is not limited to, the following activities:

1. Flaring during well tests, well-related work, tests ordered by applicable regulatory agencies;

2. Flaring due to equipment depressurization for preventive maintenance that includes: (a) routine engine overhauls (b) turbine start-ups (c) compressor start-ups (d) engine exchange/ removal (e) platform modification/construction (f) hot-jobs (welding, etc.), (g) new platform/well start-up, (h) well work-over, (i) maintenance at onshore source supporting offshore production, (j) Installation of Sulferox etc., system, (k) planned plant shut-downs, (l) unloading from new well, (m) rupture disc maintenance, (n) acid job, (o) source testing, and (p) any pipeline depressurization not due to breakdown conditions (e.g., pigging);

3. Flaring of produced gas at production sources for which no gas handling, gas injection, or gas transmission facilities currently exist;

Santa Barbara County APCD Rule 359 359 - 2 June 28, 1994

California Environmental Protection Agency

Air Resources Board

MONITORING AND LABORATORY DIVISION
Vapor Recovery and Fuel Transfer Branch
Vapor Recovery In-Use Section

SOURCE TEST REPORT
TEST NUMBER 16-02

Chevron Products Company
San Diego Terminal
2351 Harbor Drive
San Diego, California 92113

UNIT TESTED: Envent Corporation Mobile Emission Control System (EMECS) Model 42-4 Portable Thermal Oxidizer Unit

Envent Corporation Model VBS-1 Portable Bladder Unit

TEST DATES: March 16, 2016

REPORT DATE: March 25, 2016

Approved:

B. Iqbal

Basharat Iqbal, P.E.
Project Engineer

Merrin J. Wright

Merrin J. Wright, Manager
Vapor Recovery In-Use Section
Monitoring and Laboratory Division

This test report has been reviewed and approved by the Air Resources Board (ARB) staff. Approval does not necessarily signify the contents reflect the views and policies of ARB, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.

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INTRODUCTION

On March 16, 2016, the Air Resources Board (ARB) staff conducted a 6-hour vapor recovery certification test of the Envent Corporation Mobile Emission Control System (EMECS) Model 42-4 portable vapor recovery thermal oxidizer unit and Envent Corporation Model VBS-1 portable bladder unit at the Chevron Products Company's San Diego Terminal facility. The unit was tested in normal (bladder) mode with a portable vapor thermal oxidizer and portable bladder replacing the facility's normal carbon bed vapor recovery system. The rating of the Envent 42-4 thermal oxidizer is 42 MMBTU/Hr. The capacity of the Envent VBS-1 bladder is 3,500 cubic feet.

The purpose of the test was to determine whether or not the portable vapor recovery unit (portable thermal oxidizer and portable bladder) complies with the emission factor listed in CP-203, Certification Procedure for Vapor Recovery Systems of Terminals. The project engineer for this test was Basharat Iqbal who was assisted by Ray Hernandez.

PROCESS DESCRIPTION

Chevron operates a petroleum products distribution terminal in San Diego, California. At the terminal's truck (cargo tanks or gasoline delivery vehicles) loading rack, displaced gasoline vapors (from the loading of gasoline into the truck) are collected. During normal operation, the collected vapors are routed directly to the dual carbon bed vapor recovery unit. There is no bladder or holding tank at the facility.

Chevron requested certification of their vapor recovery system using a configuration that replaces the facility's normal dual carbon bed system with a portable thermal oxidizer and portable bladder system. Upcoming repairs and maintenance to the Chevron carbon beds necessitated the certification of the portable thermal oxidizer and portable bladder system so the facility could stay in operation during the repairs and maintenance.

APPLICABLE RULES AND REGULATIONS

Section 4 of CP-203 requires that the vapor recovery system shall comply with a maximum emission factor of 0.29 pounds of non-methane hydrocarbon per 1,000 gallons of gasoline liquid dispensed (0.29 lbs/1000 gallons) to obtain certification. The emission factor of 0.29 lbs/1000 gallons corresponds to 96.5% control efficiency by weight. The San Diego County Air Pollution Control District (District) requires this terminal to comply with an emission factor of 0.08 lbs/1000 gallons. The test was conducted per TP-203.1, Determination of Emission Factor of Vapor Recovery Systems of Terminals, to verify compliance with both emission factors.

At Chevron's request, ARB staff also determined the exhaust nitrogen oxides (NOx) emission factor from the thermal oxidizer by employing ARB Method 100, Procedures for Continuous Gaseous Emission Stack Sampling.

TEST RESULTS AND DISCUSSION

Test results are summarized at the end of this report. The results for the exhaust hydrocarbon and NOx concentrations were determined directly from the data recorded from gas analyzers. Mass of hydrocarbon is determined from the outlet hydrocarbon concentration and outlet volume. Outlet volume is determined with a carbon balance using the inlet hydrocarbon concentration, inlet volume, outlet hydrocarbon concentration, outlet carbon monoxide (CO) concentration, and outlet carbon dioxide (CO_2) concentration. The amount of product loaded in terms of gallons during the test was provided by Chevron.

During the unit's certification test, the following information was recorded:

1. inlet propane and methane concentrations
2. inlet temperature and pressure
3. outlet propane, NOx, CO, and CO_2 concentrations
4. inlet volume and barometric pressure

The inlet propane, methane, temperature, and pressure data were recorded on a continuous basis by strip chart, while the volume and barometric pressure were recorded throughout the test. A Quad type turbine volume meter, which only reads in the forward direction, was used to measure the inlet volume and insured against erroneous volume readings (backflow).

National Instruments data acquisition hardware and Labview software were used to acquire, record, and reduce data from the analyzers, temperatures and pressure monitors, and Quad type meter. Labview corrected the volume to standard conditions (14.7 pounds per square inch absolute (psia) and 68° F); and calculated and summed total non-methane hydrocarbon mass out of the stack. Labview repeated this process every second.

The certification test started at 0943 hours on March 16, 2016 and concluded at 1548 hours on March 16, 2016 (6 hours and 5 minutes total test duration). The test started and ended with no fueling activity at the loading racks and with the pretest bladder tank levels and the posttest bladder levels at the same point. During this time span, a total of 217,450 gallons of gasoline were loaded at the truck racks and 2.70 pounds on non-methane hydrocarbon were emitted from the vapor recovery system. These values result in an emission factor of 0.012 lbs/1000 gallons and a throughput of 857,885 gallons (extrapolated to 24 hours).

Due to distribution fluctuations in gasoline marketing, ARB has traditionally granted an increase in throughput of 10 percent when the vapor recovery unit performs well below the certification emission limit. Increasing the 24 hour throughput of 857,885 gallons by 10 percent yields a 24-hour throughput of 943,673 gallons.

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During the test period, 2.95 pounds of NOx were emitted from the vapor recovery system. These values result in a NOx emission rate of 0.48 lbs/hour.

The test results show that the portable vapor recovery thermal oxidizer with portable vapor bladder was in compliance with the District's hydrocarbon emission standard for these units of 0.08 lbs/1000 gallons (gasoline products).

Also, the facility did not exceed 18 inches of water column backpressure performance standard at the loading rack during the certification test. The following table gives information about the loading rack at the facility:

Normal Mode:

Number of Loading Lanes	3
Number of Vapor Recovery Arms/Lane	2 to 3
Maximum Pressure Observed at Loading Rack	2 inches water column

The maximum pressure observed was demonstrated with 2 loading lanes in operation and 3 vapor recovery arms in use, and was measured at the furthest arm from the processor.

CONCLUSION

ARB staff verified through testing that the hydrocarbon emission factor of the Chevron Products Company's San Diego Terminal was 0.012 lbs/1000 gallons when operating with the Envent Corporation Mobile Emission Control System (EMECS) Model 42-4 portable thermal oxidizer unit and Envent Corporation Model VBS-1 portable bladder unit. This complies with the emission factor of 0.29 lbs/1000 gallons referenced in Section 4 of CP-203 and San Diego County Air Pollution Control District emission standard of 0.08 lbs/1000 gallons.

To ensure compliance with the emission factor of 0.29 lbs/1000, the following conditions are included as part of ARB's certification:

1. The vapor recovery unit at the Chevron San Diego Terminal includes the portable thermal oxidizer and portable bladder units operating together.
2. When operating with the portable thermal oxidizer and portable bladder units, the maximum daily truck loading throughput (gasoline products only) shall be limited to 943,673 gallons.
3. The maximum back pressure of any truck loading lane shall not exceed 18 inches of water column. The facility shall be equipped with alarms that shall be activated when the unit exceeds 18 inches of water column.

4. The vapor recovery thermal oxidizer unit shall be equipped with alarms that shall be activated when the unit is not able to comply with emission factor performance standards.
5. The District may establish more stringent conditions in accordance with their rules.

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STATE OF CALIFORNIA
AIR RESOURCES BOARD
MONITORING AND LABORATORY DIVISION
ST-16-02
SUMMARY OF SOURCE TEST RESULTS
(with portable thermal oxidizer and portable vapor bladder)

Source Name and Address:	**Source Representative:**
Chevron Products Company San Diego Terminal 2351 Harbor Drive San Diego, California 92113	Justin Lewis Terminal Environmental Safety & Health Chevron San Diego Terminal 2351 Harbor Drive San Diego, California 92113 Tel 714-843-0866

Device Tested:	**ARB Representatives:**
Envent Corporation Mobile Emission Control System (EMECS) Model 42-4 Portable Thermal Oxidizer Unit Envent Corporation Model VBS-1 Portable Bladder Unit	Basharat Iqbal Ray Hernandez **Test Dates:** March 16, 2016

Test Results:			**Overall**	**Applicable Limits**
Test Times				
0943 to 1548 for a Test Duration of 6 hours and 5 minutes				
Emissions				
Total Outlet HC Mass	(lb NMHC)	(as Propane)	**2.70**	
HC Emission Factor	(lb NMHC/Kgal)	(as Propane)	**0.012**	**0.29 and 0.08**
HC Emission Rate	(lb NMHC/hr)	(as Propane)	**0.44**	
Total Outlet NOx Mass	(lb NOx)	(as NO_2)	**2.95**	
NOx Emission Rate	(lb NOx/hr)	(as NO_2)	**0.48**	
Backpressure				
Maximum System Backpressure		(in H_2O)	**2**	**18**
Throughput				
Total Gasoline Products Loaded (Test)		(Gallons)	**217,450**	
Gasoline Products 24-hour Throughput		(Gallons)	**857,885**	
Maximum Gasoline Products 24-hour Throughput		(Gallons)	**943,673**	

Merrin J. Wright Date: 3/25/16
Merrin J. Wright, Manager
Vapor Recovery In-Use Section

B. Iqbal Date: 3-25-16
Basharat Iqbal, P.E.
Project Engineer

Response to Comment Letter #6

Response to Comment 6-1:

Staff agrees with the challenge in determining the distinction of a flare compared to an afterburner, thermal oxidizer, and incinerator. These are different types of equipment and their operational purposes are different. To clarify, staff prepared a robust discussion and highlighted the differences in Chapter 3 of this staff report. It was critical to ensure a specific definition is provided so there would be no confusion as to rule applicability. In addition, it is not the intent for PR1118.1 requirements to overlap with existing Rule 1147 (*NOx emissions from miscellaneous sources*) or the upcoming PR 1109.1 (*NOx emissions from refinery equipment*). During the rule development, staff reviewed all existing definitions of flares and had numerous meetings with permit engineers, compliance staff, stakeholders from all affected industries, flare manufacturers and other regulatory agencies. The definition was amended several times due to stakeholder feedback. Staff even sent out a notice of rulemaking highlighting the proposed flare definition in case a facility operated equipment that matches the flare definition but was under the impression it was considered something else such as an afterburner or thermal oxidizer. Staff acknowledges that advanced flares have similar characteristics to traditional thermal oxidizers, and again, this is further described in Chapter 3 of this staff report. Further, staff found that certain applications, such as bulk terminal loading, use the exact same combustion device (e.g., a flare) as a landfill, wastewater treatment plant or oil and gas production site but views those devices as thermal oxidizers. Staff wanted to ensure what characterizes a flare, particularly in context to rule applicability, and the manner in which the gases enter the burner.

Response to Comment 6-2:

Flares that are permitted as "various location" are exempt from this rule. However, it should be noted that any mobile device that remains at a fixed location longer than one year to be considered a stationary source of pollution. For those instances, the capacity would have to be monitored and if the percent capacity is greater than the applicable capacity threshold, would have to be replaced. If the percent capacity is not exceeded, the rental would revert to the exemption provisions under Subparagraph (h)(1)(E) once it moved.

Response to Comment 6-3:

Organic bulk terminal loading and tank farms are considered "other flaring" under PR1118.1. The existing units will not have percent capacity threshold requirements under the proposed rule. New flares at bulk terminals and tank farms will be subject to Table 1 – Emission Limits in PR1118.1, which is consistent with current BACT limits. No additional requirements would be imposed because of this rule.

Response to Comment 6-4:

A short-term project that does not exceed two years would never trigger action in PR1118.1. The percent capacity would have to be measured and records maintained but it takes two consecutive years of surpassing the percent capacity threshold to require action to be taken. In the event the project, and the percent capacity, is greater than the capacity threshold for two consecutive

calendar years, the flare would need to be replaced with a cleaner one, or meet the Table 1 – Emission Limits, or the percent capacity would have to be reduced below the Table 2 – Annual Capacity Threshold. Knowing these considerations and options, it will ultimately be a business decision on how best to proceed with a short-term project to be profitable.

Response to Comment 6-5:

Staff disagrees with the exemption of fixed location permitted air pollution control devices because there are currently flares available and able to meet BACT standards for air pollution control devices. However, because new sites may require additional time to evaluate available control options, f~~F~~lares with a Various Location permit will be exempt.

Comment Letter #7

Comment Letter 7

Bloomenergy

September 11, 2018

Chairman William A. Burke
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

Re: Proposed Rule 1118.1

Dear Chair Burke,

Bloom Energy (Bloom) appreciates the opportunity to provide these comments on Proposed Rule (PR) 1118.1. We strongly support the South Coast Air Quality Management District's (SCAQMD or District) efforts to protect public health, improve air quality, and reduce emissions from non-refinery flares as specified under the 2016 Air Quality Management Plan. Our comments specifically focus on the benefits fuel cells can provide in assisting SCAQMD in reaching these goals.

Fuel cells provide substantial air quality benefits while providing reliable, always-on power. For example, Bloom is a provider of a breakthrough all-electric solid oxide fuel cell technology that produces reliable power using a highly resilient and environmentally superior non-combustion process. By virtue of their non-combustion process, Bloom Energy Servers virtually eliminate emissions of criteria air pollutants including NOx, SOx, CO, VOCs, and particulate matter that are associated with traditional combustion and diesel back up power configurations while providing onsite power 24x7x365.

Bloom's fuel cells are fuel flexible and can operate on either natural gas, as well as biogas or biomethane, including from a variety of sources that are under consideration with this proposed rule such as landfills, wastewater treatment facilities, and organic waste digestion. The result is a significantly lower air emissions profile as compared to the maximum emission levels under consideration in this rule—reducing localized impacts in disadvantaged and vulnerable communities.

Additionally, fuel cells are a superior air quality solution compared to potential electricity generating technologies that could be deployed on-site to take advantage of the biogas that is currently being flared. See Figure 1 for a comparison. Given their extremely low emissions, Bloom is a valuable alternative compliance mechanism that aligns perfectly with SCAQMD's mission to "clean the air and protect the health of all residents in the South Coast Air District through practical and innovative strategies."[1]

[1] "Goals and Priority Objectives," South Coast Air Quality Management District, http://yourstory.aqmd.gov/nav/about/goals-priority-objectives

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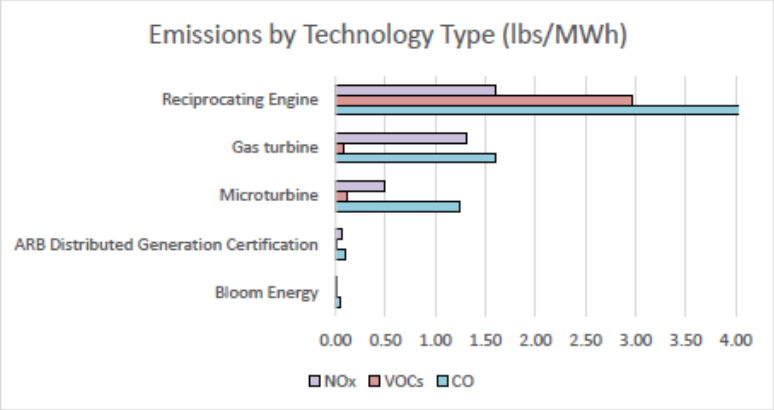
Be

Figure 1[2]



The emissions from microturbines, gas turbines, and reciprocating engines are displayed before treatment of the exhaust after combustion. Adding these cleaning systems to improve the emissions profiles is possible but adds substantial cost: For example, selective catalytic reduction (SCR) systems can add $300/KW to combined-heat-and-power (CHP) electricity generation.[3]

Finally, fuel cells provide several additional benefits that are consistent with the Districts goals: Bloom's all-electric solution can be deployed at sites where it is not necessary to match an on-site thermal load, thereby expanding the opportunities available to address energy needs with clean, reliable distributed generation; it inherently allows for higher efficiency while simultaneously producing a low heat rate; our modularity (50kW module size) allows us to remain online and manage replacements at scale without affecting the facility electricity load requirements.

With more than 200 MW installed across over 475 sites in California, Bloom has a proven technology with a strong track record of providing cost-competitive, clean,

[2] "Amendments to the Distributed Generation Certification Regulation," California Air Resources Board, pg 5, https://www.arb.ca.gov/energy/dg/2006regulation.pdf; "Bloom Energy Server ES5-300kW," Bloom Energy, https://bloomenergy.com/datasheets/energy-server-es5-300kw; "Catalog of CHP Technologies," Environmental Protection Agency, page 1-6, https://www.epa.gov/sites/production/files/2015-07/documents/catalog_of_chp_technologies_section_1._introduction.pdf; "Combined Heat and Power Catalog: CHP Program," New York State Energy Research and Development Authority, https://portal.nyserda.ny.gov/servlet/servlet.FileDownload?file=00Pt0000005wxi5EAA, page 451; "Reciprocating Engines," U.S. Department of Energy, page 4, https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Recip%20Engines.pdf; "Gas Turbines," U.S. Department of Energy, page 4, https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Gas%20Turbine.pdf; "Microturbines," U.S. Department of Energy, page 4, https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Microturbines_0.pdf.

[3] Boicea, Valentin A., Essentials of Natural Gas Microturbines, 2014, page 193.

reliable energy solutions. We encourage the SCAQMD to explore incorporating the most efficient, non-combustion fuel cell solutions as part of PR 1118.1 to protect public health and improve air quality.

Respectfully,

Erin Grizard
Senior Director, Policy

Sam Schabacker
Policy Manager

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Response to Comment Letter #7

Response to Comment 7-1:

Staff appreciates the data provided through the comment letter and recognizes the importance of alternative technologies to reduce NOx and other criteria air pollutant emissions and gaining co-benefits from gas handling such as energy production and cost savings.

Comment Letter #8

Comment Letter 8

RIVERSIDE COUNTY
DEPARTMENT OF
WASTE RESOURCES

Hans W. Kernkamp, General Manager-Chief Engineer

October 29, 2018

Mr. Steve Tsumura,
Air Quality Specialist
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

RE: Comments Regarding SCAQMD Proposed Rule 1118.1 and Staff Report Dated September 21, 2018

Dear Mr. Tsumura:

The Riverside County Department of Waste Resources (RCDWR) appreciates this opportunity to comment on the proposed Rule 1118.1. The RCDWR has eleven (11) landfill gas flares at active and inactive landfill sites that would have potential implications under the requirements of proposed Rule 1118.1. During this rule making process, the RCDWR has participated in the eight working group meetings and worked with SCAQMD staff in providing specific landfill gas data and source testing reports.

The RCDWR has the following comments on the proposed rule and draft staff report dated September 21, 2018:

Preliminary Draft Staff Report for PR 1118.1

Upon review of the preliminary draft staff report for rule 1118.1 provided by the SCAQMD on September 21, 2018, the RCDWR contacted SCAQMD staff and clarified that our Badlands Landfill (SCAQMD Facility ID 6979) flaring activity was in compliance with the proposed rule during the 2015-2017 period as otherwise indicated by Table 11 on pages 3-16 of the staff report. The primary flare at the Badlands Landfill is already an ultra-low emission flare that has demonstrated achieving the emission standards proposed in this rule. The RCDWR requests that the Badlands facility be removed from this list in the next version of the staff report. 8-1

PR 1118.1 (g) Monitoring, Recordkeeping, and Reporting Requirements:

The RCDWR requests language to be added to the rule to clarify the flow meter requirements. In section (g)(1)(E)(i)(A) of the proposed rule, reference is made to a "flare-specific non-resettable fuel meter"; however, this does not appear to be further defined anywhere within the rule. Specifically, the RCDWR requests a statement be included that states "Any fuel meter complying with the requirements of SCAQMD Rule 1150.1 section (e)(7)(A)(ii) are approved for compliance with Rule 1118.1". The RCDWR believes that the fuel meters used to comply with Rule 1150.1 are a form of "non-resettable fuel meter" in that the flow is recorded every 15 minutes and the data log can easily be used to find a total throughput over a specified time period. 8-2

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The RCDWR appreciates the time taken by SCAQMD to collaborate with stakeholders and formulate a rule that takes into consideration the industry's various needs and requirements allowing for reasonable compromises to be identified and agreed upon.

If you would like to discuss this matter further, please call Noah Rau of my staff at (951) 486-3200.

Sincerely,

for

Hans W. Kernkamp
General Manager-Chief Engineer

HWK:acc:nmr

cc: Joe McCann/Angela Dufresne/Noah Rau/Alexander Carry

PD#223239v2

Response to Comment Letter #8

Response to Comment 8-1:

Staff reviewed the data and noted the throughput to the ultra-low-NOx flare was mistakenly being attributed to the conventional flare. Badlands Landfill was removed from the list of potentially affected flares.

Response to Comment 8-2:

In response to the stakeholder's concern in comply with installation of a "flare specific non-resettable fuel meter," staff has modified the requirement. Some fuel meters account for a number of flares (i.e., flare station) so "flare specific" requirement would be challenging to comply. Most existing fuel meters are not equipped to be "non-resettable" so new equipment would need to be purchased delaying the recordkeeping and adding an extra fiscal burden. Since there has not been many known enforcement issues with the current existing fuel meters, the "non-resettable" requirement has also been removed. As such, the new requirement provides flexibility for the facilities to use their currently installed fuel meters.

Comment Letter #9

Comment Letter 9

California Independent Petroleum Association
1001 K Street, Stxth Floor
Sacramento, CA 95814
Phone: (916) 447-1177
Fax: (916) 447-1144

CIPA

October 31, 2018

By Email:

Michael Krause, Planning & Rules Manager
(Email: mkrause@aqmd.gov)
Heather Farr, Program Supervisor
(Email: hfarr@aqmd.gov)
Steve Tsumura, Air Quality Specialist
(Email: stsumura@aqmd.gov)
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Dear Michael, Heather and Steve:

CIPA and its member companies have been actively working with SCAQMD Rule Development Staff since April 2018 and have attended all of the Rule 1118.1 Working Group Meetings and have provided written comment letters. We are very disappointed to learn, at the very last minute, that a new provision limiting New Oil & Gas Flares to 800 hours /year was added to the rule language without **any** consultation or review with the affected industry sources. CIPA member companies were not made aware of the proposed change until the SCAQMD Presentation made on October 30, 2018. The Revised Preliminary Draft Rule language was just released earlier today, which does not give us adequate time make a meaningful review of the new draft and provide comments to the District before the comment period deadline and before the Rule Language is finalized. Today's comments have been provided under a very tight time frame, and we expressly reserve our right to provide additional comments as we further analyze the brand new proposed draft.

1) SCAQMD already has a **very** effective process in place to limit the development of new Oil & Gas facilities, including new flare equipment. The SCAQMD CEQA Gas (GHG) threshold of 10,000 MT CO2 EQ (equivalent to produced gas volume of approximately 146,000 MCFY or 400 MCFD) requires stationary sources permitting new flare equipment to go through the CEQA process. This rigorous public process includes an evaluation of alternatives to flaring such as use microturbines or fuel cells and requires mitigation of environmental impacts to extent feasible. Because of this, there is no need for SCAQMD to place a rule limit on new oil & gas production flare operating hours. This is already being done via the CEQA process. A blanket 9-1

800 hours/year limit does not take into account the many varying factors / limitations, including the safety of personnel and the community, that exist at individual oil & gas facilities. 9-1 Cont

2) Because SoCal Gas is working on upgrading their aging gas pipeline system equipment, oil & gas Facility gas sales connections are frequently shut-in. In order to keep a company oil sales income stream it is necessary to flare the co-produced gas during these time frames. The SoCal Gas connection are often down for time-frames > 800 hours/ year. It is not cost effective to install alternative beneficial use projects for these limited, but possibly lasting longer than 800 hours/year, types of shut-ins. We strongly recommend that the District exclude SoCal Gas connection outages from the 800 hour/year limit. 9-2

3) Many oil & gas facilities remaining in operation in the SCAQMD area are near the end of their operating lives. It is not cost effective to install beneficial use projects for the small amount of gas that is being produced. There should be a Rule Exemption for facilities with routine flaring less than 400 MCFD or 146,000 MCFY (the CEQA Project GHG threshold) with no SoCal Gas Sales connection point. The end result of this proposed new Rule Language will be closure of small oil & gas facilities and a loss of jobs. (A similar argument has been made by public utilities for closed landfill flaring operations.) 9-3

4) What is significant about 800 hours? Is there a public health risk? Permit applications already require Health Risk Assessment Screening for new devices that take into account nearby Sensitive Receptors. If the routine flaring is conducted with BACT devices that are also shielded from view, what is different about this from any other air pollution source in the basin that is controlled? SCAQMD can control air emission sources but cannot just prohibit them entirely unless they pose a public health threat. Oil & gas companies that permit new Flare equipment provide the necessary ERCs to offset emissions as required by SCAQMD. It is not a fair practice to impose this flaring limitation requirement only on oil & gas facilities and not impose this on all business processes across the board in the SCAQMD basin. Oil and gas facilities must already adhere to the most stringent emission limits and capacity thresholds for any other industry. 9-4

5) An hourly limit cannot be quantified into a specific emission reduction. Isn't that the goal of the AQMP -- to achieve a specific quantifiable emission reduction? You would only be able to quantify the emissions if you give either a specific emission limit or a volume limit due to the varying gas flowrates across the various facilities affected and even within one facility depending on the reason for flaring. An hourly limit cannot guarantee a facility will stay under any sort of emission limit – this would vary by facility. 9-5

6) In some cases, oil & gas Facility daily gas production will result in **too much** electricity generation via microturbines or fuel cells than the facility operations can consume. 9-6

Page 2 of 3

In cases where there is no connecting electrical infra-structure available to sell the excess power back to the grid flaring of excess gas is the only option. 9-6 Cont

7) Current beneficial use technologies such as microturbines and fuel cells are currently not very reliable and a back-up flaring option is required to keep oil & gas facilities operational. The proposed 800 hours /year limit for new flares is not enough to cover beneficial use equipment maintenance and upsets. 9-7

8) The proposed rule requirement for new flares disincentives companies from upgrading their existing higher emitting flare equipment to BACT equipment in order to preserve their existing permitted flaring volumes. 9-8

9) There is other non-routine flaring that takes place at oil & gas facilities for start-up, shut-down, emergency upsets, maintenance and testing purposes and that should not be included in the proposed 800 hour/year limit. 9-9

10) As local oil & gas production is increasingly limited by more restrictive regulatory requirements, it results in more and more oil & gas being imported into the basin via oil tankers (North Slope and International) and interstate gas pipelines to supply our local energy demands. The ever-growing GHG footprint of this "importing" activity should be taken into account by a SCAQMD CEQA Analysis on their collective Rule Development Activity impacting local oil & gas operations. 9-10

11) Removal of "Assist Gas" from the Definitions in former section (c)(2) of the Draft Rule will create a problem for operators using CEBs that are intermittently operated. Subsection H of the Rule should clarify that Assist Gas is exempted from the 5% capacity throughput threshold for flare use. 9-11

12) Under Section (d)(1) of the Draft Rule, moving an existing flare, permitted under pre-Rule requirements, should not make that flare subject to the Rule's NOx, CO or VOC emission limits. That could require replacement of relatively new and expensive pre-Rule flares long before the end of their useful lives. 9-12

We trust you will take seriously these concerns, as they are provided by the operators who have substantial experience with flare operation and who will be required to comply with the ultimate Rule text. Please don't hesitate to contact me with any questions. Thank you.

Best regards,

Willie Rivera
Director of Regulatory Affairs

Page 3 of 3

Response to Comment Letter #9

Response to Comment 9-1:

Since this comment letter, SCAQMD staff is not proposing an 800 hour per year limit for new flares of "produced gas." Staff does recognize the technical difficulties of setting a limit based on a time threshold including potential enforceability issues. So, in lieu of an 800 hour per year limit, staff is proposing a limit for replacement flares of 10 percent higher than the average throughput of the prior two years. This will allow businesses to maintain the same level of flaring but with a flare that is 70 percent cleaner than the existing flare. For a new flare, since there is no baseline of previous activity levels to derive a limit, staff is proposing to use the average throughput from all applicable oil and gas production sites in 2015 and 2016, which is 40 MMscf/year plus an approximate 10 percent growth factor for a proposed limit of 45 MMscf/year. ~~With regard to the suggestion of using the SCAQMD CEQA GHG threshold of 10,000 metric tons of CO2eq per year for all new permits, the equivalent annual hour cap would be over 4,000 hours of flaring per year, which is much higher than the proposed 800 hour annual limit, and would not be an effective path in encouraging beneficial use opportunities in the future.~~

Response to Comment 9-2:

Staff acknowledges the important beneficial use of pipeline injection and agrees flaring due to utility pipeline curtailment should be excluded from the throughput limit on flaring. Utility pipeline curtailment is beyond the control of the facility conducting the flaring as long as that curtailment can be verified and documented to substantiate the need for flaring.

Response to Comment 9-3:

Staff disagrees with this comment as oil and gas sites have more discretion with the closure of a well or site and control of the gas than landfills. The gas generation at a closed landfill that no longer accepts organic waste will decline according to a predictable curve. As been previously discussed in working group meetings, the oil and gas market is cyclical and an increase in the price of a barrel of oil could lead to further exploration and an increase in production.

Response to Comment 9-4:

Staff proposed the 800 hour per year limit on new flares of "produced gas" based on direction received from the October Stationary Source Committee meeting. Staff did not propose a percent capacity limit similar to the threshold for existing flares because a facility could just oversize their flare to circumvent the limit; therefore, an hour limit was proposed. It was designed to allow for flaring equivalent to approximately 10 percent of the capacity, or double the capacity threshold limit on existing flares of "produced gas." As mentioned above, staff has changed this proposed limit due to stakeholder feedback.

Response to Comment 9-5:

Staff is no longer proposing an hour limitation as mentioned above.

Response to Comment 9-6:

Staff recognizes that existing beneficial uses may be at capacity for certain sites. The proposal is intended to encourage a facility to install additional beneficial use equipment instead of replacing flares. There are other options beyond energy generation, such as cleaning, compressing, and selling the gas for use as a transportation fuel, or provide to a local municipal gas company.

Response to Comment 9-7:

As discussed above, staff is no longer proposing the 800 hour limit.

Response to Comment 9-8:

The current proposal will allow facilities to maintain the level of flaring of the average prior two years plus 10 percent to allow for future business growth. This will provide a limit to the amount of flaring allowed and ensure emission reductions will be achieved.- The 10 percent allowance for future growth is consistent with the 2016 Air Quality Management Plan.

Response to Comment 9-9:

Staff is proposing to exclude the throughput attributed to source testing and utility pipeline curtailment as those two activities are beyond the control or interest of the company, and should not be a burden to substantiate the activity occurred. All other flaring events will be included in the throughput limit.

Response to Comment 9-10:

There are many other options than flaring produced gas. Even if the 800 hour limitation was maintained, staff does not believe that would lead to significant reductions in the amount of oil and gas extracted in the SCAQMD. That said, the current proposal will allow flaring to be maintained at the current level with the allowance of a 10 percent increase to allow for growth.
Response to Comment 9-11:

Staff discussed the use of assist gas for the ultra-low--NOx flares with the flare manufacturers and was informed assist gas in not required for intermittent flaring. Further, staff was never informed of the use of assist gas during the numerous site visits conducted during rule development. To exempt assist gas from potentially being regulated would allow for unnecessary flaring and corresponding increase in NOx emissions contrary to the rule objective.

Response to Comment 9-12:

A facility can relocate an existing flare within their facility without triggering Table 1 – Emission Limits. If that flare is moved to another non-contiguous facility, Table 1 – Emission Limits would apply. This is noted in the definition of relocated flare in PR1118.1.

Comment Letter #10

Comment Letter 10

SIGNAL HILL PETROLEUM

American Energy.
American Jobs.

October 31, 2018

Michael Krause, Planning & Rules Manager
Heather Farr, Program Supervisor
Steve Tsumura, Air Quality Specialist
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: PAR 1118.1 Comments

Dear Michael, Heather and Steve:

Signal Hill Petroleum, Inc. has been following the development of Proposed Rule 1118.1. We have drafted comments on the recently changed draft rule language. Please see our comments below:

1) SCAQMD staff and industry worked in cooperation to achieve emission limits and capacity thresholds that promote efficient operation and overall decreased emissions. An additional usage capacity of 800 hours per year on new flares does not take into consideration Industry's value of natural gas and its beneficial use to its operation. Industry holds produced gas as a valuable resource for revenue and/or for beneficial uses. For example, produced gas into a gas turbine to create electricity in a safe and effective way to mitigate emissions. Flaring is a last resort method for industry. Planned maintenance and testing for SCAQMD and other agencies requires our turbine to be turned off. During this time a flare would be necessary to safely control vapors and gas streams. Additional unplanned interruptions to the turbine creates a significant safety hazard if there is 800 hours per year limit. SHP strongly urges to removal of the additional 800 hours per year condition to new flares. 10-1

2) Within Industry flaring is used as a last resort. The CEB (clean enclosed burner) has history of not operating effectively without consistent gas flow. Many flaring events using a CEB will require "Assist gas" to allow the equipment to operate continually and effectively. As a secondary piece of equipment, the CEB is not a reliable source to

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mitigate emissions in uncertain operation period without Assist gas. The continual use of Assist gas may create unforeseen emissions. SHP would like to have "Assist gas" back in the definitions of PAR 1118.1 and remove the amount of Assist gas when determining total capacity thresholds. 10-2

Please let me know if you would like to discuss our comments further. You can contact me at bcruz@shpi.net or (562) 326-5257 or my colleague Shannon Smith ssmith@shpi.net or (562) 326-5246

Sincerely,

Brian Cruz
Regulatory Compliance Technician
Signal Hill Petroleum, Inc.

Response to Comment Letter #10

Response to Comment 10-1:

Staff acknowledges produced gas is a valuable resource for revenue, and has witnessed and documented many beneficial use projects at oil and gas production sites. Staff is proposing to modify the limitation for replaced flares (see Response to Comment 9-1) and exclude source testing (see Response to Comment 9-9).

Response to Comment 10-2:

See Response to Comment 9-11 regarding assist gas.

Comment Letter #11

Comment Letter 11

From: Mike Shaffer [mailto:shafferenv@pacbell.net]
Sent: Thursday, November 1, 2018 9:31 PM
To: stsumura@aqmd.gov
Cc: Ivan Tether <ivan@tetherlaw.com>
Subject: PAR 1118.1 Additional Comments

Steve,

I'm a consultant and California Independent Petroleum Association (CIPA) member who has permitted numerous oil & gas flares in SCAQMD over the last 25 years (DCOR, Matrix, Bridge Energy/Linn/Blacksand, Sentinel Peak/ Freeport-McMoRan/PXP, Bridgemark, Aereon/Flare Industries, and several others). Since I was out of the office yesterday and didn't get a chance to add my comments to the CIPA letter submitted yesterday, I'm providing the following two (2) comments to support/supplement the CIPA comment letter dated October 31, 2018.

1. I'm in complete agreement with CIPA's comments regarding the District's last-minute proposal to add an 800 hour limit for new and relocated oil & gas flares. A few follow up questions...Why is the 800 hour proposal ONLY applicable to produced gas flares? Why not apply to other gas streams? Has a review been included in a revised staff report? Has a socioeconomic analysis been prepared for this proposal? Has the District contacted applicable stakeholders and discussed with them? 11-1

Since the oil & gas flaring universe is one of the smallest categories addressed by PAR 1118.1 (0.05 tons NOx/day) and the proposed amendments (prior to 800 hour limit) yield nearly 30% reduction in NOx, and greater reductions for VOC and CO, **I urge the District to hold off on the 800 hour proposal and address it during a future revision when it can be fully reviewed/assessed by the District and stakeholders.**

2. I am not aware of many oil & gas flares that are equipped with a "calibrated non-resettable totalizing time meter". Most (if not all) are equipped with fuel flow meters in order to monitor flaring event throughputs and report emissions pursuant to the AER Program and, if applicable, RECLAIM. In addition, every flare I have permitted has a throughput limit, and most "emergency/standby" flares have 200 hour equivalent throughput limits pursuant to the Rule 1304(a)(4) language "or equivalent method." Existing emergency flares with these 200 hour equivalent throughput limits should not be required to modify their permits and add calibrated non-resettable totalizing time meters. I believe this would be a poor use of SCAQMD resources processing these applications for zero emission reductions...plus a few thousand dollars in equipment & fees for the permit holders. Therefore, **please add wording to the (h)(3) exemption language to allow "emergency flares with existing permitted throughput limits."** 11-2

Thank you for your time and consideration.

Mike Shaffer
Shaffer Environmental Consulting
80 N. Crocker Avenue
Ventura, CA 93004-3845
(805) 659-1744 office
(805) 207-1945 cell
(805) 435-1634 fax
shafferenv@pacbell.net

Response to Comment Letter #11

Response to Comment 11-1:

Since this comment letter, staff has removed the annual 800 hour limitation for new flare installations at oil and gas production sites from the proposed rule, so the suggestion has been satisfied. Please see Response to Comment 9-1.

Response to Comment 11-2:

Staff removed the reference to non-resettable totalizing fuel meters and included the following language for the 200 hour exemption: "An owner or operator of a flare or flare station subject to this rule that operates less than 200 hours per calendar year, or the fuel gas usage limit equivalent to 200 hours per year, shall not be required to meet the applicable emission limits in Table 1 – Emission Limits". Staff believes that satisfies the commentator's recommendation and request.

Comment Letter #12

Comment Letter 12

From: Nygaard, Renee K [mailto:RENEE.NYGAARD@pbfenergy.com]
Sent: Tuesday, October 30, 2018 4:00 PM
To: Steve Tsumura <stsumura@aqmd.gov>
Cc: Jung, Melissa <Melissa.Jung@pbfenergy.com>; Flaniken, Nelson A <NELSON.FLANIKEN@pbfenergy.com>
Subject: PR 1118.1 Comments

Steve,
We would like to submit the following comments to the Proposed Rule 1118.1 (PR).

1. We second Cathy Obergfell comments during the October 17, 2018 PR 1118.1 public workshop. 12-1
2. We support WSPA's comment in letter addressed 10 16, 2018 to Mr. Krause of SCAQMD, that PR 1118.1(d)(2) be revisedto include: An owner or operator of a flare or flare station in the categories listed in Table 2 and installed prior to….". 12-2
3. Finally, we would like further clarification from the District regarding the flare definition. WSPA has previously proposed definitions that specifically exclude thermal oxidizers. In the October 17, 2018 presentation, slide #12, the District outlines that considerable effort has been made "to develop flare definition that distinguishes flares from afterburners, thermal oxidizers, and incinerators. Would you please clarify and provide detail on how the District believes the current proposed definition removes thermal oxidizers from this definition? We want to ensure our understanding is consistent. 12-3

I appreciate your time and effort during this rulemaking process.

Regards,
Renee Nygaard
Environmental Manager
Torrance Logistics Company LLC
12851 E. 166th Street
Cerritos, CA 90703

Phone 310-212-4190
Cell 310-709-9484
Fax 310-212-1788

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Response to Comment Letter #12

Response to Comment 12-1:

See Response to Public Workshop Comment 4-1.

Response to Comment 12-2:

Staff agrees with the comments and have changed the rule language such that only flares combusting gas listed in Table 2 – Annual Capacity Thresholds have to monitor their percent capacity and thus, those not listed in Table 2 (e.g., "other flares") do not need to monitor and record percent capacity.

Response to Comment 12-3:

See Response to Comment 6-1 and the discussion of the description and characterization of flares, thermal oxidizers, afterburners, and incinerators in Chapter 3 of this staff report.

Comment Letter #13

Comment Letter 13

Yorke ENGINEERING, LLC
www.YorkeEngr.com

November 13, 2018

Mr. Steve Tsumura
Air Quality Specialist
South Coast Air Quality Management District (SCAQMD)
21865 Copley Drive
Diamond Bar, CA 91765
Work: (909) 396-2549
E-mail: STsumura@aqmd.gov

Subject: Proposed Rule 1118.1 – Control of Emissions from Non-Refinery Flares Preliminary Analysis for Hoag Hospital (Facility ID 11245) Based on October 31, 2018 Draft Rule Language

Dear Mr. Tsumura:

On behalf of Hoag Hospital (Facility ID 11245), Yorke Engineering, LLC is submitting this follow-up letter to the two previously submitted on September 19 and October 17, 2018 illustrating the unique case of the flare at Hoag Hospital in Newport Beach and the impacts of PR1118.1. This analysis is based on draft rule language dated October 31, 2018, our email to SCAQMD on October 30, 2018, and our conversations on November 2 and 7, 2018.

HISTORY

For a historical summary of the flare at Hoag, please refer to the previous comment letter submitted on October 17, 2018.

UPDATED RULE IMPACT ANALYSIS

Based on an October 2, 2018 phone conversation between Corey Luth of Yorke Engineering, LLC and Mike Krause, Heather Farr, and Steve Tsumura of SCAQMD, the SCAQMD is now considering the flare gas at Hoag to be "Other Flare Gas" for rule applicability purposes. Mr. Krause acknowledges that the situation at Hoag is an "interesting story." We maintain the naturally occurring methane flared at Hoag should be uniquely classified in Table 1 of the proposed rule language dated October 31, 2018. The purpose of the flare at Hoag is to control potential odors and mitigate health risks and fire hazards. Imposing overly-restrictive emission limits may needlessly force the facility to incur excessive costs in the future to upgrade the equipment. In addition, it may cause compliance issues in the future as the composition of the gas is highly variable. A subset of gas analysis results is provided in Attachment 1. Emissions data provided by flare manufacturers may not be achievable and demonstrated via source testing. We request that an additional category be added to Table 1 named "Naturally Occurring Methane" with a requirement to maintain a low NOx burner, rather than a numerical emission limit, or a by-name exemption in subdivision (h).

In the October 2, 2018 phone call, Best Available Control Technology (BACT) emission limits were discussed. SCAQMD asserted that the flare should have been subject to the 0.06 lb/MMBTU NOx limit in the past. This is incorrect as in the Rule Evaluation for A/N 329157 the SCAQMD acknowledged that there is no specific BACT listed for this type of waste gas flare. Nor were there

LOS ANGELES/ORANGE COUNTY/RIVERSIDE/VENTURA/SAN DIEGO/FRESNO/BERKELEY/BAKERSFIELD
31726 Rancho Viejo Road, Suite 218 ▼ San Juan Capistrano, CA 92675 ▼ Tel: (949) 248-8490 ▼ Fax: (949) 248-8499

Mr. Steve Tsumura
November 13, 2018
Page 2 of 6

source specific rules establishing an emission limit on the flare. As such, the source test conducted in 1998 should be viewed only for baseline informational purposes.

In addition, SCAQMD acknowledges there is no data to support the 0.06 lb/MMBTU BARCT limit for Other Flare Gas. During a phone call with Mr. Steve Tsumura on November 2, 2018, he acknowledged the SCAQMD is unable to locate a similar flare in different districts to determine if other districts have set a precedent for this type of flare. 13-1

A Public Records Request was submitted by Yorke to the SCAQMD on October 19, 2018 requesting source tests and any other information used for the establishment of the PR1118.1 Table 1 emission limits for Other Flare Gas be released. On October 25, 2018, Public Records returned a completion letter stating, "No requested records were found." A copy of the letter is provided as Attachment 2.

In a follow-up call on November 7, 2018, Mr. Tsumura indicated the emphasis of Working Group Meeting #9 scheduled for November 15, 2018 would be Oil & Gas and Wastewater. Mr. Tsumura also informed us that a consultant named Kathy Obergfell with R.A. Nichols has been relaying information to the SCAQMD to better define the Organic Liquid emission limits in Table 1, formerly part of the Other Flare Gas category. We are concerned that the flare at Hoag may be grouped with flares at other dissimilar industries with little attention being given to Hoag's unique characteristics. 13-2

We understand the SCAQMD may be considering alternate rules for equipment subject to Rules 1110.2 and 1134 that combust biogas. Apparently, there is some acknowledgment that variabilities in gas compositions affect emissions performance. 13-3

Finally, we suggest that the rule include a definition of flare "replacement". Subdivision (d) specifies the Table 1 emission limits take effect when an operator of a flare "installs, replaces, or relocates an existing flare." The term "relocate" is defined, but it is not clear what constitutes the replacement of a flare. We propose that the definition would include "complete replacement of the flare" and not replacement of parts for maintenance. In Hoag's case the flare is a component of a larger waste gas collection and treatment system permit and we would like to verify that modification of the associated permit unit does not trigger Table 1 emission limits. 13-4

Yorke Engineering, LLC

CONCLUSION

We request that PR1118.1 include a separate gas category in Table 1 for "Naturally Occurring Methane" with a requirement to maintain a low NOx burner, rather than a numerical emission limit, or a by-name exemption in subdivision (h). We also request that the rule include a definition of flare replacement. Hoag operates the flare as a benefit to the citizens of Newport Beach by mitigating odors, health risks, and fire hazards. The quality and variability of the gas composition make establishment of numeric emission limits unreasonable without supporting documentation, of which there is none at this time.

In Attachment 3, we have a marked-up version of PR1118.1 with our proposed edits to Table 1 and subdivision (h).

Should you have any questions or comments, please contact me at (949) 556-7074.

Sincerely,

Corey Luth
Engineer
Yorke Engineering, LLC
CLuth@YorkeEngr.com

cc: Erik Lidecis, Hoag
Duane Suby, Hoag
Peter Moore, Yorke Engineering
Corina Chang, Yorke Engineering
Dixie Richards, Yorke Engineering

Attachments:

1. Gas Analysis Results
2. Public Records Completion Letter (October 25, 2018)
3. Marked-up PR1118.1 (October 31, 2018)

ATTACHMENT 1 - GAS ANALYSIS RESULTS

OILWELL RESEARCH, INC.

[illegible] W. [illegible] STREET
[illegible] BEACH, CALIFORNIA 90813
[illegible] 213 / 436 4254

August 25, 1975

City of Newport Beach
3300 Newport Blvd.
Newport Beach, CA 92660

RECEIVED
SEP 4 1980
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ANAHEIM OFFICE

Attention: Mr. Kenneth L. Perry

Gentlemen:

Shown below are the results of analysis on a gas sample taken August 19, 1975 in the Balboa Cove housing area.

	Mol. %
Oxygen	.088
Nitrogen	7.640
Carbon Dioxide	10.381
Hydrogen Sulfide	.004
Methane	81.756
Ethane	.060
Propane	.003
Iso-Butane	.001
N-Butane	.003
Iso-Pentane	.005
N-Pentane	.005
Hexane	.007
Heptane	.028
Octane	.018
Nonane +	.001
Specific Gravity (air = 1)	.688
B.T.U./cu. ft.	832.

Respectfully submitted,

A. O. Byrd

A. O. Byrd

lc

At Virgil Howell's house. # 45 Balboa Coves KLP.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT	PAGES 7	PAGE 4
STATIONARY SOURCE COMPLIANCE DIVISION	APPL NO 329157	DATE 8/29/97
PERMIT APPLICATION EVALUATION AND CALCULATIONS	PROCESSED BY GCR	CHECKED BY

Recently, concerns were raised regarding the applicability of Rule 431.1 for the sulfur content of the waste gas being burned in existing flare that may have approx. 4000 ppm of H_2S. District Prosecutors Office was contacted for the interpretation and applicability of Rule 431.1, and it was determined that the operations will be subject to Rule 431.1. A waste gas sample analysis run by the AQMD Source Testing branch confirmed H_2S level in excess of 3500 ppm (Source Test Report No. 97-0026).

On May 14, 1997, a meeting between Hoag Memorial Hospital representatives (and Counsel) and Distrct staff and Counsel was conducted at the District headquarter. As a result it was agreed to have HOAG expedite the proposed construction project to bring the source in Rule 431.1 compliance, minimize potential violations of Rule 402 and Health and Safety Code Section 41700. In the meantime, District to prepare and file for the order for abatement (stipulated O/A). District had filed a petition for an Order for Abatement under O/A # 4444-1 (scheduled hearing date of July 15, 1997). For further details please refer to the Order for Abatement Case No. 4444-1.

Upon approval and issuance of this new Permit to Construct (A/N 329157), previously issued P/C under A/N 320316 will be cancelled.1

PROCESS DESCRIPTION:

Proposed new construction consists of waste gas collection from the existing well #5, #3, #7A and Balboa Cove well. Two identical gas blower packages, No. 1 and No. 2 (one being a stand by unit) will be installed for gas transport through the sulfur treatment scrubber unit and finally to the new flare. Maximum waste gas flows, over a twenty year period and including future tie-ins from support services buildings , is estimated at 20,100 SCFH (335 scfm), average being 8,500 SCFH (140 scfm). Typical waste gas sample analysis (composite sample), September 3, 1996, used for the project design is (given by applicant);

COMPONENT	MOL. %
METHANE	61.9
CARBON DIOXIDE	14.2
OXYGEN	0.5
NITROGEN	23.0
HYDROGEN SULFIDE	0.4 (4000 ppm)
	TOTAL = 100%

Note: Aromatic and chlorinated hydrocarbons' analysis indicates some of the toxic compounds at level below detection level (< 1.0 PPB), and Benzene = 30.8 PPB. (Please refer to letter from GeoScience Analytical Inc., dated September 5, 1996, Table-3).

Mol. Wt. = 22.9
Specific Gravity = 0.79
BTU/SCF (HHV) = 627.5

Max. waste gas rate (Flare design) = 20,100 SCFH = 335 scfm.

GeoScience Analytical, Inc. "established March 1981"

608 HAILEY COURT SIMI VALLEY, CA 93065 (805) 526-6532 FAX 583-8081 EMAIL GEOSCI10@AOL.COM

September 1, 2015

Hoag Memorial Hospital Presbyterian
One Hoag Drive
Newport Beach, CA 92658-6100

Attn.: Tim Caldwell
Supervisor Plant Operations

RE: Gas Flare Chemical Composition

Dear Mr. Caldwell:

On August 20, 2015 GSA personnel collected flare gas for chemical speciation in a Certified Laboratory under Chain-of-Custody. Samples were collected and analyzed in accordance with EPA and ASTM methodology specifically described in the attached Case Narrative.

Flare gas was analyzed for Fixed Gases, hydrogen sulfide and C1-C6+ hydrocarbons. A complete laboratory report is attached hereto. The following table summarizes the gas composition identified by the subject report:

Compound	Concentration (ppmV)
Methane	698,000.0
Ethane	1,400.0
Propane	36.0
n-Butane	12.0
n-Pentane	ND
n-Hexane	ND
n-Hexane plus	24.0
Hydrogen	ND
Oxygen	156,000.0
Argon	11,300.0
Nitrogen	135,000.0
Carbon Monoxide	ND
Carbon Dioxide	15.6
Hydrogen Sulfide	0.0077

Methods, laboratory analytical data, QA/QC and Chain-of-Custody are attached hereto.

Sincerely yours,

Louis J. Pandolfi
President

Environmental Audits Hazardous Gas Mitigation Litigation Consulting Petroleum Geochemistry

ATTACHMENT 2 - PUBLIC RECORDS COMPLETION LETTER (OCTOBER 25, 2018)

Information Management
Public Records Unit

Direct Dial (909) 396-3700
Fax:(909) 396-3330

COMPLETION LETTER

October 25, 2018

COREY LUTH
YORKE ENGINEERING, LLC
31726 RANCHO VIEJO RD.# SUITE 218
SAN JUAN CAPISTRANO, CA 92675

Ref.: CONTROL NO. 97342
Received 10/19/2018

Re: PROPOSED RULE 1118.1 SOURCE TESTS FOR ESTABLISHING "OTHER FLARE GAS" EMISSIONS LIMITS.

After a thorough search of this agency's records:

NO REQUESTED RECORDS WERE FOUND FOR THE ABOVE-REFERENCED FACILITY OR FACILITY SITE.

If you have any questions, please do not hesitate to contact me, Tuesday through Friday, **8:00 a.m**. to **4:30 p.m.**

Sincerely,

LISA RAMOS x3211
For COLLEEN PAINE
Public Records Coordinator

:lr

ATTACHMENT 3 – MARKED-UP PR1118.1 (OCTOBER 31, 2018)

Rule 1118.1 (Cont.) **(TBD)**

Table 1 – Emission Limits

Flare Gas	NOx	CO	VOC
	pounds/MMBtu		
Digester gas[1]	~~0.025~~	~~0.06~~	~~0.038~~
Major polluting facility	0.025	0.06	0.038
Minor facility	0.06	N/A	N/A
Landfill gas[1]	0.025	0.06	0.038
Produced gas	0.018	~~0.06~~0.01	0.008
Other flare gas	0.06	N/A	N/A
Naturally Occurring Methane	Low NOx Burner	N/A	N/A
Other Organic liquid storage	0.25	0.37	0.15
~~Other flare gas~~Organic liquid loading and unloading	~~Parts per million @ 3% oxygen Destruction Efficiency~~pounds/1,000 gallons loaded		
	~~30~~0.034	~~10~~0.05	~~99%~~0.02

~~1. Compliance with emission limits shall be demonstrated when combusting 100% biogas (e.g. with no regeneration gas)~~

(2) An owner or operator that submits an application to install a flare or flare station after [date of adoption] to combust Produced Gas or replaces or relocates an existing flare or flare station to combust Produced Gas shall not operate the flare(s) more than 800 hours per year.

(~~2~~3) An owner or operator of a flare or flare station with a capacity threshold listed in Table 2 Capacity Threshold~~,~~ and an application deemed complete ~~installed~~ prior to [*date of adoption*] shall:

(A) Demonstrate compliance with ~~the emission limits in~~ Table 1 Emission Limits, or

(B) Calculate the percent capacity pursuant to subparagraph (g)(1)(~~D~~E) for each flare or flare station. The owners or operator of a flare or flare station~~s~~ with an annual percent capacity that surpasses the Table 2 Capacity Thresholds ~~in Table 2~~ shall:

(i) Submit a ~~notification~~ Notification of Flare Surpassing Capacity Threshold to the Executive Officer (1118.1Notifications@aqmd.gov), no later than 30 days after the end of the calendar year.

(ii) Submit a Notification ~~Statement~~ of Intent to the Executive Officer (1118.1Notifications@aqmd.gov), no later than 60

Revised Preliminary Draft Rule

Rule 1118.1 (Cont.) **(TBD)**

(~~E~~D) Provide the manufacturer's maintenance instructions, maintenance records, and the source test report(s) to the Executive Officer upon request.

(~~F~~E) ~~Maintain~~ Retain all written or electronic records required by this rule for at least five years, which shall be made available ~~upon request~~no later than two business days from date requested.

(h) Exemptions

(1) The provisions of this rule shall not apply to owners or operators of a flare~~s~~ or flare station:

(A) At asphalt plants; biodiesel plants; hydrogen production plants fueled in part with refinery gas; petroleum refineries~~,~~; and sulfur recovery plants~~, and hydrogen production plants subject to SCAQMD Rule 1118 – Control of Emissions from Refinery Flares~~;

(B) Routing only 100% natural gas directly into the flare burner ~~to oxidize combustible gases or vapors~~ ~~and~~ that are subject to SCAQMD Rule 1147 – NOx Reductions from Miscellaneous Sources NOx emission limits;

(C) ~~At facilities subject to Rule 1109.1 – Refinery Equipment.~~Routing only 100% propane or 100% butane directly into the flare burner;

(D) At a landfill that collects less than 2,000 MMscf of landfill gas per calendar year and has either ceased accepting waste or is classified by CalRecyle as an Inert Waste Disposal Site or an Asbestos Contaminated Waste Disposal Site~~and generates less than 2,000 MMscf of landfill gas per calendar year; or~~

(E) Permitted as a Various Location Flare~~s that are operated in compliance with SCAQMD Rules and Regulations~~; or~~.~~

(F) Combusting regeneration gas.

(2) An owner or operator of a flare or flare station subject to this rule that emits less than 30 pounds of NOx per month ~~calendar year~~ shall not be required to meet the ~~emission limits in~~ Table 1 Emission Limits provided:

(A) The flare or flare station has a permit that specifies conditions that limit~~s~~ the applicable NOx emissions; and

(B) The flare or flare station operates in compliance with the permit condition;

(C) This exemption shall no longer apply in the event the flare or flare station surpasses the 30 pound per month NOx emission limit.

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Rule 1118.1 (Cont.) **(TBD)**

(3) An owner or operator of a flare or flare station subject to this rule that operates less than 200 hours per calendar year shall not be required to meet the ~~emission limits in~~ Table 1 Emission Limits provided:

(A) The flare has a permit that specifies conditions that limits the operating hours; and

(B) The flare operates in compliance with the permit condition;

(C) This exemption shall no longer apply in the event the flare surpasses the 200 hours per calendar year.

(4) An owner or operator of an open flare **or flare combusting Naturally Occurring Methane** shall not be required to conduct source testing pursuant to subdivision (f).

(5) Throughput, heat input, NOx emissions and time accrued during source testing pursuant to subdivision (f) maybe omitted ~~fr~~om the calculation of percent capacity pursuant to subparagraph (g)(1)(ED), emissions pursuant to paragraph (h)(2), or hours pursuant to paragraph (h)(3).

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Response to Comment Letter #13

Response to Comment 13-1:

Since this comment letter, staff revised the proposed limit in Table 1 – Emission Limits for "other flare gas" from 30 ppm to 0.06 pounds/MMBtu consistent with current BACT limits. To clarify, the initial proposed 30 ppm limit was based on an existing permitted unit for organic liquid handling, however, it was later discovered, the source testing has yet to be completed to verify the unit has achieved the 30 ppm. The current rule proposal separates organic liquid handling from "other flare gas" category and the proposed NOx limit is consistent with the permit limit of the current flare in operation at Hoag Hospital, which has been the BACT limit since 1988.

Response to Comment 13-2:

To support the commenter's concern, organic liquids handling has been separated from the "other flare gas" category with limits consistent with current BACT limits.

Response to Comment 13-3:

Staff agrees that gas composition has an impact on flare emissions; however, gases as dissimilar as landfill gas, digester gas, and produced gas can meet similar emission limits particularly when the control equipment is similar. The gas produced at Hoag Hospital has been able to operate boilers at their site and they have produced no evidence that would indicate the 30 year old BACT standard cannot be achieved. In fact the current permit for the existing flares states it was retrofitted with ultra-low-NOx burners meeting the 0.06 pound/MMBtu limit proposed in Rule 1118.1.

Response to Comment 13-4:

Staff agrees with the comment and has included a definition for "Flare Replacement" in the proposed rule.

Comment Letter #14

Comment Letter 14

SCAP
SOUTHERN CALIFORNIA ALLIANCE OF PUBLICLY OWNED TREATMENT WORKS

November 13, 2018

Mr. Steve Tsumura, Air Quality Specialist
Planning, Rule Development and Area Sources
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Dear Mr. Tsumura:

Re: Comments on Proposed Rule 1118.1 – Non-Refinery Flares

The Southern California Alliance of Publicly Owned Treatment Works (SCAP) appreciates this opportunity to provide comments on Proposed Rule 1118.1. SCAP represents 83 public agencies that provide essential water supply and wastewater treatment to nearly 19 million people in Los Angeles, Orange, San Diego, Santa Barbara, Riverside, San Bernardino and Ventura counties. SCAP's wastewater members provide environmentally sound, cost-effective management of more than two billion gallons of wastewater each day and, in the process, convert wastes into resources such as recycled water and biogas.

Our members provide an essential public service by operating wastewater treatment plants for the sole purpose of safely and reliably managing society's sewage. Biogas is a by-product of the anaerobic sewage treatment process and must be managed continuously. This waste gas cannot be managed as a commodity, which is the objective of for-profit industries. Accordingly, our comments are focused on maintaining a safe and reliable method to manage biogas.

We would like to take this opportunity to recognize SCAQMD's efforts to address our concerns by restructuring proposed rule language. While we support the current concept of the rule and proposed limits, SCAP remains concerned that the October 31st version of the rule contains a number of outstanding issues that should be rectified. Our comments and recommended revisions are outlined in the attached redline/strikeout version of the rule. Some of these outstanding issues have the potential to materially alter rule requirements, so we respectfully request that an updated version of the rule be provided to stakeholders for a final review prior to the 30-day package deadline.

As illustrated in the attached comments, our members have relatively minor concerns pertaining to the major elements of the rule. Much of our angst has been alleviated by SCAQMD commitment to work with stakeholders and other regulatory agencies to holistically balance air quality requirements with the state-wide effort to divert organics from landfills as required under SB 1383. As we have discussed, our mission is to provide a public service by treating society's waste. With the recent 14-1

P.O. Box 231565
Encinitas, CA 92024-1565
Fax: 760-479-4881 Tel: 760-479-4880 Website: www.scap1.org Email: info@scap1.org

Mr. Tsumura November 13, 2018

revelation that food waste diversion and advanced digestion processes could generate greater concentrations of ammonia, we need to ensure that major and minor source BACT remains achievable for essential public services. SCAP believes that new BACT determinations will be required for specific digestion scenarios, which may require increasing limits contained in the current generic BACT determinations for digester gas flares. Due to the importance of the technology assessment that will be described in the Governing Board Resolution for Rule 1118.1, SCAP respectfully submits the attached draft resolution for your consideration.

Thank you again for the opportunity to comment on Proposed Rule 1118.1. Please do not hesitate to contact Mr. David Rothbart of the Los Angeles County Sanitation Districts, SCAP Air Quality Committee Chair, should you have any questions regarding this transmittal at (562) 908-4288, extension 2412.

Sincerely,

Steve Jepsen, Executive Director

cc: Dr. Philip Fine, SCAQMD
Ms. Susan Nakamura, SCAQMD
Mr. Michael Krause, SCAQMD
Ms. Heather Farr, SCAQMD
Mr. Greg Kester, California Association of Sanitation Agencies
Mr. Ray Arthur, Central Valley Clean Water Association
Mr. Randy Schmidt, Bay Area Clean Water Agencies

2

Rule 1118.1 (Cont.) **(TBD)**

(~~14~~31) OTHER FLARE GAS includes~~, but is not limited to,~~ gases combusted in flare or flare station from ~~facilities handling organic liquids, such as tank trucks, rail cars, and bulk terminal loading and offloading, or tank farm degassing~~processes or sources other than landfills, wastewater, oil and gas production, or organic liquid handling.

(~~15~~22) OXIDES OF NITROGEN (NOx) means nitric oxide and nitrogen dioxide.

(~~16~~23) PRODUCED GAS is organic compounds that are both gaseous at standard temperature and pressure and are associated with the production, gathering, separation or processing of crude oil.

(~~17~~24) PROTOCOL means a ~~SCAQMD approved~~ test protocol for determining compliance with emission limits for applicable equipment.

(~~18~~25) REGENERATIVE ADSORPTION SYSTEM means a system used to remove impurities from combustible gases or vapors consisting of several media trains that are regenerated by purging with gas, typically used with biogas or produced gas.

(~~19~~26) REGENERATION GAS means the purge gas from a regenerative adsorption system.

(~~20~~27) RELOCATE means to remove an existing source from one facility in the SCAQMD and to install that source on another non-contiguous facility. Relocate does not include ~~a~~flares permitted as a Various Location Flare.

~~(21) STATEMENT OF INTENT means a written document from an owner or operator of a flare subject to this rule indicating the action that will be taken once a flare surpasses the Table 2 Capacity Threshold for two consecutive years.~~

~~(22)~~ VARIOUS LOCATIONS FLARE means any portable flare permitted to operate at different locations in the SCAQMD [KD1] 14-2

(~~23~~28) VOLATILE ORGANIC COMPOUND (VOC) is as defined in Rule 102 – Definition of Terms.

(d) Requirements

(1) An owner or operator that submits an application to install a flare after [date of adoption] or replaces or relocates an existing flare shall ~~meet~~ not exceed the applicable NOx, VOC, and carbon monoxide (CO) emission limits specified in Table 1 Emission Limits. ~~.~~ Emissions determined to exceed any applicable Table 1 Emission Limits established by this rule shall constitute a violation of this rule.

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Rule 1118.1 (Cont.) **(TBD)**

Table 1 – Emission Limits

Flare Gas	NOx	CO	VOC
	pounds/MMBtu		
Digester gas[+]	~~0.025~~	~~0.06~~	~~0.038~~
Major polluting facility[1]	0.025	0.06	0.038
Minor facility[1]	0.06	N/A	N/A
Landfill gas[+]	0.025	0.06	0.038
Produced gas	0.018	~~0.06~~0.01	0.008
Other flare gas	0.06	N/A	N/A
Other Organic liquid storage	0.25	0.37	0.15
~~Other flare gas~~Organic liquid loading and unloading	~~Parts per million @ 3% oxygen Destruction Efficiency~~pounds/1,000 gallons loaded		
	~~30~~0.034	~~10~~0.05	~~90%~~0.02

~~1. Compliance with emission limits shall be demonstrated when combusting 100% biogas (e.g. with no cogeneration gas)~~

1. Digester gas emission limits may be increased due to the impact of advanced digestion and food waste diversion from landfills. A technical feasibility study will be performed within one year of rule adoption to evaluate appropriate limits for these facilities. 14-3

(2) An owner or operator that submits an application to install a flare or flare station after [date of adoption] to combust Produced Gas or replaces or relocates an existing flare or flare station to combust Produced Gas shall not operate the flare(s) more than 800 hours per year. Flaring conducted during source testing, maintenance, upgrades, or breakdowns of equipment, or upsets that lead to safety concerns shall not be included as part of the 800 hours per year.

(~~2~~3) An owner or operator of a flare or flare station with a capacity threshold listed in Table 2 Capacity Thresholds and an application deemed complete ~~installed~~ prior to [*date of adoption*] shall: 14-4

(A) Demonstrate compliance with ~~the emission limits in~~ Table 1 Emission Limits, or

(B) Calculate the percent capacity pursuant to subparagraph (g)(1)(~~D~~E) for each flare or flare station. The owners or operator of a flare or flare station~~s~~ with an annual percent capacity that surpasses the Table 2 Capacity Thresholds ~~in Table 2~~ shall:

Revised Preliminary Draft Rule

Rule 1118.1 (Cont.) **(TBD)**

(C) Demonstrate ~~Complete the~~ compliance with Table 1 Emissions Limits by completing a source tests pursuant to a SCAQMD approved source test protocol~~determination~~.

Table 4 – Flare Replacement

Requirement	Schedule
Submit permit application	~~6 months180 days~~1 year from the end of the calendar year after ~~from~~ surpassing the ~~annual~~ Table 2 Capacity Threshold for two consecutive calendar years
Complete flare installation	18 months after SCAQMD permit issued
~~Complete~~ Demonstrate compliance by completing a ~~determination~~source test	180 days after ~~completion of flare or flare station installation and~~ initial startup

14-5

14-6

(~~5~~6) An owner or operator of a flare or flare station subject to this rule shall perform maintenance in accordance with the manufacturer's schedule and specifications.;

(7) Display in an accessible location on the flare the model number and the rated heat input capacity of the flare on a permanent rating plate ~~issued by the manufacturer~~ for any flare installed, relocated, or modified after [*Date of Adoption*].

14-7

(8) The Notifications submitted under clauses (d)(3)(B)(i) and (d)(3)(B)(ii) and subparagraphs (d)(4)(A) and (d)(4)(B) shall be subject to notification fees pursuant to Rule 301(x) – Permitting and Associated Fees.

(e) Extension provision

(1) An owner or operator of a flare or flare station subject to this rule may submit a request to the Executive Officer for an extension from the schedule in paragraphs (d)(~~3~~4) and (d)(~~4~~5), at least 60 days prior to the schedule deadline for the requirement. The time extension request shall include:

(A) The permit number or application number of the flare or flare station requiring the extension;

(B) The reason(s) a time extension is needed;

(C) Increments of progress completed and yet to be completed pursuant to the compliance schedule; and

Revised Preliminary Draft Rule

Rule 1118.1 (Cont.) **(TBD)**

(D) The length of time requested.

(2) Approval of Time Extensions

The Executive Officer or designee shall review the request for the time extension and shall provide written approval ~~or reject the request~~ within 60 days of receipt ~~, based on~~ if the following criteria are met: 14-8

(A) The owner or operator provides sufficient details identifying the reason(s) a time extension is needed; ~~and~~

(B) The owner or operator demonstrates to the Executive Officer that there are specific circumstances ~~beyond the control of the owner or operator~~ that necessitate additional time to comply. Such a demonstration may include, but is not limited to, providing detailed schedules, engineering designs, construction plans, permit applications, purchase orders, economic burden, and technical infeasibility~~.~~, and

(C) Failure to satisfy the above criteria ~~shall~~ may also result in a denial of the request. 14-9

(f) Source Tests

(1) Within 12 months from *[Date of Adoption]* an owner or operator of a flare or flare station ~~subject to paragraph (d)(1), or~~ complying with subparagraph (d)(~~2~~3)(A) or paragraph (h)(2) shall determine the applicable NOx, VOC, and CO emissions by conducting an initial source test, and source testing every five years thereafter, pursuant to paragraph (f)(4). An owner or operator of a flare subject to paragraph (d)(1) shall conduct the initial source test according to the schedule in Table 4 Flare Replacement, and source testing every five years thereafter, pursuant to paragraph (f)(4).

(A) At least 90 days prior to a scheduled source test, submit a source test protocol to the Executive Officer for approval; ~~and~~

(B) At least one week prior to the scheduled source test, notify the Executive Officer, in writing, of the intent to conduct source testing; and

(~~B~~C) Conduct a source test according to the approved protocol. If prior to rule adoption, a source test was conducted pursuant to an approved protocol and demonstrated compliance with Table 1 Emission Limits, the owner or operator may ~~instead~~ opt to

Revised Preliminary Draft Rule

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Rule 1118.1 (Cont.) **(TBD)**

(C) The continuous electric power to a fuel meter required under subparagraph (g)(1)(A) and (g)(1)(B) ~~shall not~~may only be shut off ~~unless the flare is not operating or is shut down~~ for maintenance or safety.

(D) Each fuel meter shall be calibrated based on the manufacturer recommended procedures within 90 days of installation or [*Date of Adoption*], whichever is ~~sooner~~later, and annually thereafter may be performed using an in-situ calibration method. If the fuel meter was calibrated prior to rule adoption, conduct next calibration within the one year of anniversary date of prior calibration. 14-10

(E) Beginning January 1, 20~~10~~20, or when fuel meter is installed pursuant to subparagraph (g)(1)(A), determine the percent capacity of the flare or flare station and maintain records documenting the percent capacity determinations as follows: 14-11

(i) Total annual throughput in units of MMscf/year and/or total annual heat input in units of MMBtu/year shall be calculated by summing throughput and/or heat input of the gas at the end of each calendar year as follows:

(A) Monthly ~~T~~throughput shall be measured and recorded at least once per month by the ~~flare-specific non-resettable~~ fuel meter(s); and

(B) Heat input of the flare gas shall be measured and recorded at least once per month pursuant to (f)(6) or calculated and recorded monthly by measuring the methane concentration ~~weekly~~ using a portable nondispersive infrared detector or equivalent detector, calibrated per manufacturer's specifications.

(ii) Capacity shall be based on:

(A) Manufacturer designation and if not known or available, the permit limits will be deemed the capacity;

(B) The combined capacity of all flares in a flare station.

Revised Preliminary Draft

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Rule 1118.1 (Cont.) **(TBD)**

(iii) Annual percent capacity shall be calculated at the end of each calendar year by one of the following metrics:

(A) By volume:

$$Percent\ Capacity_{MMscf} = \frac{Total\ Annual\ Throughput\ \left(\frac{MMscf}{year}\right) \Big/ 525{,}600\ \frac{minutes}{year}}{Capacity\ (MMscf/minute)} \times 100\%$$

(B) By heat input:

$$Percent\ Capacity_{MMBtu} = \frac{Total\ Annual\ Heat\ Input\ \left(\frac{MMBtu}{year}\right) \Big/ 8760\ \frac{hour}{year}}{Capacity\ (MMBtu/hour)} \times 100\%$$

(~~F~~iv) An owner or operator of the flare or flare station that fails to measure or record the monthly throughput or heat input value in compliance with the provisions above, the percent capacity ~~shall~~ may ~~ran~~be presumed to be one-hundred percent (100%). 14-12

(2) The owner or operator of a flare or flare station subject to this rule shall:

(A) Monitor and maintain NOx emission records ~~Demonstrate the NOx emissions~~ of ~~the~~a flare~~(s)~~ or flare station ~~are less than 30 pounds per month if validating compliance~~ complying pursuant to ~~sub~~paragraph (h)(2)~~, and shall maintain monthly records documenting maximum NOx emissions of less than 30 pounds per month~~ as follows:

(i) NOx emission shall be determined based on ~~by~~ the most recently ~~an~~ approved source test conducted pursuant to ~~paragraph (f)(4)~~a SCAQMD approved source test protocol;

(ii) Monthly ~~T~~throughput shall be measured and recorded at least once per month by the ~~flare specific non-resettable~~ fuel meter(s);

(iii) Heat input of the flare gas shall be measured and recorded at least monthly pursuant to paragraph (f)(6) or calculated and recorded monthly by measuring the methane

Revised Draft Rule

Rule 1118.1 (Cont.) **(TBD)**

concentration using a portable nondispersive infrared detector or equivalent detector calibrated per manufacturer's specifications or estimated using the applicable Table 5 Default Heat Input; and

Table 5 – Default Heat Input

Flare Gas	Default Heat Input (Btu/scf)
Digester gas	600
Landfill gas	500
Produced gas	1,000

(iv) Calculated as follows:

$$Monthly\ pounds\ of\ NOx\ Emitted = \frac{pounds\ NOx}{MMBtu} \times \frac{MMscf}{month} \times \frac{Btu}{scf}$$

(B) ~~Demonstrate~~ Monitor and maintain hours of operation records ~~operating hours~~ of a flare or flare station complying pursuant ~~of the flare are less than 200 hours per year if validating compliance pursuant~~ to ~~sub~~paragraphs (h)(3) and (d)(2) ~~maintain monthly recordkeeping of flare use~~ using ~~an installed~~ calibrated non-resettable totalizing time meter.

(C) Maintain a copy of the manufacturer's, distributor's, installer's or maintenance company's written maintenance schedule and instructions ~~and retain a record of the maintenance activity for a period of not less than three years, which shall be made available upon request~~.

~~(D) Display in an accessible location on the flare the model number and the rated heat input capacity of the flare on a permanent rating plate for any flare installed, relocated, or modified after [Date of Adoption].~~

(~~E~~D) Provide the manufacturer's maintenance instructions, maintenance records, and the source test report(s) to the Executive Officer upon request.

(~~F~~E) ~~Maintain~~ Retain all written or electronic records required by this rule for at least five years, which shall be made available ~~upon request~~no later than ~~two~~five (5) business days from date requested. 14-13

Revised Proposed Draft Rule

Rule 1118.1 (Cont.) **(TBD)**

(h) Exemptions

(1) The provisions of this rule shall not apply to owners or operators of a flare~~s~~ or flare station:

(A) At asphalt plants; biodiesel plants; hydrogen production plants fueled in part with refinery gas; petroleum refineries~~,~~; and sulfur recovery plants~~, and hydrogen production plants subject to SCAQMD Rule 1118 – Control of Emissions from Refinery Flares~~;

(B) Routing only 100% natural gas directly into the flare burner~~ to oxidize combustible gases or vapors and~~ that are subject to SCAQMD Rule 1147 – NOx Reductions from Miscellaneous Sources NOx emission limits;

(C) ~~At facilities subject to Rule 1100.1 – Refinery Equipment.~~Routing only 100% propane or 100% butane directly into the flare burner;

(D) At a landfill that collects less than 2,000 MMscf of landfill gas per calendar year and has either ceased accepting waste or is classified by CalRecyle as an Inert Waste Disposal Site or an Asbestos Contaminated Waste Disposal Site~~and generates less than 2,000 MMscf of landfill gas per calendar year; or~~

(E) Permitted as a Various Location Flare~~s that are operated in compliance with SCAQMD Rules and Regulations~~; or~~.~~

(F) Combusting regeneration gas; or

(G) When the methane content of landfill or digester gas falls below manufacturer's minimum specifications; or ~~.~~ 14-14

(H) Landfill gas fired flares may fulfill the five-year source requirement through the 1150.1 testing requirements if the source test plans for that specific test period include the constituents specified in Table 1. 14-15

(2) An owner or operator of a flare or flare station subject to this rule that emits less than 30 pounds of NOx per month ~~calendar year~~ shall not be required to meet the ~~emission limits in~~ Table 1 Emission Limits provided:

(A) The flare or flare station has a permit that specifies conditions that limit~~s~~ the applicable NOx emissions; and

(B) The flare or flare station operates in compliance with the permit condition;

BE IT FURTHER RESOLVED, SCAQMD staff shall work with CAPCOA, CalRecycle, California Association of Sanitation Agencies and Southern California Alliance of Publicly Owned Treatment Works to holistically balance air quality requirements with the state-wide effort to divert organics from landfills as required under SB 1383 and report back to the Stationary Source Committee within 12 months of rule adoption to present findings and recommendations.

BE IT FURTHER RESOLVED, SCAQMD staff shall work with stakeholders to establish minor and major source BACT for flares receiving biogas derived from advanced digestion (such as thermal hydrolysis process, thermophilic process and other anaerobic digestion processes) and/or organic waste digestion or co-digestion especially as it relates to the state-wide effort to divert organics from landfills as required under SB 1383. The BACT technical assessment shall consider costs, including possible field testing, technology achieved in-practice and a description of potential reliability impacts to essential public services. SCAQMD staff shall report back to the Stationary Source Committee within 12 months of rule adoption to present findings and recommendations. 14-16

BE IT FURTHER RESOLVED that the BACT Guidelines and Rule 1118.1 shall be amended, if necessary, to reflect the BACT technical and cost assessment.

Response to Comment Letter #14

Since comments were embedded in the electronic version of this comment letter, they have been provided before the response.

Response to Comment 14-1:

Please see discussion in Chapter 3 and ~~r~~Response to Public Workshop Comment 1-2 and Response to Comment 5-1 regarding industry concerns with future impacts from food waste diversion.

Comment 14-2

The term Various Locations Flare is used elsewhere, so including a definition would be helpful.

Response to Comment 14-2:

Staff changed the reference from a "various location flare" to a flare with various location permit. This will also, in part, address a comment received during a working group meeting regarding other combustion units that meet the flare definition but may not be permitted as a flare. This wording change also eliminates the need for a definition.

Comment 14-3

The rule should provide clarity regarding the intent of the technology review that will be performed to assess the potential impact of advanced digestion and food waste diversion

(i.e., the resolution does not effectively notify stakeholders about this study or the potential ramifications). Without this transparency potential projects could be negatively impacted.

Response to Comment 14-3:

PR1118.1 will include the following footnote after Table 1 – Emission Limits to address this concern:
Table 1 - Emission Limits shall continue to apply unless amended or otherwise superseded following a technology assessment, caused to be performed by the Executive Officer, to determine potential alternative limits appropriate for digester gas generated from food waste diverted from landfills.

Comment 14-4

What happens to existing flares without an application that was deemed complete? Depending on the answer to this question, then the rule might need to be revised to ensure that existing minor sources are not required to source test as expressed by SCAQMD staff during rulemaking workshops.

Response to Comment 14-4:

The current rule concept is for a flare to either meet the Table 1 – Emission Limits or measure the percent capacity to demonstrate the flare is below the applicable Table 2 – Annual Capacity Threshold. Since the rule was changed to allow a higher NOx limit for minor source flares combusting digester gas, the owner or operator of those flares will have to either demonstrate compliance with Table 1 – Emission Limits through source testing or they will have to measure the percent capacity. For some applications, this would be a change from current practice but would be the only enforceable method to ensure the proper limits are being met. Enforceability is important not just locally but for approval by USEPA in achieving credit for reductions in the State Implementation Plan.

Comment 14-5

6-months is insufficient for a public agency to obtain detailed information needed for a complete permit application.

Response to Comment 14-5:

Staff recognizes the challenge to municipal agencies potentially subject to several layers of an approval process that could delay their ability to comply with tight enforceable deadlines. So the latest proposed rule will include an additional six months for publicly-owned facilities to submit the permit for a new flare and to submit the Notification of Flare Throughput Reduction.

Comment 14-6

If the installation of the flare is part of a larger expansion project, it's possible the flare installation could be complete but not ready for startup. Also, using the term "initial startup" is consistent with current permit conditions.

Response to Comment 14-6:

That line was removed from Table 4 – Flare Replacement and staff chan~~e~~ged the reference in subdivision (f) Source Test to state~~s~~ the initial source test shall be conducted according to the conditions set forth in the permit to construct.

Comment 14-7

If the manufacturer fails to provide the specified rating plate, the owner/operator should be allowed to install the required plate. Also, flexibility needs to be provided in the event a manufacturer goes out of business.

Response to Comment 14-7:

Staff agrees there may be instances especially with older equipment that might be difficult to comply as is currently written. In response, staff has removed the reference to "issued by the manufacturer."

Comment 14-8

To provide certainty to the owner/operator, there should be some deadline for a response. Please retain the 60-day deadline.

Response to Comment 14-8:

Staff agrees as facilities should be aware if an extension will be granted before the expiration of the legal deadline, so the proposed rule will retain the 60 day deadline for the Executive Officer to review and provide written approval or rejection of the time extension.

Comment 14-9

This provision should be less stringent because the above criteria is not specific. Changing "shall" to "may" mimics the above criteria and would provide the Executive Officer flexibility, if needed.

Response to Comment 14-9:

~~Staff agrees with the comment and prefers the consistency, so the proposed rule will include "failure to satisfy the above criteria may result in a denial of the request."~~The proposed rule

includes the criteria for approval of the time extension and additional flexibility is not necessary.

Comment 14-10

Many manufacturers recommend flow meters to be removed and sent to a remote facility for calibration, which would make the flare inoperable. SCAP members rely on flares to avoid venting to the atmosphere, so removal of the flow meter could cause venting to the atmosphere in violation of existing requirements. The initial calibration can be performed prior to commencing operation of the flare, but once installed owner/operators must be provided an in-situ calibration option regardless of manufacturer recommended procedures.

Response to Comment 14-10:

Staff addressed this concern by allowing an alternative calibration method to the manufacturers recommended procedures, provided that alternative method is approved in writing by the Executive Officer.

Comment 14-11

This is based on annual throughput, therefore the percent capacity cannot be calculated until the end of the first year (i.e., January 1, 2020).

Response to Comment 14-11:

Staff agrees that the annual percent capacity is not determined until after the first year of data collection so the rule language will need to be modified to be appropriate such as to calculate the monthly percent capacity. In addition, due to the delay in approval of the proposed rule, the January 1, 2019 date should be modified to "date of adoption."

Comment 14-12

Please replace "shall" with "may." In the event of missing data some flexibility should be provided. Landfills and treatment plants can estimate flows and methane concentrations fairly accurately. Penalizing an innocent omission should be a judgement call rather than an absolute.

Response to Comment 14-12:

Staff does not agree and will include "shall" as enforcement will have no method as to verify the intent and reasoning for missing data. Therefore, missing data will result in 100 percent capacity for each missing month.

Comment 14-13

In certain situations, it could take a few days to transmit the requested records (e.g., the responsible person is out-of-the-office, etc.).

Response to Comment 14-13:

Staff acknowledges the concern and has amended the proposed rule language from two to five days from date requested.

Comment 14-14

At a certain point landfill flares will have such low methane levels that the flare will not be able to perform as designed. Due to Rule 1150.1, gas collection rates may still exceed 2,000 MMscf per year.

Response to Comment 14-14:

Staff is aware of those concerns which is why an exemption for those facilities operating less than 2,000 MMscf per year was established. However, newly closed landfills in the future might exceed that exemption threshold which would be a concern to the SCAQMD from the perspective that NOx emissions would be high from constant flaring, and yet there are opportunities to still control emissions effectively and economically. The landfill industry provided data at the working group meeting showing how a majority of the closed landfills are currently under the proposed limit so staff plans to maintain the 2,000 MMscf threshold as it will not cause undue burden on existing sites.

Comment 14-15

An exemption should be provided to avoid redundant source testing requirements already required by Rule 1150.1.

Response to Comment 14-15:

Staff concurs with this request and made changes in the proposed rule to allow compliance with the source testing requirement if the data is generated through Rule 1150.1 and if the required pollutants are tested.

Response to Comment 14-16:

Staff appreciates the feedback and will consider the suggested language for the resolution.

Comment Letter #15

Comment Letter 15

From: Steve Tsumura
Sent: Tuesday, November 27, 2018 9:58 AM
To: Angela Kim
Subject: FW: comments on Rule 1118.1 staff presentation for Nov 15 Working Group

Michael Salman

From: Michael Salman [mailto:salman@history.ucla.edu]
Sent: Tuesday, November 13, 2018 9:47 AM
To: Philip Fine <pfine@aqmd.gov>; Michael Krause <MKrause@aqmd.gov>; Heather Farr <HFarr@aqmd.gov>; Steve Tsumura <stsumura@aqmd.gov>
Subject: comments on Rule 1118.1 staff presentation for Nov 15 Working Group

Dear Phil, Michael, Heather, and Steve

I just reviewed the staff presentation to be shown at the Thursday, November 15 meeting of the Rule 1118.1 working group.

I am concerned about the changes being made for flares at oil well sites, which the presentation describes in two significantly different ways on pages 8 and 17.

1) Concerns about the revisions described on page 8 of the presentation:

In the summary discussion of staff changes, on page 8, the presentation states that following changes will be made to the proposed rule:

- New flares at an oil and gas site would be limited to 800 hours;
- Operator would be required to notify the Executive Officer if annual operating hours exceeds 800 hours;
- Operator can provide information to substantiate that the exceedance of the 800 hours was due to:
  - Source testing;
  - Utility pipeline curtailments;
- Information to substantiate activities occurred during the year of the exceedance includes but is not limited to:
  - Invoice from source testing company;
  - Information from utility regarding curtailment

I have no objection to exempting source testing from the count of allowed hours of operation per year.

But I do have concerns about allowing an exemption for "utility pipeline curtailments." Without any definitions or limitations, such curtailments could potentially include changes to SoCal Gas's Rule 30 on gas composition requirements or any other policy decision by SoCal Gas that could result in reduced or terminated allowance of gas sales through the SoCal Gas pipeline. This could result in the permitting of unlimited routine flaring at oil well sites in the District, contrary to the stated goal of the 2016 AQMP.

Any exemption for SoCal Gas service interruptions needs to be carefully defined and limited.

15-1

I know of only one instance of prolonged service disruption cause by SoCal Gas equipment failure (Rancho Park, November 2017) which was a four month disruption. That was a rare and possibly unique event. It was handled by shutting down oil pumps, and that is what should be done again if any similar case.

Shorter disruptions ought to be handled within the hours per year limitation. If the hours per year limit was not designed to allow flares to be used as back-up for other systems when they go down, then what is the purpose of allowing 800 hours per year of flaring?

A blanket exemption due to undefined "pipeline curtailment" opens the door too wide, without limits or definitions.

It also assumes that SoCal Gas pipeline sales are the only form of beneficial use, and it also assumes that flaring is the only possible response (other back-up technologies are available, including other beneficial uses and the option of shutting down pumps).

---

2) Concerns about the proposed rule language on page 17 of the presentation :

Page 17 presents "New Flare Requirement Language –paragraph (d)(1)" which is very different from the summary description from page 8 discussed above. Here is the text of proposed rule language from page 17:

> An owner or operator that submits an application to install, replace, or relocate a flare or flare station after [date of adoption]:
>
> (A)Shall not operate that flare(s) so as to exceed the applicable NOx, VOC, and carbon monoxide (CO) emission limits specified in Table 1 –Emission Limits; and 15-2
>
> (B)Shall not operate that flare(s) more than 800 hours per calendar year if it combusts Produced Gas.
>
> i. Flaring conducted during source testing; maintenance, upgrades, or breakdowns of equipment; utility pipeline curtailment; or upsets that lead to safety concerns need not be included in the 800 hours.
>
> ii. The owner or operator of a flare that exceeds 800 hours shall submit a Notification of Annual Operation Greater than 800 hours and provide documentation substantiating the hours during any of the allowable exceptions pursuant clause (d)(1)(B)(i).

The exemptions delineated in this proposed rule language go far beyond source testing (limited and clear) and "pipeline curtailment" (which is undefined and potentially unlimited). Now the exemptions include maintenance, upgrades, and upsets with safety concerns - none of which are defined, none of which are limited. Without definition, these are potentially unlimited exemptions, and they are unenforceable.

Upgrades of equipment could be defined and thereby limited.

Maintenance would be harder to define and limit.

A "safety concern" exemption would be extremely difficult to define and enforce. Well sites are not refineries and do not have the same kind of safety issues. Nor are wells like landfills that cannot be shut down. I am not persuaded that there is a "safety concern" argument that could stand examination. Any attempt to define a "safety concern" would be lengthy and fraught. Exempting "safety" without any definition would be an open to door to routine flaring, contrary to the AQMP.

The limitation of hours per year of allowable flaring should by itself cover maintenance, equipment breakdowns, and safety concern issues if there are any. If the allowable hours of flaring are not meant for these purposes, then what are they meant to cover?

The difference between the rule language presented on page 17 and the very different summary description on page 8 is notable in and of itself.

---

3) I think alternative solutions already suggested in other communications could achieve consensus support.

A modest increase in allowable hours per year of flaring could be agreeable if coupled with a gradual phase out of existing BACT flare permits and replacement with new permits that are limited as per the new rules.

I think such a proposal could achieve consensus.

Phasing out the existing permits for BACT flares that allow routine flaring is eminently possible. NOx reductions at the point of flaring might be small, but the AQMP also considered GHG emissions and the benefits of utilizing beneficial use produced low emission fuels for mobile sources. The AQMP was clear in calling for a prioritization of beneficial uses over flaring. Allowing existing permits for routine flaring to continue indefinitely conflicts with the AQMP. 15-3

A modestly increased allowable hours of flaring would be enforceable, without the kind of problems kicked up by most of the proposed exemptions (except for a source testing exemption). But the need for such an increase needs to be clearly demonstrated and any such increase should be balanced by a phase out of permits that allow routine flaring.

This alternative would be enforceable, much easier to write into rule language, I think it would garner consensus support, and it would meet the AQMP's directions for action.

Yours

Michael

Response to Comment Letter #15

Response to Comment 15-1:

As stated in Response to Comment 9-1, staff is proposing to remove the annual 800 hour limit in lieu of an alternative limit on new flares of "produced gas." Staff is still proposing to exclude utility pipeline curtailment from the proposed limitation and included a definition to clearly define what activity will not be included toward the proposed throughput limitation. Those activities include, monitoring equipment breakdown or gas pipeline upgrades and maintenance. Including an exception for utility pipeline curtailment does not preclude the use of other beneficial use of the gas.

Response to Comment 15-2:

Staff agrees with the concern that the initial list of exclusions was too broad and potentially not enforceable. As such, staff is now proposing to limit those activities that can be excluded from the throughput limit to verifiable ones such as utility pipeline curtailment and source testing. Staff was also concerned that excluding activities that cannot be substantiated could lead to rule circumvention.

Response to Comment 15-3:

The 2016 AQMP did include a goal to encourage beneficial use over flaring and for others to replace older flares with clean4er ones; however, it did not state there should be further limits imposed on all flares. Staff is not proposing to change the permit conditions of currently installed flares meeting the Table 1 – Emission Limits. These flares were permitted in good faith and are meeting the current BACT limit. It should be noted, there are only eight flares currently permitted for oil and gas production that meet the lower NOx emission limits. Those flares only emit approximately 0.01 tons/day NOx (based on the average throughput from 2015 – 2017). Even if those facilities began flaring 24/7, the NOx emissions would only be about 0.04 tons/day NOx.

Those flares will eventually be phased out once they are replaced and permit limits will be imposed at that time.

Comment Letter #16

CIPA

California Independent Petroleum Association
1001 K Street, 6th Floor
Sacramento, CA 95814
Phone: (916) 447-1177
Fax: (916) 447-1144

December 4, 2018

Wayne Nastri, Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: PROPOSED RULE 1118.1. CONTROL OF EMISSIONS FROM NON-REFINERY FLARES

Dear Mr. Nastri:

The California Independent Petroleum Association (CIPA) respectfully submits the following comments on Proposed Rule 1118.1 under development by the South Coast Air Quality Management District (SCAQMD). CIPA represents the majority of companies operating oil and gas facilities within the SCAQMD's jurisdiction and has monitored the development of this rule since 2017. CIPA submitted written comments in March of this year on suggested revisions to the draft rule and we appreciate the District's willingness to work with our members in crafting a rule that achieves the goals of the regulation while not placing undue and unnecessary requirements on operators within the Los Angeles basin.

While the revised rule presented in November incorporated some positive changes, a new provision limiting flares to 800 hours a year is problematic and counterintuitive to the goals of the rule. Our members have been in discussion with District Staff about alternatives to the 800-hour limit, yet this limit remains in the draft proposed rule as it appears on the District's website today. In addition to being a de minimis contributor of overall emissions captured by the rule, our members are left with few options in disposing of stranded gas. Alternatives can be cost prohibitive. We request this provision be amended to recognize specific field conditions, allow for operator flexibility and recognize and incentivize the benefits of retrofitting and deploying new equipment. CIPA strongly supports reasonable pathways for exemptions on small producers and incentives for operators to adopt non-flare solutions. 16-1

Additionally, we request the District work with the California Public Utilities Commission and the California Air Resources Board in developing a solution to this that ultimately reduces flaring, better utilizes this resource and achieves the goals of the World Bank's "Zero Routine Flaring by 2030" initiative for which California is a signatory. Without reasonable and economically and technologically feasible alternatives, restricting an operator's ability to flare 16-2

1

creates safety concerns and ultimately may lead to the shut-down of field operations altogether. It is important this rule preserve an operator's ability to flare in order to sustain field operations.

CIPA strongly supports and advocates the benefits of in-state production. California oil and gas producers operate under some of strictest rules in the world and replacing Los Angeles production with imported fuels from other countries harms Californians. We stand ready to continue working with the District in crafting a rule that realizes the countless benefits of a strong oil and gas industry. Should you wish to discuss these comments further, please do not hesitate to contact me directly at (661) 477-0401. 16-3

Sincerely,

\S\

Willie Rivera
Director of Regulatory Affairs
California Independent Petroleum Association

CC: Michael Krause, SCAQMD
Heather Farr, SCAQMD
Steve Tsumura, SCAQMD

Response to Comment Letter #16

Response to Comment 16-1:

Staff agrees with your comments and modified the rule to remove the 800 hour limit and provide the following alternative annual throughput limitation and exemptions:

- Replacement flares will have an annual throughput limit of 110 percent of the average annual throughput for the two years immediately preceding the submittal of flare application;
- New flares that are not replacing an existing flare will have an annual throughput limit of 45 million standard cubic feet; and
- Gas throughput combusted during source tests or utility pipeline curtailment will not be included in the above limitations.

Response to Comment 16-2:

The SCAQMD will remain actively involved in solutions that will result in less flaring and more beneficial use of gas that would otherwise be flared.

Response to Comment 16-3:

Staff appreciates the contributions made by CIPA in supporting our California economy and employment. Staff worked to create a rule that will benefit the environment while not stifling business.

APPENDIX B – RULE 1118.1 FORMS

Notification of Flare Inventory and Capacity

South Coast Air Quality Management District

R1118.1 Notification of Flare Inventory and Capacity

Submit this form within 30 days from rule adoption.

Mail To: SCAQMD
Enforcement Manager Toxics
21865 Copley Dr.
Diamond Bar, CA 91765

Section A - Operator Information

1. **Facility Name** (Business Name of Operator):
2. **SCAQMD Facility ID**
3. **Owner's Business Name** (If different from Business Name of Operator):

Section B - Equipment Location Address

4. **Equipment Location is:**

Address

City State Zip

Section C - Business Mailing Address

5. **Correspondence Information:**

☐ Check here if same as equipment location address

Contact Name Title

Phone # Ext. E-Mail

Address

City State Zip

Section D – Flare Inventory and Capacity

Flare Number (Serial # or I.D.)	Permit Number	Date of Flare Installation	Type of Gas Combusted*	Maximum Rated Capacity			Fuel Meter Installed?	Fuel Meter Description	Date of Last Source Test
				Size	MMscf/ hour	MMBtu/ hour			
					☐	☐	Yes ☐ No ☐		
					☐	☐	Yes ☐ No ☐		
					☐	☐	Yes ☐ No ☐		
					☐	☐	Yes ☐ No ☐		
					☐	☐	Yes ☐ No ☐		
					☐	☐	Yes ☐ No ☐		
					☐	☐	Yes ☐ No ☐		
					☐	☐	Yes ☐ No ☐		

Attach additional forms to report more flares.
*1 – Any gas in an open flare; 2 – Digester Gas; 3 – Landfill Gas; 4 – Produced Gas

Section E - Authorization/Signature *I hereby certify that all information contained herein and information submitted with this application are true and correct.*

6. **Signature of Responsible Official:**
7. **Title of Responsible Official:**
8. **Print Name:**
9. **Date:**

DRAFT

© South Coast Air Quality Management District, Rule 1118.1 Notification of Flare Inventory and Capacity Form (2018.11.27)

Notification of Annual Percent Capacity Greater Than Threshold

South Coast Air Quality Management District

R1118.1 Notification of Annual Percent Capacity Greater Than Threshold

Mail To: SCAQMD
21865 Copley Dr.
Diamond Bar, CA 91765

Submit this form within 30 days from the end of the calendar year.

Section A - Operator Information

1. Facility Name (Business Name of Operator):
2. SCAQMD Facility ID
3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location is:

Street Address
City, CA Zip
Contact Name Title
Phone # Ext. E-Mail

Section C - Business Mailing Address

5. Correspondence Information:
☐ Check here if same as equipment location address

Address
City, State Zip
Contact Name Title
Phone # Ext. E-Mail

Section D – Surpassing Capacity Threshold

6. Year flare surpassed capacity threshold:_____
7. Capacity threshold surpassed previous calendar year? ☐ Yes ☐ No
8. Number of Flares
9. Source Category
10. Capacity Threshold
11. List the flare identification, the annual percent capacity for each flare, and mark whether the determination was based on throughput or heat input. If more line items are needed, please attach an additional form.

Flare ID	Annual Percent Capacity	Throughput (MMscf)	Heat Input (MMBtu)
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Section E - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

12. Signature of Responsible Official:
13. Title of Responsible Official:
14. Print Name:
15. Date:

SCAQMD USE ONLY	APPLICATION TRACKING #		EQUIPMENT CATEGORY CODE:	FEE $	VALIDATION
A R DATE	ENG.A R DATE	CLASS I II	ASSIGNMENT Unit Engineer	CHECK/MONEY ORDER #	AMOUNT $	TRACKING #

© South Coast Air Quality Management District, Rule 1118.1 Notification of Flare Surpassing Capacity Threshold Form (2018.10)

DRAFT

Notification of Intent Form

South Coast Air Quality Management District

R1118.1 Notification of Intent

Mail To: SCAQMD
21865 Copley Dr.
Diamond Bar, CA 91765

Submit this form within 60 days of surpassing the capacity threshold for two consecutive years.

Section A - Operator Information

1. Facility Name (Business Name of Operator):
2. SCAQMD Facility ID
3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location is:

Street Address

City, CA Zip

Contact Name Title

Phone # Ext. E-Mail

Section C - Business Mailing Address

5. Correspondence Information:

☐ Check here if same as equipment location address

Address

City State Zip

Contact Name Title

Phone # Ext. E-Mail

Section D – Statement of Intent

6. For each flare at the above facility that surpassed the Rule 1118.1 capacity threshold, please indicate the intended compliance pathway.

Flare	Flare Replacement	Flare Reduction	Tentative Flare Reduction Plan (e.g. fuel cell, transportation fuel, etc.)
1	☐	☐	
2	☐	☐	
3	☐	☐	
4	☐	☐	
5	☐	☐	

If there are more than 5 units please attach an additional form.

Section E - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

7. Signature of Responsible Official:
8. Title of Responsible Official:
9. Print Name:
10. Date:

SCAQMD USE ONLY	APPLICATION TRACKING #		EQUIPMENT CATEGORY CODE:	FEE $	VALIDATION
DATE A B	ENGA DATE B	CLASS I III	ASSIGNMENT Unit Engineer	CHECK/MONEY ORDER #	AMOUNT $	TRACKING #

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DRAFT

Notification of Flare Throughput Reduction Form

South Coast Air Quality Management District

R1118.1 Notification of Flare Throughput Reduction

Mail To: SCAQMD
21865 Copley Dr.
Diamond Bar, CA 91765

Submit this form within 6 months of surpassing the capacity threshold for two consecutive years.

Section A - Operator Information

1. Facility Name (Business Name of Operator):
2. SCAQMD Facility ID _____
3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location is:

Street Address _____
City _____, CA Zip _____
Contact Name _____ Title _____
Phone # _____ Ext. _____ E-Mail _____

Section C - Business Mailing Address

5. Correspondence Information:
☐ Check here if same as equipment location address

Address _____
City _____, State _____ Zip _____
Contact Name _____ Title _____
Phone # _____ Ext. _____ E-Mail _____

Section D – Current Flare Throughput

6. Flare capacity: _____ MMscf/year or _____ MMBtu/year

7. Flare throughput the prior two consecutive years:
Total Annual Throughput the first year surpassing threshold: _____ MMscf/year or _____ MMBtu/year
Total Annual Throughput the second year surpassing threshold: _____ MMscf/year or _____ MMBtu/year

8. Percent Capacity the prior two consecutive years
First Year_____%
Second Year_____%

Section E – Flare Throughput Reduction

9. List the alternative method(s) proposed to reduce flare throughput:

Alternative Use of Flare Gas	Description	Projected Throughput (MMscf/year)	Time to Implement
Energy Generation			
Gas compression			
Transportation Fuel			
Pipeline Injection			
Other			

Section E - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

10. Signature of Responsible Official:
11. Title of Responsible Official:
12. Print Name:
13. Date:

SCAQMD USE ONLY	APPLICATION TRACKING #		EQUIPMENT CATEGORY CODE:	FEE $	VALIDATION
DATE A R	ENG A R DATE	CCASS I III	ASSIGNMENT Unit Engineer	CHECK/MONEY ORDER #	AMOUNT $	TRACKING #

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Notification of Increments of Progress Form

South Coast Air Quality Management District

R1118.1 Notification of Increments of Progress

Mail To: SCAQMD
21865 Copley Dr.
Diamond Bar, CA 91765

Submit this form within 6 months of surpassing the capacity threshold for two consecutive years.

Section A - Operator Information

1. Facility Name (Business Name of Operator):

2. SCAQMD Facility ID

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location is:

Street Address

City, CA Zip

Contact Name Title

Phone # Ext. E-Mail

Section C - Business Mailing Address

5. Correspondence Information:

☐ Check here if same as equipment location address

Address

City State Zip

Contact Name Title

Phone # Ext. E-Mail

Section D – Increments of Progress

a. List the actions completed and yet to be completed to reduce flare throughput:

Actions Completed	Projected Throughput Reduction (MMscf/year)

Actions Yet to be Completed	Projected Time to Implement

Section E - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

7. Signature of Responsible Official:

8. Title of Responsible Official:

9. Print Name:

10. Date:

SCAQMD USE ONLY	APPLICATION TRACKING #		EQUIPMENT CATEGORY CODE:	FEE $	VALIDATION
A R DATE	ENG.A R DATE	CLASS I II	ASSIGNMENT Unit Engineer	CHECK/MONEY ORDER #	AMOUNT $	TRACKING #

☐ South Coast Air Quality Management District, Rule 1118.1 Notification of Increments of Progress Form (2018.10)

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Total Annual Throughput Recordkeeping Sample

SAMPLE RECORDKEEPING FORM

South Coast AQMD

Rule 1118.1 Percent Capacity Recordkeeping
Total Annual Throughput

Reporting Year:

Facility ID:
Facility Name:
Flare ID
Flare Capacity:

Source Category
Capacity threshold

Month	Throughput (MMscf/month)	Percent Capacity
January *(Example)*		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
Annual Throughput	0	

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Total Annual Heat Capacity Recordkeeping Sample

SAMPLE RECORDKEEPING FORM

Rule 1118.1 Percent Capacity Recordkeeping
Total Annual Heat Capacity

Reporting Year:

Facility ID:
Facility Name:
Flare ID
Flare Capacity: MMBtu/year

Source Category:
Capacity threshold:

	Measured Values		Calculated Values	
Month	Throughput (MMscf/month)	Heat Value (Btu/scf)	Heat Input (Btu/Month)	Percent Capacity
January *(Example)*				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
Annual Heat Input	0			

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~~Chapter 5~~

REFERENCES

"Final 2016 Air Quality Management Plan", South Coast Air Quality Management District, March 2017

"Santa Barbara County Air Pollution Control District Rule 359 – Flares and Thermal Oxidizers", Adopted June 28, 1994

"San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 4311 – Flares", Adopted June 20, 2002; (Amended June 15, 2006; June 18, 2009)

"South Coast Air Quality Management District – Best Available Control Technology Guidelines" Adopted August 17, 2000 (Revised June 6, 2003; December 5, 2003; July 9, 2004; July 14, 2006; December 2, 2016; February 2, 2018)

"Bureau of Land Management Waste Prevention, Production Subject to Royalties, and Resource Conservation", 43 CFR Parts 3100, 3160 and 3170