

Comment Letters

Comment Letter Index

Letters
Jon Elliff, Bragg Crane Service, letter
John Sakamoto, Eichleay Engineers Inc. of California, letter
James Brian MacDonald, letter
Dion Genchi, Metal Supply Inc., letter
Don A Bristol, Phillips 66, Proposed Rules and CEQA Analyses, letter
Don A Bristol, Phillips 66, Proposed Rule 9-14, letter
Ronald Stein, PTS Staffing Solutions, letter (rec'd Nov 23)
Keith Howard, Copper White & Cooper representing Shell Oil, letter
Natalie A. Braden, Shell Oil Products, letter
Jerry Combs, PhD, Siemens Process Industries & Drives, letter
Matthew W. Buell, Tesoro Refining and Marketing Company LLC, letter
Tesoro Refining and Marketing Company LLC, attachment 1, letter
Tesoro Refining and Marketing Company LLC, attachment 2, letter
Christopher W. Howe, Valero Refining Company, letter
David H. McCray, Beveridge & Diamond, representing WSPA, letter



RECEIVED
2015 DEC -1 AM 9:03
BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

Bragg Crane Service
457 Parr Boulevard
Richmond, CA 94801
November 20, 2015

Greg Nudd
Air Program Manager
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Dear Mr. Nudd:

I am writing to express my concerns about the proposed refinery rules currently under consideration by the District.

The California Air Resources Board has recommended that regional air districts NOT mandate facility-specific greenhouse gas emissions limits at the local level as these emissions are being addressed statewide as part of AB 32. Proposals to impose additional limits are therefore unnecessary and should be rejected.

With respect to Rule 8-18, I disagree with the removal of the low-level leakage repair provision. This rule goes too far and could lead to refinery unit shutdowns, which would disrupt fuel supplies and impact fuel prices at the pump. The repair provision should be reinstated.

Rule 9-14 appears to be unnecessary, since the Bay Area District is already in attainment with federal sulfur dioxide rules, and should be rejected.

Rule 11-10 is likewise unnecessary since cooling towers are already monitored under existing US EPA rules. This rule would impose millions of dollars in unnecessary compliance costs when merely incorporating the US EPA requirement as an option would be sufficient.

Greg Nudd
November 20, 2015
Page 2

Finally, overly-burdensome rules will have severe negative impacts on oil industry jobs and revenues here in the Bay Area. Those impacts should be given serious consideration during deliberations on adoption of the rules as currently proposed.

Thank you for your consideration.

Sincerely,

A handwritten signature in blue ink that reads "Jon Elliff". The signature is written in a cursive style with a large, stylized "E" and "B" at the end.

Jon Elliff
Operations Manager

November 20, 2015

Greg Nudd
Air Program Manager
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109
Email: gnudd@baaqmd.gov

Dear Mr. Nudd:

My name is John Sakamoto. I am the Executive Vice President of Eichleay Engineers Inc. of California. Our 250 employees are committed to a sustainable California economy which promotes the health and livelihood of its citizens.

I am writing to express my concerns about the proposed refinery rules currently under consideration by the District that would be redundant with current regulations and which would impose unnecessary burdens which ultimately affects all Californians.

The California Air Resources Board has recommended that regional air districts NOT mandate facility-specific greenhouse gas emissions limits at the local level as these emissions are being addressed statewide as part of AB 32. Proposals to impose additional limits are therefore unnecessary and should be rejected.

- With respect to Rule 8-18, I disagree with the removal of the low-level leakage repair provision. This rule goes too far and could lead to refinery unit shutdowns, which would disrupt fuel supplies and impact fuel prices at the pump. The repair provision should be reinstated.
- Rule 9-14 appears to be unnecessary, since the Bay Area District is already in attainment with federal sulfur dioxide rules, and should be rejected.
- Rule 11-10 is likewise unnecessary since cooling towers are already monitored under existing US EPA rules. This rule would impose millions of dollars in unnecessary compliance costs when merely incorporating the US EPA requirement as an option would be sufficient.

Finally, overly-burdensome rules will have severe negative impacts on oil industry jobs and revenues here in the Bay Area. Those impacts should be given serious consideration during deliberations on adoption of the rules as currently proposed. Thank you for your consideration.

Regards,



John Sakamoto
Eichleay Engineers Inc. of California
Executive Vice President

To BAAQMD
New Draft Refinery Rules
Sep. 17 2015

Your [proposed new "emissions" rules](#) does not take into account and conflicts with many of the factors reviled by EPA's EJ screen. <http://www2.epa.gov/ejscreen>. At best your proposals can be characterized as poorly thought-out and most likely deliberately discriminatory in nature. **Low-income minority communities will bear a disproportionate share of the cumulative burden to environmental exposure due to these regulations. Regulation conflict with Civil Rights title VI, Cal Gov. Code 11135 and Presidential Executive Order 12898. Simple put: Every man, woman and child has the right to live in an as clean and as beautiful environment as anyone else.** Your "open house" does not meet CEQA's requirement for meaningful participation and is designed to stifle communication and free speech. You say nothing about the thousands that might die from an air/fuel detonation of your air pollution You say nothing about the **Declaration of Independence's** stated reason for forming a new government is to best protect "Safety and Happiness" of the people. Your arguments for way discrimination is acceptable relies on numbers killed, length of time before death and not knowing the name of the person killed. One can only conclude a blindfolded gunman shooting of rounds in a community he dose not known would be found innocent by BAAQMD of committing any crimes. Putting in the technology to modernize faculties and produce a safer world would put tens of thousands of Americans back to work doing jobs they could be proud of. Apparently you care nothing about America's heritage or future, only corporation greed.

Sincerely:

James Brian MacDonald
Jbmd56@yahoo.com



METAL SUPPLY INC.

Carbon Steel, Stainless Steel and Aluminum

11810 Center Street, South Gate, CA 90280 | (562) 634-9940 or (800) 400-6832

Greg Nudd
Air Program Manager
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Dear Mr. Nudd:

I am writing to express my concerns about the proposed refinery rules currently under consideration by the District.

The California Air Resources Board has recommended that regional air districts NOT mandate facility-specific greenhouse gas emissions limits at the local level as these emissions are being addressed statewide as part of AB 32. Proposals to impose additional limits are therefore unnecessary and should be rejected.

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Rule 11-10 is likewise unnecessary since cooling towers are already monitored under existing US EPA rules. This rule would impose millions of dollars in unnecessary compliance costs when merely incorporating the US EPA requirement as an option would be sufficient.

Finally, overly-burdensome rules will have severe negative impacts on oil industry jobs and revenues here in the Bay Area. Those impacts should be given serious consideration during deliberations on adoption of the rules as currently proposed. As the president of a small business that employs over 150 local workers, this will greatly affect our ability to do business and support the wage of our employees leading to unnecessary cuts to our workforce. Please strongly consider the emphasis that I have placed on the points above and reconsider your position.

Thank you for your consideration,
Dion Genchi

Sales Department Fax: 562-634-1907 | Email: sales@metalsupply.com
Fabrication Department Fax: 562-634-5189 | Email: fab@metalsupply.com
www.metalsupply.com

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Phillips 66
San Francisco Refinery
1380 San Pablo Avenue
Rodeo, CA 94572

November 23, 2015

ESDR-328-15
05-C-03-G

Certified Mail – 7006 0810 0003 4487 8671

Mr Eric Stevenson, Director of Technical Services
Mr Greg Nudd, Air Quality Program Manager
BAAQMD
939 Ellis Street
San Francisco, CA 94109

- RE: Phillips 66 Company
Comments on Proposed BAAQMD Rules/Amendments and Associated Documents, including CEQA analyses:**
- **Regulation 12, Rule 15: Petroleum Refining Emissions Tracking**
 - **Regulation 12, Rule 16: Petroleum Refining Emission Limits and Risk Thresholds**
 - **Air Monitoring Guidelines for Petroleum Refineries**
 - **Regulation 9, Rule 14: Petroleum Coke Calcining Operations**
 - **Regulation 8, Rule 18: Equipment Leaks**
 - **Regulation 11, Rule 10: Hexavalent Chromium and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers**
 - **Draft Environmental Impact Report for the Bay Area Air Quality Management District Regulation 12-15: Petroleum Refining Emissions Tracking Regulation 12-16: Petroleum Refining Emissions Limits and Risk Thresholds**
 - **Negative Declaration BAAQMD Petroleum Refinery Emissions Reduction Strategy**

Mr. Stevenson and Mr. Nudd

Phillips 66 Company ("Phillips 66") provides the following comments regarding the Bay Area Air Quality Management District's ("BAAQMD" or "District") proposed rules/amendments as listed below, for all posted documents including the rule text, staff report, socioeconomic analysis, and the analyses conducted pursuant to the California Environmental Quality Act ("CEQA").

- Regulation 12, Rule 15. Petroleum Refining Emissions Tracking ("Rule 12-15")
- Regulation 12, Rule 16: Petroleum Refining Emission Limits and Risk Thresholds ("Rule 12-16")
- Air Monitoring Guidelines for Petroleum Refineries ("Air Monitoring Guidelines")
- Regulation 9, Rule 14 Petroleum Coke Calcining Operations ("Rule 9-14")
- Regulation 8, Rule 18. Equipment Leaks ("Rule 8-18")
- Regulation 11, Rule 10: Hexavalent Chromium and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers ("Rule 11-10")

- Draft Environmental Impact Report for the Bay Area Air Quality Management District Regulation 12-15 Petroleum Refining Emissions Tracking Regulation 12-16 Petroleum Refining Emissions Limits and Risk Thresholds ("DEIR")
- Negative Declaration BAAQMD Petroleum Refinery Emissions Reduction Strategy ("Negative Declaration")

Rule 12-15 and Rule 12-16 were posted on October 9, 2015 Rule 9-14, Rule 8-18, and Rule 11-10 were posted on October 23, 2015 Comments on all aforementioned rules are due by November 23, 2015 Phillips 66 has requested an extension of the comment period The relatively short timeframe provided by BAAQMD to review and comment on the rules and documents listed above is significantly shorter than typical rulemaking at the BAAQMD This abbreviated time period is insufficient to allow the necessary analyses and feedback from industry and other stakeholders regarding this BAAQMD rulemaking, which is sweeping in scope and significant in its economic and operational impacts As of the date of this submittal, the Public Hearing on these rules is scheduled for December 16, 2015 Phillips 66 renews its request for an extension of the comment period until December 8, 2015 and requests that the Public Hearing be continued to a later date, which will provide BAAQMD with the time needed to evaluate all comments received and to modify and re-propose the rules accordingly.

Phillips 66 owns and operates a refinery in Rodeo, California ("Refinery"), which converts crude oil and semi-refined materials into petroleum products, such as gasoline and diesel fuel, for Bay Area residents The Refinery is located within the BAAQMD's jurisdiction and has continuously operated at this location since 1896. It currently employs approximately 450 people Including contractors, the Refinery is a source of livelihood for more than approximately 650 people

Phillips 66 Supports and Adopts Comments by the Western States Petroleum Association

Phillips 66 supports and adopts the comments regarding the aforementioned rules submitted by the Western States Petroleum Association (WSPA) on November 23, 2015 Phillips 66 also has the following additional comments

DEIR and Negative Declaration

1. **The DEIR and Negative Declaration "piecemeal" the proposed Regulations listed at the beginning of this letter.**

The DEIR is deficient because it does not include the effects of proposed Rules 12-15 and 12-16 along with Rules 9-14, 8-18, 6-5 and 11-10 in one single EIR Instead BAAQMD separates these proposed Rules into one DEIR and one Negative Declaration BAAQMD Board Resolution 2014-07 adopted October 15, 2014 directs BAAQMD staff to do ALL the following ¹

- Continue to prepare Rule 12-15

¹ BAAQMD Board Resolution 2014-07 available on BAAQMD website
<http://www.baaqmd.gov/~media/files/board-of-directors/adopted-resolutions/2014/2014-07.pdf?la=en>,
Accessed 11/20/15

- Develop Rule 12-16 to set emission thresholds and mitigate potential emission increases
- Prepare a strategy to achieve further emission reductions from refineries which include as a goal a 20% reduction in refinery emissions

In its October 2015 *Petroleum Refinery Emissions Reduction Strategy: Staff Report* (PRERS Staff Report), BAAQMD states in the Executive Summary on page 1 that the emission reduction strategy “*stems from a Board of Directors’ resolution (2014-17) adopted in October 2014, in which the Board instructed staff to develop a regulatory strategy that would further reduce emissions from petroleum refineries, with a goal of an overall reduction of 20 percent (or as much as feasible) no later than 2020*”

Because proposed Rules 12-15 and 12-16 along with Rules 9-14, 8-18, 6-5 and 11-10 are all part of Board Resolution 2014-07 and affect the same refineries, they should be included in one single EIR, not piecemealed into separate documents

2. The CEQA documentation is inadequate because it does not analyze the impacts of a refinery in the region being shutdown.

As discussed above, BAAQMD Board Resolution 2014-07 directs BAAQMD staff to try to reduce emissions from petroleum refineries by 20 percent. Because there are five refineries within the BAAQMD jurisdiction, a shutdown of one refinery would lead to an emission reduction of approximately 20 percent. It is not unreasonable to assume that one outcome of the proposed Rules would be a shutdown of one refinery. The shutdown of one Bay Area Refinery has the potential to result in significant global GHG and other environmental impacts. The CEQA document should analyze the impacts of the Rules causing a shutdown of one of the five Bay Area refineries.

3. The DEIR indicates that Alternative 2 “Adopt Rule 12-15 and Not Rule 12-16” is environmentally superior and meets 6 of the 8 objectives.

Page 1-20 of the DEIR states that “*Since Alternative 2 would eliminate all of the potentially significant impacts and achieve most of the project objectives, it would be considered the environmentally superior alternative.*” Because Alternative 2, not adopting Rule 12-16, is the environmentally superior alternative, BAAQMD must provide more justification why foregoing this alternative is acceptable. The DEIR states that because “*the need for emission reductions has not yet been determined, the amount of emissions reductions that would not occur under Alternative 2 is unknown*.” In other words, until the results of the analyses and emission inventories required by Rule 12-15 are completed, there is no way to determine what, if any, benefits from Rule 12-16 emission reductions would be achieved.

RULE 12-15 – REFINERY EMISSIONS TRACKING

- 1. BAAQMD should not regulate crude inputs – District permitting rules assure emission limits will not be exceeded and sufficiently protect air quality**

The District has not demonstrated that the requirement for refinery owners and operators to submit the refinery crude slate information as proposed in Rule 12-15 satisfies the "necessity" requirement in California Health and Safety Code section 40727. It only speculates that "the refining of these different crude oils may also lead to increased emissions" and that "[b]ecause of the potential for changes in the sources of crude oil, it is prudent for the Air District to improve our understanding of emissions from the refineries and set standards to ensure that public health is protected" (Staff Report, pg 12-16-17). District permitting rules already restrict increases to emissions at refineries such that any change in crude slate that may lead to a change in emissions would already be limited by stringent permitting rules, but the District ignores these requirements in purporting to justify its authority to collect confidential and business-sensitive manufacturing-input information, which is an unprecedented first for a regulatory agency tasked with regulating emissions.

2. BAAQMD should site, operate, and install community monitors

Rule 12-15-501 requires refinery owners and operators to site, install, and operate community monitors. Per the District's website, BAAQMD has sited, installed, and operated more than a dozen air monitoring sites that provide data to the public regarding ambient air quality². The District does not need to promulgate a rule to duplicate this effort. In fact, the rule requirements impose a burden on refinery owners and operators *with which they legally cannot comply* -- only the District purportedly has the eminent domain authority to obtain access to public or private property across the community to install the required monitors.

3. BAAQMD should not require refineries to submit Solomon reports

Proposed Rule 12-15 requires the submission of the report prepared by Solomon Associates evaluating the refinery's performance against others in the industry. This information is highly confidential, and the District has not provided adequate safeguards to prevent public disclosure of such information.

AIR MONITORING GUIDELINES

In August 2015, BAAQMD published Air Monitoring Guidelines to implement proposed requirements under Rule 12-15 to site, install, and operate fence-line and community monitors. These comments address Phillips 66's concerns with the Air Monitoring Guidelines and corresponding requirements within Rule 12-15³.

Table 1 of the socio-economic report provided by BAAQMD notes that annual costs to operate the Fence-Line Air Monitoring and Community Air Monitoring System as proposed in the Air Monitoring Guidelines will be \$125,000 annually. BAAQMD's annual cost estimate is extremely low and appears to omit costs needed for data management, QA/QC, website management, 24/7 maintenance support and response to real and false detections. There are also annual costs associated with replacement parts including the sources (UV light, FTIR filament, and

² http://hank.baaqmd.gov/tec/maps/dam_sites.htm, Accessed 11/17/15

³ The Guidelines are accessible at the following site: <http://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/workshops/2015/100915/monitoringguidelines-pdf.pdf?la=en>, Accessed 11/17/15

TDL retro-reflector cubes) and FTIR detectors that can significantly add to the annual cost. As a real-world benchmark, Phillips 66's expenditures for its Fenceline have averaged approximately \$360,000 annually since 2011 and we expect that the annual costs for the Fenceline Air Monitoring and Community Air Monitoring System as proposed in the Air Monitoring Guidelines will be at least this much if not likely more. These increased costs need to be incorporated into the BAAQMD rulemaking process and analysis.

Phillips 66 has additional comments regarding specific provisions of the Air Monitoring Guidelines that are listed in Table 1, below

Table 1. Phillips 66 comments on BAAQMD Air Monitoring Guidelines

Topic	BAAQMD Text	Phillips 66 Response
Definitions 12-15-209 Fenceline Monitoring System	<p>Fence-line Monitoring System Equipment that measures and records air pollutant concentrations at or near the property boundary of a facility, and which may be useful for detecting and/or estimating the quantity of fugitive emissions, gas leaks, and other air emissions from the facility</p>	<p>Our experience has shown that the fence-line system is a tool for detecting potential off-site impacts, but it is not feasible to estimate the quantity of an emission from the facility. We propose the definition be reworded to the following (in <u>underlined</u> text)</p> <p>Fence-line Monitoring System Equipment that measures and records air pollutant concentrations at or near the property boundary of a facility, and which may be useful for <u>detecting gas leaks and the potential for off-site impacts from the facility.</u></p>
12-15-407 Air Monitoring Plans	<p>Air Monitoring Plans. A refinery owner/operator shall obtain and maintain APCO approval of a plan for establishing and operating a fence-line monitoring system and community air monitoring system. Timely submittal as described in the next sentence shall constitute compliance with this requirement unless and until there is a determination of disapproval by the APCO pursuant to Section 408. On or before December 31, 2016, the refinery owner/operator shall submit to the APCO a plan for establishing and operating a fence-line monitoring system to aid in determining specified pollutants that cross the refinery fence- line(s) in real-time and a community air monitoring system to aid in assessing air quality impacts in communities near refineries. The plan shall include detailed information describing the equipment to be used to monitor, record, and report air pollutant levels, the siting, operation, and maintenance of this equipment, and procedures for implementing data quality assurance and quality control. Within one year of approval by the District Board of Directors of updated air</p>	<p>Phillips 66 believes that is in the best interest of all parties involved for the BAAQMD to site, install, and operate the proposed community monitors. The Air Monitoring Guidelines currently allows the option of having BAAQMD operate the community monitor, but this is not apparent in the rule language. Therefore, the proposed rule wording changes are noted below</p> <p>Air Monitoring Plans A refinery owner/operator shall obtain and maintain APCO approval of a plan for establishing and operating a fence-line monitoring system and community air monitoring system <u>in accordance with this section or with 12-15-407.1 below.</u></p> <p><u>407.1 APCO Owned/Operated Community Air Monitoring System:</u> <u>As an alternative to the community air monitoring system requirements in 12-15-407, the refinery owner/operator may request that the APCO site and operate the community air monitoring system. Submittal of a written request, on or before December 31, 2016, by the refinery owner/operator to the APCO for the APCO to site and operate the community monitoring</u></p>

Topic	BAAQMD Text	Phillips 66 Response
	<p>monitoring guidelines published by the APCO under Section 12-15-410, the refinery/operator shall submit to the APCO an updated air monitoring plan. The siting of community air monitors shall be addressed in an Air Monitoring Plan Siting Addendum that may be submitted subsequent to the required time for submittal of the Air Monitoring Plan, provided the community air monitoring system is installed and operated in a timely manner as provided in 12-15-501</p> <p>The Air Monitoring Guidelines, page 19, states, "Once siting has been determined, the refinery operator may choose to have the Air District operate the community monitoring site utilizing its QAPP to define QA/QC procedures and its website to display the data "</p>	<p><u>system constitutes compliance with the requirements of 12-15-501 and 12-15-407 An Air Monitoring Plan is not required to be submitted for a community monitoring system when the refinery owner/operator elects to have the APCO site and operate the system</u></p>
<p>12-15-501 Community Air Monitoring System</p>	<p>Community Air Monitoring System Within two years of the approval of an air monitoring plan under Section 12-15-408 4, the refinery owner/operator will ensure that a community air monitoring system is installed, and is operated and maintained in accordance with the approved air monitoring plan. Community air monitoring system data shall also be reported as specified in the approved plan</p>	<p>The proposed wording (in <u>underlined text</u>) is recommended to be added to capture the sites that will elect to have the BAAQMD site, install, and operate the community monitors: <u>501.1 APCO Owned/Operated Community Air Monitoring System Refinery owners/operators that comply with 12-15-407 1 are exempt from 12-15-501.</u></p>
<p>Air Monitoring Guidelines Section 1.1 Fence-line Monitoring – Instrument Completeness</p>	<p>Instrumentation must meet a minimum of 75% completeness on an hourly basis, 90% of the time based on annual quarters (Page 5)</p>	<p>The proposed downtime guidance is not straightforward We propose to keep the downtime requirements consistent with the requirements for Area Monitors as stipulated under Section 1-530 of Regulation 1 as noted below: 1-530 Area Monitoring Downtime "Area monitoring downtime caused by instrument malfunction, where such downtime exceeds a continuous 24-hour period, shall be reported to the APCO within the next normal working day after discovery of the malfunction Downtime due to</p>

Topic	BAAQMD Text	Phillips 66 Response
<p>Air Monitoring Guidelines Section 1.1 Fence-line Monitoring – Fenceline monitor siting</p>	<p>Measurements must cover populated areas within 1 mile of the refinery fence-line likely to be affected when the annual mean wind direction lies in an arc within 22.5 degrees of a direct line from source to receptors 10% of the time, or greater, based on the most representative meteorological measurements for sources likely to emit the compounds listed above at the refinery. If this is not the case and an alternative method, such as dispersion modeling is used to determine fence-line locations, refinery operators must provide rationale for utilizing any alternative in the Air Monitoring Plan that addresses why receptors would not be affected by emissions from the sources within the refinery. (Page 5 and 6)</p>	<p>maintenance or repair which is expected to exceed 5 days' duration shall be reported to the APCO prior to the commencement of such maintenance or repairs ”</p> <p>The Rodeo Refinery Fenceline monitors have been sited for nearly 20 years and have been used as tools to identify potential for off-site impact. A key to the siting of these was the topography of the plant that limits the places they can be sited due to the proximity to hills and steep elevation changes. Since the monitors need to be accessed frequently, they need to be located in an area for safe access. Proposed wording change to account for this is noted below</p> <p>Measurements must cover populated areas within 1 mile of the refinery fence-line likely to be affected when the annual mean wind direction lies in an arc within 22.5 degrees of a direct line from source to receptors 10% of the time, or greater, based on the most representative meteorological measurements for sources likely to emit the compounds listed above at the refinery. If this is not the case and an alternative method, such as dispersion modeling is used to determine fence-line locations, refinery operators must provide rationale for utilizing any alternative in the Air Monitoring Plan that addresses why receptors would not be affected by emissions from the sources within the refinery <u>or note when topography or physical feasibility determines siting locations</u></p>
<p>Air Monitoring Guidelines Section 1.1 Fence-line Monitoring – Fenceline monitor siting</p>	<p>Refineries that already have open path monitoring capabilities in place need only provide verification those current systems adequately address population requirements. (Page 6, also repeated on Page 11)</p>	<p>The wording does not provide clear guidance on what is required for verification. Proposed wording is below (in <u>underlined</u> text):</p> <p>Refineries that already have open path monitoring capabilities in place need only provide verification those current systems adequately address population</p>

Topic	BAAQMD Text	Phillips 66 Response
		<p>requirements. <u>One example of such verification is to provide typical wind pattern information showing the current siting adequately addresses population requirements</u></p>
<p>Air Monitoring Guidelines Section 1.2 Community Monitoring</p>	<p>Refinery operators must appropriately site and operate at least one permanent community air monitoring station that provides a reference for exposures for residents living near the refinery (Page 6)</p>	<p>Section 1.2 does not mention that the Refinery can alternatively request the Air District to operate the community site. This is not noted until page 19 of the guidelines. It is recommended that this is noted earlier in the document. Proposed wording to Section 1.2 is provided below (in <u>underlined</u> text) Refinery operators must appropriately site and operate at least one permanent community air monitoring station that provides a reference for exposures for residents living near the refinery. <u>The refinery operator may elect for the Air District to site, install, and operate the community monitor(s). Upon notifying the Air District that the refinery defers community monitoring to the Air District, all requirements of Section 1.2, and Sections 4 through 7 no longer apply to the refinery owner/operator.</u></p>
<p>Air Monitoring Guidelines Section 3.3 Appropriate Sampling Methodologies</p>	<p>Air Monitoring Plans must address why a particular measurement method was chosen for a given location based on likely emissions from nearby contributing sources, desires to reach appropriate levels of detection and ability to measure compounds that have potentially unique relationships that apply to the particular facility. Factors that affect measurements, such as path length and potential interferences, should also be addressed. Issues that affect data completeness for the measurement technique proposed should be documented. If time periods when data cannot be collected due to these operational issues are to be excluded from data completeness calculations, methodologies for</p>	<p>Errors inherent to the design of the measurement technologies and limitations to accuracy, repeatability, and precision are not possible to be remedied. Phillips 66 will strive to operate the measurement technologies at their optimum levels, but cannot possibly achieve performance beyond the capabilities of the technologies themselves. Phillips 66 suggests the following change to the language (in strikeout text): “Errors associated with the measurement technologies as well as accuracy, repeatability and precision should be documented and presented and ways to address these issues provided in the Air Monitoring Plan”</p>

Topic	BAAQMD Text	Phillips 66 Response
	<p>determining and documenting when the events occur must be addressed Errors associated with the measurement technologies as well as accuracy, repeatability and precision should be documented and presented and ways to address these issues provided in the Air Monitoring Plan (Page 12)</p>	
<p>Air Monitoring Guidelines Section 3.4 Quality Assurance/ Quality Control (QA/QC)</p>	<p>Methodologies for ensuring appropriate levels of QA/QC must be provided in the Air Monitoring Plan to ensure data are of high enough quality and representative and defensible enough to meet the goals described in Section 3.3 The QA/QC plan should set data acceptance levels as well as appropriate levels of data quality In addition, the QA/QC plan should address data management issues and provide the levels of review that data will go through to determine validity. This should be outlined in a Quality Assurance Project Plan (QAPP) that follows EPA guidelines submitted in the Air Monitoring Plan It is critical that this portion of the monitoring plan identify a clear and transparent manner when data does not meet quality requirements and should be removed from the data set, to ensure the community understands why data is removed (Page 12 and 13)</p>	<p>Based on Phillips 66's experience with its fenceline monitoring system, there are limitations to the level of accuracy this type of equipment can achieve and the error bar can be wide The fenceline monitoring program serves its purpose of indicating potential off-site impacts However, it cannot be expected to generate laboratory quality data given the technical limitation, nor does require that level of precision to indicate potential off-site impacts. Phillips 66 requests that BAAQMD revise the language as below to accept the inherent limitations to the technology's capabilities (in <u>underlined</u> text).</p> <p>"Methodologies for ensuring appropriate levels of QA/QC must be provided in the Air Monitoring Plan to ensure data are of high enough quality and representative and defensible enough to meet the goals described in Section 3.3 <u>to the extent possible by the technology</u>"</p>
<p>Air Monitoring Guidelines Section 6 Siting Considerations</p>	<p>Once siting has been determined, the refinery operator may choose to have the Air District operate the community monitoring site utilizing its QAPP to define QA/QC procedures and its website to display the data. This may result in monitoring at the community site being incorporated into the Air District's monitoring network and, as a result, be used for NAAQS determination as defined in 40 CFR, Part 58 If this option is chosen, the refinery</p>	<p>Reference for the Refinery owner/operator to defer to the Air District to operate the community monitoring equipment should be noted earlier in the Guidelines and in the rule text The Air District should also perform the siting and installation Proposed wording has been noted for Section 1.2 Community Monitoring above</p>

Topic	BAAQMD Text	Phillips 66 Response
	<p>operator will be responsible covering costs of all Air District resources needed to operate and maintain the site. The refinery operator must include in the Air Monitoring Plan an agreement regarding the operation of the necessary equipment and recognizing that the Air District may be required to continue operation of equipment as mandated by 40 CFR, Part 58. The agreement must also allow the Air District to operate additional equipment at the location, if desired, but that the operation and maintenance costs associated with any equipment are covered by the Air District. (Page 19 and 20)</p>	

RULE 9-14 – COKE CALCINING

Because Rule 9-14 pertains to a facility separate from our Refinery, Phillips 66 will submit its comments regarding Rule 9-14 under separate cover

RULE 8-18 – EQUIPMENT LEAKS

1. Heavy liquid fugitive components generate low VOC emissions and should not be subject to onerous tagging and monitoring requirements.

Phillips 66 has demonstrated that fugitive leaks from equipment in heavy liquid service are minimal. Requiring tagging and monitoring for these components would impose significant costs and operational burden with little to no benefit to air quality.

BAAQMD has significantly overestimated the emissions from heavy liquid components by using outdated, extremely conservative emission factors. Phillips 66 provided actual heavy liquid component monitoring data to BAAQMD demonstrating emissions are orders of magnitude lower than the District's emissions estimates. See E-mails from Jennifer Ahlskog, Phillips 66, to Greg Stone, BAAQMD, September 25, 2014 and October 8, 2014. Under EPA fugitive regulations such as 40 CFR 60 Subpart VV (e.g. 40 CFR 60.482-5), Phillips 66 must identify leaks that are discovered through Audio, Visual, and Olfactory (AVO) means. As AVO leaks are identified, Refinery personnel undertake Method 21 monitoring of the leaks. Phillips 66 reviewed historical data where an AVO leak was discovered and follow-up monitoring was conducted for heavy liquid components and shared that information with BAAQMD staff. See E-mails from Jennifer Ahlskog, Phillips 66, to Greg Stone, BAAQMD, September 25, 2014 and October 8, 2014. Of the 60 component AVO leaks for which follow-up Method 21 monitoring was conducted, 48 of the readings were 0 ppm, and the average VOC concentration detected was 2.4 ppm. The highest measured value was 89 ppm, and the second highest was 30 ppm. To compare, the BAAQMD's current emission factors are orders of magnitude larger and equivalent to a reading of 484 ppm for valves, 16,134 ppm for pump seals, and 1,017 ppm for connectors. See Letter from WSPA to BAAQMD, March 5, 2015. The AVO leaks, where the worst case concentrations are expected, had minimal measured VOC concentrations based on real monitoring data. The District has ignored this data and offered no justification for doing so.

Phillips 66 performed testing on approximately 350 different components in September 2014 and this data was also provided to BAAQMD. See E-mails from Jennifer Ahlskog, Phillips 66, to Greg Stone, BAAQMD, September 25, 2014 and October 8, 2014. The monitoring was conducted across both newer and older units, diesel streams, and other heavier streams. No leaks were detected for any of these components. The District has ignored this data and offered no justification for doing so.

2. Requiring tagging and monitoring of heavy liquid components is not cost-effective.

District BACT guidelines state that for organics, BAAQMD's guideline cost limit is \$17,500 per ton of organic emissions reduction.⁴ Beyond that, an emission reduction mandate is not cost-

⁴ <http://hank.baaqmd.gov/pmt/bactworkbook/intro3.htm>, Accessed 11/18/15

effective The District has also stated that organic compound control rules typically range from several thousand to over fifteen thousand dollars per ton of emissions reductions See Regulation 9-14 Staff Report, pg 15

Phillips 66 estimates that approximately 173,000 heavy liquid components will need to be tagged at the Refinery to meet the requirements of this rule In 2009, Phillips 66 re-tagged a large portion of the LDAR components at the Refinery, and the costs were approximately \$10 75 per component This project is expected to be no different, if not more costly because this will be a new effort, not a re-tagging effort It will cost approximately \$2 million to tag the 173,000 heavy liquid components at the Refinery necessary for compliance with the Rule

Based on the monitoring data discussed above in this letter and use of more reasonable emissions estimation methods in the 1999 ARB/CAPCOA "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities" (details included in the aforementioned emails to BAAQMD), Phillips 66 estimates VOC emissions from heavy liquid components at the Refinery to be about 3 tpy The District currently estimates heavy liquid component emissions to be about 120 tpy To compare, the total VOC emissions from the rest of the entire refinery are around 130 tpy See 2014 emission inventory for BAAQMD PTO fees attached The District has used erroneous emission factors to artificially inflate heavy liquid component fugitive emissions from 3 tpy to 120 tpy, essentially doubling the Refinery's total VOC emissions

Using a more realistic estimate of VOC emissions from heavy liquid components of 3 tpy and Phillips 66's estimated cost of compliance of at least \$2 million initially (annualized to \$174,000 per year over 20 years with a 6% interest rate) and ongoing labor costs around \$520,000 per year (the cost to double our LDAR staff), the cost-per-ton reduction if we were to reduce all heavy liquid component emissions to 0 tpy would be \$231,000 per ton VOC reduction (This is even using the conservative assumption that the rule as proposed will actually reduce heavy liquid fugitive emissions down to 0 tpy, which it probably cannot since it is simply a leak detection and repair rule, not a guarantee of complete leak elimination) Requiring \$231,000 per ton of VOC reduction far exceeds BAAQMD's \$17,500 per ton cost-effectiveness threshold The District has overstated the actual emissions from leaking components in heavy liquid service, and then used that inflated figure to justify a rule that would otherwise be prohibitively costly

RULE 11-10 – COOLING TOWERS

1. BAAQMD Overstates Actual Refinery Cooling Tower Emissions by a Factor of 25.

In its October 2015 *Petroleum Refinery Emissions Reduction Strategy. Staff Report* (Staff Report), BAAQMD indicates that the potential volatile organic compounds ("VOCs") emission reductions for the Refinery cooling towers resulting from implementation of the proposed amendments to Rule 11-10 is 84 tons per year ("tpy") See Staff Report, p. C.5, Table C2 This is impossible because the BAAQMD emission inventory for the cooling towers at the Refinery indicates they emit only a fraction of those VOC emissions For example, in 2014, the BAAQMD emission inventory has only 3 3 tons of VOCs emitted from the Refinery's cooling towers. This amount of yearly emissions (*i e* , 3 3 tpy) is typical of the Refinery's cooling tower emissions and is based on Phillips 66 cooling tower monitoring data provided to BAAQMD See

attached Phillips 66 BAAQMD Permit to Operate. Rather than utilize actual VOC emissions data, BAAQMD apparently used default uncontrolled versus controlled U.S. EPA AP-42 emission factors to develop the proposed emission reductions in Table C2.

BAAQMD also indicates in its Staff Report that the proposed amendments to Rule 11-10 will result in a reduction of VOC emissions to 0.7 pounds per million gallons of recirculated water ("lb/MMgal"). See Staff Report, p. C-5, Table C2. However, the 3-year average (2012-2014) for VOC emissions from all Refinery cooling towers is only 0.46 lb/MMgal. See attached e-mail from Suejung Shin, Phillips 66, to Brian Lusher and Bhagavan Krishnaswamy, BAAQMD, dated February 24, 2015. Therefore, the rate of Refinery cooling tower emissions is already below the emission rate that the proposed amendments are attempting to achieve. Further, there is no basis for the monitoring proposed in Rule 11-10-304 when actual Refinery emissions are already lower than the emission reduction goal in the proposed rule (0.46 lb/MMgal vs. 0.7 lb/MMgal). See Phillips 66 Permit Condition 22121.

2. BAAQMD Uses Inaccurate Cost Effectiveness.

As described above, the actual emission reductions from Refinery cooling towers are well below the 84 tpy used by BAAQMD to calculate the cost effectiveness of the proposed rule. Using the costs depicted in the Staff Report and assuming 100% control of all Refinery cooling tower emissions (i.e., 3.3 tpy), the cost-effectiveness ranges between \$64,000 to \$230,000 per ton. This greatly exceeds the cost-effectiveness values reported of \$2,533 to \$9,125 per ton and upon which BAAQMD has traditionally assessed its regulations as being cost-effective. See Staff Report, p. C-6, Table C4. The BAAQMD VOC control rules typically have cost effectiveness that ranges from several thousand to over fifteen thousand dollars per ton of emissions reductions. See Regulation 9-14 Staff Report, pg. 15. The District BACT guideline states that for organics, BAAQMD's guideline cost limit is \$17,500 per ton. See <http://hank.baaqmd.gov/pmt/bactworkbook/intro3.htm>, Accessed 11/18/15.

3. Additional Comments

The daily or continuous monitoring proposed in Rule 11-10-304 should be altered or deleted. As described above, the monthly monitoring conducted by Phillips 66 has demonstrated to BAAQMD satisfaction (by virtue of the sampling data's inclusion in the development of the Phillips 66 BAAQMD emission inventory for the cooling towers) that emissions are below the emission rate of 0.7 lb/MMgal that the proposed Rule is attempting to achieve.

The Leak Action Level as defined in Regulation 11-10-204.1 should be calculated, as in Phillips 66 Permit Condition 22121, to be the difference in the return and sample line sample results. This difference is an indication of what VOCs are being emitted to atmosphere. As discussed above, this sampling has been proven to demonstrate that cooling tower emissions are low, which makes the additional monitoring proposed unnecessary.

Because current Phillips 66 emissions are below the emission reduction goal of the proposed Rule as described above, the Best Management Practices in Regulation 11-10-402 should be deleted from the proposed rule. Compliance with the monthly sampling as described above is sufficient to meet the "best modern practices" definition as it is used in Regulation 8 Rule 2 and the monitoring proposed in Regulation 11-10-402 is unnecessary, burdensome and provides no additional emission reduction benefit.

The Leak Action Requirement in Rule **11-10-305** should include a delay-of-repair provision. As BAAQMD acknowledges in Table C5 of its Staff Report, there are cases where leaks may not be able to be repaired within the 21 days currently prescribed in Rule 11-10-305 due to being technically infeasible and/or parts/personnel being unavailable. Rather than simply including a delay-of-repair period, BAAQMD states in the Staff Report that in cases where leaks cannot be repaired within the proposed timeframe, refinery operators can request reprieve through the BAAQMD's variance and/or compliance agreement process. At best, this is a cumbersome solution that unnecessarily requires effort and wasted hours by refinery personnel, BAAQMD's Office of Counsel, and the BAAQMD Hearing Board, not to mention imposing other inefficiencies and unnecessary costs. Rather than enact regulatory requirements that it knows will unnecessarily create compliance problems and "punt" resolution of those problems to subsequent Hearing Board and enforcement discretion processes, BAAQMD should enact a more sensible provision in the rule, which we have set forth above.

The Leak Action Requirement in Regulation **11-10-305** should designate a specific subset of the TACs in Table 2-5-1 of Regulation 2 Rule 5 that require speciation. It is infeasible to test for all TACs listed in Table 2-5-1 as currently required in the proposed rule. There is no reason why the majority of TACs in Table 2-5-1 would even be present in a cooling tower leak and to test for all the components would be inefficient and impose excessive costs.

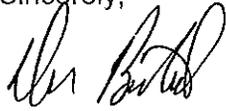
The reporting requirements in Regulation **11-10-401.1** should be modified to delete the requirement to notify the APCO of pH, iron and chlorine concentrations in the cooling water because these parameters are not relevant to hydrocarbon leaks.

Regulation **11-10-401.2** should be altered to delete the requirements to demonstrate that total hydrocarbon emissions from a leak are below 15 pounds per day (lb/d) and TAC emissions from the leak are below their corresponding acute and chronic trigger levels in Table 2-5-1 of Regulation 2 Rule 5. The Staff Report indicates that the requirement to demonstrate total hydrocarbon emissions are below 15 lb/d was included to demonstrate compliance with Regulation 8-2-301. This requirement is unnecessary because the proposed rule itself qualifies the cooling towers for the "best modern practices" exemption in Regulation 8-2-114 and, therefore, the limit in Regulation 8-2-301 is not applicable. There is no justification for the requirement to demonstrate TAC emissions are below their corresponding acute and chronic trigger levels in Table 2-5-1 of Regulation 2 Rule 5. The trigger levels in Regulation 2 Rule 5 are only designed for new and modified sources to determine whether or not the New Source Review requirements for TACs in Regulation 2 Rule 5 applies to that new or modified source. These trigger levels should not be used as an arbitrary emission limit for unpredictable emissions from leaks and this limit should be deleted from the proposed language in **11-10-401.2**.

The proposed Rule should be updated to include an exemption for cooling towers that service heat exchangers where the process fluids do not contain VOCs. As an example, the Phillips 66 Unit 110 Hydrogen Plant Cooling Tower does not provide cooling water for any streams containing VOCs. The proposed Rule is unnecessary for such cooling towers because even if a leak occurs, there will not be any VOCs present in the process fluid to be emitted to atmosphere from the cooling tower.

If you have any questions regarding these comments, please contact me at (510) 245-5825

Sincerely,



Don Bristol
Environmental Superintendent

Attachments

cc Eric Stevenson, BAAQMD (via e-mail ESTevenson@baaqmd.gov) w/Attachments

ATTACHMENTS

RULE 8-18 COMMENTS

Shin, Suejung

From: Ahlskog, Jennifer:
Sent: Wednesday, October 08, 2014 2:01 PM
To: gstone@baaqmd.gov
Cc: blusher@baaqmd.gov, Bristol, Don A
Subject: RE: Phillips 66 8-18 Exempt Monitoring Results
Attachments: P66 8-18 Exempt Monitoring 2014_0930 Flange and Plug.pdf

Attached are additional monitoring records for different types of components in Heavy Liquid service from some of the units referenced below.

Jennifer Ahlskog
Phillips 66 - San Francisco Refinery
Environmental Services Department

From: Ahlskog, Jennifer:
Sent: Thursday, September 25, 2014 1:55 PM
To: gstone@baaqmd.gov
Cc: blusher@baaqmd.gov; Bristol, Don A
Subject: Phillips 66 8-18 Exempt Monitoring Results

Greg, per the discussion with the BAAQMD Emission Inventory group on September 18, 2014 attached are the direct monitoring results from two types of 8-18 exempt (i.e. heavy liquids) components undertaken by Phillips 66. The initial monitoring that was previously shared with our BAAQMD Permit Engineer is titled "P66 AVO Method 21 Leak Results". The attached email to Brian Lusher on August 21st gives additional background on the monitoring. We feel the AVO monitoring results represent worst-case, conservative emissions since that data set was generated from the monitoring of leaks identified from AVO inspections. The additional attachment is titled "P66 8-18 Exempt Monitoring 2014_09". Our 3rd party LDAR monitoring company performed testing on approximately 350 different components this past week. The monitoring was conducted in a number of units that included newer Unit components (U250, U246), and older unit (U200, U40, & U80) components. Diesel as well as other heavier streams were monitored. In all cases the Method 21 monitoring result was zero (0).

The additional monitoring conducted furthers our belief that the CAPCOA default zero factor is a reasonable assumption for the 8-18 exempt components. Please let us know the review status of other refinery monitoring data. Ideally, once an assessment is made we would prefer that our current invoice be quickly updated so that we can pay the necessary full fee in a timely manner. Due to our check processing approval process it would be helpful if we could be re-invoiced by October 1, 2014. Thanks and please advise if you have any follow-up questions.

Jennifer Ahlskog
Phillips 66 - San Francisco Refinery
Environmental Services Department

From: Ahlskog, Jennifer:
Sent: Thursday, August 21, 2014 5:34 PM
To: blusher@baaqmd.gov
Cc: Bristol, Don A; dhall@baaqmd.gov; Sanjeev Kamboj (Skamboj@baaqmd.gov)
Subject: P66 Heavy Liquid Fugitives

Brian, as you are aware, Phillips 66 (P66) included Heavy Liquid fugitives in the 2013 Annual Update fugitive values. The emissions were based on the CAPCOA default zero factors and using the ratio of Heavy Liquid components factor found in the ICR protocol. We believe this value provides a representative estimate that should be utilized for 2013

emissions Per our discussions last year and this year we think it is inappropriate for BAAQMD to inconsistently apply a Heavy Liquid component factor that has not been vetted and likely significantly overestimates facility & BAAQMD air shed emissions. We believe the Heavy Liquid component emissions factor should be tackled through the emission inventory protocol portion of the BAAQMD's 12-15 rule making process WSPA has requested meeting(s) with BAAQMD to begin reviewing the emission protocol on a methodical source by source basis By going through this process an appropriate emission factor can be determined using sound science and available and/or targeted monitoring data.

The CAPCOA default zero factor constitutes 3 tpy VOC for the P66 Refinery. As evidence this value is reasonable we wanted to make you aware of some Heavy Liquid monitoring that we undertake throughout the year on an as-needed basis. Under EPA fugitive regs such as 40 CFR 60 Suppart VV (e.g. 40 CFR 60.482-5) we must identify leaks that are discovered through Audio, Visual, and Olfactory (AVO) means As AVO leaks are identified the facility undertakes Method 21 monitoring of the leaks. In some cases, these leaks are in Heavy Liquid service and may also have a slow liquid drip. An example of the type of component where this might occur would be a heavy liquid pump seal leak. Attached are examples of instances where a AVO leak was discovered and follow up monitoring was conducted for heavy liquid components The average ppm emissions for this data set is 2.4 ppm, the majority of the readings are 0 In the highest emission case the emissions were 89 ppm and the second highest measured value was 30 ppm In order to perform an evaluation of the appropriateness of the CAPCOA default zero factor I used the CAPCOA correlation with two cases of emissions. One was at 5 ppm (close to avg of 2.4 ppm) and one case at 30 ppm (mid high measurement) The resulting emissions are 3 – 9 tpy of VOC emissions (see calcs below). I believe this confirms the CAPCOA Default Zero factor and associated emissions of 3 tpy are appropriate for the P66 inventory

Please let me know if you have any questions. We look forward to working with BAAQMD on the 12-15 emissions inventory protocol to ensure that accurate emissions are determined in a consistent fashion for P66 and the local refineries.

P66 Estimated Heavy Liquid Emissions Based on AVO Spot Monitoring

Case 1 AVO Avg 5 ppm (2.4 ppm)		CAPCOA Factors	Screening Value	Calculated Emis Factor
Component	Service		(ppm)	(kg/hr/source)
Connector	Heavy Liquid	$1.53E-6*(SV)^{0.736}$	5	0.0000050
Pump	Heavy Liquid	$5.07E-5*(SV)^{0.622}$	5	0.0001380
Valve	Heavy Liquid	$2.27E-6*(SV)^{0.747}$	5	0.0001380
Total				

Case 2 - AVO Mid Worst Case 30 ppm		CAPCOA Factors	Screening Value	Calculated Emis Factor
Component	Service		(ppm)	(kg/hr/source)
Connector	Heavy Liquid	$1.53E-6*(SV)^{0.736}$	30	0.0000187
Pump	Heavy Liquid	$5.07E-5*(SV)^{0.622}$	30	0.0004205
Valve	Heavy Liquid	$2.27E-6*(SV)^{0.747}$	30	0.0004205
Total				

Jennifer M. Ahlskog
Phillips 66 - San Francisco Refinery
Environmental Services Department
(510) 245-4439
Jennifer.M.Ahlskog@P66.com

AVO Discovered Leaks & Follow Up Method 21 Monitoring

Unit	HL Type	Background	VOC Reading
215	Lube Oil	0	0
SPP	Lube Oil	0	0
100	Oil	0	2
100	Seal oil	0	1
SPP	Seal oil	0	0
200	Lube Oil	0	0
235	Seal oil	0	0
200	gland oil	0	0
200	Seal oil	0	0
215	Lube Oil	0	0
200	Reciprocal oil	0	0
200	Lube Oil	0	0
80	gear oil	0	0
MTC	Diesel	0	0
200	Diesel Range	0	2
200	Diesel Range	0	0
238	Pump Seal Oil	0	0
236	Pump Seal Oil	0	0
200	Pump Seal Oil	0	0
200	Gas oil	0	0
200	Heavy Coker Gas Oil	0	0
230	Diesel	0	0
246	Pump Seal Oil	0	0
80	Diesel	0	1
80	Diesel	0	1
SPP	Lube Oil	0	0
200	Vac Tower Heavy Gas Oil	0	0
244	Seal oil	0	0
248	Seal oil	0	0
80	Lube Oil	0	0
248	Seal oil	0	0
238	Seal oil	0	0
110	Pump Seal Oil	0	0
110	Seal oil	0	0
240 plt 4	Seal oil	0	0
SPP	gear oil	0	0
SPP	Lube Oil	0	0
228	Seal oil	0	0
200	Seal oil	0	3
200	Seal oil	0	10
267	Seal oil	0	0
240	Seal oil	0	89
Plt 31	Seal oil	0	0
SPP	Oil	0	0
200	Heavy Coker Gas Oil	0	0
200	Lube oil	0	3
236	Seal oil	0	0
200	Seal oil	0	0
240 plt 4	Seal oil	0	0
240 plt 31	Seal oil	0	0
240 plt 1	Seal oil	0	1
240 plt 1	Seal oil	0	0
240 plt 2	Seal oil	0	1
200	Seal oil	0	0
230	Seal oil	0	30
246	Seal oil	0	0
246	Seal oil	0	0
200	Seal oil	0	0
250	gear oil	0	0
230	gear oil	0	0

Heavy Liquid Component Readings

UNIT 200

DATE 9/24/14

TECHNICIAN J. Green

TVA 1241

	Unit	Valve	Pump	Connector	Reading
1	GATE VLV		F-65A-1		0
2					0
3					0
4					0
5					0
6					0
7					0
8	GATE VLV		F-65A-1		0
9	BALL VLV				0
10	BALL VLV		F-65A-1		0
11	GATE VLV		F-69A-1		0
12					0
13					0
14	GATE VLV		F-69A-1		0
15	GATE VLV		F-70A-1		0
16					0
17					0
18	GATE VLV		F-70A-1		0
19	GATE VLV		F-70B-2		0
20					0
21					0
22					0
23					0
24	GATE VLV		F-70B-2		0
25			F-69B2		0
26					0
27					0
28					0
29					0
30	GATE VLV		F-69B-2		0
31			F-65B-1		0
32					0
33					0
35					0
36					0
37					0
38					0
39					0
40	GATE VLV		F-65B-1		0
41			F-69C-1		0
42					0
43					0
44					0
45					0
46	GATE VLV		F-69C-1		0
47			F-70C-1		0
48					0
49					0
50	GATE VLV		F-70C-1		0

388

~~F-69A(1/2)~~

- E-66A
- F-66A

~~F-70A(1/2)~~

• G-66A(1/2)

SEAL OIL PUMP

• G-67A(1/2)

Control oil pump

~~F-65A(1/2)~~

- G-62A(1,2)
- F-67B
- F-66B

~~F-65B(1/2)~~

Heavy Liquid Component Readings

UNIT 246
250

DATE 9-22-14 TECHNICIAN Efron M

TVA 1241

F-810

~~G-810A/B~~

	Unit	Valve	Pump	Connector	Reading
1	246	Gate Valve	G-810B		Ø
2					Ø
3					Ø
4					Ø
5					Ø
6					Ø
7					Ø
8					Ø
9					Ø
10					Ø
11					Ø
12	246	Gate Valve	G-810B		Ø
13	246	Gate Valve	G-810A		Ø
14					Ø
15					Ø
16					Ø
17					Ø
18					Ø
19					Ø
20					Ø
21					Ø
22	246	Gate Valve	G-810A		Ø
23	246	GATE Valve	G-813B		Ø
24					Ø
25	246	GATE VALVE	G-813B		Ø
26					Ø
27	246	GATE VALVE	G-813B		Ø
28	246		G-813A		Ø
29					Ø
30					Ø
31	246	GATE VALVE	G-813A		Ø
32					Ø
33					Ø
35					Ø
36					Ø
37					Ø
38					Ø
39	246	GATE VALVE	G-811A		Ø
40					Ø
41					Ø
42	246	GATE VALVE	G-811A		Ø
43	246	GATE VALVE	G-811A		Ø
44	246		G-811B		Ø
45					Ø
46					Ø
47					Ø
48	246	GATE VALVE	G-811B		Ø
49	246	GATE VALVE	F-813		Ø
50	246	GATE VALVE	F-813		Ø

~~G-804A/B~~
D-803
~~D-804~~
G-808A/B
G-809
G-816A/B
~~G-814A/B~~
~~F-813~~
~~G-813A/B~~
G-818
E-830A
E-829

Heavy Liquid Component Readings

	Valve	Pump	Connector	Reading	Other
51	GATE VALVE	F-813		⊙	
52	↓	↓		⊙	
53				⊙	
54				⊙	
55				⊙	
56				⊙	
57	GATE VALVE	F-813		⊙	
58	GATE VALVE	D-804		⊙	
59	GATE VALVE	D-711		⊙	
60	↓	↓		⊙	
61	GATE VALVE	D-711		⊙	
62	GATE VALVE	D-7-11		⊙	
63	GATE VALVE	G-715		⊙	
64	NEEDLE VLV	↓		⊙	
65	↓	↓		⊙	
66	PRV			⊙	
67	GATE VALVE	G-715		⊙	
68	GATE VALVE	G-725		⊙	
69	NEEDLE VLV			⊙	
70	↓			⊙	
71	PRV			⊙	
72	GATE VALVE	G-725		⊙	
73	GATE VALVE	G-717A/B		⊙	
74	↓	↓		⊙	
75	GATE VALVE			⊙	
76	↓			⊙	
77				⊙	
78	PRV			⊙	
79	GATE VALVE			⊙	
80	PRV			⊙	
81	GATE VALVE			⊙	
82	↓			⊙	
83				⊙	
84	GATE VALVE			⊙	
85	GATE VALVE	G-717 A/B		⊙	
86	GATE VALVE	G-731 A/B		⊙	
87	↓			⊙	
88	PRV			⊙	
89	GATE VALVE			⊙	
90	↓			⊙	
91	PRV	G-731 A/B		⊙	
92	BALL VLV	G-721 A/B		⊙	
93	↓			⊙	
94				⊙	
95	BALL VLV			⊙	
96	PRV			⊙	
97	BALL VLV			⊙	
98	↓			⊙	
99				⊙	
100	↓	G-721 A/B		⊙	

- (F-723)
- G-722
- F-718
- GB-701
- F-721
- ~~G-721 A/B~~
- F-714B
- ~~G-715~~
- G-716
- (F-724B)
- ~~G-725~~
- (G-726)
- ~~G-717 A/B~~
- ~~G-731 A/B~~

Heavy Liquid Component Readings

	Valve	Pump	Connector	Reading	Other
101	PRV	G-721A/B		0	
102	GATE VALVE	G-722		0	
103				0	
104				0	
105				0	
106	GATE VLV	G-722		0	
107		G.M. 701		0	
108				0	
109				0	
110				0	
111	GATE VALVE	G.M. 701		0	
112	GATE VLV	F-721		0	
113				0	
114	GATE VLV	F-721		0	
115	GATE VLV	F-714A/B		0	
116				0	
117				0	
118	GATE VLV	F-714A/B		0	
119	GATE VLV	F-724A/B		0	
120				0	
121				0	
122	GATE VLV	F-724A/B		0	
123	Blobe VLV	E-724		0	
124	GATE VLV			0	
125		F-724A/B		0	
126				0	
127	GATE VLV	F-724A/B		0	
128	GATE VLV	F-716A/B		0	
129				0	
130				0	
131				0	
132				0	
133	GATE VLV			0	
134	3 way VLV	F-716A/B		0	
135	GATE VLV	F-716B		0	
136				0	
137				0	
138				0	
139	GATE VLV			0	
140	CNTRL VLV	F-716B		0	
141	GATE VLV			0	
142	GATE VLV	F-716A		0	
143				0	
144				0	
145				0	
146				0	
147				0	
148				0	
149	GATE VLV	F-716A		0	
150	CNTRL VLV	F-716A		0	

~~G-722~~
~~F-718~~
~~GB-764~~
~~F-721~~
~~F-714B~~
~~G-716~~
~~F-724B~~
~~G-726~~

Heavy Liquid Component Readings

UNIT 80

DATE 9.23.14

TECHNICIAN E. Freeman

TVA 1241

40 # MTC

	Unit	Valve	Pump	Connector	Reading
1	80	PRV	G-101		0
2		Globe VLV			0
3		PLUG VLV			0
4		GATE VLV			0
5					0
6					0
7					0
8		GATE VAVE			0
9		TWIN SEAL			0
10					0
11	80	TWIN SEAL	G-101		0
12		GATE VLV	G-101		0
13		GATE VLV			0
14	80	TWIN SEAL	G-101		0
15	80	PRV	G-1		0
16		GATE VLV			0
17	80	GATE VLV	G-1		0
18	80	GATE VLV	G-1		0
19					0
20					0
21					0
22					0
23					0
24					0
25					0
26					0
27					0
28					0
29					0
30					0
31	80	GATE VLV	G-1		0
32	80	TWIN SEAL	G-1		0
33					0
35					0
36					0
37	80	TWIN SEAL	G-1		0
38		PRV	G-3		0
39	80	NEEDLE VLV	G-3		0
40	80	PRV	G-4		0
41	80	PRV	G-7		0
42	80	GATE VLV	G-8		0
43	80	HEX ROOT	G-8		0
44	80	HEX ROOT	G-8		0
45		GATE VLV	G8		0
46					0
47					0
48					0
49					0
50	80		G-8		0

~~G-101~~
G-7
G-3
G-4
F-4
G-8

Heavy Liquid Component Readings

	Valve	Pump	Connector	Reading	Other
51	GATE VLV	G-8		0	
52				0	
53				0	
54				0	
55				0	
56				0	
57				0	
58				0	
59				0	
60				0	
61				0	
62				0	
63	GATE VALVE	G-8		0	
64	PLUG VLV			0	
65				0	
66	PLUG VLV	G-8		0	
67	PRV			0	
68	PRV			0	
69	PRV	G-8		0	
70	GATE VLV	B-3		0	
71	GATE VLV			0	
72	TWIN SEAL	B-3		0	
73	GATE VLV			0	
74	TWIN SEAL	B-3		0	
75				0	
76	TWIN SEAL	B-3		0	
77	GATE VLV	B-3		0	
78	TWIN SEAL			0	
79	TWIN SEAL			0	
80	GATE VLV			0	
81	GATE VLV	B-3		0	
82	TWIN SEAL	B-3		0	
83	Butterfly VLV	B-3		0	
84	GATE VLV			0	
85				0	
86	GATE VLV			0	
87	Butterfly VLV	B-3		0	
88	Butterfly VLV			0	
89	GATE VLV			0	
90				0	
91	GATE VLV	B-3		0	
92	GATE VLV			0	
93				0	
94				0	
95				0	
96				0	
97				0	
98				0	
99	GATE VLV	B-3		0	
100	Butterfly VLV	B-3		0	

G-246
G-28
G-71
G-190

Heavy Liquid Component Readings

	Valve	Pump	Connector	Reading	Other
101	Butterfly VLV	B-3		0	
102	GATE VLV			0	
103	GATE VLV			0	
104	TWIN SEAL	B-3		0	
105	TWIN SEAL			0	
106	GATE VLV			0	
107				0	
108	GATE VLV	B-3		0	
109	GATE VLV			0	
110	GATE VLV	B-3		0	
111	TWIN SEAL	B-3		0	
112	TWIN SEAL			0	
113	GATE VLV			0	
114	GATE VLV	B-3		0	
115				0	
116	GATE VLV	B-3		0	
117	TWIN SEAL	B-3		0	
118				0	
119	TWIN SEAL	B-4		0	
120	GATE VLV			0	
121	GATE VLV			0	
122	TWIN SEAL	B-4		0	
123	GATE VLV			0	
124				0	
125				0	
126	GATE VLV	B-4		0	
127	Butterfly VLV			0	
128	Butterfly VLV	B-4		0	
129	GATE VLV			0	
130	GATE VLV	B-4		0	
131	TWIN SEAL	B-5		0	
132	TWIN SEAL	B-5		0	
133				0	
134	TWIN SEAL	B-5		0	
135	GATE VLV			0	
136	TWIN SEAL			0	
137	TWIN SEAL	B-5		0	
138	Butterfly VLV			0	
139	Butterfly VLV	B-5		0	
140	Butterfly VLV	B-5		0	
141	GATE VLV			0	
142				0	
143				0	
144	GATE VLV	B-5		0	
145	Butterfly VLV	B-5		0	
146	GATE VLV			0	
147				0	
148				0	
149	GATE VLV			0	
150	Butterfly VLV	B-5		0	

Heavy Liquid Component Readings

258

9/30/14
 ← M2231
 Reichelle
 PHA1208

	Valve	Pump	Connector	Reading	Other
51		G-707A		1	
52			Flange	0	
53			Plug	0	
54			TIC	0	
55			Plug	0	
56			Flange	0	
57			Bonnet	0	
58			flange	0	
59			flange	0	
60			flange	0	
61			flange	0	
62			Bonnet	0	
63			Flange	0	
64			Flange	0	
65			plug	0	
66		G-707B		0	
67			Flange	0	
68			T.C.	0	
69			Plug	0	
70			Plug	0	
71			Flange	0	
72			Bonnet	0	
73			Flange	0	
74			Flange	0	
75		G-722		0	
76			Bonnet	0	
77			T.C.	175	
78			Plug	0	
79			Flange	0	
80			plug	0	
81			Flange	0	
82			flange	0	
83			Bonnet	0	
84			flange	0	
85		G-816B		0	
86			FLANGE	0	
87			FLANGB	0	
88			FLANGR	0	
89			PLUG	0	
90			BONNET	0	
91			FLANGR	0	
92			BONNET	0	
93			FLANGB	0	
94		G-809		0	
95			FLANGE	0	
96			FLANGB	0	
97			FLNGR	0	
98			PLUG	0	
99			FLANGR	0	
100			BONNET	0	

TAD PG

246

Heavy Liquid Component Readings

Valve	Pump	Connector	Reading	Other
101		FLANGE	0	
102	G-808B		0	
103		FLANGE	0	
104		T.C.	0	
105		PLUG	0	
106		BONNET	0	
107		BONNET	0	
108		FLANGE	0	
109	G-808A		0	
110		FLANGE	0	
111		FLANGE	0	
112		T.C.	0	
113		PLUG	0	
114		BONNET	0	
115		BONNET	0	
116		PLUG	0	
117		FLANGE	0	
118		PLUG	0	
119	G-811A		20	
120		FLANGE	0	
121		FLANGE	0	
122		T.C.	0	
123		FLANGE	0	
124	G-811B		0	
125		FLANGE	0	
126		FLANGE	0	
127		T.C.	0	
128	G-28		0	
129		FLANGE	0	
130		FLANGE	0	
131		PLUG	0	
132		FLANGE	0	
133		FLANGE	0	
134	G-140		0	
135		FLANGE	0	
136		FLANGE	0	
137		FLANGE	0	
138		Bonnet	0	
139		PLUG	0	
140		FLANGE	0	
141	G-190		0	
142		FLANGE	0	
143		FLANGE	0	
144		T.C.	0	
145		PLUG	0	
146		FLANGE	0	
147		Bonnet	0	
148		FLANGE	0	
149		FLANGE	0	
150		PLUG	0	

MTC →

- 67
 ← 10/1/14
 M2231, REGION
 PHX#7204

Heavy Liquid Component Readings

UNIT MTC, 0000

DATE 10-1-14

TECHNICIAN M2231

TVA 1204

MTC →

U-200 →

	Unit	Valve	Pump	Connector	Reading
1			G-71		0
2				FLANGE	0
3				FLANGE	0
4				T.C.	0
5				T.C.	0
6				FLANGE#	0
7				PLUG	0
8				FLANGE	0
9			G-246		0
10				FLANGE	0
11				FLANGE	0
12				BOUNNET	0
13				FLANGE	0
14				FLANGE	0
15				PLUG	0
16				T.C.	0
17			G66A-1		0
18				flange	0
19				flange	0
20				FLANGE	0
21				PLUG	0
22				T.C.	0
23				FLANGE	0
24				FLANGE	0
25			G66A-2		0
26				FLANGE	0
27				FLANGE	0
28				FLANGE	0
29				PLUG	0
30				T.C.	0
31				FLANGE	0
32			G67A-1		0
33				FLANGE	0
35				FLANGE	0
36				FLANGE	0
37				PLUG	0
38				T.C.	0
39				FLANGE	0
40			G67A-2		0
41				FLANGE	0
42				FLANGE	0
43			G62A-1		0
44				FLANGE	0
45				FLANGE	0
46			G62A-2		0
47				FLANGE	0
48				FLANGE	0
49			G66B-1		0
50				FLANGE	0

Heavy Liquid Component Readings

	Valve	Pump	Connector	Reading	Other
51			FLANGE	Ø	
52		Gr-66B-2		Ø	
53					
54					
55					
56					
57					
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59					
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99					
100					

04/23/15

A0016



**BAY AREA AIR QUALITY
MANAGEMENT DISTRICT**

939 ELLIS STREET
SAN FRANCISCO CALIFORNIA 94109
(415) 771 6000

PERMIT TO OPERATE

Plant# 21359

Page 1

Expires: AUG 1, 2015

This document does not permit the holder to violate any District regulation or other law.

Phillips 66 Company - San Francisco Refinery
1380 San Pablo Ave
Rodeo, CA 94572

APR 2015

Location: 1380 San Pablo Ave
Rodeo, CA 94572

S#	DESCRIPTION	[Schedule]	PAID
2	Process Heater/Furnace, 22MM BTU/hr max, Multifuel U229 B-301 HEATER Emissions at: P2 Stack	[B]	698
3	Process Heater/Furnace, 62MM BTU/hr max, Multifuel U230 B-201 HEATER Emissions at: P3 Stack	[B]	1970
4	Process Heater/Furnace, 95MM BTU/hr max, Multifuel U231 B-101 Heater Emissions at: P4 Stack	[B]	3014
5	Process Heater/Furnace, 104MM BTU/hr max, Multifuel U231 B-102 Heater Emissions at: P5 Stack	[B]	3301
7	Process Heater/Furnace, 64MM BTU/hr max, Multifuel U231 B-103 HEATER Emissions at: P6 Stack	[B]	2030
9	Industrial Boiler - Other, 61MM BTU/hr max, Multifuel U240 B-2 BOILER Emissions at: P8 Stack	[B]	1927

The operating parameters described above are based on information supplied by permit holder and may differ from the limits set forth in the attached conditions of the Permit to Operate. The limits of operation in the permit conditions are not to be exceeded. Exceeding these limits is considered a violation of District regulations subject to enforcement action.

04/23/15

A0016



**BAY AREA AIR QUALITY
MANAGEMENT DISTRICT**

930 ELLIS STREET
SAN FRANCISCO, CALIFORNIA 94109
(415) 771-6000

**PERMIT
TO OPERATE**

Plant# 21359

Page: 138

Expires: AUG 1, 2015

This document does not permit the holder to violate any District regulation or other law.

*** PERMIT CONDITIONS ***

=====

meets the design criteria of BAAQMD Regulation 8-5-321.3 and secondary seal that meets the design criteria of BAAQMD Regulation 8-5-322.5. The owner/operator shall ensure that there are no ungasketed roof penetrations, no slotted pipe guide poles unless equipped with float and wiper seals, and no adjustable roof legs unless fitted with vapor seal boots or equivalent. [Cumulative increase]

- 3. Monthly records of the throughput of each material processed at this tank shall be kept in a District-approved log for at least 5 years and shall be made available to the District upon request. [Cumulative Increase]

~~~~~ END OF CONDITIONS ~~~~~

| S#  | Source Description                       | Annual Average lbs/day |     |     |     |    |
|-----|------------------------------------------|------------------------|-----|-----|-----|----|
|     |                                          | PART                   | ORG | NOx | SO2 | CO |
| 2   | U229_B-301 HEATER                        | 1                      | 0   | 2   | 8   | 1  |
| 3   | U230_B-201 HEATER                        | 2                      | 1   | 26  | 15  | 3  |
| 4   | U231_B-101 Heater                        | 8                      | 3   | 45  | 64  | 10 |
| 5   | U231_B-102 Heater                        | 8                      | 3   | 53  | 64  | 10 |
| 7   | U231_B-103 HEATER                        | 2                      | 1   | 37  | 17  | 4  |
| 9   | U240_B-2 BOILER                          | 4                      | 2   | 15  | 32  | 5  |
| 10  | U240_B-101 HEATER                        | 18                     | 8   | 23  | 159 | 25 |
| 11  | U240_B-201 Heater                        | 12                     | 5   | 88  | 98  | 15 |
| 12  | U240_B-202 HEATER                        | 3                      | 1   | 14  | 27  | 9  |
| 13  | U240_B-301 Heater                        | 22                     | 9   | 49  | 178 | 28 |
| 15  | U244_B-501 HEATER                        | 7                      | 3   | 8   | 59  | 9  |
| 16  | U244_B-502 HEATER                        | 7                      | 3   | 7   | 52  | 8  |
| 17  | U244_B-503 HEATER                        | 6                      | 2   | 7   | 49  | 8  |
| 18  | U244_B-504 HEATER                        | 3                      | 1   | 3   | 23  | 4  |
| 19  | U244_B-505 HEATER                        | 1                      | 0   | 1   | 7   | 1  |
| 20  | U244_B-506 HEATER                        | 2                      | 1   | 11  | 18  | 3  |
| 21  | U244_B-507 HEATER                        | -                      | -   | -   | -   | -  |
| 22  | U248_B-606 HEATER                        | 2                      | 1   | 8   | 19  | 12 |
| 29  | U200_B-5 Heater                          | 12                     | 5   | 65  | 98  | 15 |
| 30  | U200_B-101 Heater                        | 5                      | 2   | 39  | 40  | 6  |
| 31  | U200_B-501 Heater                        | 1                      | 0   | 8   | 7   | 18 |
| 36  | Vacuum Tower Feed Heater                 | 8                      | 0   | 8   | 16  | 10 |
| 43  | U200_B-202 Heater                        | 21                     | 8   | 90  | 166 | 26 |
| 44  | U200_B-201 PCT Reboil Furnace            | -                      | -   | -   | -   | -  |
| 45  | Heavy Gas Oil Feed Heater                | 5                      | 5   | 6   | 1   | 15 |
| 50  | Diesel Engine, turbine S-352 startup     | -                      | -   | 0   | -   | 0  |
| 51  | Diesel Engine, turbine S-353 startup     | -                      | -   | 0   | -   | 0  |
| 52  | Diesel Engine, turbine S-354 startup     | -                      | 0   | 0   | -   | 0  |
| 53  | Diesel Engine, emergency standby         | -                      | -   | 0   | -   | 0  |
| 54  | Diesel Engine, emergency standby         | -                      | -   | -   | -   | -  |
| 55  | Diesel Engine, emergency standby         | -                      | -   | -   | -   | -  |
| 56  | Diesel Engine, emergency standby         | -                      | -   | 0   | -   | 0  |
| 57  | Diesel Engine, emergency standby         | -                      | -   | 0   | -   | 0  |
| 58  | Diesel Engine, emergency standby         | -                      | -   | 0   | -   | 0  |
| 59  | Diesel Engine, emergency standby         | -                      | -   | 0   | -   | 0  |
| 69  | PROPANE LOADING RACK                     | -                      | -   | -   | -   | -  |
| 70  | BUTANE LOADING RACK                      | -                      | -   | -   | -   | -  |
| 71  | U32_WAX & LUBE OIL TANK CAR LOADING RACK | -                      | -   | -   | -   | -  |
| 72  | U32_WAX TRUCK LOADING RACK               | -                      | -   | -   | -   | -  |
| 73  | LUBE OIL TRUCK LOADING RACK              | -                      | -   | -   | -   | -  |
| 90  | TANK NO. 67                              | -                      | 1   | -   | -   | -  |
| 91  | TANK NO. 73                              | -                      | 1   | -   | -   | -  |
| 94  | TANK NO. 78                              | -                      | 0   | -   | -   | -  |
| 97  | TANK NO. 100                             | -                      | 3   | -   | -   | -  |
| 98  | TANK NO. 101                             | -                      | 31  | -   | -   | -  |
| 99  | TANK NO. 102                             | -                      | 0   | -   | -   | -  |
| 100 | TANK NO. 103                             | -                      | -   | -   | -   | -  |
| 101 | Tank 104 Storm Water Equalization        | -                      | 13  | -   | -   | -  |
| 102 | Tank 105 Storm Water Equalization        | -                      | 13  | -   | -   | -  |
| 103 | TANK NO. 106                             | -                      | 1   | -   | -   | -  |

| S#                 | Source Description                         | Annual Average lbs/day |             |             |             |             |
|--------------------|--------------------------------------------|------------------------|-------------|-------------|-------------|-------------|
|                    |                                            | PART'                  | ORG         | NOx         | SO2         | CO          |
| 500                | ULSD Cooling Tower                         | 0                      | 1           | -           | -           | -           |
| 503                | Sulfur Storage Tank                        | -                      | -           | -           | 0           | -           |
| 504                | Sulfur Degassing Unit                      | 11                     | -           | -           | -           | -           |
| 505                | Sulfur Truck Loading Rack                  | -                      | -           | -           | -           | -           |
| 506                | Fixed Roof Tank 257; abated by A-7, Vapor  | -                      | 1           | -           | -           | -           |
| 507                | Unit 76 Active Skimmer System 450 gal fix  | -                      | 0           | -           | -           | -           |
| 1002               | Sulfur Plant - Unit 236                    | 24                     | 7           | 14          | 71          | 150         |
| 1003               | Sulfur Plant Unit 238                      | 50                     | 10          | 18          | 54          | 194         |
| 1007               | U100-Dissolved Air Flotation Unit (with fi | -                      | -           | -           | -           | -           |
| 1008               | U100 Primary Stormwater Basin              | -                      | -           | -           | -           | -           |
| 1009               | U100 Main Stormwater Basin                 | -                      | -           | -           | -           | -           |
| 1010               | U235 Sulfur Recovery Unit                  | 6                      | 1           | 49          | 26          | 40          |
| 32100              | Fugitive Sources - Vacuum Producing System | -                      | -           | -           | -           | -           |
| 32101              | Fugitive Sources - Process Vessel Depressu | -                      | -           | -           | -           | -           |
| 32102              | Fugitive Sources - Valves, Flanges, and Co | -                      | 539         | -           | -           | -           |
| 32103              | Fugitive Sources - Pumps & Compressor Seal | -                      | 334         | -           | -           | -           |
| 32104              | Fugitive Sources - Pressure Relief Valves  | -                      | 11          | -           | -           | -           |
| 32105              | Fugitive Sources - Process Drains          | -                      | 6           | -           | -           | -           |
| 32106              | Fugitive Sources - Waste water             | -                      | -           | -           | -           | -           |
| 32110              | Process Gas (Combustion) Emissions from Fl | 1                      | 28          | 0           | 68          | 23          |
| A423               | Thermal Oxidizer for S-1003                | -                      | -           | -           | -           | -           |
| A422               | Thermal Oxidizer for S-1002                | -                      | -           | -           | -           | -           |
| A49                | DAF Thermal Oxidizer                       | -                      | -           | -           | -           | -           |
| <b>T O T A L S</b> |                                            | <b>453</b>             | <b>1721</b> | <b>1255</b> | <b>1976</b> | <b>1542</b> |

\*\* PLANT TOTALS FOR EACH EMITTED TOXIC POLLUTANT \*\*

| Pollutant Name                           | Emissions lbs/day |
|------------------------------------------|-------------------|
| Benzene                                  | 2.18              |
| Formaldehyde                             | 21.68             |
| Phenol                                   | .06               |
| Toluene                                  | 2.44              |
| Xylene                                   | 3.96              |
| Ethylbenzene                             | .17               |
| Acetaldehyde                             | .18               |
| Chloroform                               | .83               |
| Glutaraldehyde                           | .23               |
| Cadmium                                  | .02               |
| Lead (all) pollutant                     | .04               |
| Manganese                                | .03               |
| Nickel pollutant                         | .14               |
| Mercury (all) pollutant                  | .16               |
| Diesel Engine Exhaust Particulate Matter | .04               |
| PAH's (benzo[a]pyrene equiv)             | .09               |
| Naphthalene                              | 4.89              |
| Ammonia (NH3) pollutant                  | 352.04            |



Western States Petroleum Association  
Credible Solutions • Responsive Service • Since 1907

Guy Bjerke  
Manager, Bay Area Region & State Safety Issues

**VIA ELECTRONIC MAIL**

March 5, 2015

Mr. Jim Karas  
Permit Services Division  
Bay Area Air Quality Management District (BAAQMD)  
939 Ellis Street  
San Francisco, CA 94109-7799

**RE: BAAQMD Methods for Calculating Fugitive Emissions from Components in Heavy Liquid Service**

Dear Mr. Karas:

The Western States Petroleum Association (WSPA) is a non-profit trade association representing twenty-six companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Arizona, Nevada, Oregon, and Washington. Our members in the Bay Area have operations and facilities regulated by the Bay Area Air Quality Management District (District).

As you are aware we are scheduled to have a meeting on Monday, March 9, 2015 to discuss the method for estimating fugitive emissions from components in heavy liquid service that Ms. Leong identified to me verbally on December 9, 2014. i.e., she relayed that you had decided that the District will use "Method 1" average emission factors from the 1999 ARB/CAPCOA "California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities",<sup>1</sup> even though she acknowledged that the method is very conservative and results in very high emissions estimates. The purpose of this letter is to both formally document our issues with the District's approach (most of which we have previously identified to the District in meetings on September 2, 2014 and September 18, 2014) and to respond to Ms. Leong's February 11, 2015 e-mail request to "Please send any proposals for a joint study or inspection sweeps to develop representative factors for the heavy liquid components and we will review them before the meeting."

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<sup>1</sup> Available from <http://www.arb.ca.gov/fugitive/fugitive.htm>

We are concerned about the District's significant changes to longstanding documented policies (and in some cases, replacement of factors that are even incorporated into District permits) without identifying any technical basis or new supporting data. The "Method 1" approach significantly inflates emissions and therefore also significantly inflates the health risk impacts calculated in health risk assessments. For example, the District's application of the Method 1 factor for pressure relief devices corresponds to a factor that is approximately twice the factor that would be calculated using ARB/CAPCOA Method 3 if 100% of the devices were leaking and "pegged" the monitor at 10,000 ppmvC<sub>1</sub>, an absurd result which has not been even close to supported by any previous studies. The District's approach also inflates permit renewal fees, and the switching of methodologies may result in an apparent increase in refinery emissions that is likely to create confusion relative to the actual downward trend in refinery emissions over time (that District staff have already conveyed to the Board). This new methodology presents skewed information to the public and Board of Directors who make decisions based on the numbers and expect them to be based in reality and not conservative to the point of being meaningless. The public would be misinformed about health risks. More importantly, the Board of Directors may choose to target heavy liquid fugitive emissions as an area of emissions reductions; this would only result in reductions "on paper" that would drive attention away from real air improvement goals and strategies. Refineries are not the only facilities which handle heavy liquids, and therefore emissions from refineries' components in heavy liquid service should not be calculated any differently from other facilities' components that are also in heavy liquid service.

As we have identified previously, we believe that the District's current approach is inaccurate and yields misrepresentative results. We have identified our technical comments in Attachment A to this letter (some of which are reiterated from our meetings in September 2014).

In addition, we take issue with the process that the District has been using for implementing its new approach, which represents a significant departure from the past. In the past, the District has developed documentation indicating that there is some value associated with having consistent, defensible, written procedures. For example, the District is listed as having participated in the development of the 1999 ARB/CAPCOA guidelines—which "represents a multi-year effort on the part of industry...(CAPCOA), and the (ARB), to provide a consistent approach for purposes of estimating fugitive emissions from equipment components used in the California petroleum industry",<sup>2</sup> and specifically lists components in heavy liquid service<sup>3</sup> as being exempted (along with many other components, such as those operating under negative pressure, those buried below ground or underwater, those handling instrument air, etc.) The District has cross-referenced these guidelines in its own Permit Handbook for many years (further clarifying that while gasoline terminals can use Method 1 factors, refineries should use site-specific emission factors developed using Method 3 from the ARB/CAPCOA guidelines) WSPA supports the development of—and subsequent use of—clearly written and supported guidelines over the informal, unsupported changes that the District is now seeking to implement.

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<sup>2</sup> Dean C Simeioth (Chief, Criteria Pollutants Branch, ARB), cover letter dated February 18, 1999, available from <http://www.arb.ca.gov/fugitive/fugitive.htm>

<sup>3</sup> Specifically, "components handling exclusively liquids which evaporate 10% or less at 150 °C".

However, in spite of the written documentation identified above, WSPA has been made aware that over the last several years the District's permit engineers have not been addressing emissions from components in heavy liquid service from all of the refineries consistently and the documentation and support has been lacking. While some refineries were allowed to exclude components in heavy liquid service per the ARB/CAPCOA guidelines, others were required to include them, and some were required to use emission factors for components in heavy liquid service that are orders of magnitude higher than others, or risk not getting a permit renewal. When WSPA met with the District on September 18, 2014 (to address components in heavy liquid service specifically), we were assured that the District would work with us and discuss this issue further. WSPA members were asked by the District to provide inspection data for components in heavy liquid service and they did so. On December 9, 2014, Ms. Leong informed me that effectively all of the data provided by the WSPA members were being discounted and that you had decided that the District would apply "Method 1" average emission factors from the ARB/CAPCOA Guidelines to components in heavy liquid service (and acknowledged result in significantly higher emissions than in the past). The District issued permit renewal invoices to the refineries based on this new methodology that were substantially higher than in the past for all of the refineries, and in at least one instance these factors conflict with factors that the District wrote into an air permit.

On January 26, 2015, Ms. Leong provided me with a listing of District responses to WSPA's comments regarding the District's draft "Refinery Emissions Inventory Guidelines. An Assessment of EPA Document Emission Estimation Protocol for Petroleum Refineries" for the District's draft proposed Rule 12-15 (made on September 2, 2014) which include the statement that "Regarding the [1999] CAPCOA guidance, the District did not partake in the collection of the data, does not understand the component identification and selection process (process unit/component type) used in the collection, and cannot defend on a technical basis any resulting data obtained from the collection of any such data." The District has not clarified why it is disavowing the ARB/CAPCOA guidance that it participated in developing (and the language in its own Permit Handbook, and the language in some of its permits, and its past site-by-site unwritten policies) after so many years and the District has not identified any technical basis or justification for doing so.

In summary, the approach that the District identified to us verbally and is basing its invoices on is technically flawed and the District's past and current quantification of these emissions has been inconsistent. It is therefore important that both WSPA and the District find a resolution to this issue that is technically supportable.

Ms. Leong's January 26, 2015 response to our September 2014 comments identified that "the District is open to a comprehensive study conducted at the time and expense of the refineries with the District's input and validation checks" and as mentioned above Ms. Leong requested on February 11, 2015 that we "send any proposals for a joint study or inspection sweeps to develop representative factors for the heavy liquid components" prior to our meeting on March 9. We have reservations about collecting the data ourselves (or with our contractors), without getting some sort of prior agreement from the District that the results of the data will be used to estimate HL emissions. We have identified elements of a draft proposal in Attachment B to this letter, and feel that it is critical that the District participate in the details of the proposal's

development and provide some type of written assurance that they will use the results in lieu of the current Method 1 factors. WSPA would also like to have a discussion about the factors that the District will be using for permit renewals and invoicing prior to the completion of the proposed study. In particular, we are requesting that all invoice amounts for 2013 emissions associated with fugitive emissions from components in heavy liquid service be held in abeyance until the completion of the study.

We appreciate your consideration of these comments and look forward to our meeting on March 9. If you have any questions, please contact me at (925) 826-5354 or (925) 890-7803 (mobile) or [gbjcrke@wspa.org](mailto:gbjcrke@wspa.org).

Sincerely,

A handwritten signature in black ink, appearing to read "Guy Bjerke". The signature is fluid and cursive, with the first name "Guy" written in a larger, more prominent script than the last name "Bjerke".

Guy Bjerke  
Manager, Bay Area Region & State Safety Issues

cc: Jack Broadbent  
Jeff McKay  
Pam Leong  
Eric Stevenson

## Attachment A

### Technical Issues With District “Method 1” Approach to Fugitive Emissions from Components in Heavy Liquid Service

The ARB/CAPCOA guidelines identify four different approaches for quantifying fugitive emissions from components in heavy liquid service, the two that are relevant in this discussion are “Method 1” (the Average Emission Factor Method, that involves multiplying the number of components by an average factor per component and is taken directly from US EPA’s 1995 “Protocol for Equipment Leak Emission Estimates”) and “Method 3” (the Correlation Equation Method, that involves employing EPA Method 21 to measure concentrations at components and estimate a corresponding mass emissions rate) These will be discussed in more detail below.

#### Interpretation of the ARB/CAPCOA Guidelines

The opening paragraph of Section V of the guidelines is as follows:

“The collected data used to develop the EPA 1995 emission factors were defined and counted using a specific methodology. In order to accurately calculate fugitive emissions from leaking equipment using the new correlation equations and emission factors, it is essential that users identify and count components in the same way. This section defines and illustrates how components are to be counted for use with the new emission factors. This section also provides examples of components which are not included in component counts when using the Correlation Equation Method (general or unit-specific) for the quantification of fugitive emissions.”

Section V then proceeds to identify specifics of various types of components (connectors, flanges, etc.) and concludes with the following section:

#### “Components Not Counted”

The following components are not included in component counts used for the quantification of fugitive emissions.

- ▶ components handling commercial natural gas
- ▶ components handling fluids of 10% by weight or less volatile organic compound
- ▶ components operating under negative pressure at all times
- ▶ components totally enclosed or contained such that there are no VOC emissions to the atmosphere
- ▶ components handling non-volatile lubricating fluids
- ▶ components handling non-volatile hydrocarbon fluids used as heat transfer mediums, such as Therminol and glycol

- ▶ components buried below ground or under water
- ▶ components handling exclusively liquids which evaporate 10% or less at 150 °C
- ▶ components in water streams after primary separation at light crude oil production facilities
- ▶ components where a hydrogen sulfide (H<sub>2</sub>S) exposure danger is present
- ▶ components handling instrument air
- ▶ components on liquid drain lines downstream of the second block valve
- ▶ components on discharge lines of pressure relief devices that discharge to the atmosphere (however, the final discharge point will be considered as an open ended line)”

As we identified in September 2014, it is for this reason that WSPA contends that the intent of the ARB/CAPCOA guidelines was to not count “components handling exclusively liquids which evaporate 10% or less at 150 °C” when calculating leak emissions. Bay Area refineries may be conservatively reporting some of these components anyway, given that they report emissions for all components subject to the monitoring requirements of Rule 8-18, and Rule 8-18’s heavy liquids exclusion is more restrictive—i.e., it only excludes heavy liquids “having an initial boiling point [emphasis added] greater than 302 °F” (302 °F = 150 °C).

The District, in its January 26, 2015 responses to WSPA’s comments, reiterated only the last sentence of the opening paragraph of Section V of the guidelines and contended that “The CAPCOA guidance is clear that the Correlation Equation Method including the ‘Default Zero Factors’ is the only method not to be used for heavy liquid components. Therefore, the average emission factors are the only method available.” While it may be possible to grammatically parse the sentences in Section V of the Guidelines

“This section defines and illustrates how components are to be counted for use with the new emission factors. This section also provides examples of components which are not included in component counts when using the Correlation Equation Method (general or unit-specific) for the quantification of fugitive emissions ”

to mean that the (a) discussion of the specifics of counting various types of components (connectors, flanges, etc.) only refers to “emission factors” (Method 1) and not the Correlation Equation Method (Method 3) and that (b) the listing of components excluded from counting only applies to Method 3 and not to Method 1, this does not make any sense from a technical perspective, for the following reasons.

- That interpretation is inconsistent with the fact that the discussion of counting various types of components includes diagrams of where to screen components when using Method 3
- That interpretation would indicate that all of the components listed under “Components Not Counted” would need Method 1 average emission factors applied to them too (which makes no sense, and not all of these even have average emission factors available in Table 1)

- That interpretation would mean that there are components (including but not limited to those in heavy liquid service) for which only Method 1 emission factors can be used and that they cannot be further refined or improved upon (using Method 3), which does not make sense

### **Methodology Identified in BAAQMD's Permit Handbook**

The use of only Method 3 is consistent with the District's Permit Handbook, which lists Method 1 emission factors for gasoline marketing terminals but does not list Method 1 emission factors for refineries, stating instead that

“Each of the five major refineries in the Bay Area already have District-approved fugitive emission factors derived from the Correlation Equation Method (Method 3) of the [ARB/CAPCOA] Guidelines, based on a comprehensive inspection program of the fugitive components at each of the refineries. When reviewing permits for those five refineries, the permit engineer should use the refinery's District-approved refinery-specific fugitive emission factors.”<sup>4</sup>

The District's Permit Handbook makes no mention of a requirement that refineries additionally calculate emissions from components in heavy liquid service using Method 1 of the Guidelines, and this is significant since the latter exceed emissions from the components in gas and light liquid service that are using the District-approved refinery-specific fugitive emission factors.

### **Technical Issues Associated with the Use of Method 1 for Estimating Emissions**

There are several technical issues associated with applying Method 1 emission factors to components in heavy liquid service.

1. One of the simplest issues is that the application of those factors to components in heavy liquid service results in emissions from these components being considerably higher than those from components in gas/light liquid service, even though the latter are more numerous and contain more volatile materials. In fact, for at least some of the refineries, use of the Method 1 factors results in higher emissions from the heavy liquid components alone than the entire total of VOC emissions from the rest of the refinery.
2. Also, as identified in our meetings on September 2 and September 18, 2014, the Method 1 emission factors correspond to average Method 3 screening values that are a physical impossibility for many heavy liquids, even at elevated temperatures; i.e., the screening values would exceed the true vapor pressure of the liquid. For example, the saturation vapor pressure of jet fuel and diesel fuel at ambient temperatures is approximately 0.015 psi  $\approx$  1,000 ppmv, yet the Method 1 emission factor for pump seals in heavy liquid service corresponds to a Method 3 screening concentration of 16,134

<sup>4</sup> BAAQMD, “Petroleum Refinery Fugitive Emissions”, Section 3.4 of the Source-Specific Guidance (cross-referenced by “Bulk Loading Facilities”, Section 3.1) in the BAAQMD Engineering Division's Permit Handbook (February 15, 2007 and November 17, 2014 versions)

ppm. The Method 1 emission factor for valves in heavy liquid service is technically feasible for an individual valve—i.e., it corresponds to a Method 3 screening concentration of 484 ppm—but its application to a universe of valves would correspond to the condition that a very large percentage of them were leaking, which is inconsistent with the data collected by the refineries in late 2014 per the District’s request, refinery personnel observations during regular audio/visual/olfactory (AVO) inspections required by 40 CFR 60 Subpart VV (e.g., 40 CFR 60.482-5) and follow-up for leaks, and District inspections. For other components—i.e., connectors, open-ended lines, and sampling connections—the Method 1 factor is independent of the type of service (which is illogical, given that the factors for pump seals and valves show a clear difference based on volatility) and the corresponding screening values are 1,017 ppm, 18,124 ppm, and 110,196 ppm, respectively. The Method 1 emission factors for compressor seals and pressure relief valves correspond to screening values of 37,757,671 ppm and 4,400,057 ppm, respectively. This provides further evidence that the Method 1 emission factors are conservative to the point of being meaningless. See Table A-1 below which summarizes the illogically high screening values. For pressure relief devices (PRDs), another way of looking at this is to consider the fact that Method 3 identifies that if a PRD were to be screened and the concentration was so high as to “peg” the monitor (i.e., went beyond the upper limit of its range) at 10,000 ppmC1, the emission factor would be 0.082 kg/hr. So applying an emission factor of 0.082 kg/hr to PRDs corresponds to the condition that 100% of the PRDs were leaking so much that they pegged the monitor at 10,000 ppmC1, and the District’s method of applying the Method 1 factor for PRDs (0.16 kg/hr) is approximately twice that.

**Table A- 1. Average Emission Factors from CAPCOA/ARB Guidance, and Corresponding Screening Values (based on correlation formulas in Table IV-3a of that Guidance).**

| Component Type         | Service Type | Method 1 Emission Factor (kg/hr/source) <sup>a</sup> | Method 3 Emission Factor (kg/hr/source) as fcn of screening value (SV) <sup>b</sup> | Method 3 Screening Value Corresponding to Method 1 factor |
|------------------------|--------------|------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Valves/All             | Gas          | 2.68E-02                                             | 2.27E-06 (SV) <sup>0.747</sup>                                                      | 282,673                                                   |
|                        | Light liquid | 1.09E-02                                             |                                                                                     | 84,771                                                    |
|                        | Heavy liquid | 2.30E-04                                             |                                                                                     | 484                                                       |
| Pump seals/All         | Light liquid | 1.14E-01                                             | 5.07E-05 (SV) <sup>0.622</sup>                                                      | 244,851                                                   |
|                        | Heavy liquid | 2.10E-02                                             |                                                                                     | 16,134                                                    |
| Compressor seals       | Gas          | 6.36E-01                                             | 8.69E-06 (SV) <sup>0.642</sup>                                                      | 37,757,671                                                |
| Pressure relief valves | Gas          | 1.60E-01                                             | 8.69E-06 (SV) <sup>0.642</sup>                                                      | 4,400,057                                                 |
| Connectors             | All          | 2.50E-04                                             | 1.53E-06 (SV) <sup>0.736</sup>                                                      | 1,017                                                     |
| Open-ended lines       | All          | 2.30E-03                                             | 1.90E-06 (SV) <sup>0.724</sup>                                                      | 18,124                                                    |
| Sampling connections   | All          | 1.50E-02                                             | 8.69E-06 (SV) <sup>0.642</sup>                                                      | 110,196                                                   |

<sup>a</sup>Source: 1995 EPA Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017, November 1995) which referenced the 1980 Petroleum Refining Study (EPA-600/2-80-075c, April 1980). All factors shown are the same as those shown in Vol 3, App B, Table B2-23 of the 1980 Petroleum Refining Study, except the factor for pressure relief valves (Table B2-23 identified a factor of 0.19 lb/hr/source = 0.086 kg/hr/source).

<sup>b</sup>Screening Value (SV) is the concentration (ppm as methane, or ppmC1) monitored using EPA Method 21.

3. As discussed last September, the US EPA definition of “heavy liquid” is different from the exemptions in the ARB/CAPCOA Guidelines or the District’s Regulation 8-18; i.e., US EPA defines heavy liquids as ones that contain < 20% (wt.) of materials with vapor pressures in excess of 0.3 kiloPascals (kPa) at 20 °C. This category is likely to conservatively incorporate more substances than are exempted from the ARB/CAPCOA Guidelines or the District’s Regulation 8-18.
4. Finally, as explained in US EPA’s 1995 “Protocol for Equipment Leak Emission Estimates”, the Method 1 factors are based on relatively sparse data collected from a 1980 study, as shown in Table A-2.

Table A-2. Fugitive Component Counts included in 1980 Refinery Study,<sup>5</sup> the basis for the 1995 EPA Protocol Method 1 Factors

| Component Type                          | Service Type | Number of components screened <sup>a</sup> | Number of components leaking (> 200 ppmC <sub>6</sub> and/or ≥ 0.00001 lb/hr) |
|-----------------------------------------|--------------|--------------------------------------------|-------------------------------------------------------------------------------|
| Valves                                  | Gas          | 563                                        | 154                                                                           |
|                                         | Light Liquid | 913                                        | 330                                                                           |
|                                         | Heavy Liquid | 485                                        | 32                                                                            |
| Pumps                                   | Light Liquid | 470                                        | 296                                                                           |
|                                         | Heavy Liquid | 292                                        | 66                                                                            |
| Compressor seals                        | All          | 142                                        | 105                                                                           |
| Pressure relief valves <sup>b</sup>     | Gas          | 92                                         | 42                                                                            |
|                                         | Light Liquid | 28                                         | 7                                                                             |
|                                         | Heavy Liquid | 23                                         | 8                                                                             |
| Connectors (incl. flanges) <sup>c</sup> | Gas          | 2094                                       | 62                                                                            |
|                                         | Light Liquid |                                            |                                                                               |
|                                         | Heavy Liquid |                                            |                                                                               |
| Open-ended lines                        | Gas          | 129                                        | 30                                                                            |
|                                         | Light Liquid |                                            |                                                                               |
|                                         | Heavy Liquid |                                            |                                                                               |
| Drains                                  | All          | 257                                        | 49                                                                            |

<sup>a</sup>From Tables B2-1 and B2-2 except as noted elsewhere.

<sup>b</sup>Breakout of service types is from Table B2-22; it was noted however that the total numbers of PRVs shown as being screened and leaking here (143 and 57, respectively) are slightly less than the total numbers identified in Table B2-1 (148 and 58, respectively).

<sup>c</sup>Table B2-21 identifies at least 353 of these were in gas/vapor service, at least 575 were in light liquid/two-phase service, and at least 307 were in heavy liquid service, but the total of these is well below the total number screened as identified in Table B2-1.

5. In Appendix A-1 to the ARB/CAPCOA Guidelines it is acknowledged that “The EPA average emissions factors may not be representative of California emissions” and a proposed action item was to “Develop California specific emission factors based on California data” (p. 2). Use of the Method 1 factors certainly accrues no benefit to the installation of components meeting District BACT guidelines (e.g., graphitic gaskets, dual mechanical seals, etc )

<sup>5</sup> Weatherhold, R G , L.P. Provost, and C.D. Smith (Radian Corporation) “Assessment of Atmospheric Emissions from Petroleum Refining”: Volume 3. Appendix B EPA-600/2-80-075c Prepared for US EPA (Research Triangle Park, NC), April 1980

## Attachment B

### **Draft Proposal for Joint Study/Inspection Sweep to Develop Representative Factors for the Heavy Liquid Components**

To the extent that the District is not comfortable with the conclusion that fugitive emissions components in heavy liquid service—i.e., those that are exempt from Regulation 8-18, with initial boiling points above 302 °F = 150 °C—are negligible, or with the emission factors for components in heavy liquid service that it has used at several of the refineries in the previous years (for permitting and inventories), WSPA is prepared to consider a joint study/inspection sweep to develop representative factors for heavy liquid components based on Method 21 sampling at Bay Area refineries. However, with regard to the District's request for a "comprehensive" study, WSPA would like to point out that the study should not need to involve substantially more components than were used to generate the "Method 1" US EPA factors for refinery components in heavy liquid service that the District is currently backing (see table in Attachment A to this letter).

As you are aware, per your request, several refineries already submitted Method 21 measurements to you in 2014; however, our understanding was that these were discounted either because (a) the District did not personally witness the testing and/or (b) the District was not involved in selecting which components to monitor and therefore felt that the data might not be representative. As a result, WSPA will be asking that the District (a) personally witness the testing and (b) identify how it would like us to select a "representative sample" of components in heavy liquid service.

**ATTACHMENTS**

**RULE 11-10 COMMENTS**

**From:** [Shin, Suejung](#)  
**To:** "Brian Lusher"; [Bhagavan Krishnaswamy](#)  
**Cc:** [Eastep, Brent P](#)  
**Subject:** RE: VOC Data for Cooling Towers  
**Date:** Tuesday, February 24, 2015 8:58:27 AM  
**Attachments:** [Cooling Tower Records 2012-2014 to B Lusher.xls](#)

---

Hi Brian and Bhagavan,

Please find attached P66's cooling tower VOC monitoring data for the last three years. Please let me know if you have any questions.

Thanks,

Suejung

**Suejung Shin**

Environmental Engineer

Environmental Services Department

Phillips 66 Company

San Francisco Refinery

1380 San Pablo Avenue || Rodeo, CA 94572-1354

[suejung.shin@p66.com](mailto:suejung.shin@p66.com) || (510) 245-4655

**From:** Brian Lusher [<mailto:blusher@baaqmd.gov>]

**Sent:** Thursday, January 29, 2015 11:49 AM

**To:** Shin, Suejung

**Cc:** Eastep, Brent P; Bhagavan Krishnaswamy

**Subject:** [EXTERNAL]VOC Data for Cooling Towers

Suejung,

District staff is working on better addressing VOC emissions from cooling towers. Specifically, staff is trying to determine how appropriate the AP-42 default emission factor is for estimating emissions from cooling towers. Staff is also trying to determine whether or not there are potential emission reductions associated with better control of cooling towers.

The Phillips 66 cooling towers are subject to Condition 12122 (Shown below).

This condition requires VOC monitoring of the influent and effluent of the towers. This data and the associated recirculation rate for each tower would be very useful information for this effort.

Question: Can Phillips 66 provide a spreadsheet with the VOC data for each cooling tower for the last three years? If yes, then could you email this information to Bhagavan Krishnaswamy and myself.

It is my understanding that Jennifer had provided accurate information for the recent annual updates on the total amount of water recirculated through each cooling tower. This information and the VOC data can be used to compare the a mass balance approach with the AP-42 value.

Let me know if you have any questions,

Brian Lusher

Senior Air Quality Engineer

Bay Area Air Quality Management District

Phone 415 749-4623

Fax 415 749-5030

COND# 22121 -----

For Sources S452, S453, S455, S457, S458, S500, Cooling Towers (Applications 10349, 14112 and 17465)

1 The owner/operator shall take a sample and perform a visual inspection of the cooling tower water at each

cooling tower above on a daily basis to check for signs of hydrocarbon in the cooling water (Regulation 2-6-503)

2 The owner/operator shall take a sample of the cooling tower water 3 times per week at each cooling tower above and analyze for chlorine content as an indicator of hydrocarbon leakage into the cooling water. On a monthly basis, the owner/operator shall sample the water in the inlet line and in the return line of each cooling tower and determine the VOC content in each line using EPA laboratory method 8015. Any period of sampling when the difference between the return and supply VOC concentrations is greater than or equal to 84 ppb is considered a hydrocarbon leak. (Regulation 2-6-503)

3 The owner/operator shall maintain daily records of sodium hypochlorite usage at each cooling tower above (Regulation 2-6-503)

4 The owner/operator shall sample the cooling tower water at each cooling tower at least once per month and subject the sample to a District approved laboratory analysis to determine its total dissolved solids content (basis

Regulations 2-6-503, Regulation 3)

5. If the monitoring in part 1 or part 2 indicates that there is a hydrocarbon leak into the cooling water, the owner/operator shall retest two times to confirm that there is a hydrocarbon leak. If the VOC concentrations in the second and third leak tests are less than 84 ppb, the owner/operator shall revert to monthly testing. However, if the VOC concentrations in the second and third leak tests are greater than or equal to 84 ppb, the owner/operator shall submit a report to the Enforcement and the Engineering divisions at the District. The owner/operator shall perform weekly testing until VOC levels are below 84 ppb for two consecutive weeks. The owner/operator shall submit reports on a weekly basis until the monitoring indicates that no hydrocarbon leaks into the cooling water (Regulation 1-441)

6 If the monitoring in part 1 or part 2 indicates a hydrocarbon leak for longer than 4 weeks, the owner/operator shall estimate the daily amount of VOC emitted using the following procedure. The owner/operator shall sample the water in the inlet line and in the return line and determine the VOC content in each line using EPA laboratory method 8015. This analysis shall be performed each week until VOC levels return to normal. The owner/operator shall report the VOC estimates to the Enforcement and the Engineering divisions at the District on a monthly basis. If a hydrocarbon leak occurs at Sources S452, S457, S458, or S500, the owner/operator shall use the VOC estimates to confirm that no more than 5 tons VOC per year was emitted at any source. If more than 5 tons VOC per year is emitted at S452, S457, S458, or S500, the facility shall submit an application for a District permit within 90 days of determining that the source is subject to

District permits. (Regulations 1-441, 2-1-424, 2-6-416 2, 2-6-501, 2-6-503)

7 The owner/operator shall use the total dissolved solids monitoring to estimate annual emissions of particulate from the cooling towers. The estimated annual emissions shall be reported to the Engineering Divisions by June 30th of each year as part of the annual update. The owner/operator shall use this estimate to confirm that S452 has not emitted more than 5 tons particulate per year. (Regulation 1-441, 2-6-416 2, 2-6-501)

8 The owner/operator shall maintain the following records for five years from the date of record.

- a. Records of daily visual inspection
  - b. Records of chlorine content 3 times per week
  - c. Records of monthly usage of sodium hypochlorite
  - d. Records of monthly determination of total dissolved solids
  - e. Records of any indications of hydrocarbon leaks
  - f. Records of any analyses of VOC content in cooling tower inlet and outlet
- (Regulation 2-6-501)



04/23/15

A0016



**BAY AREA AIR QUALITY  
MANAGEMENT DISTRICT**

939 ELLIS STREET  
SAN FRANCISCO, CALIFORNIA 94109  
(415) 771-6000

# PERMIT TO OPERATE

Plant# 21359

Page 1

Expires: AUG 1, 2015

This document does not permit the holder to violate any District regulation or other law.

Phillips 66 Company - San Francisco Refinery  
1380 San Pablo Ave  
Rodeo, CA 94572

APR 2015

Location: 1380 San Pablo Ave  
Rodeo, CA 94572

| S# | DESCRIPTION                                                                                        | [Schedule] | PAID |
|----|----------------------------------------------------------------------------------------------------|------------|------|
| 2  | Process Heater/Furnace, 22MM BTU/hr max, Multifuel<br>U229 B-301 HEATER<br>Emissions at: P2 Stack  | [B]        | 698  |
| 3  | Process Heater/Furnace, 62MM BTU/hr max, Multifuel<br>U230 B-201 HEATER<br>Emissions at: P3 Stack  | [B]        | 1970 |
| 4  | Process Heater/Furnace, 95MM BTU/hr max, Multifuel<br>U231 B-101 Heater<br>Emissions at: P4 Stack  | [B]        | 3014 |
| 5  | Process Heater/Furnace, 104MM BTU/hr max, Multifuel<br>U231 B-102 Heater<br>Emissions at: P5 Stack | [B]        | 3301 |
| 7  | Process Heater/Furnace, 64MM BTU/hr max, Multifuel<br>U231 B-103 HEATER<br>Emissions at: P6 Stack  | [B]        | 2030 |
| 9  | Industrial Boiler - Other, 61MM BTU/hr max, Multifuel<br>U240 B-2 BOILER<br>Emissions at: P8 Stack | [B]        | 1927 |

The operating parameters described above are based on information supplied by permit holder and may differ from the limits set forth in the attached conditions of the Permit to Operate. The limits of operation in the permit conditions are not to be exceeded. Exceeding these limits is considered a violation of District regulations subject to enforcement action.

04/23/15

A0016



**BAY AREA AIR QUALITY  
MANAGEMENT DISTRICT**

939 ELLIS STREET  
SAN FRANCISCO, CALIFORNIA 94109  
(415) 771-6000

**PERMIT  
TO OPERATE**

Plant# 21359

Page: 138

Expires: AUG 1, 2015

This document does not permit the holder to violate any District regulation or other law.

\*\*\* PERMIT CONDITIONS \*\*\*

=====

meets the design criteria of BAAQMD Regulation 8-5-321.3 and secondary seal that meets the design criteria of BAAQMD Regulation 8-5-322.5. The owner/operator shall ensure that there are no ungasketed roof penetrations, no slotted pipe guide poles unless equipped with float and wiper seals, and no adjustable roof legs unless fitted with vapor seal boots or equivalent. [Cumulative increase]

- 3. Monthly records of the throughput of each material processed at this tank shall be kept in a District-approved log for at least 5 years and shall be made available to the District upon request. [Cumulative Increase]

~~~~~ END OF CONDITIONS ~~~~~

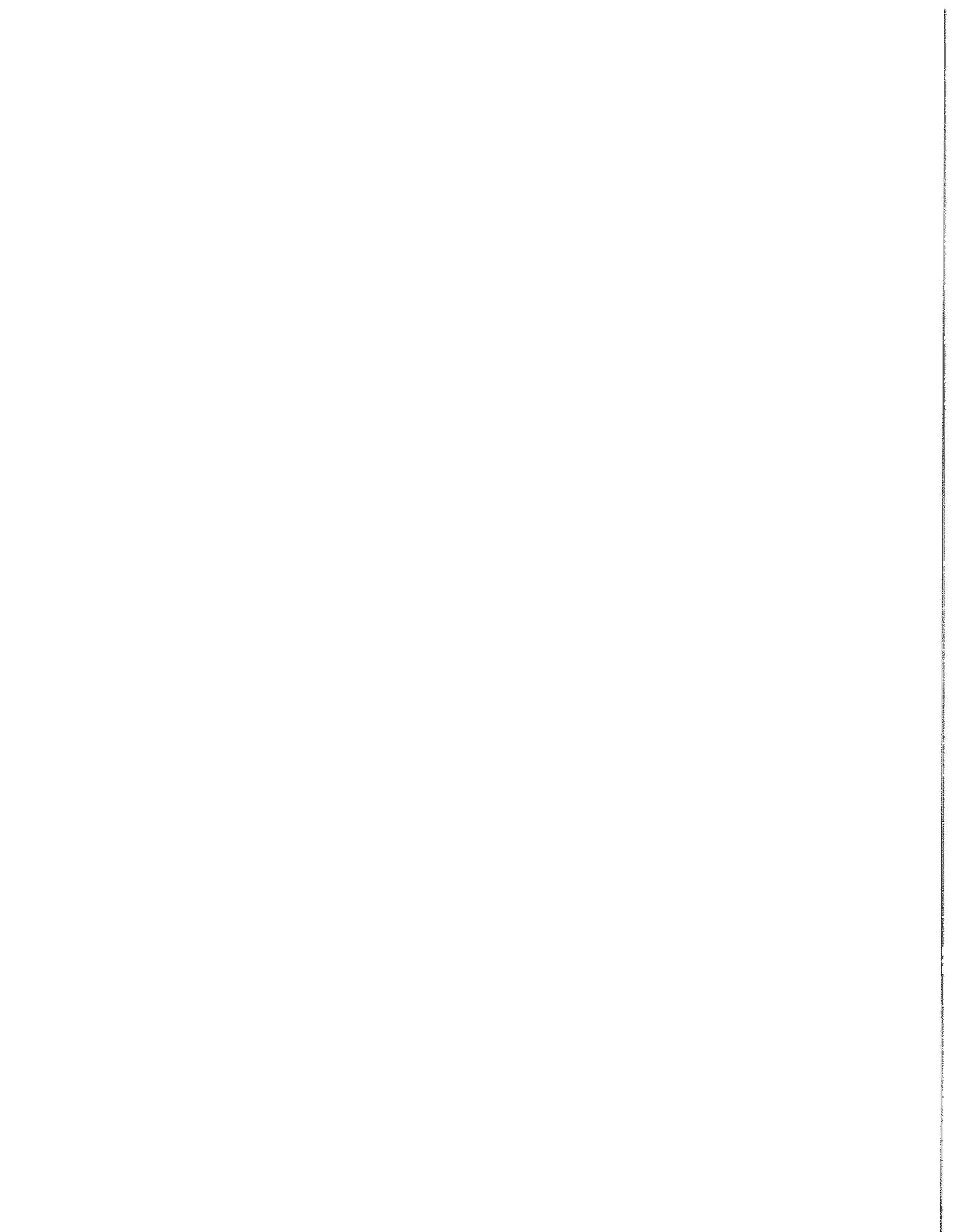
| S# | Source Description | Annual Average lbs/day | | | | |
|-----|--|------------------------|-----|-----|-----|----|
| | | PART | ORG | NOx | SO2 | CO |
| 2 | U229_B-301 HEATER | 1 | 0 | 2 | 8 | 1 |
| 3 | U230_B-201 HEATER | 2 | 1 | 26 | 15 | 3 |
| 4 | U231_B-101 Heater | 8 | 3 | 45 | 64 | 10 |
| 5 | U231_B-102 Heater | 8 | 3 | 53 | 64 | 10 |
| 7 | U231_B-103 HEATER | 2 | 1 | 37 | 17 | 4 |
| 9 | U240_B-2 BOILER | 4 | 2 | 15 | 32 | 5 |
| 10 | U240_B-101 HEATER | 18 | 8 | 23 | 159 | 25 |
| 11 | U240_B-201 Heater | 12 | 5 | 88 | 98 | 15 |
| 12 | U240_B-202 HEATER | 3 | 1 | 14 | 27 | 9 |
| 13 | U240_B-301 Heater | 22 | 9 | 49 | 178 | 28 |
| 15 | U244_B-501 HEATER | 7 | 3 | 8 | 59 | 9 |
| 16 | U244_B-502 HEATER | 7 | 3 | 7 | 52 | 8 |
| 17 | U244_B-503 HEATER | 6 | 2 | 7 | 49 | 8 |
| 18 | U244_B-504 HEATER | 3 | 1 | 3 | 23 | 4 |
| 19 | U244_B-505 HEATER | 1 | 0 | 1 | 7 | 1 |
| 20 | U244_B-506 HEATER | 2 | 1 | 11 | 18 | 3 |
| 21 | U244_B-507 HEATER | - | - | - | - | - |
| 22 | U248_B-606 HEATER | 2 | 1 | 8 | 19 | 12 |
| 29 | U200_B-5 Heater | 12 | 5 | 65 | 98 | 15 |
| 30 | U200_B-101 Heater | 5 | 2 | 39 | 40 | 6 |
| 31 | U200_B-501 Heater | 1 | 0 | 8 | 7 | 18 |
| 36 | Vacuum Tower Feed Heater | 8 | 0 | 8 | 16 | 10 |
| 43 | U200_B-202 Heater | 21 | 8 | 90 | 166 | 26 |
| 44 | U200_B-201 PCT Reboil Furnace | - | - | - | - | - |
| 45 | Heavy Gas Oil Feed Heater | 5 | 5 | 6 | 1 | 15 |
| 50 | Diesel Engine, turbine S-352 startup | - | - | 0 | - | 0 |
| 51 | Diesel Engine, turbine S-353 startup | - | - | 0 | - | 0 |
| 52 | Diesel Engine, turbine S-354 startup | - | 0 | 0 | - | 0 |
| 53 | Diesel Engine, emergency standby | - | - | 0 | - | 0 |
| 54 | Diesel Engine, emergency standby | - | - | - | - | - |
| 55 | Diesel Engine, emergency standby | - | - | - | - | - |
| 56 | Diesel Engine, emergency standby | - | - | 0 | - | 0 |
| 57 | Diesel Engine, emergency standby | - | - | 0 | - | 0 |
| 58 | Diesel Engine, emergency standby | - | - | 0 | - | 0 |
| 59 | Diesel Engine, emergency standby | - | - | 0 | - | 0 |
| 69 | PROPANE LOADING RACK | - | - | - | - | - |
| 70 | BUTANE LOADING RACK | - | - | - | - | - |
| 71 | U32_WAX & LUBE OIL TANK CAR LOADING RACK | - | - | - | - | - |
| 72 | U32_WAX TRUCK LOADING RACK | - | - | - | - | - |
| 73 | LUBE OIL TRUCK LOADING RACK | - | - | - | - | - |
| 90 | TANK NO. 67 | - | 1 | - | - | - |
| 91 | TANK NO. 73 | - | 1 | - | - | - |
| 94 | TANK NO. 78 | - | 0 | - | - | - |
| 97 | TANK NO. 100 | - | 3 | - | - | - |
| 98 | TANK NO. 101 | - | 31 | - | - | - |
| 99 | TANK NO. 102 | - | 0 | - | - | - |
| 100 | TANK NO. 103 | - | - | - | - | - |
| 101 | Tank 104 Storm Water Equalization | - | 13 | - | - | - |
| 102 | Tank 105 Storm Water Equalization | - | 13 | - | - | - |
| 103 | TANK NO. 106 | - | 1 | - | - | - |

| S# | Source Description | Annual Average lbs/day | | | | |
|-----|--|------------------------|-----|-----|-----|----|
| | | PART | ORG | NOx | SO2 | CO |
| 377 | Machine Shop Cold Cleaner | - | 0 | - | - | - |
| 378 | Auto Shop Cold Cleaner | - | - | - | - | - |
| 380 | Activated Carbon Silo (P-204) | 0 | - | - | - | - |
| 381 | Aeration Tank, Pact (F-201) | - | - | - | - | - |
| 382 | Aeration Tank, Pact (F-202) | - | - | - | - | - |
| 383 | Clarifier, F-203 | - | - | - | - | - |
| 384 | Clarifier (F-204) | - | - | - | - | - |
| 385 | Media Filter (F-271 to F-278) | - | - | - | - | - |
| 386 | PAC Regeneration Sludge Thickener (F-211) | - | - | - | - | - |
| 387 | Wet Air Regeneration (P-202) | - | - | - | - | - |
| 388 | Sludge Pretreatment (T-276 separator, F-20 | - | - | - | - | - |
| 389 | Diatomaceous earth silo (F-214) | - | - | - | - | - |
| 390 | F-248 Thickened Sludge Storage | - | - | - | - | - |
| 392 | Regenerated PAC Slurry Storage Tank F-266 | - | - | - | - | - |
| 398 | MP-30 Flare | 0 | 7 | 1 | - | 1 |
| 400 | Wet Weather Wastewater Sump (with vented c | - | - | - | - | - |
| 401 | Dry Weather Wastewater Sump (with vented c | - | 0 | - | - | - |
| 425 | Marine Loading Berth M1 | - | 5 | - | - | - |
| 426 | Marine Loading Berth M2 | - | 5 | - | - | - |
| 427 | Marine Loading Berth B2 | - | - | - | - | - |
| 428 | Marine Loading Berth B3 | - | - | - | - | - |
| 429 | Marine Loading Berth B4 | - | - | - | - | - |
| 432 | U215_Deisobutanizer | - | - | - | - | - |
| 433 | MOSC Storage Tank | - | 0 | - | - | - |
| 434 | U246 High Pressure Reactor Train | - | - | - | - | - |
| 435 | Reformate Splitter | - | - | - | - | - |
| 436 | Deisopentanizer | - | - | - | - | - |
| 437 | Hydrogen Manufacturing Unit | - | - | - | - | - |
| 438 | U110_H-1 Furnace (H2 Plant Reforming) | 37 | 1 | 76 | 14 | 31 |
| 439 | Tank 109 (MUK) | - | 13 | - | - | - |
| 440 | Tank 110 (Alkylate) | - | 31 | - | - | - |
| 442 | TK 112 (U244 Reformate) | - | 89 | - | - | - |
| 444 | Tank 243 (LAR Blendstock) | - | 82 | - | - | - |
| 445 | Tank 271 (Cracked Naphtha) | - | 0 | - | - | - |
| 446 | Tank 310 (ISOPENTANE) | - | - | - | - | - |
| 447 | Tank 311 (Isopentane) | - | 4 | - | - | - |
| 448 | Tank 1007 (Blendstock Receiving) | - | 1 | - | - | - |
| 449 | TANK #285 (CRACKED NAPHTHA) | - | 4 | - | - | - |
| 450 | Groundwater Extraction Trenches | - | - | - | - | - |
| 452 | U230 Cooling Tower | 17 | 14 | - | - | - |
| 453 | U236 Cooling Tower | 1 | 7 | - | - | - |
| 455 | U240 Cooling Tower | 4 | 32 | - | - | - |
| 456 | U110 Cooling Tower | 1 | 1 | - | - | - |
| 457 | U228 Cooling Tower | 0 | 3 | - | - | - |
| 458 | U200 Cooling Tower | 1 | 1 | - | - | - |
| 460 | Ultra Low Sulfur Diesel Hydrotreater | - | - | - | - | - |
| 461 | Hydrotreater Charge Heater | 3 | 0 | 3 | 5 | 3 |
| 462 | Fuel Gas Caustic Treating Unit - Unit 215 | - | - | - | - | - |
| 463 | Butane Caustic Treatment System | - | - | - | - | - |
| 465 | Unit 235 Sulfur Pit-Tank | 11 | - | - | - | - |

| S# | Source Description | Annual Average lbs/day | | | | |
|-------------|--|------------------------|------|------|------|------|
| | | PART | ORG | NOx | SO2 | CO |
| 500 | ULSD Cooling Tower | 0 | 1 | - | - | - |
| 503 | Sulfur Storage Tank | - | - | - | 0 | - |
| 504 | Sulfur Degassing Unit | 11 | - | - | - | - |
| 505 | Sulfur Truck Loading Rack | - | - | - | - | - |
| 506 | Fixed Roof Tank 257; abated by A-7, Vapor | - | 1 | - | - | - |
| 507 | Unit 76 Active Skimmer System 450 gal fix | - | 0 | - | - | - |
| 1002 | Sulfur Plant - Unit 236 | 24 | 7 | 14 | 71 | 150 |
| 1003 | Sulfur Plant Unit 238 | 50 | 10 | 18 | 54 | 194 |
| 1007 | U100-Dissolved Air Flotation Unit (with fi | - | - | - | - | - |
| 1008 | U100 Primary Stormwater Basin | - | - | - | - | - |
| 1009 | U100 Main Stormwater Basin | - | - | - | - | - |
| 1010 | U235 Sulfur Recovery Unit | 6 | 1 | 49 | 26 | 40 |
| 32100 | Fugitive Sources - Vacuum Producing System | - | - | - | - | - |
| 32101 | Fugitive Sources - Process Vessel Depressu | - | - | - | - | - |
| 32102 | Fugitive Sources - Valves, Flanges, and Co | - | 539 | - | - | - |
| 32103 | Fugitive Sources - Pumps & Compressor Seal | - | 334 | - | - | - |
| 32104 | Fugitive Sources - Pressure Relief Valves | - | 11 | - | - | - |
| 32105 | Fugitive Sources - Process Drains | - | 6 | - | - | - |
| 32106 | Fugitive Sources - Waste water | - | - | - | - | - |
| 32110 | Process Gas (Combustion) Emissions from Fl | 1 | 28 | 0 | 68 | 23 |
| A423 | Thermal Oxidizer for S-1003 | - | - | - | - | - |
| A422 | Thermal Oxidizer for S-1002 | - | - | - | - | - |
| A49 | DAF Thermal Oxidizer | - | - | - | - | - |
| T O T A L S | | 453 | 1721 | 1255 | 1976 | 1542 |

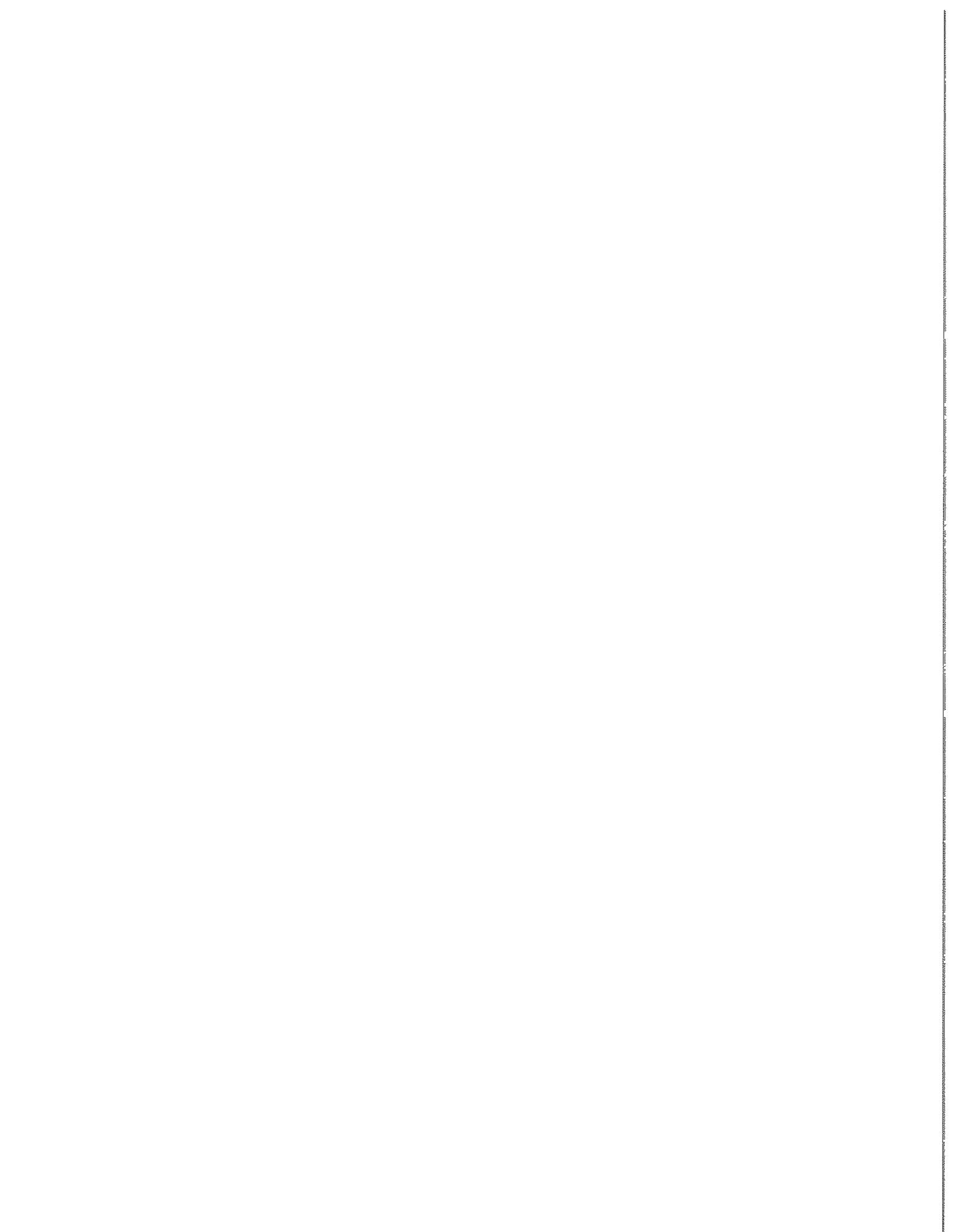
** PLANT TOTALS FOR EACH EMITTED TOXIC POLLUTANT **

| Pollutant Name | Emissions lbs/day |
|--|-------------------|
| Benzene | 2.18 |
| Formaldehyde | 21.68 |
| Phenol | .06 |
| Toluene | 2.44 |
| Xylene | 3.96 |
| Ethylbenzene | .17 |
| Acetaldehyde | .18 |
| Chloroform | .83 |
| Glutaraldehyde | .23 |
| Cadmium | .02 |
| Lead (all) pollutant | .04 |
| Manganese | .03 |
| Nickel pollutant | .14 |
| Mercury (all) pollutant | .16 |
| Diesel Engine Exhaust Particulate Matter | .04 |
| PAH's (benzo[a]pyrene equiv) | .09 |
| Naphthalene | 4.89 |
| Ammonia (NH3) pollutant | 352.04 |



ATTACHMENTS

COMMENTS INCORPORATED BY REFERENCE





Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Guy Bjerke
Manager, Bay Area Region & State Safety Issues

VIA ELECTRONIC MAIL

June 19, 2015

Mr. Greg Nudd
Manager, Rule Development Section
Bay Area Air Quality Management District (BAAQMD)
939 Ellis Street
San Francisco, CA 94109

**RE: WSPA Comments on BAAQMD's Petroleum Refinery Emissions Reduction Strategy:
Initial Report and Concept Papers**

Dear Mr. Nudd:

The Western States Petroleum Association (WSPA) is a non-profit trade association representing twenty-six companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Arizona, Nevada, Oregon, and Washington. Our members in the Bay Area have operations and facilities regulated by the Bay Area Air Quality Management District (District).

WSPA is concerned that the District is (a) rushing draft language out for comment before conducting sufficient technical analysis (including consultation with the regulated entities) and (b) not following its own rule development process.

WSPA is concerned that the district has rushed the publication of draft language without sufficient technical analysis. There are important errors and misleading statements in the concept papers that negatively reflect on the District's credibility, and that could have been avoided had the District consulted with WSPA. These statements include but are not limited to:

- The statement on page A:4 that "Staff do not believe that the proposed [FCCU] regulations will require any additional controls. We expect that the refineries that use ammonia or urea injection will be able to meet the proposed limits by optimizing injection locations and rates." As we have identified previously, refineries are all different; the fact that one refinery can meet the limit is insufficient evidence for assuming that all of them can. Based on the refineries' operating experience, at least one refinery completely disagrees with staff's assessment and others believe that staff does not have sufficient information to be able to assert this with confidence.

- The statement on page C:3 that “four of the five refineries are already meeting [the proposed] limit” for total sulfur in refinery fuel gas. All five refineries identified that they cannot meet the proposed limit of 40 ppm total sulfur (3-hour rolling average).
- The statements on page E:3 that “Staff prefers continuous hydrocarbon analysis as a method of acquiring cooling tower water emissions data. Such a device is already in use in...two Bay Area refineries. Chevron and Shell.” The monitoring systems at both companies have detection limits that are higher than the 84 ppbw limit that the District has identified, and both companies have also experienced technical issues with those monitors.
- The statement on page F:3 for gas turbine SCR's that cost estimates “based on “30 percent additional costs [relative to costs of new systems]...accommodate retrofit into an existing facility”. The 30% factor does not cover the cost of retrofits, particularly when space is limited (as it is, at least in some cases).

Our overall key point is that there are many detailed technical issues that warrant discussion between the regulated community and District staff, and that it is much more efficient to have these discussions than for the District to release hastily constructed draft language, ask WSPA to comment, revise the draft language, ask for more comments, etc. For several of these measures, there is also a need to look at pollutants together, rather than individually, because there are tradeoffs (such as ammonia minimization vs. PM/opacity control, criteria pollutant reduction for GHG increases, etc.)

WSPA is concerned that the district has not followed its typical and statutory rule making process. The rule development process described on the District's website begins with (1) identification of an air pollution problem, and (2) a technical assessment memorandum that reviews options for addressing the problem.¹ We have seen no such identification of an air pollution problem (or a review of options for addressing the problem), especially given that (a) the District currently attains all of the National Ambient Air Quality Standards (NAAQS)² and (b) BAAQMD's monitoring data have reflected a declining trend in ambient concentrations for decades (meaning that the air that people breathe now is cleaner than it has ever been); and (c) the District's CARE program identified that the most significant toxics impacts are not in the vicinity of the refineries, but are instead in the vicinity of “the maze” of highways across from the Bay Bridge.³ Instead, what the District's strategy identifies is a desire to reduce emissions from petroleum refining specifically, with no discussion of options. This seems to be in response to resolutions drafted by anti-oil activist groups whose members have commented at the

¹ <http://www.baaqmd.gov/rules-and-compliance/rule-development>

² WSPA recognizes that while the standards have been attained, BAAQMD has not asked EPA to reclassify it from “nonattainment” to “attainment”

³ BAAQMD, “Improving Air Quality & Health in Bay Area Communities: Community Air Risk Evaluation Program Retrospective & Path Forward (2004 – 2013),” April 2014, available from http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CARE%20Program/Documents/CARE_Retrospective_April2014.ashx?1a=en, p. 36

District's podium that they have the stated purpose of shutting down at least one refinery by 2020. The issue of process is not just a matter of principle, it is also a matter of law. California's Health & Safety Code Section 40001(c) specifies that

“Prior to adopting any rule or regulation to reduce criteria pollutants, a district shall determine that there is a problem that the proposed rule or regulation will alleviate and that the rule or regulation will promote the attainment or maintenance of state or federal ambient air quality standards.”

Separately, of the six rules that are identified in the District's strategy, three address ozone precursors, ROG and NO_x: i.e., Rule 8-18 (ROG and TACs from equipment in heavy liquid service), Rule 11-10 (ROG and TACs from cooling towers), and Rule 9-9 (NO_x from Stationary Gas Turbines). In accordance with H&SC 40914(b), the District's 2010 Clean Air Plan (CAP) for ozone was required to include “every feasible measure” to control ozone, and ARB had to concur with that assessment.⁴ We are not aware of any new information since the time of the 2010 CAP that indicates that the feasibility of these controls has changed, nor does the District's strategy present such information.

In addition to the issues mentioned above, the District is rushing things. The 24 days that the District has allowed for comments on its refinery emissions reduction strategy and draft language for six new or modified rules is far shorter than what it has used for individual rulemakings in the past, and is far too short for a complete review of the draft language; as a result our comments here are only preliminary. While our understanding is that the District had some communications with some refineries regarding some of these rules, the communications have not been nearly specific or complete enough for many of them to provide key feedback.

In addition, we would also like to point out that some of the draft proposed rule changes—including Rule 8-18 (Equipment Leaks), possibly Rule 9-1 (for any sulfuric acid plants separate from refineries), and Rule 9-9 (Stationary Gas Turbines)—affect more entities than just refineries, and that by burying these draft proposed rule changes within the “Petroleum Refinery Emissions Reduction Strategy” the District may not be including and engaging all stakeholders (a key value that the District identifies on the webpage that identifies the District's Mission Statement).⁵

WSPA therefore disagrees that packaging these actions “enables the Air District to use its staff resources more efficiently and streamlines coordination and consultation with the public and the regulated community”, as claimed on the first page of the District's Request for Comments. Instead, we believe that it goes beyond the resources of both the District staff and the regulated community and leads to poorly researched rulemaking with unintended consequences.

⁴ This requirement is also noted on page ES-1 of the Executive Summary of the 2010 Clean Air Plan: i.e., “Under these circumstances, state law requires the CAP to include all feasible measures to reduce emissions of ozone precursors and to reduce transport of ozone precursors to neighboring air basins.”

⁵ <http://www.baaqmd.gov/about-the-air-district/mission-statement>

WSPA is willing to work with the District to reduce emissions. Despite the short timeframe that the District has allowed for commenting on these concept papers, WSPA is providing preliminary specific comments on each of the six draft rules/draft rule amendments, which are incorporated as Attachment A to this letter. The District is strongly encouraged to engage WSPA and adhere to its rule development process before shaping the proposed rules further.

We appreciate your consideration of these comments. If you have any questions, please contact me at (925) 826-5354 or (925) 890-7803 (mobile) or gbjergke@wspa.org.

Sincerely,

A handwritten signature in black ink, appearing to read "Guy Bjerke". The signature is fluid and cursive, with the first name "Guy" and last name "Bjerke" clearly distinguishable.

Guy Bjerke
Manager, Bay Area Region & State Safety Issues

Enclosure

cc: BAAQMD Board of Directors
Jack Broadbent
Jean Roggenkamp
Brian Bunger

ATTACHMENT A

PRELIMINARY COMMENTS ON THE DISTRICT'S SIX CONCEPT PAPERS

The District's six concept papers omit several important details, and 24 days is not sufficient time to comment on the papers, however, preliminarily, WSPA has identified the following comments. We look forward to the opportunity to engage in more detailed discussions with the District in the future.

1. Draft Regulation 6-5: Condensable and Indirect PM from Refinery FCCUs

The District's concept paper states "Staff do not believe that the proposed regulations will require any additional controls. We expect that the refineries that use ammonia or urea injection will be able to meet the proposed limits by optimizing injection locations and rates." The basis of this expectation is not elaborated upon, and at least one refinery has identified that its configuration does not allow for it to meet the proposed 10 ppm ammonia limits through this type of optimization; other facilities have identified that their configurations may not allow them to meet it, and that there is certainly a real risk that there will be a tradeoff with respect to the control of other pollutants (that could result in potential noncompliance with particulate standards). Separately, the concept paper acknowledges that an exemption is needed for periods of startup, shutdown, bypass, or emergency bypass, but identifies that "because these definitions are always contentious", the exemption will only be provided when a Permit to Operate explicitly provides it. WSPA strongly objects to this, and members have had negative experiences with these types of dependent actions in the past; if the exemption is needed, the rule ought to identify when it is needed (as the District has done in Rule 9-10), rather than creating a potentially unworkable situation down the road.

The statement in Section 6-5-101 of the draft language that "commingled emissions from an FCCU and one or more other sources from a single exhaust point shall all be considered to be FCCU emissions" is problematic, depending on the sources that are commingled, the limited exemption in 6-5-111 should also be clarified so that it applies to both the FCCU itself and any commingled sources.

Since the District lists the PM limit as "TBD", we cannot comment on its feasibility at this time. However, the direct/indirect categorizations on page A:2 and in the rule language are confusing; they seem to be renaming terms that have already been defined in Federal rules, which define "primary PM_{2.5}" as the sum of filterable PM_{2.5} and condensable PM emissions [40 CFR 51.50], "secondary PM" as "particles that form or grow in mass through chemical reactions in the ambient air well after dilution and condensation have occurred...usually formed at some distance downwind from the source [and] not...reported in the emission inventory" [40 CFR 51.50], and "precursors of a criteria pollutant" (for PM_{2.5}) as including SO₂ and (sometimes) NO_x, VOC, and/or NH₃ [40 CFR 93.152]—i.e., things that can potentially form secondary PM

The following statements on page A.2 do not readily distinguish between what the District seems to be calling "indirect" and "direct" PM emissions.

"Indirect PM emissions are not particulate matter when emitted, but are precursors to the atmospheric formation of PM_{2.5}. Direct emissions may be...material that is a gas at the emission point, but that immediately condenses in the atmosphere to a liquid or solid form ("condensable" particulate)."

To minimize confusion, WSPA suggests that the District use the Federal terminology. It is misleading to call SO₂ and ammonia "indirect particulate" because not all of the emissions are converted to particulate; as the District is aware, these pollutants exist as gases in the air as well.

2. Concept Paper for Changes to Rule 8-18: Equipment Leaks

The concept paper fails to identify why the draft proposed regulatory changes for VOC reductions are now feasible, whereas they were not feasible at the time of the 2010 Clean Air Plan (or the time of the 2005 Clean Air Plan). The District has not identified that there is any new information since the time of those plans.

The costs identified in the concept paper appear to be underestimated, but the District has not provided any detail with respect to how they were derived. Because refinery heavy liquid components number in the several hundred thousands between all facilities, the District should be aware that at least one refinery has identified that simply re-tagging the components that are currently required to be tagged took them a year. It is not clear whether the draft rule language is asking that all components be field-tagged or whether they need to be identified, documented, and stored in a database, but either would involve significant effort (for little or no benefit—certainly not a benefit commensurate with the cost). A compliance date in 2016 is not realistic based on the proposed language.

One of the first changes identified is the requirement to monitor and identify all components in heavy liquid service. We note that BAAQMD is not the only air district that is subject to Clean Air Plan requirements to implement "all feasible measures" to control ozone precursors, the South Coast AQMD (whose air quality is considerably worse than the Bay Area's), has only found it feasible to require monitoring of pumps in heavy liquid service (not all components in heavy liquid service). In addition to placing requirements on the components in heavy liquid service, the District is proposing to change the allowable equipment on the non-repairable list. Among the draft changes is an elimination of the ability to put any component on the delay of repair list if it leaks in excess of 10,000 ppm (1%). This means that sources could have to shut down a process unit to repair a leak of less than 5 pounds per day. WSPA believes that the District needs to consider both (a) how the emissions associated with unit shutdown and startup could far outweigh the emissions associated with repairing the leak quickly and (b) the immense costs associated with shutting down the unit. Keeping that in mind, the "essential

equipment" language is too restrictive; BAAQMD's leak definition is 100 ppm (and SCAQMD's, by contrast, is 500 ppm)

WSPA also has the following comments:

- By adding pressure relief devices on storage tanks (8-18-214), the District is overlapping existing storage tank requirements covered in Rule 8-5; i.e., PRVs (P/V Vents) under 8-5-223 and equipment directly associated with atmospheric storage tanks are completely addressed in Rule 8-5. To maintain rule compliance clarity, and minimize overlapping and sometimes conflicting rule language, atmospheric storage tank PRVs should remain in Rule 8-5-403.
- If the District continues to insist on increased monitoring, WSPA would like to see that there is an option for decreased monitoring frequency (if data establish that a decreased frequency makes sense) and also the flexibility of incorporating SMART LDAR as a compliance option, and/or what credit the District might be able to provide for going beyond minimum requirements.
- Please clarify the need for the additional recordkeeping request for background readings over 50 ppm. What is the perceived issue that the District is desiring to address? An example would be helpful.
- Bagging of equipment to estimate mass emission is not feasible for certain types of equipment (e.g., very hot equipment or odd configurations). The method is also time-consuming. It would be helpful for the District to provide more details regarding procedures and reasons for this compliance method. Historical mass emissions bagging results would be helpful to narrow scope for this compliance requirement.
- The mass limit in the current Rule 8-18-306.4 for a valve with a major leak is 15 pounds per day, not 5 pounds per day as was presented in the District's Reg 8-18 concept paper proposed rule language underline/strikeout format.

3. Concept Paper for Changes to Rule 9-1: Refinery Fuel Gas Sulfur Limits

The concept paper's statement that "four of the five refineries are already meeting this limit [of 40 ppm total sulfur, 3-hour rolling average]" is inaccurate. All five refineries identified that they cannot meet the limit. One refinery confirmed with BAAQMD that they used incorrect data in its calculations of emissions and its conclusions on the refinery's ability to meet the 3-hour 40 ppm standard. The tremendous expenditures associated with equipment changes needed to meet the proposed limit as well as the time and environmental impacts of installing or modifying equipment (including potential increases in GHG emissions associated with operating new equipment) were not addressed in the concept paper.

4. Concept Paper for Rule 9-1: Limiting Sulfur Dioxide Emissions from Sulfuric Acid Plants

The EPA has entered into a number of consent decrees to reduce emissions at existing Sulfuric Acid Plants (DuPont, Rhodia, Mosaic are three examples) and the limits to retrofit these existing facilities are in the range of an order of magnitude higher than the limit of what BAAQMD is proposing. The Rhodia limit noted in the concept paper is in the range for plants being retrofitted. The plant in New Jersey is a DuPont plant in Linden New Jersey built after the issuance of the synthetic minor permit (first TRI report in 2008). The Indiana permit was intended for a facility at a coal gasification plant that has not been and likely will not be built. The extremely low emission rates proposed in this rule are likely only achievable at a newly built facility. In addition the BAAQMD casually throws out this concept of the utilization of a chemical scrubber which has greater safety risks due to the transport in and out of the chemicals. In addition scrubbers use significant amounts of electricity, which increases GHG emissions.

5. Concept Paper for Changes to Rule 11-10: Cooling Towers

Page E:3 of the concept paper identifies that "The Air District's staff is concerned about the MEPM sampling method's ability to provide representative hydrocarbon emissions data on a consistent basis", but provides no detail with regard to why they have these concerns. WSPA would like to understand these concerns, and potentially have the opportunity to identify the situations in which the MEPM (or EPA Method 624) is sufficiently accurate and could be used on a regular basis. The District identifies that they prefer continuous hydrocarbon monitors that two refineries have for their cooling tower water, but both of these refineries identified

- Technical issues with continuous monitors utilized at those facilities
- The District significantly underestimated costs (associated with both installation and operation, including preventive maintenance and calibration);
- Monitoring levels are higher than the District's proposed action level of 84 ppbw (0.084 ppmw); and
- Monitors may not be capable of accurately measuring concentrations at 84 ppbw.

The concept paper seems to imply that what is being proposed has been achieved in practice in the Bay Area, however, the proposal merely combines different monitoring practices and leak levels included in different refinery permits without sufficient research into whether or not the conditions all work together. In addition to the fact that the existing continuous monitors' detection limits are nowhere near the 84 ppbw level, we are only aware of the 84 ppbw limit being applied to one refinery, where it is applied to the difference between the concentrations in the return water and supply water (not just the return water), and compliance is based on monthly (not continuous) sampling and laboratory analysis (rather than monitoring). WSPA believes that monitoring once a month is much more feasible and would be consistent

with EPA "Maximum Achievable Control Technology" (MACT) standards [40 CFR 63.654(c)4].

Section 11-10-305.2 of the rule language allows 3 calendar days for leak minimization (which is too short) and up to 14 calendar days for repair of a leak (which is also very aggressive). WSPA believes that the 45 day repair times in the EPA MACT standard [40 CFR 63.654(d)] are more reasonable. There are almost always multiple exchangers tied into a cooling tower such that it is a significant effort to find which exchanger is leaking once you have detection. On top of that, the contingency provisions of Section 11-10-305.2 do not make sense; it states that if repair is not technically feasible within 14 calendar days, the owner/operator needs to substantiate their findings to the APCO's satisfaction within 5 calendar days from the day the leak was initially detected. This does not make sense; the facility will likely try to make every effort to repair within 14 calendar days, and likely will not know whether it is technically feasible to repair the leak within 14 calendar days until the 14th day. The requirement in 11-10-305.3 to obtain the detailed drawings, signatures, etc. and conduct a root cause analysis is not feasible for five days, nor does it seem necessary. WSPA's position is that once a leak is found, personnel efforts need to be directed towards isolating where it is and fixing it, rather than preparing a root cause analysis of what caused it (which in most cases is likely to not even be knowable).

Page E.3 of the concept paper identifies that the Regulation 1, Section 207 definition of "best modern practices" is "too generic of a definition for cooling tower operations", yet the exact same definition is proposed for Section 11-10-201. The District identifies more specific "best modern practices" in Section 11-10-306, but provides no support for this listing in the concept paper.

Section 11-10-207.2—in some situations, repairing a leak by "changing the pressure so that water flows into the process fluid"—will be problematic from a safety perspective.

Separately, it is unclear whether this rule is targeting total hydrocarbon emissions (as identified in the title of the draft rule above the table of contents, and the majority of the rule language) or non-methane organic carbon emissions (as identified in the title of the draft rule on page 11-10-2).

6. Concept Paper for Changes to Rule 9-9: Stationary Gas Turbines

WSPA is not aware of any substantive changes in NO_x control technology options or pricing that would make the control options identified in the District's concept paper any more feasible now than they were at the time of the 2010 Clean Air Plan (which was required by law to include "every feasible measure" to control ozone, and ARB had to concur with that assessment).

The District is soliciting feedback on their cost analysis, but has provided no detail with respect to how that analysis was done (e.g., what scope is included in the "current SCR equipment cost quotes") aside from citing the 6th edition of EPA's Air Pollution Control Cost Manual. WSPA believes it would be far more efficient if the District were to share its work, and we could comment specifically on the accuracy on various components of the analysis and resolve any

differences. It is important that feasibility and cost-effectiveness are accurately addressed. The calculations of emissions reductions and costs may not be accurate, since it appears that rather than consider the specific size constraints and other limitations at these facilities (as prescribed in Section 2.5.4.2 of the 6th edition of EPA's Air Pollution Control Cost Manual), the paper indicates that a 30% factor was added "to accommodate retrofit into an existing facility". This is not accurate, especially in cases where there is simply not enough space to accommodate SCR systems.

WSPA November 23, 2015 letter incorporated by reference



Phillips 66
San Francisco Refinery
1380 San Pablo Avenue
Rodeo, CA 94572

November 23, 2015

ESDR-329-15
05-C-03-G

Via email and CERTIFIED MAIL:7006 0810 0003 4487 8664

Mr. Greg Nudd (gnudd@baaqmd.gov), Rule Development Manager
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

**Subject: Comments on Proposed Regulation 9,
Rule 14: Petroleum Coke Calcining Operations
Phillips 66, San Francisco Refinery at Rodeo**

Dear Mr. Nudd

Phillips 66 Company (Phillips 66) respectfully submits the following comments on the Bay Area Air Quality Management District's (BAAQMD or District) proposed Regulation 9, Rule 14 Petroleum Coke Calcining Operations (Rule 9-14)

Phillips 66 is a diversified energy manufacturing company that processes, transports, stores, and markets fuels and products globally. Phillips 66 owns and operates a Carbon Plant in Rodeo, California ("Carbon Plant"). The Carbon Plant uses as a raw material "green" petroleum coke, which is a by-product from the refining process, and converts it into calcined coke, a more marketable product. The Carbon Plant has continuously operated at this location since 1959. While the Carbon Plant receives feed from the nearby Phillips 66 refinery in Rodeo, California ("Refinery"), it is not a part of the Refinery's operations. Rather, the Carbon Plant is a stand-alone business, separate and distinct from the Refinery. The Carbon Plant also operates under a separate BAAQMD permit and facility number.

The Carbon Plant directly employs 35 full-time employees and 7 long-term contractors. Additionally, according to the "Assessment of Petroleum Industry Economic Impact to the State of California" prepared by Purvin & Gertz, Inc., the Carbon Plant also indirectly supports 5 jobs for every one job at the Carbon Plant, for an estimated total of 218 jobs in other industries to support the business and to provide goods and services to its employees outside of the workplace.¹ Moreover, for every dollar earned by employees at the Carbon Plant, \$3.15 in

¹ Multiplier for employment and earnings for NAICS Code 324191 "All Other Petroleum and Coal Products" in the report "Assessment of Petroleum Industry Economic Impact to the State of California," Contract No. AT1101-07, Prepared for the Western States Petroleum Association by Purvin & Gertz, Inc., June 2011 <https://www.wspa.org/sites/default/files/uploads/documents/Industry%20Issues/Purvin%20%26%20Gertz%20Economic%20Impacts%20FINAL.pdf>, Accessed 11/16/15.

total earnings are realized in the region² Finally, Contra Costa County receives hundreds of thousands of dollars in payroll and property taxes as a result of the Carbon Plant's presence and operation. These funds support such public services as road improvement projects, parks, and public schools. This equates to millions of dollars of benefits to the region as a result of the Carbon Plant's operations.

The Carbon Plant management has also ensured that the company is active in the community, with employees actively volunteering and the plant sponsoring such events as the Hercules Rotary Fourth of July event, Hercules Lions Senior Citizens Holiday Party, and Hercules Chamber of Commerce Kids Expo. In sum, the Carbon Plant is an integral part of the Rodeo and Hercules communities and economy.

As the only coke calcining facility in the Bay Area, the Carbon Plant is the only facility that will be subject to this new rule. This puts Phillips 66 in a unique position to provide input on the technical and economic impacts of these new requirements, which will plainly be significant.

1. The District Has Failed to Establish that these control measures are necessary.

The statutory requirements for rulemaking by local air districts require that the District Board make a finding of necessity. Necessity "means that a need exists for the regulation, or for its amendment or repeal, as demonstrated by the record of the rulemaking authority."³

a. With respect to the SO₂ NAAQS, the record does not establish necessity of additional control measures.

The NAAQS and California Ambient Air Quality Standards (CAAQS) were established to ensure adequate health and environmental protection. For areas that are designated nonattainment for any given NAAQS, BAAQMD, through the SIP, is required to submit planning elements such as reasonable further progress (RFP) requirements, attainment demonstrations, reasonably available control measures (RACM), and contingency measures.⁴ For areas that have achieved the NAAQS, BAAQMD is *not* required to submit such planning elements.⁵ The Bay Area has been in attainment with the SO₂ NAAQS as far back as 1978 and in fact has only had three exceedances on any monitors in the past 10 years, as a point of comparison, ozone, for which the Bay Area is in nonattainment and which is primarily generated by vehicle emissions, had

<https://www.wspa.org/sites/default/files/uploads/documents/Industry%20Issues/Puvin%20%26%20Gertz%20Economic%20Impacts%20FINAL.pdf>, Accessed 11/16/15

² *Id.*

³ Health & Saf. Code § 40727.

⁴ 42 U.S.C. § 7502(b).

⁵ EPA, Memorandum by John S. Seitz, *Reasonable Further Progress, Attainment Demonstration, and Related Requirements for Ozone Nonattainment Areas Meeting the Ozone National Ambient Air Quality Standard*, (May 10, 1995)

more than one hundred exceedances in the same time period⁶⁷ Accordingly, there is no necessity with respect to the SO₂ NAAQS under the federal Clean Air Act requirement to support the District's issuance of these rules The proposed rules should not be incorporated into the SIP because they are not necessary to attain the NAAQS or to maintain compliance with it

As explained above, the Bay Area has been in attainment for SO₂ for quite some time For this reason alone, it is not "necessary" to adopt regulations aimed at reducing SO₂ emissions

2. The District Has Failed to Establish that these control measures are necessary to achieve the PM_{2.5} NAAQS

The Bay Area is designated attainment for the federal 24-hour and the annual PM_{2.5} NAAQS Nonetheless, the BAAQMD seeks to achieve PM_{2.5} reductions by way of reducing SO₂ Because the Bay Area is in attainment, such reductions are not necessary As described above, areas that have achieved the NAAQS are *not* required to submit planning elements such as RFP requirements, attainment demonstrations, reasonably available control measures (RACM), and contingency measures⁸ Accordingly, there is no federal Clean Air Act requirement for purposes of the PM_{2.5} NAAQS for the District to issue this rule⁹ BAAQMD has admitted as much to EPA, explaining.

EPA has determined that PM levels in the Bay Area do not exceed any PM_{2.5} NAAQS (i) by formally designating the region as "attainment of the standard, in the case of the annual PM_{2.5} NAAQS, and (ii) by administratively determining that the region's PM_{2.5} levels do not exceed the standard, in the case of the 24-hour PM_{2.5} NAAQS Because the Bay Area does not have any PM_{2.5} levels that exceed the standards, by definition there are no sources of PM_{2.5} precursors that currently contribute, significantly or otherwise to any PM_{2.5} levels that exceed the standards¹⁰

⁶ NAAQS attainment status history: U.S. Environmental Protection Agency Green Book Nonattainment Areas for Criteria Pollutants, http://www3.epa.gov/airquality/greenbook/phistory_ca.html, Accessed 11/2/15

CAAQS attainment status history: California Air Resources Board Chronology of State Sulfur Dioxide Designations, 1989-2014, <http://www.arb.ca.gov/desig/changes/so2.pdf>, Accessed 11/2/15 Directed from "State Standard Area Designation" page, <http://www.arb.ca.gov/desig/statedesig.htm#prior>, Accessed 11/2/15.

⁷ BAAQMD Annual Bay Area Air Quality Summaries, <http://www.baaqmd.gov/about-air-quality/air-quality-summaries>, Accessed 10/28/15

⁸ EPA, Memorandum by John S. Seitz, *Reasonable Further Progress, Attainment Demonstration, and Related Requirements for Ozone Nonattainment Areas Meeting the Ozone National Ambient Air Quality Standard*, (May 10, 1995).

⁹ Even though its annual PM_{2.5} standard is identical to the federal annual PM_{2.5} standard (numerically), California has designated the Bay Area nonattainment for the annual PM_{2.5} CAAQS

¹⁰ BAAQMD, Letter from Jim Karas to Gerardo Rios, EPA Region 9, *BAAQMD NSR Program—Compliance with PM Precursor Requirements in CAA Title I, Part D, Subpart 4* (December 22, 2014)

Even if there was a need for PM_{2.5} reductions (to achieve the NAAQS), the record does not establish that this rule will provide benefits by way of PM_{2.5} emissions reductions or, more important, reductions in concentration of the NAAQS. Nonetheless, BAAQMD states that this rule, directed at reducing SO₂ emissions, will reduce PM_{2.5} emissions. SO₂ is a potential precursor of secondary PM_{2.5}, but the rate at which SO₂ converts to PM_{2.5} is unclear. The staff report accompanying the proposed rule contains no analysis, or any reference to analysis, to quantify the level of PM_{2.5} reductions actually expected, that is, the conversion ratio from SO₂ to PM_{2.5} has not been scientifically studied or established as part of the proposed rule-making process. Moreover, the record does not show how these reductions in PM_{2.5} concentrations would correlate to maintenance of that NAAQS. The rulemaking documents do not explain how shutting down this facility or otherwise reducing the SO₂ emissions will impact ambient PM_{2.5} levels in relation to the NAAQS level (if at all). In fact, information not referenced in the staff report but otherwise included in BAAQMD modeling studies have shown (1) that “reducing sulfur-containing PM precursor emissions by 20 percent (around 16 tons/day) typically had at most a small impact on Bay Area PM_{2.5} levels,” (2) that secondary PM_{2.5} is present mostly as ammonium nitrate, not sulfur compounds, and (3) that “significant amounts of PM_{2.5}, especially secondary PM_{2.5}, are transported from the Central Valley” which lies to the east of the Bay Area,¹¹ meaning that it is not reasonable to conclude that reducing SO₂ emissions here will actually impact PM_{2.5} concentrations. The BAAQMD’s own study on the impact of SO₂ emissions on PM_{2.5} attainment status seems to indicate that shutting down this plant, or requiring decreases in SO₂ emissions of the magnitude proposed, would not meaningfully impact ambient PM_{2.5} levels (much less impact the attainment status). Accordingly, the District has not established the “necessity” that it must demonstrate to adopt this regulation.

3. The costs associated with the proposed rule are significant and unjustified.

The proposed rule provides two compliance options: 1) an annual emissions limit of 770 tpy, or 2) control efficiency of 80 percent. Per the socioeconomic report (Appendix B of the proposed rule package), complying with the 770 tpy limit would require an initial investment of greater than \$2 million, and annual costs of approximately \$1.9 million thereafter. Compliance with the 80 percent control requirement would require an initial investment of greater than \$3 million, with ongoing annual costs at just under \$3 million. The report estimates the Carbon Plant’s annual net income at \$4.7 million. BAAQMD’s report establishes that the proposed rule will have a significant impact.

As summarized below, costs stemming from the proposed rule are significant across the board. Even after ten years, costs remain significant. In all cases the cost-to-net profit ratio exceeds the ten percent cost-to-net profit threshold utilized for purposes of the socioeconomic analysis.¹²

¹¹ BAAQMD, Oct. 2009, “Fine Particulate Matter Data Analysis and Modeling in the Bay Area,” <http://www.baaqmd.gov/~media/files/planning-and-research/research-and-modeling/pm-data-analysis-and-modeling-report.pdf?la=en>, Accessed 10/28/15

¹² Applied Development Economics, Inc., *Socioeconomic Impact Analysis of Proposed Regulation 9, Rule 14: Petroleum Coke Calcining Operations*, p. 12 (October 28, 2015).

As it stands, according to the BAAQMD's socioeconomic report, this new rule will effectively consume 36 to 69% of the annual profits that are generated by the Carbon Plant. As described above and as recognized by BAAQMD's own socioeconomic report, such drastic costs and loss of profits may result in a reduction of workforce and economic activity, not just at the Carbon Plant, but elsewhere as well. The pursuit of levels of reductions of PM_{2.5} concentrations and the impact of those reductions on exceedances of the NAAQS, neither of which has been quantified, cannot support a rule imposing such significant costs. The District needs to establish through appropriate modeling the impacts of this proposed rule before it can proceed further with the rulemaking to meet the basic requirements for California regulatory actions. Absent this demonstration, the District cannot establish reasonableness (another legal requirement), much less necessity. This is all the more critical given that Phillips 66 is being forced to shoulder the regulatory impacts entirely on its own.

Indeed, statutory requirements for rulemaking by a district require that the district board "actively consider the socioeconomic impact of regulations and make a good faith effort to minimize adverse socioeconomic impacts."¹³ While the District's report makes clear that the socioeconomic impacts of the proposed rule are significant, it fails to explain how the District will minimize these impacts.

For the above reasons, the proposed rule cannot be adopted at this time.

4. The CEQA Analysis inadequately addresses environmental impacts. The CEQA analysis inappropriately concludes that there would be no significant adverse impacts.

a Shutting down the Carbon Plant will result in a net global GHG increase.

The quality of the calcined coke produced by the Carbon Plant allows it to be physically incorporated into steel or other products, essentially sequestering the carbon. If the Carbon Plant shut down, the refinery would sell the green coke where it will likely be burned as fuel, releasing the carbon into the atmosphere as CO₂. Further, the transportation associated with selling the coke elsewhere will result in further CO₂ emissions as well as emissions of other air pollutants.

Operation of the Carbon Plant, as opposed to shutting it down and selling the green coke as fuel, reduces an estimated 330,000 metric tons of CO₂ per year by trapping the carbon (this information was provided to BAAQMD staff on September 1, 2015). After only 3 years, this results in more CO₂ reductions than the \$300 million that the air district has spent on CO₂ reduction efforts over the

¹³ Health & Saf. Code, § 40728.5

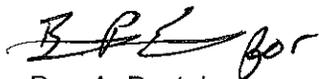
past 8 years¹⁴ The effect of shutting down the facility on global GHG emissions should be evaluated in the CEQA analysis

- b **The Carbon Plant generates low-carbon electricity.** The Carbon Plant generates 18 megawatts (MW) of electricity as a co-benefit of current operations using waste heat, where 1 MW supplies about one thousand homes. If the Carbon Plant did not continue operations, that 18 MW would need to be otherwise generated by PG&E likely in the short term by burning fossil fuels and therefore contribute to increased global CO₂ emissions. The increase in electricity generation should be evaluated in the CEQA analysis

5. The rule package contains inaccuracies about the Carbon Plant. Phillips 66 is concerned about specific factual errors regarding about the Carbon Plant and requests corrections be made in the final document. Please see Attachment 1 for a complete listing

Phillips 66 appreciates BAAQMD's consideration of our comments and urges the careful consideration of the socioeconomic report's finding of significant impact. BAAQMD's own analysis shows that the current rule will have an adverse economic impact on this facility and the local economy

Sincerely,



Don A. Bristol
Environmental Team Lead

Attachments

¹⁴ BAAQMD, Board of Directors Meeting, July 29, 2015, Agenda Item 14, "Update on Air District Climate Protection Program" http://www.baaqmd.gov/~media/files/board-of-directors/2015/agenda_14_preliminary-climate-protection-program-update-pdf.pdf?la=en

Attachment 1

Specific comments on the rule, staff report, and CEQA report text

| Topic | Page | BAAQMD Text | Phillips 66 Response |
|-------------------------------------|---------------------|---|--|
| Misrepresentation of communications | Staff report, pg 17 | "Carbon Plant representatives offered to submit a counter to the requirements in the draft rule within 24 hours [of Thursday, October 15, 2015], however, staff did not receive such information as of [Monday,] October 19, 2015 " [clarification added] | The Phillips 66 Environmental Superintendent (Don Bristol) called the BAAQMD head manager in charge of this rule (Eric Stevenson) on Friday, October 16, 2015 as agreed. However, we were informed he was now on vacation or out of the office for the next two weeks, which was not mentioned the day prior. Mr Bristol subsequently left a voicemail for Mr Stevenson's direct report (Greg Nudd) on Monday, October 19, 2015 and received a call back later that week. This staff report was subsequently published around 5pm on Friday, October 23, 2015. Phillips 66 followed through on its commitment. |
| Misrepresentation of commitment | Staff report, pg 14 | "The Carbon Plant has stated that they are willing to spend between \$4 million to \$5 million to upgrade their SO ₂ controls. They have annualized that capital expense to \$250,000, assuming a 20-year life span of the new equipment." | Phillips 66 never made a commitment regarding what the Company was "willing to spend." The cost estimate of \$4 to \$5 million was a response to a specific BAAQMD staff question regarding how much it would cost to upgrade the sodium bicarbonate delivery and injection system to meet the proposed emission limits.

Second, Phillips 66 performed specific calculations at BAAQMD's request to estimate compliance costs. Because BAAQMD annualizes capital expenses over 20 years, Phillips 66 used that assumption within our calculations to conform with BAAQMD's expectations. Internally at Phillips 66, capital expenditures for projects are not annualized over 20 years, but typically in the 5-10 year range. |

| Topic | Page | BAAQMD Text | Phillips 66 Response |
|--|--|---|---|
| References to the wrong rule, pollutant, and stationary source control measure (SSM) | <p>Staff report, pg. 16</p> <p>Staff report, pg. 17-18</p> | <p>“Pursuant to the California Environmental Quality Act, the District has caused an initial study for proposed <u>Regulation 8, Rule 53</u> to be prepared by Environmental Audits of Placentia, CA ” [emphasis added]</p> <p>“The proposed Rule is Necessary to protect public health by reducing <u>ozone precursors</u> to meet the commitment of Control Measure <u>SSM5</u> of the Bay Area 2010 Clean Air Plan” [emphasis added]</p> | These should be corrected |
| BAAQMD’s proposed 770 tpy limit is not economically feasible | Staff report, pg 5 | “In order to ensure that the controls are economically feasible, the Air District is proposing a 770 tpy limit This corresponds to a 70% control of SO ₂ and would reduce compliance costs from an estimated \$3 million/year to \$2 million/year ” | Phillips 66 estimates that a 770 tpy limit will cost approximately \$3 million per year, while the BAAQMD socioeconomic report shows that annual profits from Carbon Plant operations are approximately \$4 7 million per year This limit will require annual expenditures in excess of 40% of the net income of the facility This is not economically feasible |
| CEQA report does not align with staff report | <p>CEQA Analysis, pg. 2-12 through 2-13, pg. 3-23</p> <p>Staff report, pg 16</p> | <p>Table 2 5-1 and Table 3-6 of the CEQA Analysis say Rule 9-14 will result in 372 tpy of SO₂ reductions</p> <p>The staff report estimates 710 tpy of SO₂ reductions</p> | Phillips 66 believes the CEQA analysis inadequately addressed impacts based on the wrong expected SO ₂ reductions |
| Staff report does not align with the rule text | Staff report, pg 10 | “One requirement is an SO ₂ mass emission limit while the second is a requirement for each kiln to inject dry sorbent into each kiln’s exhaust flue at a minimum rate ” | Rule 9-14 as posted on October 23, 2015 does not have a requirement for each kiln to inject dry sorbent into each kiln’s exhaust flue at a minimum rate |

| Topic | Page | BAAQMD Text | Phillips 66 Response |
|---|--------------------|---|---|
| Description of SO ₂ is not properly contextualized | Staff report, pg 7 | <p>“SO₂ dissolves in water vapor to form acid and interacts with other gases and particles in the air to form sulfate particles and other compounds that can be harmful to people and the environment.[] Scientific evidence links short-term exposures to SO₂ with various respiratory problems as well as the exacerbation of existing cardiovascular disease [] The fine particles that are formed from sulfur dioxide can penetrate deeply into the lungs and worsen respiratory diseases such as emphysema and bronchitis. The fine particles can also worsen existing heart disease ”</p> | <p>These statements need to be accompanied by the proper context of what SO₂ levels are actually toxic to health (presumably the levels established by the NAAQS/CAAQS) to avoid the likelihood that the reader draws incorrect conclusions about harm caused by current SO₂ emissions levels with BAAQMD's jurisdiction</p> <p>Similarly, while SO₂ can lead to the secondary formation of fine particulate (PM_{2.5}), the Carbon Plant's secondary PM_{2.5} contribution to the air basin is probably minimal compared to the direct fine particulate emissions from mobile sources and wood burning devices. That is, the report suggests that reducing SO₂ emissions can effectively reduce these health impacts, but does not allude to its likely low magnitude contribution</p> |

| Topic | Page | BAAQMD Text | Phillips 66 Response |
|---|--------------------|--|---|
| Comparison to South Coast AQMD Rule | Staff report, pg 4 | <p>“The proposed rule’s emission standard is consistent with the only other current SO₂ emissions standard for an operational petroleum coke calcining facility in California ²”</p> <p>² South Coast AQMD, Rule 1119</p> | <p>South Coast Air Quality Management District (AQMD), Rule 1119 requires 80% SO₂ control from calciners, however, that rule is superceded by the South Coast AQMD SO₂ Regional Clean Air Incentives Market (RECLAIM) RECLAIM is a completely different emissions regulation scheme that creates a market for SO₂ credits It is possible, although Phillips 66 has no way of knowing, that emission reductions at the South Coast Tesoro calciner may have become cost effective only because the emissions reduction credits can be used in the RECLAIM market</p> <p>To state a facility under RECLAIM and one under this proposed rule has a consistent SO₂ emissions standard is misleading</p> |
| BAAQMD should not require installation of load cell and collection of sodium bicarbonate usage data | Rule 9-14-502 | <p>“the owner/operator of a petroleum coke calcining operation shall use a calibrated APCO approved load cell to monitor the mass of sorbent injected per hour for the first kiln to comply with the requirements of 9-14-301 ”</p> | <p>Rule 9-14-301 does not have any requirements to monitor the mass of sorbent injected per hour Phillips 66 requests the monitoring and recordkeeping requirements related to sorbent to be removed from the rule</p> |
| Average SO ₂ emission factor | Rule 9-14-204 | <p>“The initial Average SO₂ Emission Factor is equal to 12.81 pounds of SO₂ per ton of green coke processed The emission factor may be updated by the APCO using additional inlet source test data”</p> | <p>Phillips 66 requests that it be made clear in the rule that any update to the Average SO₂ Emission Factor will not require a revision to Rule 9-14 that needs to be adopted by the Board of Directors</p> |

| Topic | Page | BAAQMD Text | Phillips 66 Response |
|--|-------------------------|--|---|
| Reflection of normal operations | Staff report, pg 13 | "The most recent three-year period included 2010, 2013 and 2014 when both kilns were considered to be fully operational. The kilns operated at unusually low production levels in 2011 and 2012. The averages are representative of SO ₂ emissions and emission reductions during normal operating conditions for each kiln." | Phillips 66 provided information to BAAQMD that 2010 and 2013 had more downtime than average over the past decade. Those years reflect increased downtime and lower SO ₂ emissions than normal operating conditions so cannot be considered as when the kilns were fully operational as suggested by BAAQMD. |
| Federal rules applicable | Staff report, pg. 16 | "The Carbon Plant is not subject to any specific Federal requirements." | The Phillips 66 Carbon Plant is subject to many specific federal requirements including those under 40 CFR 70 Title V Operating Permits, 40 CFR 64 Compliance Assurance Monitoring, 40 CFR 63 ZZZZ NESHAP RICE, among others. |
| "Cost effective" threshold not defined | Staff report, pg 14-15 | "Cost effectiveness is the sum of costs to comply with the proposed rule on an annual basis divided by the expected emissions reduction on an annual basis [] This rule is very cost effective. As a comparison, Air District organic compound control rules typically range from several thousand to over fifteen thousand dollars per ton of emissions reductions, and rules to reduce oxides of nitrogen, NO _x , typically range from about seven thousand to around twenty thousand dollars per ton of emissions reduced." | BAAQMD fails to provide a bright line for what is considered a cost effective SO ₂ reduction rule and only provides ranges for other pollutants. As BAAQMD knows, each pollutant has a different cost effectiveness threshold because each requires different levels of investment to achieve the one ton of reduction, with NO _x and organics often having a higher threshold. A comparison to other pollutants' cost effectiveness thresholds in this report is misleading. |
| Typographical error | CEQA Analysis, pg. 3-39 | Table 3-9
Total CO ₂ emissions = 2,436
Total CO ₂ e emissions = 1,090 | There is an error in Table 3-9 that shows CO ₂ emissions are higher than CO ₂ e emissions. This should be corrected. |

| Topic | Page | BAAQMD Text | Phillips 66 Response |
|----------------------|--------------------|---|--|
| Clarification needed | Rule 9-14-301 2 1, | "Operate all Petroleum Coke Calcining Kilns such that the SO ₂ emitted from the Kilns does not exceed an average of 385 tons per Kiln, per calendar year." | <p>Phillips 66 requests that the rule be clarified to state that the total SO₂ emissions from both kilns shall not exceed 770 tons per year, because the current language is not clear whether "average of 385 tons" is referring to an average over both kilns or an average over the calendar year. Stating the limit is 770 tons per year on a facility-wide basis is consistent with the language presented in the staff report as listed below</p> <p>Staff report, pg 4, "Once the rule takes full effect, the plant will either have to meet the 80 percent control target or meet an emissions limit of 770 tons per year (tpy) of SO₂ "</p> <p>Staff report, pg 5, "In order to ensure that the controls are economically feasible, the Air District is proposing a 770 tpy limit "</p> <p>Staff report, pg 12, "The Carbon Plant will also be required to either meet annual SO₂ mass emissions limit of 770 tpy "</p> <p>Staff report, pg. 12, "The annual limit of 770 tpy is consistent with normal production rates "</p> <p>Staff report, pg. 14, "The estimated annual cost for the Carbon Plant to improve their current DSI system to comply with the rule's 770 tpy emission requirement is approximately from \$2 0 million "</p> <p>[Continued in several other instances]</p> |

| Topic | Page | BAAQMD Text | Phillips 66 Response |
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| Misrepresentation of communications | Staff report, pg 15 | <p>“The Carbon Plant operators (Phillips 66 or P66) presented a plan to the Air District staff that would reduce emissions to a level consistent with 50 percent control on an annual basis That would reduce emissions by 203 tpy in a typical year at a cost of \$900,000 for a cost effectiveness of \$4,433/ton of SO₂ reduced ”</p> | <p>A formal plan was never presented by Phillips 66 as this report text may suggest Phillips 66 provided data to BAAQMD of costs for different options and the corresponding emission reductions that could be expected as well as an indication of the order of magnitude where costs would very likely make operations no longer economically feasible</p> |
| The numbers as presented are flawed | Various | <p>Staff report, pg 12, “The annual limit of 770 tpy is consistent with normal production rates and a 70 percent control of SO₂ by the Carbon Plant’s DSI system . The annual mass limit was calculated by multiplying the 12 81 lb [of uncontrolled SO₂] / ton [of green coke feed] emission factor by the typical throughput of the Carbon Plant [400,000 tpy green coke] and multiplying that number by 30 percent.”</p> <p>Staff report, pg 13, “Staff estimated the average SO₂ emission reductions combined from both kilns to be 42 percent The average NSR is 0 4 and the average amount of abated SO₂ emitted from both exhaust stacks was 1,480 tons The total mass of unabated SO₂ prior to abatement for that year was 2,550 tons When both kilns were both fully operational for an aggregate 36 month period, the average amount of SO₂ emitted into the ambient air, after</p> | <p>The 770 tpy limit is effectively more than 70% control because the District’s calculation method considers when the kilns are not running as 0% control However, Phillips 66 considers shutting down operations as 100% control of emissions and uses that operational flexibility to help maintain compliance with current emission limits Further, when developing an emission limit, Phillips 66 contends that the <i>maximum</i> throughput of the Carbon Plant should be used, not the <i>typical</i> throughput.</p> <p>The staff report does not sufficiently contextualize that these numbers are from spot data with wide error bars For example, the average NSR was calculated using an average inlet SO₂ factor The inlet SO₂ data is from about only 30 hours of random testing and is being used to calculate a factor to represent all historical and future inlet SO₂ for this rule</p> |

| Topic | Page | BAAQMD Text | Phillips 66 Response |
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| | | <p>42 percent had been removed by the system's DSI controls, was 4 0 tons per day "</p> <p>Staff report, pg 16 Table with costs
 50% control level = \$0 9 million/yr
 770 tpy limit = \$2.0 million/yr
 80% control level = \$3 million/yr</p> <p>Staff report, pg. 16 Table with SO₂ emissions reductions
 50% control level = 203 tpy reduction
 770 tpy limit = 710 tpy reduction
 80% control level = 969 tpy reduction</p> | <p>Phillips 66 believes that a 50% control level would likely cost an additional \$2 0 million per year, an annual mass emission limit of 770 tpy would likely cost an additional \$3 0 million per year, and an 80% control requirement would likely cost an additional \$3.4 million per year This data has been previously provided to BAAQMD It is unclear what assumptions BAAQMD has changed to develop the reduced cost estimates</p> <p>Phillips 66 calculated emissions reductions closer to 300 tpy for the 50% control level (roughly equivalent to a 150 lb/hr per kiln limit) and has previously shared this information with BAAQMD It is unclear what assumptions BAAQMD has changed to develop the reduced cost estimates Further, Phillips 66 believes emissions reductions should be calculated from the total facility potential to emit (PTE) or maximum emissions in the past, not the average actual emissions from the past couple years (when the Carbon Plant experienced lower production due to market conditions)</p> |

| Topic | Page | BAAQMD Text | Phillips 66 Response |
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| Last minute change to the rule | <p>Email announcement from Mr Greg Nudd on 11/13/15</p> <p>“Minor Edits to Proposed Rules” document posted on 11/13/15</p> | <p>“The staff of the Bay Area Air Quality Management District have made some minor changes to three of the proposed Refinery Emission Reduction Strategy rules. These changes are intended to clarify the intent of the rules and are not substantive. As a result, written comments are still requested by the close of business, Monday, November 23, 2015.”</p> <p>The Air District Staff have made some minor changes to three of the proposed Refinery Emission Reduction Strategy rules. These changes are intended to clarify the intent of the rules and are not substantive. The purpose of this document is to explain the changes and why they were made.</p> | <p>While the District may not consider the changes to the rules substantive, Phillips 66 contends that 10 days (with 4 of those days being the weekend) is insufficient time to review, agree or disagree with the District’s decision that the comments are non-substantive, incorporate the changed language and citations within our comment letter(s), and prepare additional comments based on the new language.</p> |



Shell Oil Products US

Martinez Refinery
PO Box 711
Martinez, CA 94553-0071

CERTIFIED MAIL – Return Receipt Requested

November 23, 2015

Mr. Eric Stevenson, Director
Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Subject: Shell Comments on the Proposed Refinery Regulations

Dear Mr. Stevenson,

The Shell Martinez Refinery (Shell) offers the following comments on the proposed BAAQMD Regulation 12 Rules 15 and 16 (12-15 and 12-16), the additional refinery rules (8-18, 11-10 and 9-6) and the accompanying Staff Reports and Socioeconomic Analysis. We also herein incorporate by reference the comments submitted on 11/23/15 to the BAAQMD by Beveridge and Diamond on behalf of WSPA.

1. Regulation 12-15 Section 405.1 requires the Health Risk Analysis (HRA) to be based on 2015 emissions inventory data. Although this section also allows the inventory to incorporate improved emission calculations and to reflect emission reductions that have been achieved prior to the submittal of the HRA, it is not clear how this would be possible due to the compressed timing required in the rule for the HRA.

District staff significantly overestimate refinery fugitive emissions from equipment in heavy liquid hydrocarbon service and cooling water towers by requiring use of outdated EPA default emission factors. Staff require use of these factors because they do not believe that refinery monitoring data is sufficient for calculating emissions. Shell has monthly EPA monitoring results on all of our cooling water towers and inspection data for a representative sample of valves and connectors in heavy liquid service. All of the data based on actual testing shows no leaks. However, the data has not been acceptable to staff apparently because the monitoring was not done on the frequency staff consider necessary. The inflated emissions will be required for the HRA and are the basis for new proposed requirements in both Regulation 8-18 and Regulation 11-10. Presumably once we implement the requirements of these rules we will be able to use the data to report our emissions in lieu of the significantly inflated estimates and we are confident that the results will show that actual emissions are orders of magnitude below the inflated estimates. Unfortunately, the timing of the implementation of the proposed rules is such that the HRAs will already be complete and submitted by then. We will not be able to revise the emissions estimates and we will have HRAs based on grossly inaccurate, overestimated emissions triggering notification to our community and risk reduction based on this bad data. In addition, we will implement costly new rule requirements in Regulations 8-18 and 11-10 to prove what all previous testing has already shown – emissions from cooling water towers and equipment in heavy liquid service are not significant.

The only way to fix the HRA problem is to not base the HRA on 2015 data but allow time to resolve these inventory issues. The problem is that even if we are able to implement the new rule requirements before the HRA submittal, we can't retroactively change the frequency of monitoring for what was done in 2015. There is no way to resolve the emission issues retroactively for 2015. Thus, the HRA should not be required until the problems with the emissions inventory guidance can be resolved. The HRA must be

based on the most accurate data possible and we should not be required to base it on bad emission estimates with the hope that it can be corrected later. That is not good rulemaking.

2. The 12-15/12-16 Staff Report acknowledges in Table 4 that each refinery is expected to trigger the "significant risk" requirements in 12-16-301.2 when the HRAs are complete. The HRA risk estimate and risk drivers won't be known until the HRAs are complete. Without this information, how can the District presume in section 12-16-303 of the Socioeconomic Report that each refinery will be able to significantly reduce the health risk to below the significant risk level of 25 in a million from all stationary sources at the refinery by simply installing particulate filters on the refinery diesel engines? Shell has a limited number of diesel engines and all are permitted as emergency use only. They are typically run only for a limited number of hours per year of reliability testing as allowed by our Title V permit. It is inaccurate and unreasonable to assume that installing particulate filters will mitigate refinery risk below significance levels without knowing the estimated risk and the source of the risk. The Socioeconomic Report should be revised to estimate the cost of various mitigation scenarios including control of ship emissions and high VOC emissions based on faulty emission estimates (see #1 above).
3. The 12-15/12-16 Socioeconomic Report assumes an annualized cost for the installation of a wet scrubber system of \$8.2 million. Using the calculation methodology referenced in the report, this presumes an installed equipment cost of approximately \$35 million. There is no reference for the source of that estimate. Shell believes this cost estimate is at least an order of magnitude too low for installation of a wet scrubber system on an existing FCCU. An example of why this is unrealistic is the fact that a retrofit installation will require rebuilding the existing CO Boilers because they were not originally designed to exhaust through a wet scrubber. There are also issues with finding space to locate a scrubber within the existing plot space. We believe that an estimate of \$350 million for a scrubber is low as Valero installed one in 2012 and has publically stated that their project cost over \$750 million. If a more realistic estimate was used in the report, the cost to net profits would be > 20% which should be considered significant. The report should be revised to use more accurate costs.
4. In response to public comments concerning the District's rush to adopt the refinery rules, the District has stated that the rulemaking has been going on for over three years and there has not been a rush. In fact, only one of the rules has been in development for 3 years (Regulation 12-15). The first public draft of Regulation 12-16 was in **January 2015** and after hearing concerns in public workshops, the District said the rule would be significantly revised. The next draft of Reg 12-16 was not issued until **September 2015** (2.5 months ago) and this draft had brand new concepts that had never been publically discussed before (e.g. NAAQS demonstrations). Four additional refinery rules were only first proposed at the end of **May 2015** (< 6 months ago). These rules were all revised and re-issued in **October 2015**. All four of these rules will impose significant new requirements on refineries. None of these have had the time to be properly reviewed and revised as needed. There are serious flaws in all of the rules – both in the basic requirements and in the implementation. We have pointed these flaws out to the District in meetings, at Workshops, by email and through extensive written comments submitted by WSPA. Most of the problems have not been addressed and we have been told by staff that they understand there are problems but they don't have the time to address them. Their plan is to re-open the rules after adoption to try to fix them. This does not make sense and provides the regulated community with no certainty. The rules should not be adopted until they are right.

Shell believes it is critical for these comments to be addressed prior to rule adoption. Please contact Kathy Wheeler (925-313-3722) if you would like to discuss these issues in more detail.

Very truly yours,



Natalie A. Braden
Manager, Environmental Affairs Department
Shell Oil Products, US – Martinez Refinery

cc via email to: EStevenson@baaqmd.gov and GNudd@baaqmd.gov

| Topic | Page | BAAQMD Text | Phillips 66 Response |
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| A study should not be required in a rule | Rule 9-14-401 | <p>“Schedule for SO₂ Control Upgrade Study The owner/operator of a Petroleum Coke Calcining Operation subject to this standard shall conduct a study, using an independent engineering firm, to determine the changes required to meet the 80 percent Control Level for All Kilns The study shall also quantify the total initial capital costs and recurring operating costs required meet [sic] the 80percent Control Level The owner/operator shall complete the study and submit it to the APCO no later than December 31, 2017 ”</p> | Phillips 66 should have the flexibility to meet compliance limits through the method of their choosing and should not be required by BAAQMD to conduct a study through an independent engineering firm |
| Inconsistencies in expected usage of sodium bicarbonate in CEQA report | <p>CEQA Analysis, pg 3-39</p> <p>CEQA Analysis, pg. 3-68</p> | <p>“Upgrading the DSI system is expected to increase the use of sodium bicarbonate by an estimated <u>4,000 tons</u> per year” [emphasis added]</p> <p>“This is expected to require about <u>2,600 tons</u> per year of sodium bicarbonate to be delivered to the Plant and about the same amount of spent sodium bicarbonate to be removed ” [emphasis added]</p> | Relevant parts of the CEQA analysis should be redone to be based on a consistent number for sodium bicarbonate usage. |
| CEQA GHG threshold calculation | CEQA Analysis, pg 3-39 | <p>“The GHG emission increases associated with increased SO₂ scrubbing would be required to be offset ”</p> <p>Table 3-9 depicts that when the 1,090 MT CO₂e increase from SO₂</p> | CO ₂ emissions associated with the chemical reaction of sodium bicarbonate with sulfur dioxide to form CO ₂ are not reported or covered under the current structure of AB32 Covered emissions sources under AB32 are defined under the Mandatory Reporting Rule (MRR) at Title 17 California Code of |



2015 NOV 23 AM 9:06

November 20, 2015

VIA ONE-DAY MAIL

Mr. Eric Stevenson, Director
Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Re: Shell Comments on Proposed Draft Environmental Impact Report (DEIR) for Bay Area Air Quality Management District Proposed Regulation 12, Rules 15 and 16 and Comments on Staff Report (Staff Report) for the Petroleum Refining Emissions Tracking, and Emission Limits and Risk Thresholds

Dear Mr. Stevenson:

As outside counsel for the Shell Martinez Refinery (Shell) I have been asked to submit the attached comments related to the above matters. Please note that where a comment references a title or a chapter of the DEIR the comment also applies to any similar discussion in the Executive Summary of the DEIR and/or Staff Report. The attached comments utilize the following acronyms or definitions.

Additional Refinery Rules – Includes the proposed rules, amendments, and staff report referenced in the October 2015 Bay Area Air Quality Management District, Petroleum Refinery Emissions Reduction Strategy: Staff Report covering Particulate Emissions from Refinery Fluidized Catalytic Cracking Units, Equipment Leaks, Petroleum Coke Calcining Operations, and Cooling Towers.

DEIR or EIR – References the Draft Environmental Impact Report for the Bay Area Air Quality Management District proposed Air District Regulation 12, Rule 15: Petroleum Refining Emissions Tracking; and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds.

HRA- Health Risk Assessment.

Lead Agency – References Bay Area Air Quality Management District, or BAAQMD, or District.

NAAQS- References National Ambient Air Quality Standards.

Mr. Eric Stevenson, Director
Technical Services Division
Bay Area Air Quality Management District
November 20, 2015
Page 2

New Rule – References the new version of 12-16 issued for public comment by the District on September 11, 2015.

Project – Includes the proposed 12-15 and 12-16, the Additional Refinery Rules, and the 2016 Refinery Rules (defined below).

Rules – the Proposed 12 -15 and 12-16 and the Additional Refinery Rules.

Staff Report – The BAAQMD Staff Report issued in October of 2015 for Proposed Air District Regulation 12, Rule 15: Petroleum Refining Emissions Tracking and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds.

Strategy Staff Report - Includes the BAAQMD Staff Report and the Petroleum Refinery Emissions Reduction Strategy issued by the District in October 2015.

12-15 – References the Proposed Air District Regulation 12, Rule 15: Petroleum Refining Emissions Tracking.

12-16 - References Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds.

2016 Refinery Rules – Refers to a second set of refinery regulations to be adopted by the District in 2016, including the Draft amendments to Regulation 9-1 and 9-9 issued by the District on May 26, and the rules referenced in the "Concept" paper issued by the District on the same Date and those rules to be adopted in 2016 referenced in the Strategy Staff Report.

Very truly yours,



Keith Howard

KH/bh

Enclosures

cc: Natalie Braden (w/encl.)
Pierre Espejo (w/encl.)

The Shell Martinez Refinery (Shell) offers the following comments on the Draft Environmental Impact Report (DEIR) prepared by the Bay Area Air Quality Management District (District) as lead agency with respect to the District's proposed new Regulation 12, Rule 15 - Petroleum Refining Emissions Tracking (Rule 12-15) and Regulation 12, Rule 16 - Petroleum Refining Emissions Limits and Risk Thresholds (Rule 12-16) and the supporting Staff Report. The comments below address issues and concerns Shell has identified with the highlighted Chapters and Sections of the DEIR.

Chapter 1 - Introduction

Introduction

Contrary to allegations in the DEIR (pg 1-1), refineries are not among the major sources of air pollution in the Bay Area when all sources of emissions are considered. As shown on Attachment No. 1 obtained from the District website, the District's own records demonstrate that refineries are responsible for only 4% of the reactive organic gas (ROG), 3% of the NO_x, 6% of the PM_{2.5}, and 26% of the SO₂ emissions in the Bay Area. As acknowledged in the DEIR (pg 1-1), refinery emissions also have trended downward over time. Attachment No. 1 includes a graph entitled "Refinery Emission Trends 1980 to 2015 ...", which demonstrates dramatic reductions in emissions of ROG, NO_x, SO₂, and toxic air contaminants from Bay Area refineries during this time period.

The DEIR claims that refineries rank among the top ten facilities for risk-weighted emissions of toxic air contaminants and are some of the largest sources of NO_x and SO₂. (DEIR pg 1-1). Assuming that this statement refers only to "stationary sources", the District must explain why the DEIR fails to analyze or explain the environmental impact of excluding at least 5 of the top 10 stationary sources of toxic air contaminants, along with some of the largest emitters of SO₂ and NO_x, from coverage under Rule 12-15 and Rule 12-16.

Notice of Preparation and Initial Study

The DEIR (pg 1-2) references only one comment letter (submitted by the Western States Petroleum Association) received by the District in response to the Notice of Preparation/Initial Study (NOP/IS) issued on February 23, 2015. In fact, Shell submitted extensive comments on the NOP/IS in a letter dated March 26, 2015, a copy of which is included as Attachment No. 2 and incorporated herein by reference. The letter was e-mailed to the District on March 26, 2015 and sent by certified mail and Shell received the certified mail receipt showing it had been delivered to the District. As lead agency, the District must include in the DEIR any appropriate information requested in responses to the NOP/IS. (CEQA Guidelines § 15082). The District as lead agency was also required to consider all information and comments received in conjunction with preparation of the DEIR. (CEQA Guidelines § 15084). As the District does not acknowledge receipt of Shell's March 26, 2015 comment letter, it did not consider the issues and concerns identified therein.

Further, Rule 12-15 was substantially revised, and Rule 12-16 was completely rewritten, between the District's issuance of the NOP/IS in February 2015, and September 11, 2015, the date on which the District issued a Request for Comments Notice seeking public comment on the

proposed revisions to the two draft rules. In addition to the foregoing, the District is also currently seeking public comment on four new or modified rules applicable to refinery sources (Additional Refinery Rules) and has scheduled amendments to additional refinery-related rules for 2016 (2016 Refinery Rules). Neither the Additional Refinery Rules, nor the 2016 Refinery Rules, are referenced in the NOP/IS, even though both sets of rules, along with Rule 12-15 and Rule 12-16, collectively comprise what the District refers to as its Petroleum Refinery Emissions Reduction Strategy (Strategy Staff Report pgs 1,2).

The NOP is required to provide a sufficient description of the Project to enable responders to provide a meaningful response. (CEQA Guidelines § 15082). However, the version of the Project analyzed in the DEIR bears little resemblance to the Project described in the NOP. Rule 12-15 went through a three-year rule development process, consisting of workshops, meetings, and draft rules circulated for public comment, before the District's issuance of the NOP/IS on February 23, 2015 (Staff Report, pgs 12-16-32 & 33). However, significant revisions were made to Rule 12-15, and Rule 12-16 was introduced only shortly before NOP/IS was issued and then 12-15 was substantially changed and 12-16 completely rewritten, between issuance of the NOP/IS and September 11, 2015, the date the District formally sought public comment on the versions of Rules 12-15 and 12-16 now proposed for adoption. Attachment No. 3 contains redlines showing the significant changes to Rule 12-15, and the complete re-write of Rule 12-16, made available to the public in September 2015. Given the significance of these changes, agencies and other interested members of the public receiving the NOP were denied the opportunity to provide meaningful responses and comments to the Project in its current form. The CEQA process adopted by the District should be re-started, beginning with a NOP that accurately describes the Project, followed by a DEIR that addresses potential environmental impacts associated with all aspects of the District's stated Petroleum Refinery Emissions Reduction Strategy (i.e., the current versions of Rules 12-15 and 12-16, the Additional Refinery Rules, and the 2016 Refinery Rules).

Areas of Controversy

An EIR must include a brief summary of the proposed action and its consequences that identifies, in part, "areas of controversy" known to the lead agency, including issues raised by agencies and the public. (CEQA Guidelines § 15123(b)). Shell's comments on the NOP were not acknowledged as received and there is no reference in the DEIR to the issues of concern identified by Shell. That alone is a fatal flaw in the DEIR and is further reason for the District to restart the CEQA process for the Project.

Chapter 2 - Project Description

Project Objectives

The DEIR identifies a number of specific objectives that the District seeks to achieve through adoption of Rules 12-15 and 12-16. As will be highlighted below, those objectives that are within the District's legal authority are already being met, or can be met, through existing laws, rules and regulations.

- Characterization of Refinery-Related Emissions. Under the existing rules cited on pages 3-17 and 3-18 of the DEIR, the District already has the authority to request from any or all of the Bay Area refineries the information that would be required under Rule 12-15 in its current form. (*see* District Regulation 1, Section 410, 420, 440, 441, 501, 502, 520, 521, 522, 523, 540, 541, 542, 543, 544, and 600). Each Bay Area refinery is unique. Information related to emission characterization would be far more useful if the requests were tailored by the District to each specific refinery rather than applying the general approach contained in Rule 12-15. In summary, Rule 12-15 is unnecessary as the information covered thereunder can be obtained through the application of existing District rules.
- Crude Slate Changes. All Bay Area refineries already have emission limits or equivalent operational limits set in their Title V permits issued by the District to each refinery. Such limits apply regardless of the types of crude they process. These emission limits do not change because there is or may be a change in the type of crude processed.
- Ensure Compliance with Ambient Air Quality Standards. For SO₂, this goal is already being met as the Bay Area is in attainment for SO₂, NO_x, and CO. (DEIR pg 3-4). Further EPA has designated the Bay Area as having "Clean Data" for PM_{2.5} (the equivalent of attainment), but the District has not requested attainment status from EPA for PM_{2.5}. As demonstrated in Attachment No. 1, current refinery SO₂ emissions are only a small fraction of what they were in 1980. Accordingly, Rule 12-16 is unnecessary.
- Refinery Energy Efficiency. Energy efficiency is something all refineries currently practice without District interference. Mandating how a refinery operates its energy systems would appear to be in direct conflict with statutory authority granted air pollution control districts by the State Legislature which prohibits districts from setting "operational or effectiveness requirements" for any specific emission control equipment. (Health and Safety Code Section 40001(d)(3)). Energy systems are only one operation within a refinery that may produce greenhouse gases. If the District can mandate how Bay Area refineries are to manage and operate their energy systems, it could potentially dictate how all other refinery systems are to operate. The District can set emission limits for a facility or source, but cannot direct the facility how to operate to meet those limits.
- Refinery Health Risks. The District currently has the statutory authority to require Bay Area refineries to conduct updated Health Risk Assessments (*see* Comment above re: Characterization Refinery- Related Emissions) and can address any reductions needed through its normal rulemaking process. Further, the State Toxic Hot Spots law which all refineries must comply with requires HRAs. Attachment No. 1 also demonstrates that emissions of toxic air contaminants from Bay Area refineries have been reduced by more than 75% since 1980.
- Public Information on Refinery Emissions and Crude Slate Changes. As stated above, the District already has the ability to obtain through existing rules all of the emissions information required by Rule 12-15. Shell considers crude slate information to be highly confidential and proprietary, with its release having the potential to create significant competitive disadvantages. Further, efforts to obtain this information represent yet another example of attempts by the District to operate in excess of the authority granted under the Health and Safety Code. After obtaining the crude slate information, and notwithstanding the absence of any

statutory authority for such action, the District presumably will attempt to proscribe which sources of crude a Bay Area refinery can and cannot process.

In summary, the objectives identified by the District in support of Rules 12-15 and 12-16 that do not exceed the District's statutory authority are being met, or can be met, through application of existing laws, rules and regulations.

Background and Project Description

As acknowledged in the Staff Report and the DEIR, the versions of Rules 12-15 and 12-16 in existence when the NOP/IS was issued is not what is analyzed in the DEIR. Substantial changes were made to Rule 12-15, and Rule 12-16 was completely rewritten, between February 23, 2015 (the NOP issuance date) and September 11, 2015. The version of Rule 12-16 currently proposed for adoption by the District bears almost no resemblance to the version of Rule 12-16 in existence at the time the NOP was issued or to the versions that had preceded the NOP.

The District Staff Reports (Staff Report, pg 12-16-1; Strategy Staff Report, pgs 1 & 2) reference directions to staff from the District's Board of Directors to promulgate, in addition to Rules 12-15 and 12-16, additional rules requiring a 20% emission reduction from the same refineries subject to Rules 12-15 and 12-16 (i.e., the Additional Refinery Rules). On October 23, 2015, the District issued a Public Hearing Notice setting forth its intention to adopt the Additional Refinery Rules. (See Attachment 4). The District has set November 23, 2015, as the end of the public comment period for the Additional Refinery Rules, the same date as the end of the comment period on the DEIR. The Additional Refinery Rules are also scheduled for adoption on December 16, 2015, the same day that the District's Board of Directors will consider adoption of Rules 12-15 and 12-16.

According to the Staff Reports, the District has adopted a "four part" strategy stemming from Board of Directors Resolution No. 2014-17. The "four parts" are described in detail in the Strategy Staff Report as including Rule 12-15, Rule 12-16, the Additional Refinery Rules, and the 2016 Refinery Rules, all of which are collectively referred to by the District as comprising its Petroleum Refinery Emissions Reduction Strategy. Adoption of the Additional Refinery Rules is currently proposed by the District to be on the basis of a CEQA Negative Declaration. As clearly demonstrated by the Strategy Staff Report and Board of Directors Resolution No. 2014-17, the Additional Refinery Rules and the 2016 Refinery Rules are directly related to Rules 12-15 and 12-16, and collectively comprise one project for purposes of CEQA environmental review. Excluding the potential environmental impacts of the Additional Refinery Rules and the 2016 Refinery Rules from the Project analyzed in the DEIR (i.e., proposed adoption of Rules 12-15 and 12-16) is a classic example of project piecemealing prohibited by CEQA. While the DEIR (pg 31-15) lists all the above rules, along with approximately eight other rules that will affect refinery operations, as being "considered" by the District, it fails to acknowledge that the Additional Refinery Rules and Rules 12-15 and 12-16 have in fact been scheduled for adoption by the District at the same Board of Directors Hearing. Clearly, the Additional Refinery Rules are part of the Project.

CEQA Guidelines section 15378 defines "project" to mean "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a

reasonably foreseeable indirect physical change in the environment. CEQA Guideline 15378). The term "project" refers to the activity which is being approved and which may be subject to discretionary approvals by governmental agencies. The term project does not mean each separate governmental approval. (CEQA Guidelines §15378 (c)). Courts have explained that a complete project description must "address not only the immediate environmental consequences of the project, but also all 'reasonably foreseeable consequence(s) of the initial project'." (*Laurel Heights Improvement Association v. Regents of University of California* (1988) 47 Cal.3d 376, emphasis added; see also *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449-50). If a[n] ...EIR...does not adequately apprise all interested parties of the true scope of the project for intelligent weighing of the environmental consequences of the project, informed decision making cannot occur under CEQA and the final EIR is inadequate as a matter of law." (*Riverwatch v. Olivenhain Municipal Water Dist.* (2009) 170 Cal.4th 1186, 1201).

Moreover, a public agency may not segment a large project into two or more smaller projects in order to mask serious environmental consequences. CEQA prohibits such a "piecemeal" approach and requires review of a project's impacts as a whole. (CEQA Guidelines §15378(a); *Burbank-Glendale-Pasadena Airport Authority v. Hensler* (1991) 233 Cal.App.3d 577, 592). CEQA mandates "that environmental considerations do not become submerged by chopping a large project into many little ones – each with a minimal potential impact on the environment – which cumulatively may have disastrous consequences. (*Bozung v. Local Agency Formation Commission* (1975) 13 Cal.3d 263, 283-84; *City of Santhree v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1452). Before approving a project, a lead agency must assess the environmental impacts of all reasonably foreseeable phases of a project. (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 396-397 (EIR held inadequate for failure to assess impacts of second phase of pharmacy school's occupancy of a new medical research facility). "The significance of an accurate project description is manifest where," as here, "cumulative environmental impacts may be disguised or minimized by filing numerous, serial applications.. (*Arviv Enterprises v. South Valley Area Planning Commission* (2002) 101 Cal.App.4th 1333, 1346).

Clearly, Rules 12-15 and 12-16, the Additional Refinery Rules, and the 2016 Refinery Rules are all part of one "Project" and regulatory action. A new NOP and a new draft EIR need to be prepared and recirculated to include all aspects of the Project and to analyze all potential environmental impacts associated with the complete set of proposed rules directed at refinery sources. The Additional Refinery Rules simply cannot be adopted on the basis of a Negative Declaration because they are part of a much larger project, which includes Rule 12-15, Rule 12-16, and the 2016 Refinery Rules, all of which must be addressed in one EIR. (CEQA Guidelines § 15378).

Applicable SO₂, PM_{2.5}, And TAC Control Technologies

As acknowledged in the Staff Report, Section 40001 of the Health and Safety Code prohibits the District from mandating that specific types of air pollution control equipment be installed at a facility. Yet, the DEIR lists the specific air pollution control devices that will be required under Rule 12-16.

Chapter 3 - Environmental Setting, Impacts, Mitigation Measures and Cumulative Impacts

Environmental Impacts

The environmental impact analysis in the DEIR is inadequate. While the DEIR acknowledges that Rules 12-15 and 12-16 will result in significant impacts, including those associated with construction, baghouses, ESPs, and WGS water demand, some of which cannot be mitigated (pg 3-77), it contains no analysis of the impacts associated with the Additional Refinery Rules or the 2016 Refinery Rules. This omission cannot be cured by treating the Additional Refinery Rules as a separate project and issuing a Negative Declaration, and simply ignoring any impacts from the 2016 Refinery Rules.

Shell NOP Comments

As highlighted above, Rule 12-16 was completely rewritten, and Rule 12-15 significantly revised, between February 23, 2015 and September 11, 2015. Nonetheless, many of Shell's NOP comments also apply to the new versions of the rules issued by the District for public comment on September 11, 2015. The following comments provided by Shell in its March 26, 2015 comment letter (none of which were addressed in the DEIR) relate to potential environmental impacts associated with Rules 12-15 and 12-16 as now proposed for adoption.

1. How will Regulation 12 Rule 16 (12-16) impact existing enforceable permit limits developed as a result of a project that was subject to mandated emission mitigation reductions imposed after a CEQA review and certification of an EIR (CEQA Limits)? As 12-16 is written, if a refinery is operating below its CEQA Limits and then increases its operation up to the CEQA Limit, it appears the refinery could trigger the requirement for an Emission Reduction Plan even though it had already supplied the emission mitigations to offset CEQA Limits and was in compliance with all applicable rules and regulations when the project was approved. If a refinery invested hundreds of millions of dollars in mitigation equipment required to obtain a project permit and has operated the equipment for years relying on the permits obtained after complying with CEQA, does 12-16 abrogate those CEQA limits? Do the proposed Rules make historic CEQA reviews meaningless for refineries, and supersede CEQA for all future refinery projects? What is the long term environmental impact of 12-15 and 12-16 superseding CEQA for refinery projects?

2. What will be the future environmental impact if refineries no longer have an incentive to undertake new projects that include emissions reductions if any CEQA Limits established in the permitting process cannot be relied on?

3. How does 12-16 impact Regulation 2 Rule 4 (emissions banking)? Will a refinery be able to use banked emission credits to offset emission increases above the 12-16 trigger levels? If a future project will cause emission increases and they are offset by use of emission reduction credits (ERCs) to obtain the permit, will those ERCs be recognized under 12-16? Does 12-16 in effect, abrogate and/or supersede Regulation 2 Rule 4 for refineries? What is the environmental impact if refineries can no longer utilize Regulation 2 Rule 4 for future projects and the corresponding loss of any incentive to create emission reductions to place in the

bank? Can the District abrogate use of Regulation 2 Rule 4 for refinery projects without a thorough analysis of all of potential environmental impacts and consequences?

4. Please address the environmental impact of the inconsistency between 12-16 and existing State and Federal (PSD) permitting programs, especially with respect to use of emission offsets as allowed under Regulation 2 Rule 2.

5. What is the basis for the required finding of ‘necessity for adoption of Regulation 12 Rule 16? Refineries are the only stationary source under the District’s jurisdiction being subjected to the rule and a cap on specified emissions. The District’s own CARE data shows that refinery emissions are not the cause of health risks in impacted communities (see BAAQMD April 2014 CARE Program Report). Refineries are already subject to over 30 BAAQMD rules including the strictest permitting rules in the Country. The District’s data show that emissions from refineries have been declining over the years (see Regulation 12 Rules 15 and 16 Public Workshop Presentation, March 16, 2015). In light of the data, why is 12-16 and a cap on certain refinery emissions necessary?

6. Please address the environmental impact of Regulation 12 Rules 15 and 16 in conjunction with the District’s stated refinery emission reduction strategy of 20% reduction in emissions by 2020. All of these rule development efforts affecting the refineries are taking place concurrently and therefore shouldn't the environmental impact of all of these efforts be considered together in one CEQA review (EIR) (see Regulation 12 Rules 15 and 16 Public Workshop Presentation, March 16, 2015).

7. Please explain the apparent conflict between Rules 12-15 and 12-16? The 1/28/15 BAAQMD Staff Report states that “the proposed Mitigation Rule in 12-16 would use emissions information gathered by the Tracking Rule to establish “trigger level” emissions toeholds...” However, the proposed 12-16 initial trigger levels have already been set without any emissions information from 12-15 as neither rule has been adopted. The current triggers are artificial and don’t adequately account for routine variations in refinery emissions. Without the benefit of the data to be gathered by Reg 12-15 in setting the trigger levels, address the potential risk of a significant resource burden on the refineries to determine the cause of and implement mitigation for emission changes due to variation in routine operation. Isn't setting emission triggers in 12-16 without the benefit of the data to be provided in Regulation 12 Rule 15 premature?

Excluded Significant Impacts

The DEIR is inadequate in its failure to consider impacts to aesthetics, cultural resources, geology and soils, noise, and traffic that could result from the implementation of Rules 12-15 and 12-16. Rule 12-15 requires multiple installations of monitoring equipment along the fence lines of the refineries, many of which have residential neighbors along such fence lines. All monitors are required to be in a secure structure large enough for inspection and maintenance personnel to access. In addition, monitors are required to be placed in positions of maximum concentration of air contaminants, which may not be on refinery-owned property. The construction, placement, operation and maintenance of the monitors and related structures will clearly have a significant aesthetic impact that likely will trigger the need for mitigation measures to reduce these impacts to less than significant levels.

The construction of air pollution control equipment contemplated by Rule 12-16, such as a Wet Gas Scrubber (WGS), would be a major project for any refinery costing hundreds of millions of dollars. As indicated in the DEIR (pgs 3-22, & 3-23) a single WGS could require close over 200 construction workers. EIRs for major refinery projects almost always require mitigation for significant impacts from traffic, geology and soils, noise related to construction and operation of the new equipment. (See Shell Crude Tank Replacement Project Draft Environmental Impact Report Contra Costa County file # LP10-2006 chapters 4.1, 4.5, 4.7, 4.13, and 4.17). None of these impacts are discussed or mitigated in the DEIR.

In addition, the methodology required to be used for emission calculations under Rules 12-15 and 12-16 largely excludes use of actual emissions and instead results in inflated emission estimates by requiring use of modeled emissions, out dated and grossly inaccurate emission factors, and emissions from offsite mobile sources that refineries neither own or control all of which result in greatly overstated refinery emissions (See Regulations 12-15-405 and 12-16-304, and guidelines issued in connection therewith). The end result is that Rules 12-15 and 12-16 may result in requirements that air pollution control equipment be constructed and operated, with all the adverse environmental consequences identified in the DEIR and in these comments, to reduce phantom emissions. A further adverse impact not considered in the DEIR will occur when inflated emissions unrelated to actual emissions are required to be used to trigger "Risk Notification Requirements" provided for in Regulation 12-16-402. The impacts of required false notification of a health risk to communities surrounding refineries, when in fact no such risk may exist based on actual emissions, is not considered in the DEIR.

Cumulative Impacts

An EIR must discuss whether a Project may have cumulatively considerable impacts which may result from the combination of the Project and other projects causing related impacts. (CEQA Guidelines § 15130(a)). A project has a significant cumulative effect if it has an impact that is individually limited, but cumulatively considerable. (CEQA Guidelines § 15065(a)(3)). Cumulatively considerable is defined as meaning that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. (CEQA Guidelines § 15065(a)(3)). Cumulative impacts analysis is necessary because environmental damage often occurs incrementally from a variety of small projects that appear insignificant when considered individually, but can result in significant impacts when considered collectively. (*Communities for a Better Env't v. Cal Res. Agency* 103 Cal. App. 4th 98, 114 (2002)). The cumulative impact analysis in the DEIR is incomplete and inadequate.

In discussing the cumulative impacts of Rules 12-15 and 12-16, the only reference in the DEIR is to the District's 2010 Clean Air Plan and the implementation of Rules 12-15 and 12-16. If, as the District appears to imply, the Additional Refinery Rules and the 2016 Refinery Rules, as well as the other refinery rules being "considered" (DEIR pg 3-77), are really projects separate from the adoption of Rules 12-15 and 12-16, at a minimum the impacts from adoption and implementation of those rules must be considered in the cumulative impacts analysis required by CEQA. The DEIR fails to include any such analysis.

Chapter 4 - Alternatives Analysis

Alternative 1 - No Project Alternative

This Alternative is the best alternative as Rules 12-15 and 12-16 are unnecessary. The DEIR acknowledges that much of the information required by Rule 12-15 can be obtained under existing rules, laws and regulations. (DEIR, pg 4-3) In fact, the District currently has all of the tools and authority needed to obtain the information covered by Rule 12-15 from each of the individual refineries. Such requests could be tailored to fit the individual circumstances of each refinery. The Bay Area is currently, and for years has been, in compliance with the NAAQS for SO₂, NO_x, CO, (DEIR 3-4) and PM_{2.5} (should the District seek attainment status from EPA). Health Risk Assessments are covered by the State Toxic Hot Spots law with which all refineries must comply (DEIR pgs 2-4, 3-16). The methodology required to be used for emission calculations under Rules 12-15 and 12-16 for the most part excludes use of actual emissions and instead inflates emission estimates by requiring use of modeling, outdated inflated emission factors and emissions from offsite mobile sources that are neither owned nor controlled by the refineries, resulting in greatly overstated refinery emissions (See Regulations 12-15-405 and 12-16-304). The end result is that Rules 12-15 and 12-16 may result in requirements to notify the public of health risks and to construct and operate air pollution control equipment, with all of the resulting adverse environmental consequences identified in the DEIR and in these comments, when no health risk or excess emissions exist. This alternative avoids all of the significant environmental impacts from the adoption of Rules 12-15 and 12-16. (DEIR pgs 3-39, 3-41, 3-69, and 3-77).

Alternative 2 - Implement Regulation 12-15, Tracking Rule Only

The DEIR states that "[s]ince the need for emission reductions has not yet been determined, the actual control measures that will be required to reduce emissions, if any, is unknown". (DEIR pg 1-2). The analysis of Alternative 1 also recognizes that "the need for emission reductions has not yet been determined..." (DEIR pg 4-3) and that "[i]t is currently unknown whether or not any of the affected refineries would exceed any of the refinery-wide emission limits for SO₂ or PM_{2.5} or whether or not updating the HRAs would demonstrate exceedance of any significant risk thresholds...".

Rule 12-15 is intended to develop the information needed to make such determinations. If after information is provided to the District under Rule 12-15 it is determined that emission reduction measures are needed, the existing rule development process can be followed targeting those contaminants requiring a reduction. Implementing Rule 12-15 only will avoid almost all of the significant environmental impacts identified for the Project. Further, "Alternative 2 would achieve six of the eight project objectives." (DEIR pgs 1-20, 4-7). While the Staff Report only identifies six objectives and the DEIR lists only seven, it nevertheless is clear that Alternative 2 would accomplish almost all of the objectives of the Project without any of the adverse environmental consequences, while allowing any future refinery rules to be tailored to specific needs identified by the information gathered from Rule 12-15.

Socioeconomic Analysis

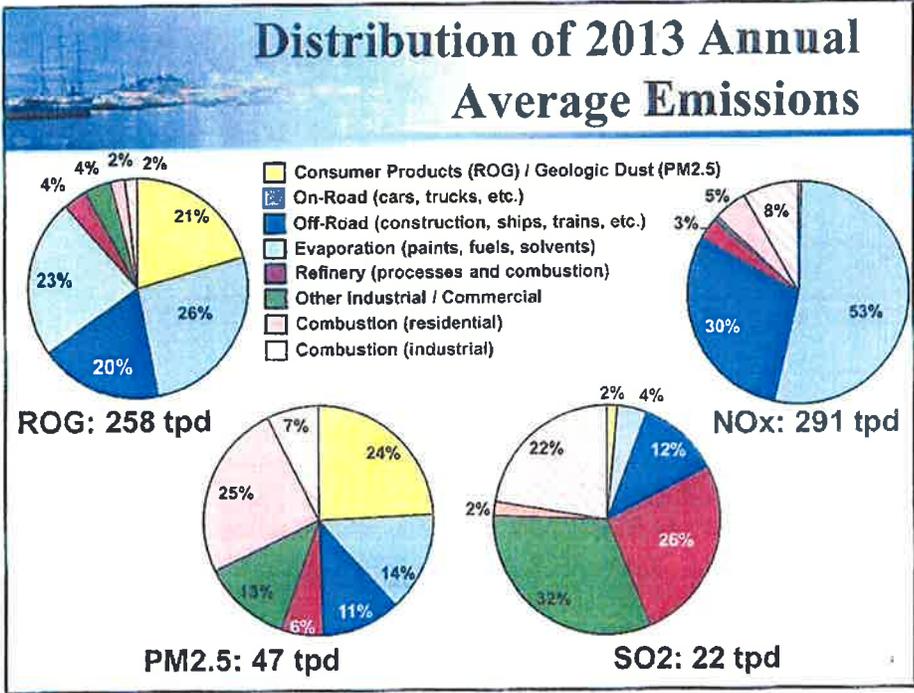
Finally, the Staff Report contains a Socioeconomic Analysis and "The analysis concludes that the socio-economic impacts of compliance with the requirements of these rules is less than

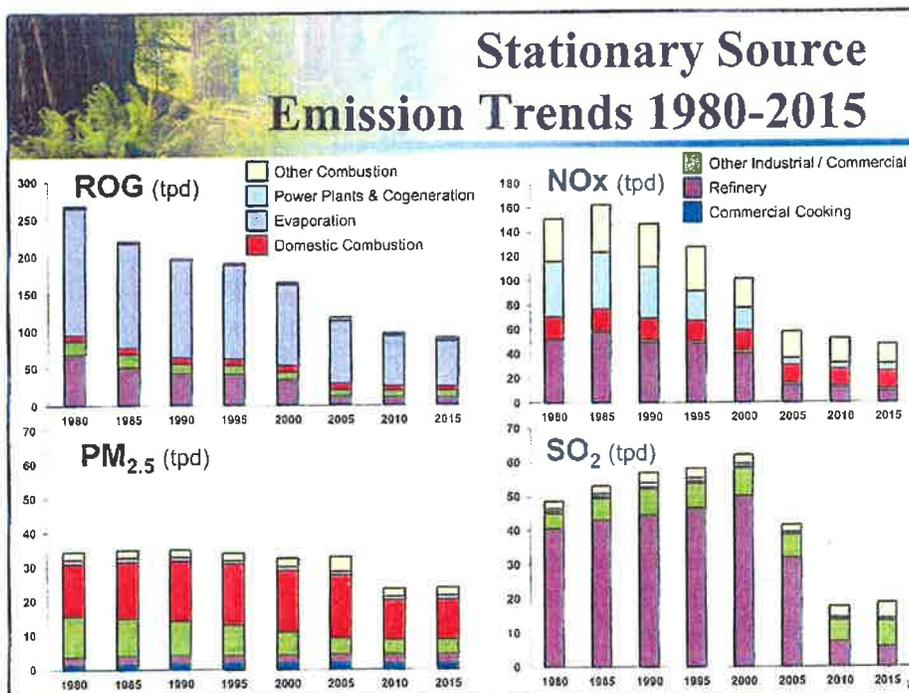
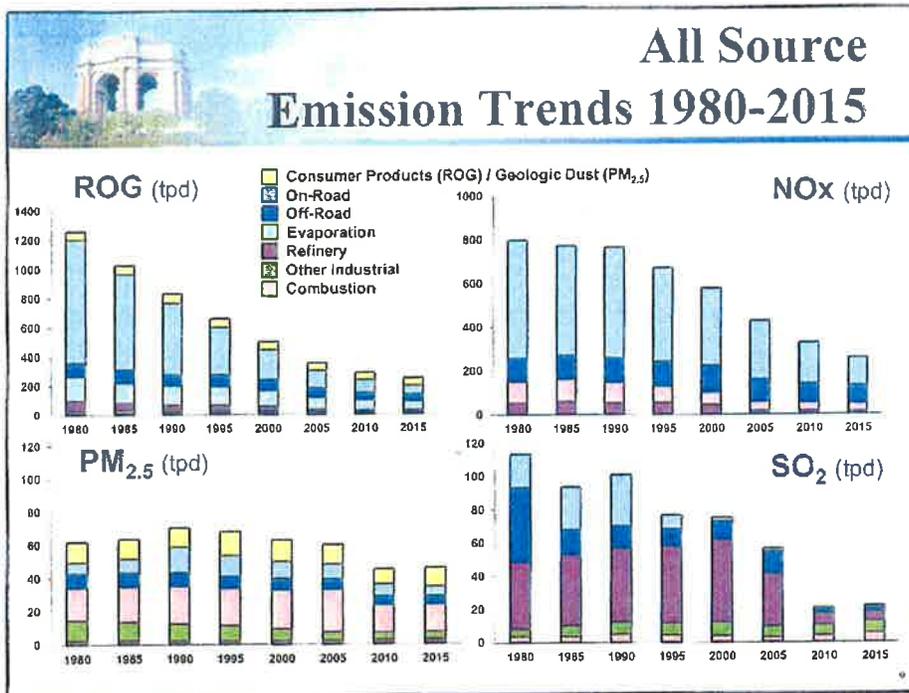
significant, even assuming the most expensive controls that may be required." (Staff Report 12-16-30). This conclusion cannot be justified when on the same page of the Staff Report Table 4 states "It is assumed that each refinery will trigger the significant risk requirements of 12-16-301.2" and need to implement a Risk Reduction plan. The Table then shows "Cost (per refinery) TBD." The Staff Report conclusion cannot be justified when the cost of compliance has yet to be determined. Further, Section 12-16-303 of the Socio-Economic Analysis Report states that refineries would "be able to reduce significantly reduce the health risk from all stationary sources at the refinery by installing particulate control filters on all diesel engines onsite" at a nominal cost. In fact, the refinery has only 9 diesel engines and all are used as emergency backup only. Installation of such filters would provide only a minimal reduction in health risk. The controls required to reduce health risk depends on the results of the HRA and what is driving the risk at each refinery. If the risk estimates are based on exaggerated emissions data (as would currently be the case since the refineries are required to use old inaccurate default emission factors for fugitive emissions) controls could be required to mitigate phantom emissions. These costs could easily be in the hundreds of millions of dollars. These costs and the impacts to the environment of installing emission controls that are not needed are not considered in the analysis.

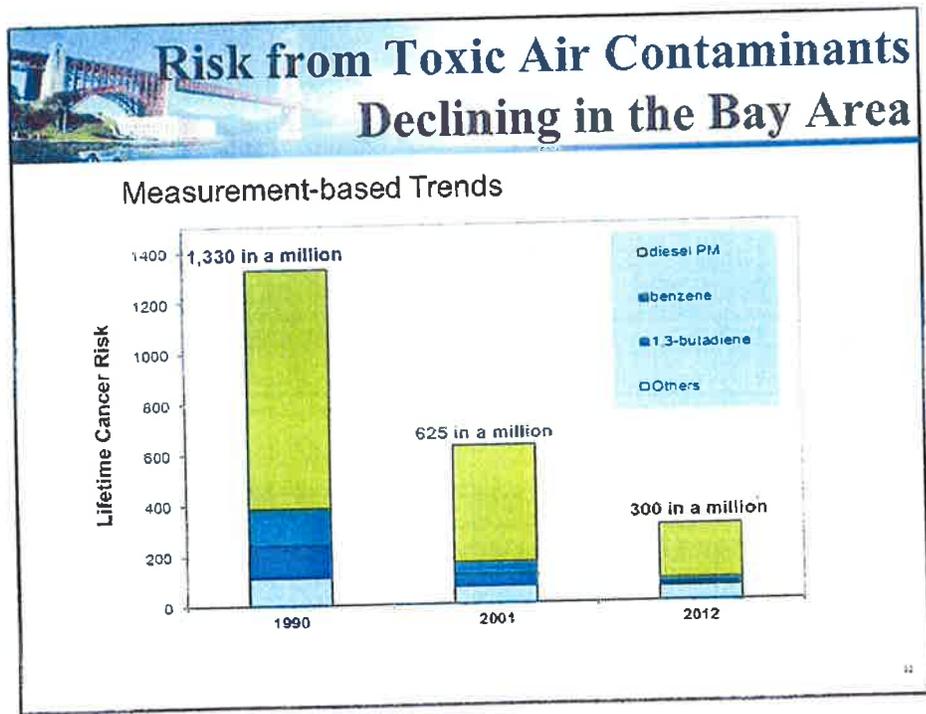
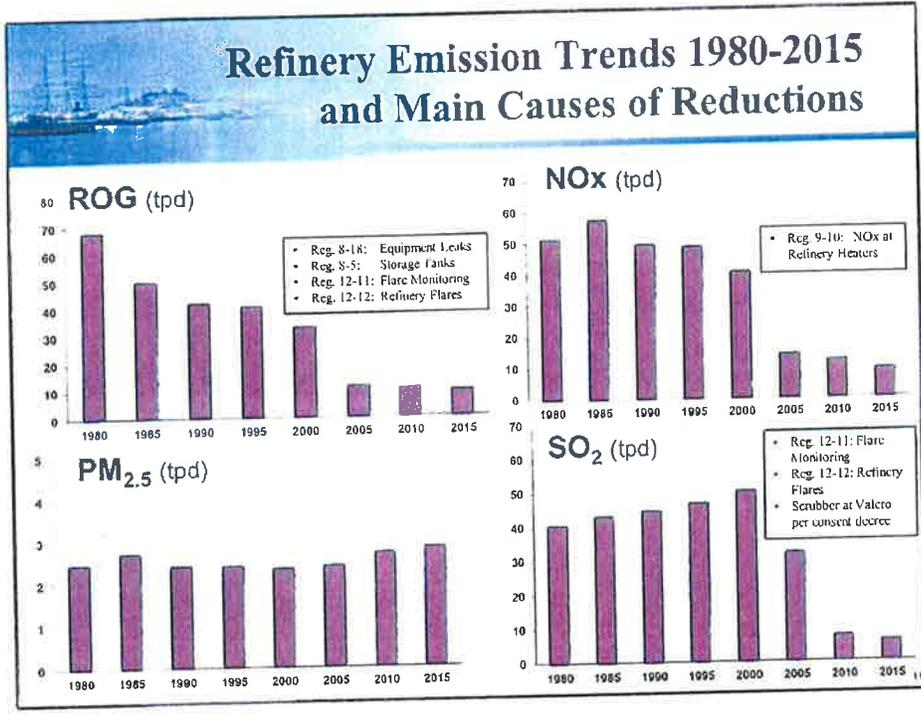
Further, the inflated emissions estimates required by the 12-15 and 12-16 will likely result in the requirement to warn (notify) neighbors surrounding the refinery of potential health risks that, in fact, do not exist. Not only would such unnecessary notification result in unfounded apprehension, but could affect property values. The Socioeconomic Analysis makes no mention of this potential socioeconomic impact.

Air District Compliance & Enforcement - 2013

- **Compliance Verification Inspections**
 - 10,130
- **Complaint Investigations**
 - 3,320
- **Violations**
 - 1006
- **Incident Investigations**
 - 442 Episodes, 82 Breakdowns, 2 Major Incidents
- **Compliance Audits & Refinery Program Review**
 - Tank Degas Audit
 - Regulation 8-18 Audit
 - Marine Terminals Audit







ATTACHMENT 2



Shell Oil Products US

Martinez Refinery
PO Box 711
Martinez, CA 94553-0071

CERTIFIED MAIL – Return Receipt Requested

March 26, 2015

Mr. Eric Stevenson, Director
Technical Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Subject: Comments on the CEQA Notice of Preparation of Draft Environmental Impact Report for Adoption of Proposed BAAQMD Regulation 12 Rules 15 and 16

Dear Mr. Stevenson,

The Shell Martinez Refinery (Shell) offers the following comments on the Notice of Preparation of the Environmental Impact Report for the Proposed BAAQMD Regulation 12 Rules 15 and 16 (12-15 and 12-16). Shell requests that the EIR respond to the questions/comments below. The California Environmental Quality Act (CEQA) is one of California's landmark pieces of environmental legislation often credited with protecting California's environment since its adoption. A number of the concerns and questions below relate to the potential impact of 12-15 and 12-16 on CEQA.

1. How will Regulation 12 Rule 16 (12-16) impact existing enforceable permit limits developed as a result of a project subject to mandated emission reductions imposed after a CEQA review and certification of an EIR (CEQA Limits)? As 12-16 is currently written, if a refinery is operating below its CEQA Limits and then increases its operation up to the CEQA Limit, it appears the refinery could trigger the requirement for an Emission Reduction Plan and duplicating the emission mitigations required by CEQA Limits. Where a refinery may have invested hundreds of millions of dollars in mitigation equipment required to obtain a project permit and operated the equipment for years relying on the permits obtained after complying with CEQA, does 12-16 abrogate those CEQA limits? If that is the case don't the proposed rules essentially make a CEQA review meaningless for refineries, and what is the long term impact of 12-15 and 12-16 superseding CEQA for refinery projects?

Does the exemption for emission increases resulting from an increase in crude oil throughput found in Section 103 of Regulation 12-16 apply to all refinery units that process crude oil or a fraction thereof? We understand that the exemption is included to provide refineries the flexibility needed to increase production when required to meet increased demand. The BAAQMD 1/28/15 Staff Report states that this will "help to ensure that the adequate supply of marketable products is not adversely affected by the requirements of the proposed rule." However, increasing throughput to a crude unit is only one way that refineries increase or maintain production to meet increased demand. Different process units may increase production within permitted limits and others may reduce production depending on the product in demand (e.g. gasoline, diesel, jet fuel). Please address the impact if refineries in the Bay Area can no longer operate process units other than the crude unit up to their permitted limits to increase production of specific products as needed to meet demand. Further, why shouldn't the exemption for increases in throughput under permitted levels apply to any unit in the refinery that processes, handles, or stores any crude oil or fraction of crude oil as allowed by an Air District Permit to Operate?

The following is a Shell specific example to illustrate the concerns and questions expressed above. Shell submitted an application for a Land Use permit and an application for an Authority to Construct in 2010 for a project to replace several crude storage tanks with larger tanks to provide more onsite storage to allow for greater receipt of crude oil by marine vessel to replace pipeline receipts. The project involved a 70 ton estimated increase in NOx emissions over the baseline emissions, due to the anticipated increase in ship traffic. A Land Use permit was issued based on a certified Environmental Impact Report and the BAAQMD issued an Authority to Construct. Both permits contain enforceable CEQA Limits requiring a 70 ton reduction of NOx emissions from the FCCU to offset the ship emission increases. The refinery spent \$70MM at the FCCU to reduce NOx.

The NOx emissions at the FCCU were reduced starting in 2010. As of 2015 the new crude tanks are still being built and the refinery has not yet increased ship traffic as permitted by the Land Use and BAAQMD permits. The NOx emissions have been reduced over the entire time allowed for setting the Petroleum Refining Emission Profile (PREP) per 12-15 (2010-2014), but when the refinery starts bringing in more crude by ship as allowed by the permit, the NOx emissions will go up compared to the PREP. Shell will still be 70 tons of NOx below its 2007-2009 NOx baseline, but will show an increase in NOx emissions over the PREP. Will the \$70MM investment at the FCCU to offset the NOx emissions from the ship traffic be of no use and unrecognized under 12-16? Will 12-16 require the refinery to develop an Emission Reduction Plan and mitigate these same NOx emissions again when the permitted shipping levels are reached?

3. What will be the future environmental impact if refineries no longer have an incentive to undertake new projects (including modernization projects) that include emissions reductions if any CEQA Limits established in the permitting process cannot be relied on?
4. How does 12-16 impact Regulation 2 Rule 4 (emissions banking)? Will a refinery be able to use banked emission credits to offset emission increases above the 12-16 trigger levels? If a future project will cause emission increases and they are offset by use of emission reduction credits (ERCs) to obtain the permit, will those ERCs be recognized under 12-16? Does 12-16 in effect, abrogate and/or supersede Regulation 2 Rule 4 for refineries? What is the environmental impact if refineries can no longer utilize Regulation 2 Rule 4 for future projects and the corresponding loss of any incentive to create emission reductions to place in the emissions bank? Can the District abrogate use of Regulation 2 Rule 4 for refinery projects without a thorough analysis of all of the potential environmental impacts and consequences?
5. Please address the environmental impact of the inconsistency between 12-16 and existing State and Federal (PSD) permitting programs, especially with respect to the use of emission offsets as allowed under Regulation 2 Rule 2.
6. What is the basis for the required finding of 'necessity' for adoption of Regulation 12 Rule 16? Refineries are the only stationary source under the District's jurisdiction being subjected to this rule and a cap on emissions. The District's own CARE data shows that refinery emissions are not the cause of health risks in impacted communities (see BAAQMD April 2014 CARE Program Report). Refineries are already subject to over 30 BAAQMD rules including the strictest permitting rules in the Country. The District's data show that emissions from refineries have been declining over the years (see Regulation 12 Rules 15 and 16 Public Workshop Presentation, March 16, 2015). In light of the data, why is 12-16 and a cap on refinery emissions necessary?
7. Please address the environmental impact of Regulation 12 Rules 15 and 16 in conjunction with the District's stated refinery emission reduction strategy of 20% reduction in emissions by 2020. All of these rule development efforts affecting the refineries are taking place concurrently (see Regulation 12 Rules 15 and 16 Public Workshop Presentation, March 16, 2015) and therefore shouldn't the environmental impact of all of these efforts be considered together in one CEQA review (EIR)?
8. Please explain the apparent conflict between rules 12-15 and 12-16. The 1/28/15 BAAQMD Staff Report states that "the proposed Mitigation Rule in 12-16 would use emissions information gathered by the Tracking Rule to establish "trigger level" emissions thresholds..." However, the proposed 12-16 trigger levels have already been set without any emissions information from 12-15 as neither rule has been adopted. The current triggers have been artificially set and don't adequately account for routine variations in refinery emissions. Without the benefit of the data to be gathered by Reg 12-15 in setting the trigger levels, address the potential risk of refineries exceeding the trigger due to routine operation as well as the significant resource burden on the refineries to determine the cause of and implement mitigation for emission changes due to variation in

routine operation. Isn't setting emission triggers in 12-16 without the benefit of the data to be provided in Regulation 12 Rule 15 premature?

Shell appreciates your consideration of these comments. Please contact Kathy Wheeler (925-313-3722) if you would like to discuss these issues in more detail.

Very truly yours,

A handwritten signature in cursive script that reads "Natalie Braden".

Natalie A. Braden
Manager, Environmental Affairs Department
Shell Oil Products, US – Martinez Refinery

ATTACHMENT 2

The Shell Martinez Refinery (Shell) offers the following comments on the Notice of Preparation of the Environmental Impact Report for the Proposed BAAQMD Regulation 12 Rules 15 and 16 (12-15 and 12-16). Shell requests that the EIR cover any answer the questions/comments below. The California Environmental Quality Act (CEQA) is one of California's landmark pieces of environmental legislation often credited with protecting California's environment since its adoption. A number of the concerns and questions below relate to the potential impact of 12-15 and 12-16 on CEQA.

1. How will Regulation 12 Rule16 (12-16) impact existing enforceable permit limits developed as a result of a project subject to mandated emission reductions imposed after a CEQA review and certification of an EIR (CEQA Limits)? As 12-16 is currently written, if a refinery is operating below its CEQA Limits and then increases its operation up to the CEQA Limit, it appears the refinery could trigger the requirement for an Emission Reduction Plan and duplicating the emission mitigations required by CEQA Limits. Where a refinery may have invested tens of millions of dollars in mitigation equipment required to obtain a project permit and operated the equipment for years relying on the permits obtained after complying with CEQA, does 12-16 abrogate those CEQA limits? If that is the case don't the proposed rules essentially make a CEQA review meaningless for refineries, and what is the long term impact of 12-15 and 12-16 superseding CEQA for refinery projects?
2. Does the exemption for emission increases resulting from an increase in crude oil throughput found in Section 103 of Regulation 12-16 apply to all refinery units that process crude oil or a fraction thereof? We understand that the exemption is included to provide refineries the flexibility needed to increase production when required to meet increased demand. The BAAQMD 1/28/15 Staff Report states that this will "help to ensure that the adequate supply of marketable products is not adversely affected by the requirements of the proposed rule." However, increasing through put to a crude unit is only one way that refineries increase or maintain production to meet increased demand. Different process units may increase production within permitted limits and others may reduce production depending on the product in demand (e.g. gasoline, diesel, jet fuel). Please address the impacts if refineries in the Bay Area can no longer operate process units other than the crude unit up to their permitted limits to increase production of specific products as needed to meet demand. Further, why shouldn't the exemption for increases in throughput under permitted levels to apply to any unit in the refinery that processes, handles, or stores any crude oil or fraction of crude oil as allowed by an Air District Permit to Operate?

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The NOx emissions at the FCCU were reduced starting in 2010. As of 2015 the new crude tanks are still being built and the refinery has not yet increased ship traffic as permitted by

the land use and BAAQMD permits. The NOx emissions have been reduced over the entire time allowed for setting the PERP per 12-15 (2010-2014), but when the refinery starts bringing in more crude by ship as allowed by the permit, the NOx emissions will go up compared to the PERP. Shell will still be 70 tons below its 2007-2009 baseline, but will show an increase over the PERP. Will the \$_____ project cost including the \$70MM investment at the FCCU to offset the NOx emissions from the ship traffic be of no use and unrecognized under 12-16? Will 12-16 require the refinery to develop an Emission Reduction Plan and mitigate these same NOx emissions again when the permitted shipping levels are reached?

3. What will be the future environmental impact if refineries no longer have an incentive to undertake new projects that include emissions reductions if any CEQA Limits established in the permitting process cannot be relied on?
4. How does 12-16 impact Regulation 2 Rule 4 (emissions banking)? Will a refinery be able to use banked emission credits to offset emission increases above the 12-16 trigger levels? If a future project will cause emission increases and they are offset by use of emission reduction credits (ERCs) to obtain the permit, will those ERCs be recognized under 12-16? Does 12-16 in effect, abrogate and/or supersede Regulation 2 Rule 4 for refineries? What is the environmental impact if refineries can no longer utilize Regulation 2 Rule 4 for future projects and the corresponding loss of any incentive to create emission reductions to place in the bank? Can the District abrogate use of Regulation 2 Rule 4 for refinery projects without a thorough analysis of all of potential environmental impacts and consequences?
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7. Please address the environmental impact of Regulation 12 Rules 15 and 16 in conjunction with the District's stated refinery emission reduction strategy of 20% reduction in emissions by 2020. All of these rule development efforts affecting the refineries are taking place concurrently and therefore shouldn't the environmental impact of all of these efforts be considered together in one CEQA review (EIR) (see Regulation 12 Rules 15 and 16 Public Workshop Presentation, March 16, 2015)?
8. Please explain the apparent conflict between rules 12-15 and 12-16? The 1/28/15 BAAQMD Staff Report states that "the proposed Mitigation Rule in 12-16 would use emissions information gathered by the Tracking Rule to establish "trigger level" emissions thresholds..." However, the proposed 12-16 initial trigger levels have already been set without any emissions information from 12-15 as neither rule has been adopted. What methodology was and/or will be used to develop the initial PERP. Refineries could be

required to develop and implement emission reduction plans for *apparent* emission increases that are not real emission increases?. Without the benefit of the data to be gathered by 12-15 in setting the trigger levels, there is the risk of a significant resource burden on both the refineries and the District to determine the cause of insignificant changes in emissions, review the Emission Reduction Plans and implement mitigations for those changes.? Isn't setting emission triggers in 12-16 without the benefit of the data to be provided in Regulation 12 Rule 15 is premature?

ATTACHMENT 3

REGULATION 12 MISCELLANEOUS STANDARDS OF PERFORMANCE RULE 15 PETROLEUM REFINING EMISSIONS TRACKING INDEX

12-15-100 GENERAL

12-15-101 Description

12-15-200 DEFINITIONS

12-15-201 Accidental Air Release
12-15-202 Ambient Air
12-15-203 Community Air Monitoring System
12-15-204 Criteria Pollutant
12-15-205 Crude Oil
12-15-206 Crude Slate
12-15-207 Emissions Inventory
12-15-208 Fence-line Monitoring System
12-15-209 Greenhouse Gases (GHGs)
12-15-210 Health Risk Assessment (HRA)
12-15-211 Health Risk Assessment Modeling Protocol
[12-15-212 Monthly Crude Slate Report](#)
[12-15-213 On-going Annual Petroleum Refinery Emissions Inventory](#)
12-15-214² Petroleum Refinery
12-15-215³ Petroleum Refinery Emissions Profile (PREP)
12-15-216⁴ Petroleum Refinery Emissions Profile Period
~~12-15-215 On-going Petroleum Refinery Emissions Inventory~~
12-15-217⁶ Petroleum Refinery Owner/Operator
12-15-218⁷ Receptor Location
12-15-219⁸ Sensitive Receptor
12-15-220⁹ Source
12-15-221⁹ Toxic Air Contaminant (TAC)

12-15-400 ADMINISTRATIVE REQUIREMENTS

12-15-401 On-going [Annual](#) Petroleum Refinery Emissions Inventory and [Monthly](#) Crude Slate Reports
12-15-402 Petroleum Refinery Emissions Profile Report
12-15-403 Revision of Petroleum Refinery Emissions Profile Report
12-15-404 Review and Approval of On-going [Annual](#) Petroleum Refinery Emissions Inventory and [Monthly](#) Crude Slate Reports and Petroleum Refinery Emissions Profile Reports
12-15-405 Submittal of Health Risk Assessment Modeling Protocol and Health Risk Assessment
12-15-406 Review and Approval of Health Risk Assessment Modeling Protocols and Health Risk Assessments
12-15-407 Air Monitoring Plans
12-15-408 Review and Approval of Air Monitoring Plans
12-15-409 Emissions Inventory Guidelines
12-15-410 Air Monitoring Guidelines
12-15-411 Designation of Confidential Information
[12-15-412 Energy Utilization Analyses](#)
[12-15-413 Monthly Crude Slate Reports for Calendar Years 2012, 2013, and 2014](#)

12-15-500 MONITORING AND RECORDS

- 12-15-501 Community Air Monitoring System
- 12-15-502 Fence-line Monitoring System
- 12-15-503 Recordkeeping

12-15-600 MANUAL OF PROCEDURES

- 12-15-601 Emissions Inventory Procedures
- 12-15-602 Health Risk Assessment Procedures
- 12-12-603 Air Monitoring Procedures

REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
RULE 15
PETROLEUM REFINING EMISSIONS TRACKING

(Adopted [DATE])

12-15-100 GENERAL

12-15-101 Description: The purpose of this rule is to track air emissions and crude oil composition characteristics from petroleum refineries over time, to complete health risk assessments for petroleum refineries, and to establish monitoring systems to provide detailed air quality data along refinery boundaries and in nearby communities.

12-15-200 DEFINITIONS

12-15-201 Accidental Air Release: An unanticipated emission of a criteria pollutant, toxic air contaminant, and/or greenhouse gas into the atmosphere required to be reported in a Risk Management Plan (RMP) under 40 CFR §68.168.

12-15-202 Ambient Air: The portion of the atmosphere external to buildings to which the general public has access.

12-15-203 Community Air Monitoring System: Equipment that measures and records air pollutant concentrations in the ambient air at or near sensitive receptor locations near a facility, and which may be useful for estimating associated pollutant exposures and health risks, and in determining trends in air pollutant levels over time.

12-15-204 Criteria Pollutant: An air pollutant for which an ambient air quality standard has been established, or that is an atmospheric precursor to such an air pollutant. For the purposes of this rule, criteria pollutants are carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter with an aerodynamic diameter of 10 micrometers or less (PM₁₀), particulate matter with an aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}), precursor organic compounds (POC), and sulfur dioxide (SO₂).

12-15-205 Crude Oil: Petroleum, as it occurs after being extracted from geologic formations by an oil well, and after extraneous substances may have been removed, and which may be subsequently processed at a petroleum refinery.

12-15-206 Crude Slate: A record of the characteristics and quantities of crude oil and/or crude oil blends to be processed by a crude distillation unit at a petroleum refinery.

12-15-207 Emissions Inventory: A comprehensive accounting of the types and quantities of criteria pollutants, toxic air contaminants, and greenhouse gases that are released into the atmosphere based on state-of-the-art measurement technologies and estimation methodologies. For the purposes of this rule, emissions inventory data shall be collected or calculated for: (1) all continuous, intermittent, predictable, and accidental air releases resulting from petroleum refinery processes at stationary sources at a petroleum refinery, and (2) all air releases from cargo carriers (e.g., ships and trains), excluding motor vehicles, that load or unload materials at a petroleum refinery including emissions from such carriers while operating within the District or within California Coastal Waters as specified in Regulation 2-2-610 (adopted Dec. 19, 2012).

12-15-208 Fence-line Monitoring System: Equipment that measures and records air pollutant concentrations at or near the property boundary of a facility, and which may be useful for detecting and/or estimating the quantity of fugitive emissions, gas leaks, and other air emissions from the facility.

12-15-209 Greenhouse Gases (GHGs): The air pollutant that is defined in 40 CFR § 86.1818-12(a), which is a single air pollutant made up of a combination of the following six constituents: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur

hexafluoride. GHG emissions shall be expressed as CO₂ equivalent emissions (CO₂e) according to the methodology set forth in 40 CFR § 52.21(b)(49)(ii).

- 12-15-210 **Health Risk Assessment (HRA):** A detailed and comprehensive analysis to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of the human population and to assess and quantify both the individual and populationwide health risks associated with those levels of exposure. HRAs required by this rule shall be prepared in accordance with Section 12-15-602.
- 12-15-211 **Health Risk Assessment Modeling Protocol:** A detailed plan identifying the steps that will be taken during the air dispersion modeling and health risk assessment process. This plan shall be prepared in accordance with the [most recent guidelines adopted by the Office of Environmental Health Hazard Assessment \(OEHHA\) under Health and Safety Code Section 44360\(b\)\(2\) for use in the Air Toxics "Hot Spots" Information and Assessment Act of 1987 \(Health and Safety Code Section 44300 et seq.\)](#) ~~modeling protocol guidance presented in OEHHA's Air Toxic Hot Spots Risk Assessment Guidelines: Technical Support Document for Exposure Assessment and Stochastic Analysis~~ and shall identify the specific basis or references for all input data (such as emissions data, stack parameters, building dimensions, terrain data, meteorological data, health effects values, etc.) and the proposed models, methods, procedures, and assumptions that will be used for each step of the HRA process.
- 12-15-212 **Monthly Crude Slate Report:** [A summary of crude slate volumes and properties processed by refinery crude unit\(s\) each calendar month, reported annually for the calendar year.](#)
- 12-15-213 **On-going Annual Petroleum Refinery Emissions Inventory:** [An emissions inventory at a petroleum refinery covering a calendar year period. For the purposes of this rule, on-going annual emissions inventories are required to be compiled for the calendar year 2015, and for each subsequent calendar year.](#)
- 12-15-214 **Petroleum Refinery:** An establishment that is located on one or more contiguous or adjacent properties, and under common control, and that processes crude oil to produce more usable products such as gasoline, diesel fuel, aviation fuel, lubricating oils, asphalt or petrochemical feedstocks. Petroleum refinery processes include separation processes (e.g., atmospheric or vacuum distillation, and light ends recovery), petroleum conversion processes (e.g., cracking, reforming, alkylation, polymerization, isomerization, coking, and visbreaking) petroleum treating processes (e.g., hydrodesulfurization, hydrotreating, chemical sweetening, acid gas removal, and deasphalting), feedstock and product handling (e.g., storage, blending, loading, and unloading), and auxiliary facilities (e.g., boilers, waste water treatment, hydrogen production, sulfur recovery plant, cooling towers, blowdown systems, compressor engines, and power plants).
- 12-15-215 **Petroleum Refinery Emissions Profile (PREP):** An emissions inventory for the Petroleum Refinery Emissions Profile (PREP) period that is used as a reference with which to compare emissions inventories for later periods of time (on-going [annual](#) emissions inventories) in order to determine changes in emissions that have occurred from a petroleum refinery. A PREP shall be the average emission rate, expressed in units of tons or pounds per year, based on actual emissions that occurred during the PREP period, except that a PREP shall not include emissions that exceeded regulatory or permitted limits, or emissions from accidental air releases.
- 12-15-216 **Petroleum Refinery Emissions Profile Period:** A period of 12 consecutive months, from January 2010 through December 2015, which is selected by a refinery owner/operator for establishing a PREP for a particular criteria pollutant, toxic air contaminant, or greenhouse gas. A different consecutive 12-month period may be used for each criteria pollutant, toxic air contaminant, or greenhouse gas.
- ~~12-15-215 **On-going Petroleum Refinery Emissions Inventory:** An emissions inventory at a petroleum refinery covering a calendar year period. For the purposes of this rule, on-going emissions inventories are required to be compiled for the calendar year 2016, and for each subsequent calendar year.~~
- 12-15-217 **Petroleum Refinery Owner/Operator:** Any person who owns, operates, or exercises operational control over the majority of operations at a petroleum refinery. The refinery owner/operator is responsible for compliance with this rule for the entirety of the petroleum

refinery, including any refinery processes or auxiliary facilities that may be separately owned or operated. Any person who owns, operates, or exercises operational control over a portion of a petroleum refinery that is less than a majority of the total refinery operations must provide the Owner/Operator with information sufficient to allow the owner/operator to comply with this rule, and must make that information available to the APCO upon request.

12-15-2187 Receptor Location: A location outside the property boundary or control of the facility being evaluated where a member of the public may reasonably be expected to be exposed to air pollutants for the particular acute or chronic health risks being evaluated.

12-15-2198 Sensitive Receptor: A receptor location where an individual that may have increased vulnerability to exposure to air pollutants may be present. For the purposes of this rule, sensitive receptors are residences (where an individual may live for 6 months or more out of a year), schools (including colleges and universities), daycares, hospitals, and senior-care facilities.

12-15-22019 Source: Any article, machine, equipment, operation, contrivance or related groupings of such which may produce and/or emit air pollutants.

12-15-2210 Toxic Air Contaminant (TAC): An air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a present or potential hazard to human health. For the purposes of this rule, TACs consist of the substances listed in the most recent health risk assessment guidelines adopted by OEHHA.

12-15-400 ADMINISTRATIVE REQUIREMENTS

12-15-401 On-going Annual Petroleum Refinery Emissions Inventory and Monthly Crude Slate Reports: A refinery owner/operator shall obtain and maintain APCO approval of an On-going Annual Petroleum Refinery Emissions Inventory and Monthly Crude Slate Report. Timely submittal as described in the next sentence shall constitute compliance with this requirement unless and until there is a determination of disapproval by the APCO pursuant to Section 12-15-404. On or before September 1, ~~2017~~2016, and every subsequent September 1, a refinery owner/operator shall submit to the APCO an On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report covering the previous calendar year period in an APCO-approved format. This report shall include, at a minimum, the following:

401.1 Identification of the calendar year that the On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report covers.

401.2 A summary of the total quantity of each criteria pollutant, TAC, and GHG that was emitted from the petroleum refinery during the on-going annual petroleum refinery emissions inventory period.

401.3 A detailed listing of the annual emissions of each criteria pollutant, TAC, and GHG emitted from each source at the petroleum refinery, and a complete description of the methodology used for determining these emissions including documentation of the basis for any assumptions used, except that methodologies that are unchanged from a previously submitted On-going Annual Petroleum Refinery Emissions Inventory and Monthly Crude Slate Report under this section may instead be noted as such. Emissions resulting from accidental releases and flaring events addressed in Regulation 12, Rules 11 and 12 shall be identified, included and quantified as such, along with the date(s) and time(s) that the release occurred.

401.4 As an alternative to 401.3 for GHG, annual emissions for GHG may be reported based on the most recent California Air Resources Board (CARB) Regulation for the Mandatory Reporting of Greenhouse Gas Emissions methodology. If emissions increase by more the 10,000 metric tons from the PREP or from the previous year's On-going Annual Petroleum Refinery Emissions Inventory and Monthly Crude Slate Report, the owner/operator must submit with that year's Emissions Inventory and Monthly Crude Slate Report an analysis of the cause of the GHG emissions increase, including the individual sources involved, and the actions taken to meet the emissions reductions requirements of the CARB regulation. The analysis shall also include documentation for any assumptions used.

- 401.5 A plot plan that clearly identifies the location of each source identified in Section 12-15-401.3 at the petroleum refinery.
- 401.6 Beginning with the On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report for the calendar year 2016 (due on or before September 1, 2017), and for every subsequent calendar year On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report, a table that shows, on a refinery-wide basis for each applicable air pollutant, the change in emissions that occurred between the PREP established under Sections 12-15-402 or 403 and the calendar year period for which the On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report was prepared under this section. Emission changes do not need to be shown for any newly listed TACs that have been included in an On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report but that have not been included in a PREP due to insufficient information.
- 401.7 The Monthly Crude Slate Report shall include Quarterly summaries of the total volume (million barrels) and average sulfur content (percentage by weight), nitrogen content (percentage by weight), API gravity (degrees), and total acid number (milligrams of potassium hydroxide per gram) of the petroleum refinery's crude slate and other pre-processed feedstocks for each calendar month, reported for the calendar year period covered by the On-going Annual Petroleum Refinery Emission Inventory, and include the following: ~~Crude-Slate-Report:~~
- 7.1 Total volume (million barrels) processed by crude unit(s) and other pre-processed feedstocks that are refined, blended or processes at other process units, and
 - 7.2 Average API gravity (degrees), and
 - 7.3 Average sulfur content (percentage by weight), and
 - 7.4 Average nitrogen content (parts per million by weight), and
 - 7.5 Average vapor pressure (psi), and
 - 7.6 Average Total Reduced Sulfur (H₂S and mercaptan content, parts per million by weight), and
 - 7.7 Average BTEX (benzene, toluene, ethylbenzene, and xylene) contents (percentage by volume), and
 - 7.8 Average total acid number (milligrams of potassium hydroxide per gram), and
 - 7.9 Average metals content for nickel, vanadium, and iron (parts per million by weight).
- 12-15-402 Petroleum Refinery Emissions Profile Report:** A refinery owner/operator shall obtain and maintain APCO approval of a PREP report. Timely submittal as described in the next sentence shall constitute compliance with this requirement unless and until there is a determination of disapproval by the APCO pursuant to Section 12-15-404. On or before July 1, 2016, a refinery owner/operator shall submit to the APCO a PREP report in an APCO-approved format. This report shall include, at a minimum, the following:
- 402.1 Identification of the PREP period for each air pollutant included in the PREP.
- 402.2 A summary of the emission rate of each criteria pollutant, TAC, and GHG that was emitted from the petroleum refinery during the PREP period, expressed in units of tons or pounds per year, excluding any emissions that do not meet the definition of PREP in Section 12-15-~~213215~~.
- 402.3 A detailed listing of the emission rate of each criteria pollutant, TAC, and GHG that was emitted from each source at the petroleum refinery during the PREP period, expressed in units of tons or pounds per year for criteria pollutant and TAC emissions and in units of metric tons per year for GHG emissions, and a complete description of the methodology used for determining these emissions including documentation of the basis for any assumptions used and the exclusion of any emissions that do not meet the definition of PREP in Section 12-15-~~213215~~.
- 402.4 A plot plan that clearly identifies the location of each source identified in Section 12-15-402.3 at the petroleum refinery.

- 12-15-403 Revision of Petroleum Refinery Emissions Profile Report:** Any improvements in emissions inventory methodologies that are used to expand or refine On-going [Annual](#) Petroleum Refinery Emission Inventory and [Monthly](#) Crude Slate Reports submitted under Section 12-15-401 shall also be used to expand or refine future submissions of the PREP as provided below, to the extent that such improved methodologies are also applicable to the sources included in the PREP. In such instances, a revised PREP report shall be submitted to the APCO no later than by the date the applicable On-going [Annual](#) Petroleum Refinery Emission Inventory and [Monthly](#) Crude Slate Report is due. The revised PREP report shall, at a minimum, identify the date of the revision, contain the information described in Sections 12-15-402.1 to 402.4, and clearly identify, describe, and justify the changes in the PREP that have been made. Revised PREP reports should be expanded to include emissions of newly listed TACs that have been included in an On-going [Annual](#) Petroleum Refinery Emission Inventory and [Monthly](#) Crude Slate Report required by Reg. 12-15-401.6, unless insufficient information exists to make such revisions.
- 12-15-404 Review and Approval of On-going [Annual](#) Petroleum Refinery Emissions Inventory and [Monthly](#) Crude Slate Reports and Petroleum Refinery Emissions Profile Reports:** The procedure for determining whether an On-going [Annual](#) Petroleum Refinery Emission Inventory and [Monthly](#) Crude Slate Report submitted under Section 12-15-401, or a PREP report submitted under Section 12-15-402 or 403, meet the applicable requirements of this rule is as follows:
- 404.1 Preliminary Review:** Within 45 days of receipt of the report, the APCO will complete a preliminary review of the report to identify any deficiencies that need to be corrected. If the APCO determines that the submitted report is deficient, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination and the required corrective action.
- 404.2 Corrective Action:** Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the report within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will disapprove the report, or the APCO may make the necessary corrections to the emissions inventory report with a designation that the report includes Air District revisions.
- 404.3 Public Comment:** The ~~report~~ [Annual_Petroleum Refinery Emissions Inventory Report and Petroleum Refinery Emissions Profile Reports](#), including any revisions made to correct deficiencies will be made available for public review for 45 days (with the exception of information designated confidential). The APCO will consider any written comments received during this period prior to approving or disapproving the final reports.
- 404.4 Final Action:** Within 45 days of the close of the public comment period under Section 12-15-404.3 (if applicable), the APCO will approve the report if the APCO determines that the report meets the requirements of Sections 12-15-401, 402, or 403, and Section 12-15-601, and shall provide written notification to the refinery owner/operator. This period may be extended if necessary as determined by the APCO. If the APCO determines that the report does not meet the requirements of Sections 12-15-401, 402, 403, and Section 12-15-601, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the report within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will determine that the refinery owner/operator has failed to meet the requirements of Sections 12-15-401, 402, or 403, and Section 12-15-601, and will disapprove the report, or the APCO may make the necessary corrections and approve the report with a designation that the report was approved with Air District revisions.
- 404.5 Public Inspection:** Within 15 days of the approval or disapproval of a report under Section 12-15-404.4, the APCO shall post the approved or disapproved report on the

District's website, and shall notify any member of the public who submitted comments under Section 12-15-404.3, or who otherwise requested such notification of this action in writing. In making information available for public inspection, the confidentiality of trade secrets, as designated by the refinery owner/operator, shall be handled in accordance with Section 6254.7 of the Government Code.

12-15-405 Submittal of Health Risk Assessment Modeling Protocol and Health Risk Assessment:

A refinery owner/operator shall obtain and maintain APCO approval of a HRA Modeling Protocol and HRA and, if required pursuant to 12-16-~~303~~401, an Updated HRA Modeling Protocol and HRA. Timely submittal of a protocol and assessment as described in this section shall constitute compliance with this requirement unless and until the APCO makes a disapproval determination pursuant to Section 12-15-406.4 or 406.8.

405.1 Timely Submittal of HRA Modeling Protocol: Timely submittal of an HRA Modeling Protocol means that the refinery owner/operator shall submit to the APCO an HRA Modeling Protocol for the petroleum refinery no later than ~~September 1, 2016~~ March 1, 2017 ~~or within 60 days of the date that CARB releases the Hotspots Analysis Reporting Program (HARP) for use after incorporation of OEHHA's revised HRA Guidelines, whichever date is later.~~ This protocol shall be based on emissions inventory data collected for the 2015 calendar year ~~prior to the year in which CARB releases HARP.~~

405.2 Timely Submittal of HRA: Timely submittal of an HRA means that the refinery owner/operator shall submit to the APCO an HRA that is completed in accordance with the final APCO-approved HRA Modeling Protocol by no later than 90 days after receipt of APCO approval of the HRA Modeling Protocol.

405.3 Timely Submittal of Modeling Protocol for Updated HRA: Timely submittal of an Modeling Protocol for an Updated HRA required pursuant to 12-16-~~303~~401 means that the refinery owner/operator shall submit to the APCO an HRA Modeling Protocol for the petroleum refinery no later than 60 days after APCO approval of an On-Going Annual Emissions Inventory Report that, pursuant to 12-16-~~303~~401, triggers the requirement to obtain and maintain approval of an Updated HRA.

405.4 Timely Submittal of an Updated HRA: Timely submittal of an Updated HRA required pursuant to 12-16-~~303~~401 means that the refinery owner/operator shall submit to the APCO an HRA that is completed in accordance with the final APCO-approved HRA Modeling Protocol by no later than 90 days after ~~receipt of APCO approval of the HRA Modeling Protocol~~ receiving notification from the APCO that an Updated HRA is required pursuant to Regulation 12-16-401.

12-15-406 Review and Approval of Health Risk Assessment Modeling Protocols and Health Risk Assessments:

The procedure for determining whether a Health Risk Assessment (HRA) Modeling Protocol and Health Risk Assessment submitted under Section 12-15-405 meet the applicable requirements of this rule is as follows:

406.1 Preliminary Protocol Review: Within 90 days of receipt of an HRA Modeling Protocol, the APCO will complete a preliminary review of the protocol to identify any deficiencies that need to be corrected. If the APCO determines that the submitted protocol is deficient, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination and the required corrective action.

406.2 Protocol Corrective Action: Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the HRA Modeling Protocol within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will disapprove the HRA Modeling Protocol.

406.3 Public Comment on HRA Modeling Protocol: The HRA Modeling Protocol, including any revisions made to correct deficiencies, will be made available for public review for 45 days (with the exception of information designated confidential). The APCO will consider any written comments received during this period prior to approving or disapproving the final HRA Modeling Protocol.

- 406.4 Final Action on Modeling Protocol:** Within 45 days of the close of the public comment period under Section 12-15-406.3, the APCO will approve the HRA Modeling Protocol if the APCO determines that the HRA Modeling Protocol meets the requirements of Section 12-15-405, and shall provide written notification to the refinery owner/operator. This period may be extended if necessary as determined by the APCO. If the APCO determines that the HRA does not meet the requirement of Sections 12-15-405, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the HRA Modeling Protocol within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will determine that the refinery owner/operator has failed to meet the requirement of Sections 12-15-405, and will disapprove the HRA Modeling Protocol.
- 406.5 Preliminary HRA Review:** The APCO will complete a preliminary review of the HRA to verify that it was conducted in accordance with the APCO-approved Modeling Program and to identify any deficiencies that need to be corrected. If the APCO determines that the submitted HRA is deficient, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination and the required corrective action.
- 406.6 HRA Corrective Action:** Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the HRA within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will disapprove the HRA.
- 406.7 Public Comment on HRA:** The HRA, including any revisions made to correct deficiencies, will be made available for public review for 45 days (with the exception of information designated confidential). The APCO will consider any written comments received during this period prior to approving or disapproving the final HRA.
- 406.8 Final Action:** Within 45 days of the close of the public comment period under Section 12-15-406.7 the APCO will approve the HRA if the APCO determines that the HRA meets the requirements of Section 12-15-405, and shall provide written notification to the refinery owner/operator. This period may be extended if necessary as determined by the APCO. If the APCO determines that the HRA does not meet the requirement of Sections 12-15-405, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the HRA within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will determine that the refinery owner/operator has failed to meet the requirement of Sections 12-15-405, and will disapprove the HRA.
- 406.9 Public Inspection:** Within 15 days of the approval or disapproval of an HRA under Section 12-15-406.8, the APCO shall post the approved or disapproved HRA on the District's website, and shall notify any member of the public who submitted comments under Section 12-15-406.3, or who otherwise requested such notification of this action in writing. In making information available for public inspection, the confidentiality of trade secrets, as designated by the refinery owner/operator, shall be handled in accordance with Section 6254.7 of the Government Code.
- 12-15-407 Air Monitoring Plans:** A refinery owner/operator shall obtain and maintain APCO approval of a plan for establishing and operating a fence-line monitoring system and community air monitoring system. Timely submittal as described in the next sentence shall constitute compliance with this requirement unless and until there is a determination of disapproval by the APCO pursuant to Section 408. On or before December 31, 2015, the refinery owner/operator shall submit to the APCO a plan for establishing and operating a fence-line monitoring system and a community air monitoring system. The plan shall include detailed information describing the equipment to be used to monitor, record, and report air pollutant

levels, the siting, operation, and maintenance of this equipment, and procedures for implementing data quality assurance and quality control. Within one year of approval by the District Board of Directors of updated air monitoring guidelines published by the APCO under Section 12-15-410, the refinery/operator shall submit to the APCO an updated air monitoring plan. The siting of community air monitors shall be addressed in an Air Monitoring Plan Siting Addendum that may be submitted subsequent to the required time for submittal of the Air Monitoring Plan, provided the community air monitoring system is installed and operated in a timely manner as provided in 12-15-501.

12-15-408 Review and Approval of Air Monitoring Plans: The procedure for determining whether an air monitoring plan submitted under Section 12-15-407 meets the applicable requirements of this rule is as follows:

- 408.1 Preliminary Review:** Within 45 days of receipt of the air monitoring plan, the APCO will complete a preliminary review of the plan to identify any deficiencies that need to be corrected. If the APCO determines that the submitted plan is deficient, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination and the required corrective action.
- 408.2 Corrective Action:** Upon receipt of such notification, the refinery owner/operator shall correct the plan and resubmit the proposed plan within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will disapprove the plan.
- 408.3 Public Comment:** The plan, including any revisions made to correct deficiencies, will be made available for public review within 45 days (with the exception of information designated confidential). The APCO will consider any written comments received during this period prior to approving or disapproving the final plan.
- 408.4 Final Action:** Within 45 days of the close of the public comment period under Section 12-15-408.3, the APCO will approve the air monitoring plan if the APCO determines that the plan meets the requirements of Section 12-15-407 and Section 12-15-603, and shall provide written notification to the refinery owner/operator. This period may be extended if necessary as determined by the APCO. If the APCO determines that the plan does not meet the requirements of Section 12-15-407 and Section 12-15-603, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the air monitoring plan within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will determine that the refinery owner/operator has failed to meet the requirements of Sections 12-15-407 and Section 12-15-603 and will disapprove the plan.
- 408.5 Public Inspection:** Within 15 days of the approval or disapproval of an air monitoring plan under Section 12-15-408.4, the APCO shall post the plan on the District's website, and shall notify any member of the public who submitted comments under Section 12-15-408.3, or who otherwise has requested such notification of this action in writing. In making information available for public inspection, the confidentiality of trade secrets, as designated by the refinery owner/operator, shall be handled in accordance with Section 6254.7 of the Government Code.
- 408.6 Siting of Community Monitors:** If the APCO determines that sites proposed for community monitors in the Air Monitoring Plan Siting Addendum are inappropriate, the APCO shall notify the refinery owner/operator of any deficiencies. Within 30 days of receiving this notice, the refinery owner/operator shall correct siting deficiencies and resubmit the Siting Addendum. If the proposed sites continue to be inappropriate, the APCO shall disapprove the Air Monitoring Plan.
- 408.7 Separate Approvals for Fence-Line and Community Monitoring Possible:** The APCO may approve both the fence-line monitoring and community air monitoring system elements of the Air Monitoring Plan, or may approve only the element that is determined to be adequate while disapproving the remainder. A refinery

owner/operator shall implement the approved elements of an Air Monitoring Plan.

- 12-15-409 Emissions Inventory Guidelines:** The APCO shall publish, and periodically update, emissions inventory guidelines for petroleum refineries that describe the emission factors/estimation methodologies that the District will apply for each source category when reviewing emissions inventories required under this rule. Methods included in these guidelines may include, but are not limited to, continuous monitoring to measure emissions, applying the results of emissions source tests to known activity levels, combining published emission factors with known activity levels, material balances, or empirical formulae.
- 12-15-410 Air Monitoring Guidelines:** The APCO shall publish air monitoring guidelines for petroleum refineries that describe the factors that the District will apply in reviewing community air monitoring systems and fence-line monitoring systems required under this rule. These guidelines may include, but are not limited to, specifications for pollutant coverage, siting, instrumentation, operation, maintenance, quality assurance, quality control, and data reporting. The guidelines shall be reviewed by the APCO within five years of initial issuance in consideration of advances in air monitoring technology, updated information regarding the health effects of air pollutants, and review of data collected by existing fence-line and community air monitoring systems established under this rule.
- 12-15-411 Designation of Confidential Information:** When submitting an On-going [Annual](#) Petroleum Refinery Emission Inventory and [Monthly](#) Crude Slate Report, PREP report, air monitoring plan, or other documents or records required by this rule, the refinery owner/operator shall designate as confidential any information claimed to be exempt from public disclosure under the California Public Records Act, Government Code Section 6250 et seq. If a document is submitted that contains information designated confidential in accordance with this section, the owner/operator shall provide a justification for this designation and shall submit a separate copy of the document with the information designated confidential redacted.
- 12-15-412 Energy Utilization Analyses:**
- 412.1** [The owner/operator of a refinery that participated in the HSB Solomon Associates LLC "Worldwide Fuels Refinery Performance Analysis" \(aka "Fuels Study"\) for operating year 2012 shall provide to the APCO no later than \[90 days after adoption\] the energy assessment portion of the resulting refinery-specific study report, including all energy gap analyses for the refinery.](#)
- 412.2** [The owner/operator of a refinery that participates in the HSB Solomon Associates LLC "Worldwide Fuels Refinery Performance Analysis" \(aka "Fuels Study"\) for operating year 2014 shall provide to the APCO the energy assessment portion of the resulting refinery-specific study report, including all energy gap analyses for the refinery no later than 90 days after the refinery's receipt of the report.](#)
- 12-15-413 Monthly Crude Slate Reports for Calendar Years 2012, 2013, and 2014:** A refinery owner/operator shall obtain APCO approval of historical documentation of Monthly Crude Slate Reports covering the calendar years 2012, 2013, and 2014 in an APCO-approved format on or before September 1, 2016. These reports shall include the following:
- 413.1** [Identification of the calendar year that the Monthly Crude Slate Report covers.](#)
- 413.2** [Summaries of the petroleum refinery's crude slate and other pre-processed feedstocks for each calendar month, including:](#)
- [2.1 Total volume \(million barrels\) processed by crude unit\(s\) and other pre-processed feedstocks that are refined, blended or processes at other process units, and](#)
 - [2.2 Average API gravity \(degrees\), and](#)
 - [2.3 Average sulfur content \(percentage by weight\), and](#)
 - [2.4 Average nitrogen content \(parts per million by weight\), and](#)
 - [2.5 Average vapor pressure, \(psi\), and](#)
 - [2.6 Average Total Reduced Sulfur \[H₂S + mercaptan content \(parts per million by weight\)\], and](#)
 - [2.7 Average BTEX \(benzene, toluene, ethylbenzene, and xylene\) content \(percentage by volume\), and](#)
 - [2.8 Average total acid number \(milligrams of potassium hydroxide per gram\), and](#)

2.9 Average metals content for nickel, vanadium, and iron (parts per million by weight).

12-15-500 MONITORING AND RECORDS

- 12-15-501 Community Air Monitoring System:** Within two years of the approval of an air monitoring plan under Section 12-15-408.4, the refinery owner/operator will ensure that a community air monitoring system is installed, and is operated and maintained in accordance with the approved air monitoring plan. Community air monitoring system data shall also be reported as specified in the approved plan.
- 12-15-502 Fence-line Monitoring System:** Within one year of the approval of an air monitoring plan under Section 12-15-408.4, the refinery owner/operator will ensure that a fence-line monitoring system is installed, and is operated in accordance with the approved air monitoring plan. Fence-line monitoring system data shall also be reported as specified in the approved plan.
- 12-15-503 Recordkeeping:** The refinery owner/operator shall maintain records of all monitoring information, source test results, material and fuel throughputs, and other information used to establish emissions inventories required under this rule. The refinery owner/operator shall also maintain records of the quantity and characteristics of crude oil that is processed through the crude unit(s), and other pre-processed feedstocks that are refined, blended or processed. Characteristics for crude oil shall include the properties listed in Section 12-15-401.7. ~~at a minimum, sulfur content, nitrogen content, API gravity and total acid number. Characteristics for pre-processed feedstocks shall include, at a minimum, sulfur content, nitrogen content, API gravity and all specification information required by the owner/operator and/or provided by the supplier of the pre-processed feedstocks.~~ Such records shall be maintained for a period of five years after the submittal of a required On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report or PREP report, and shall be made available to the APCO upon request.

12-15-600 MANUAL OF PROCEDURES

- 12-15-601 Emissions Inventory Procedures:** Each emissions inventory required under this rule shall be prepared following the District's Emission Inventory Guidelines for Petroleum Refineries established under Section 12-15-409.
- 12-15-602 Health Risk Assessment Procedures:** Each health risk assessment required under this rule shall be prepared following the most recent guidelines adopted by the Office of Environmental Health Hazard Assessment (OEHHA) under Health and Safety Code Section 44360(b)(2) for use in the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Health and Safety Code Section 44300 et seq.).
- 12-15-603 Air Monitoring Procedures:** Each air monitoring plan required under this rule shall be prepared following the District's Air Monitoring Guidelines for Petroleum Refineries established under Section 12-15-410.

ATTACHMENT 3

REGULATION 12 MISCELLANEOUS STANDARDS OF PERFORMANCE RULE 16 PETROLEUM REFINING EMISSIONS LIMITS ~~ANALYSIS, THRESHOLDS AND~~ ~~MITIGATION~~ AND RISK THRESHOLDS

INDEX

12-16-100 GENERAL

- 12-16-101 Description
- 12-16-102 Exemption, Small Refineries
- ~~12-16-103 Limited Exemption, Increases in Crude Oil Throughput~~
- ~~12-16-104 Limited Exemption, Greenhouse Gas Emissions~~
- 12-16-103⁵ Limited Exemption, Emission from Flares

12-16-200 DEFINITIONS

- ~~12-16-201 AB 2588 Mandatory Risk Reduction Threshold~~
- 12-16-201 Accidental Air Release
- 12-16-202 Acute Hazard Quotient
- 12-16-203 Air Emission Reduction Measures
- 12-16-204 Chronic Hazard Quotient
- 12-16-205 Cost-Effectiveness
- ~~12-16-211 Criteria Pollutant~~
- ~~12-16-212 Crude Oil~~
- 12-16-206 Emissions Inventory
- 12-16-207 Emission Reduction Plan (ERP)
- ~~12-16-213 Greenhouse Gases (GHGs)~~
- 12-16-208 Health Risk
- 12-16-209 Maximally Exposed Individual (MEI)
- 12-16-210 National Ambient Air Quality Standard (NAAQS)
- 12-16-211 Non-Cancer Acute Hazard Index
- 12-16-212 Non-Cancer Chronic Hazard Index
- 12-16-213 Notification Risk Threshold
- ~~12-16-216 On-Going Petroleum Refinery Emissions Inventory~~
- 12-16-214 Petroleum Refinery
- ~~12-16-218 Petroleum Refinery Emissions Profile (PREP)~~
- 12-16-215 Policy for Notification Under the Air Toxics "Hot Spots" Act
- 12-16-216 Potential to Emit
- 12-16-217 ~~Petroleum Refinery Owner/Operator~~
- 12-16-218 Refinery-Wide Cancer Risk
- 12-16-219 Risk Reduction Audit and Plan (RRAP)
- 12-16-220 Risk Reduction Measures
- 12-16-221 Significant Risk Threshold
- 12-16-222 Source
- 12-16-223 Toxic Air Contaminant (TAC)
- ~~12-16-223 Toxicity Weighted Emissions~~
- ~~12-16-224 Trigger Level~~
- 12-16-224 Unreasonable Risk Threshold

12-16-300 STANDARDS

- ~~12-16-301 Emission Reduction Plan~~
- ~~12-16-302 Emission Reduction Plan Implementation~~
- ~~12-16-303 Updated Health Risk Assessment~~
- [12-16-301 Health Risk Thresholds](#)
- [12-16-302 Risk Reduction Audit and Plan](#)
- [12-16-303 Risk Reduction Plan Implementation](#)
- [12-16-304 Source-Specific and Refinery-wide SO₂ and PM_{2.5} Emission Limits](#)
- [12-16-305 SO₂ and PM_{2.5} NAAQS Compliance](#)

12-16-400 ADMINISTRATIVE REQUIREMENTS

- ~~12-16-401 Emission Reduction Plan~~
- ~~12-16-402 Updated Emission Reduction Plan~~
- [12-16-401 Health Risk Assessment Requirements](#)
- [12-16-402 Risk Notification Requirements](#)
- [12-16-403 Risk Reduction Audit and Plan Submission Requirements](#)
- [12-16-404 Risk Reduction Audit and Plan Requirements](#)
- [12-16-405 Source-Specific and Refinery-wide SO₂ and PM_{2.5} Emission Limits](#)
- [12-16-406 Refinery-Wide Demonstration of Compliance with SO₂ and PM_{2.5} NAAQS](#)
- [12-16-407 Emissions Reduction Plan](#)
- [12-16-408³ Review and Approval of Risk and Emission Reduction Plans \(Plan\)](#)
- [12-16-409 Updated Risk Reduction Plan](#)
- ~~12-16-404 Refinery Specific Toxic Air Contaminant Trigger Levels~~
- ~~12-16-405 Emission Increases Related to Increases in Crude Oil Throughput~~

12-16-500 MONITORING AND RECORDS

12-16-600 MANUAL OF PROCEDURES

- 12-16-601 Emissions Inventory Procedures

REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
RULE 16
PETROLEUM REFINING EMISSIONS ~~ANALYSIS, THRESHOLDS AND MITIGATION~~
AND RISKS LIMITS
(ADOPTED [DATE])

12-16-100 GENERAL

12-16-101 Description: The purpose of this rule is to ~~identify the cause of, and to mitigate, any significant emissions increases from petroleum refineries~~ ensure that the emissions from operation of Bay Area Refineries do not pose an unacceptable health risk on nearby communities and do not result in exceedance of the National Ambient Air Quality Standards for SO₂ and PM_{2.5}.

12-16-102 Exemption, Small Refineries: This rule shall not apply to any refinery that is limited to a total crude oil throughput or total crude oil processing capacity of 5,000 barrels per day or less by an Air District Permit to Operate.

~~**12-16-103 Limited Exemption, Increases in Crude Oil Throughput:** This rule does not require mitigation of emission increases of criteria pollutants or greenhouse gases if such increases are caused solely by an increased volume of crude oil processed at the crude oil unit as allowed by an Air District Permit to Operate, relative to the crude oil unit throughput that was used to establish the PREP in Regulation 12, Rule 15, and those increases do not reflect an increase in the emission rate relative to the processing rate of crude oil. Therefore, the portion of the increase in emissions of a criteria pollutant or greenhouse gas above the Trigger Level that is attributable to an increase in crude oil throughput shall be addressed in the Causal Analysis in Section 12-16-401.1, but is exempt from the other requirements of Section 401 provided the refinery owner/operator satisfies the requirements of Section 12-16-405.~~

~~**12-16-104 Limited Exemption, Greenhouse Gas Emissions:** Emission increases of greenhouse gases (GHG) that exceed the Trigger Levels in Section 12-16-301 shall be addressed in the Causal Analysis in Section 12-16-401.1, but are exempt from the other requirements of Section 401.~~

12-16-103⁵ Limited Exemption, Emissions from Flares: Emissions from flaring events addressed in Regulation 12, Rules 11 and 12 shall not be included in requirements for demonstrating compliance with the NAAQS under this rule. Specifically, emissions from flaring events shall be excluded from the requirements of Sections 12-16-404 through 12-16-408.

12-16-200 DEFINITIONS

~~**12-16-201 AB 2588 Mandatory Risk Reduction Threshold:** The significant risk level established by Air District pursuant to the Air Toxics "Hot Spots" Information and Assessment Act, Health and Safety Code (H&SC) Section 44391 et seq.~~

12-16-201 Accidental Air Release: An unanticipated emission of a criteria pollutant, toxic air contaminant, and/or greenhouse gas into the atmosphere required to be reported in a Risk Management Plan (RMP) under 40 CFR §68.168.

12-16-202 Acute Hazard Quotient: The ratio of the estimated short-term average concentration of a toxic air contaminant at a particular location to its acute reference exposure level (estimated

for inhalation exposure).

- 12-16-203 Air Emission Reduction Measures:** Equipment or practices intended to reduce or eliminate air emissions, and that may include equipment upgrades or modernization, improved emissions capture or control, process changes, operational changes, or feedstock modifications. ~~When addressing Toxic Air Contaminants, air emission reduction measures shall include risk reduction measures.~~
- 12-16-204 Chronic Hazard Quotient:** The ratio of the estimated long-term average concentration of a toxic air contaminant at a particular location to its chronic reference exposure level (estimated for inhalation and non-inhalation exposures).
- 12-16-205 Cost-Effectiveness:** The ratio of the total annualized cost of an Air Emission Reduction Measure to the annual amount of emissions reduced from its implementation.
- ~~**12-16-211 Criteria Pollutant:** An air pollutant for which an ambient air quality standard has been established, or that is an atmospheric precursor to such an air pollutant. For the purposes of this rule, criteria pollutants are carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter with an aerodynamic diameter of 10 micrometers or less (PM₁₀), particulate matter with an aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}), precursor organic compounds (POC), and sulfur dioxide (SO₂).~~
- ~~**12-16-212 Crude Oil:** Petroleum, as it occurs after being extracted from geologic formations by an oil well, and after extraneous substances may have been removed, and which may be subsequently processed at a petroleum refinery.~~
- 12-16-206 Emissions Inventory:** A comprehensive accounting of the types and quantities of criteria pollutants, toxic air contaminants, and greenhouse gases that are released into the atmosphere based on state-of-the-art measurement technologies and estimation methodologies. For the purposes of this rule, emissions inventory data shall be collected or calculated for: (1) all continuous, intermittent, predictable, and accidental air releases resulting from petroleum refinery processes at stationary sources at a petroleum refinery, and (2) all air releases from cargo carriers (e.g., ships and trains), excluding motor vehicles, that load or unload materials at a petroleum refinery including emissions from such carriers while operating within the Air District or within California Coastal Waters as specified in Regulation 2-2-610 (adopted Dec. 19, 2012).
- 12-16-207 Emission Reduction Plan (ERP):** A document ~~intended to meeting~~ the requirements of Section 12-16-407 that ~~lists and details the measures that will be implemented to reduce emissions of pollutants that have caused an exceedance of the~~ National Ambient Air Quality Standards ~~and details measures that will be implemented to attain compliance with the standards.~~
- ~~**12-16-213 Greenhouse Gases (GHGs)**—The air pollutant that is defined in 40 CFR § 86.1818-12(a), which is a single air pollutant made up of a combination of the following six constituents: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHG emissions shall be expressed as CO₂-equivalent emissions (CO₂e) according to the methodology in 40 CFR § 52.21(b)(49)(ii).~~
- 12-16-208 Health Risk:** The potential for adverse human health effects resulting from exposure to emissions of air contaminants and ranging from relatively mild temporary conditions, such as eye or throat irritation, shortness of breath, or headaches, to permanent and serious conditions, such as birth defects, cancer or damage to lungs, nerves, liver, heart, or other organs. Measures of health risk from exposure to toxic air contaminants include cancer risk, chronic hazard index, and acute hazard index.
- 12-16-209 Maximally Exposed Individual (MEI):** As defined in Regulation 2: Permits, Rule 5: New Source Review of Toxic Air Contaminants, Section 2-5-212: [A person that may be located at the receptor location where the highest exposure to toxic air contaminants emitted from a given source or project is predicted, as shown by an APCO-approved HRSA. MEI locations are typically determined for maximum cancer risk, chronic hazard index and acute hazard

- [index based on exposure to residential, worker, and student receptors.\]](#)
- 12-16-210 [National Ambient Air Quality Standard \(NAAQS\): Ambient air standards for air pollutants considered harmful to public health and the environment established by the United States Environmental Protection Agency under authority of the Clean Air Act \(42 U.S.C. 7401 et seq.\) that apply for outdoor air throughout the United States.](#)
- 12-16-211 [Non-Cancer Acute Hazard Index: A measure of short-term non-cancer health risks, which is the sum of the individual acute hazard quotients for toxic air contaminants identified as affecting the same target organ or organ system. The Air District will determine the Non-Cancer Acute Hazard Index pursuant to the Air Toxics "Hot Spots" Information and Assessment Act, H&SC Sections 44300, et seq.](#)
- 12-16-212 [Non-Cancer Chronic Hazard Index: A measure of long-term non-cancer health risks, which is the sum of the individual chronic hazard quotients for toxic air contaminants identified as affecting the same target organ or organ system. The Air District will determine the Non-Cancer Chronic Hazard Index pursuant to the Air Toxics "Hot Spots" Information and Assessment Act, H&SC Sections 44300, et seq.](#)
- 12-16-213 [Notification Risk Threshold: A set of Refinery-Wide Health Risk levels at which a refinery will be required to notify the impacted public of the refinery's health risks pursuant to the Air Toxics "Hot Spots" Information and Assessment Act, California Health and Safety Code H&SC Section 44300 et seq.](#)
- ~~12-16-216 [On-Going Petroleum Refinery Emissions Inventory: An emissions inventory at a petroleum refinery covering a calendar year period. For the purposes of this rule, On-Going Emissions Inventories are required to be compiled for the calendar year 2016, and for each subsequent calendar year. The On-Going Petroleum Refinery Emissions Inventory is described more fully in Regulation 12, Rule 15.](#)~~
- 12-16-214 **Petroleum Refinery:** An establishment that is located on one or more contiguous or adjacent properties, and under common control, and that processes crude oil to produce more usable products such as gasoline, diesel fuel, aviation fuel, lubricating oils, asphalt or petrochemical feedstocks. Petroleum refinery processes include separation processes (e.g., atmospheric or vacuum distillation, and light ends recovery), petroleum conversion processes (e.g., cracking, reforming, alkylation, polymerization, isomerization, coking, and visbreaking) petroleum treating processes (e.g., hydrodesulfurization, hydrotreating, chemical sweetening, acid gas removal, and deasphalting), feedstock and product handling (e.g., storage, blending, loading, and unloading), and auxiliary facilities (e.g., boilers, waste water treatment, hydrogen production, sulfur recovery plant, cooling towers, blowdown systems, compressor engines, and power plants).
- ~~12-16-218 [Petroleum Refinery Emissions Profile \(PREP\): An emissions inventory that is used as a reference with which to compare emissions inventories for later periods of time \(On-Going Emissions Inventories\) in order to determine changes in emissions that have occurred from a petroleum refinery. The PREP is described more fully in Regulation 12, Rule 15.](#)~~
- 12-16-215 [Policy for Notification Under the Air Toxics "Hot Spots" Act: Air District procedures, adopted by the Air District Board of Directors, July 30, 1991, that details requirements for noticing exposed persons pursuant to Section 44362 of the California Health and Safety Code.](#)
- 12-16-216 [Potential to Emit: The maximum capacity of a source or facility to emit a pollutant based on any physical or operational limitation on the capacity of the source or facility to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, or the capacity of any upstream or downstream process that acts as a bottleneck.](#)

- 12-16-217 ~~Petroleum Refinery Owner/Operator:~~** Any person who owns, operates, or exercises operational control over the majority of operations at a petroleum refinery. The refinery owner/operator is responsible for compliance with this rule for the entirety of the petroleum refinery, including any refinery processes or auxiliary facilities that may be separately owned or operated. Any person who owns, operates, or exercises operational control over a portion of a petroleum refinery that is less than a majority of the total refinery operations must provide the Owner/Operator with information sufficient to allow the owner/operator to comply with this rule, and must make that information available to the APCO upon request.
- 12-16-218 Refinery-Wide Cancer Risk:** An estimate of the probability that an individual will develop cancer as a result of lifetime exposure to emissions from a Petroleum Refinery emitted carcinogens at a particular location, and considering, where appropriate, age sensitivity factors to account for inherent increased susceptibility to carcinogens during infancy and childhood. The Air District will determine the Refinery-Wide Cancer Risk pursuant to the Air Toxics "Hot Spots" Information and Assessment Act, H&SC Sections 44300, et seq.
- 12-16-219 Risk Reduction Audit and Plan (RRAP):** A document meeting the requirements of Section 12-16-404 that identifies, among other things, sources, quantities, and causes of emissions responsible for exceedance of Significant Risk Thresholds and details measures that will be implemented to reduce risk below that threshold.
- 12-16-220 Risk Reduction Measures:** Changes to production processes, feedstocks, product formulations, emission point locations, emissions capture and dispersion mechanisms, and other practices that reduce Toxic Air Contaminant emissions or that reduce health risks at the facility being evaluated.
- 12-16-221 Significant Risk Threshold:** A set of Refinery-Wide Health Risk levels established by the Air District pursuant to the Air Toxics "Hot Spots" Information and Assessment Act, H&SC Section 44300, et seq., at which a refinery will be required to reduce health risks pursuant to a District-approved risk reduction and audit plan.
- 12-16-222 Source:** Any article, machine, equipment, operation, contrivance or related groupings of such that may produce and/or emit air pollutants.
- 12-16-223 Toxic Air Contaminant (TAC):** An air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a present or potential hazard to human health. For the purposes of this rule, TACs consist of the substances listed in the most recent health risk assessment guidelines adopted by the Office of Environmental Health Hazard Assessment (OEHHA).
- ~~**12-16-223 Toxicity-Weighted Emissions:**~~ An emission calculation technique that uses the cancer potency (CP) weighting factors and chronic reference exposure level (CREL) weighting factors described in Regulation 2, Rule 5 to assess the relative carcinogenic-weighted quotient and non-carcinogenic-weighted quotient for each toxic air contaminant under evaluation. The toxicity-weighted emissions for a project or site are the sum of the individual quotients for each type of risk: the sum of all carcinogenic-weighted quotients and the sum of all non-carcinogenic-weighted quotients.
- ~~**12-16-224 Trigger Level:**~~ An air emissions increase threshold measured relative to the emissions in the PREP described in Regulation 12, Rule 15, Section 12-15-402 that, if exceeded, initiates requirements under this rule. Specific Trigger Levels are defined in Section 12-16-304.
- 12-16-224 Unreasonable Risk Thresholds:** A set of Refinery-Wide Risk levels established by Air District pursuant to the Air Toxics "Hot Spots" Information and Assessment Act, H&SC Section 44300, et seq., that the Air District deems to be unacceptable

12-16-300 STANDARDS

~~12-16-301 Emission Reduction Plan: A refinery owner/operator shall obtain and maintain APCO approval of an Emission Reduction Plan (ERP) in accordance with Section 12-16-401 or 402 if any of the conditions described in Sections 12-16-301.1, 301.2 or 301.3 occur. Timely submittal of an ERP or Updated ERP as specified in Sections 12-16-401 or 402 and compliance with the procedures of Section 12-16-403 shall satisfy this requirement unless and until the APCO disapproves the ERP.~~

~~301.1 An On-Going Petroleum Refinery Emissions Inventory Report required by Regulation 12, Rule 15 establishes that emissions of a criteria pollutant has increased relative to the baseline emissions inventory for that pollutant established in the PREP by more than 7.0 percent or GHGs by more than 10,000 metric tons (CO₂ equivalent).~~

~~301.2 An On-Going Petroleum Refinery Emissions Inventory Report required by Regulation 12, Rule 15 establishes that emissions of TAGs have increased relative to the baseline emissions inventory established in the PREP in excess of any of the Trigger Levels in Table 1.~~

| Table 1 – TAC Trigger Levels | |
|-------------------------------------|---|
| Chronic Trigger Level | Any Chronic Trigger Level in Table 2-5-1 of Regulation 2, Rule 5, unless the refinery owner/operator demonstrates prior to the time an ERP is due that the total refinery-wide carcinogenic-weighted emission rate and the total refinery-wide non-carcinogenic-weighted emission rate, whichever are applicable, have not increased. |
| Carcinogenic Trigger Level | Any refinery-specific Carcinogenic Trigger Level established pursuant to Section 12-16-404.1. |
| Noncarcinogenic Trigger Level | Any refinery-specific Noncarcinogenic Trigger Level established pursuant to Section 12-16-404.2. |

~~301.3 A Health Risk Assessment (HRA) required by Regulation 12, Rule 15 establishes that a refinery-wide health impact is greater than the Air District's current AB-2588 mandatory risk reduction threshold, and an On-going Petroleum Refinery Emissions Inventory Report required by Regulation 12, Rule 15 establishes that the refinery has any increase in toxicity-weighted emissions for that health impact type.~~

~~12-16-302 Emission Reduction Plan Implementation: A refinery owner/operator shall implement any and all Air Emission Reduction Measures identified in an approved ERP prepared pursuant to Sections 12-16-401 or 402 in accordance with the schedule provided in that ERP.~~

~~12-16-303 Updated Health Risk Assessment: A refinery owner/operator shall obtain and maintain approval of an Updated Health Risk Assessment if each of the conditions of Sections 303.1 through 303.4 are met.~~

~~303.1 An APCO approved HRA indicates that the refinery has a refinery-wide health impact that is greater than the Air District's current AB-2588 mandatory risk reduction threshold; and~~

~~303.2 The APCO has approved an On-Going Emissions Inventory that shows an increase in refinery-wide toxicity-weighted emissions relative to the baseline emissions inventory established in the PREP; and~~

~~303.3 The refinery is not implementing an approved risk reduction and audit plan developed pursuant to California Health & Safety Code § 44381 that addresses the increase described in Section 303.2; and~~

~~303.4 The most recent APCO approved refinery-wide HRA is based on an inventory year that is more than five years prior to the inventory year showing the increase described in Section 303.2.~~

- ~~303.5~~ If the conditions of Sections 303.1 through 303.3 are met but the most recent APCO-approved refinery-wide HRA is based on an inventory year that is less than five years prior to the inventory year showing the increase described in Section 303.2 then the refinery owner/operator must comply with Section 12-16-301.3 by submitting a causal analysis pursuant to Section 12-16-401.1 addressing the increase described in Section 302.2.
- ~~303.6~~ An Updated Health Risk Assessment required pursuant to this Section shall be submitted in accordance with 12-15-405 and shall be reviewed by the APCO in accordance with 12-16-405.

12-16-301 Health Risk Thresholds: For each petroleum refinery, the health impact thresholds that trigger further action are established as the following values for cancer risks and non-cancer acute and chronic hazard indices.

| | <u>Health Risk Thresholds</u> | <u>Refinery-Wide Cancer Risk</u> | <u>Refinery-Wide Non-Cancer Acute and Chronic Hazard Indices</u> |
|--------------|-------------------------------|---|--|
| <u>301.1</u> | <u>Notification Risk</u> | 10 in a million (10×10^{-6}) | 1.0 |
| <u>301.2</u> | <u>Significant Risk</u> | 25 in a million (25×10^{-6}) | 2.5 |
| <u>301.3</u> | <u>Unreasonable Risk</u> | 100 in a million (100×10^{-6}) | 10 |

12-16-302 Risk Reduction Audit and Plan: A refinery owner/operator shall obtain and maintain an APCO approval of a Risk Reduction Audit and Plan (RRAP) in accordance with Sections 12-16-403 and 404 if the APCO-approved HRA required pursuant to Section 12-15-405 or 12-16-401 establishes that a Refinery-Wide Health Risk exceeds a Significant Risk Threshold set forth in Subsection 12-16-301.2.

12-16-303 Risk Reduction Plan Implementation: A refinery owner/operator shall implement all Risk Reduction Measures identified in an approved RRAP prepared in accordance with Sections 12-16-403 and 404.

12-16-304 Source-Specific and Refinery-wide SO₂ and PM_{2.5} Emission Limits: A refinery owner/operator shall not exceed the refinery-wide potential to emit (PTE) limits for SO₂ and PM_{2.5} established in accordance with Section 12-16-405.

12-16-305 SO₂ and PM_{2.5} NAAQS Compliance: A Refinery Owner/Operator shall either
305.1 Demonstrate compliance with SO₂ and PM_{2.5} NAAQS in accordance with Section 12-16-406; or,
305.2 Obtain approval of an Emissions Reduction Plan in accordance with Section 12-16-407.

12-16-400 ADMINISTRATIVE REQUIREMENTS

~~12-16-401 Emission Reduction Plan:~~ A refinery owner/operator shall submit the Emission Reduction Plan (ERP) required by Section 12-16-301 to the APCO within 60 days of APCO approval of an On-Going Refinery Emissions Inventory Report that establishes that a Trigger Level of Section 12-16-301 has been exceeded. The ERP shall include the elements described in Sections 12-16-401.1, 401.2, and 401.3. APCO disapproval of any of these elements or failure to implement an APCO-approved schedule described in Sections 12-16-401.2 or 401.3, shall constitute a violation of Section 12-16-301.

- ~~401.1 Causal Analysis:~~ The ERP shall include a Causal Analysis that includes the following:
- ~~1.1 Identification of the source(s) of emissions that contributed to the refinery-wide emissions increase that exceeded a Trigger Level and a quantification of the~~

- contribution of each source to this increase.
 - 4.2 An analysis that identifies the factor(s) that resulted in the emissions increase. The analysis shall address, in addition to other factors involved, the degree to which changes in crude oil characteristics at the refinery may have caused or contributed to the emissions increase.
 - 4.3 If accidental air releases are identified as causing or contributing to an emissions increase at the refinery, identification of the accident's initiating event and any contributing factors, and a description of the investigation that led to these findings.
 - 4.4 Any requests for exemption based on Section 12-16-103, including the demonstrations described in Section 12-16-405.
- 401.2 Air Emission Reduction Measures:** The ERP shall identify any Air Emission Reduction Measures planned for implementation that will, within two (2) years of submission of a complete ERP, reduce emissions that have exceeded a Trigger Level. This part of the ERP shall include the following:
- 2.1 A quantification of the emission reductions expected from each Air Emission Reduction Measure.
 - 2.2 A schedule for the permitting and implementation of each Air Emission Reduction Measure.
- 401.3 Emission Reduction Audit:** If the planned Air Emission Reduction Measures in Section 401.2 are not projected to fully mitigate, within two years of submission of the complete ERP, each emissions increase that has exceeded a Trigger Level, then the ERP must include an Emission Reduction Audit. The Emission Reduction Audit shall include the following:
- 3.1 Identification of all technically feasible Air Emission Reduction Measures that would mitigate to any extent emissions that have exceeded a Trigger Level and a quantification of the emission reductions that would be achieved by each measure.
 - 3.2 An estimate of the cost-effectiveness of each technically feasible Air Emission Reduction Measure and a description of the basis for the estimate.
 - 3.3 A schedule for the permitting and implementation of technically feasible Air Emission Reduction Measures sufficient to fully mitigate emissions that have exceeded a Trigger Level. A refinery owner/operator is not required to implement Air Emission Reduction Measures that exceed maximum cost-effectiveness as described in Table 2.

| Pollutant | Maximum Cost Effectiveness (\$/ton of emissions reduced) |
|-------------------|--|
| NO _x | \$35,000 |
| SO ₂ | \$35,000 |
| PM ₁₀ | \$15,000 |
| PM _{2.5} | \$50,000 |
| CO | \$500 |
| ROC | \$35,000 |

Notes:

- 1. Maximum cost-effectiveness values are in 2015 dollars and shall be adjusted for inflation using the Bay Area Consumer Price Index in other years.
- 2. The PM_{2.5} cost-effectiveness value shall be applied only to combustion emissions including process units that regenerate catalyst, such as Fluidized Catalytic Cracking Units and Catalytic Reformer Units. Non-combustion particulate emissions are subject to the PM₁₀ value.

12-16-402 Updated Emission Reduction Plan: If implementation of an APCO approved Emission

~~Reduction Plan (ERP) described in Section 12-16-401 fails to fully mitigate emissions that have exceeded Trigger Levels, a refinery owner/operator shall submit an Updated ERP to the APCO that satisfies the following requirements:~~

~~402.1 The Updated ERP shall be submitted to the APCO within 120 days of the final compliance date in the APCO-approved ERP.~~

~~402.2 The Updated ERP shall include an Emission Reduction Audit as described in Section 12-16-401.3.~~

12-16-401 Updated Health Risk Assessment Requirement: A refinery owner/operator shall submit to the APCO for approval an updated health risk assessment (HRA) within 150 days of notification by the APCO that an updated HRA is required. The refinery owner/operator shall follow the procedures in Section 12-15.405.3 and 405.4 regarding the timely submittal of the modeling protocol.

12-16-402 Risk Notification Requirements: A Refinery Owner/Operator notified by the APCO that an HRA or Updated HRA indicates that the Refinery-Wide Cancer Risk or Refinery-Wide Non-Cancer Acute or Chronic Hazard Index exceeds the Notification or Significant Risk Threshold shall notify all exposed persons regarding the results of the HRA in accordance with the Air District Policy for Notification Under the Air Toxics "Hot Spot Act."

12-16-403 Risk Reduction Audit and Plan Submission Requirements: Within 180 days of notification from the APCO that an approved HRA indicates a Refinery-Wide Health Risk exceeds the Significant Risk Threshold set forth in Subsection 12-16-301.2, the notified Refinery Owner/Operator shall submit a RRAP to the APCO in accordance with Section 12-16-404 that details Risk Reduction Measures that will reduce emissions or health risk from the refinery to a level below the Significant Risk Threshold as soon as feasible, but by no later than five years from the date of submission:

403.1 The APCO may extend this time period up to five additional years if the Refinery Owner/Operator demonstrates to the APCO that requiring implementation of the plan within five years places an unreasonable economic burden on the facility operator or is not technically feasible:

403.2 The APCO may shorten the time period proposed by the Refinery Owner/Operator for RRAP implementation to less than five years if the APCO finds that:

2.1 It is technically feasible and economically practicable to implement the plan to reduce emissions below the significant risk level more quickly, or

2.2 The Unreasonable Risk threshold set forth in 12-16-301.3 is exceeded.

403.3 Progress on Emissions Reductions: The Refinery Owner/Operator shall report to the APCO progress on the emission reductions achieved by the plan in the emissions inventory updates required pursuant to Regulation 12, Rule 15, Section 12-15-401.

12-16-404 Risk Reduction Audit and Plan Requirements: A Refinery Owner/Operator subject to Subsection 12-16-403 shall submit to the APCO a RRAP that shall include all of the following:

404.1 The name and address of the facility.

404.2 The North American Industry Classification System (NAICS) code for the facility.

404.3 A source characterization including:

3.1 Summary data from the applicable APCO-approved air toxic emission inventory.

3.2 Summary data from the related health risk assessment.

3.3 Identification of the processes/emission points contributing to risks over the Significant Risk Threshold(s).

404.4 An evaluation of the risk reduction measures to be implemented including:

4.1 Identification of Risk Reduction Measure(s).

4.2 Anticipated emission reductions.

4.3 Anticipated health risk reduction.

404.5 A schedule for implementing the Risk Reduction Measures as expeditiously as

- feasible, but no later than the timeframes established in Section 12-16-403, including:
- 5.1 Dates for filing applications for permits to construct
 - 5.2 Dates equipment will be installed (if applicable).
 - 5.3 Dates process changes will be completed (if applicable).
 - 5.4 Dates for demonstrating the effectiveness of Risk Reduction Measures.
- 404.6 An estimate of residual risk following implementation of the risk reduction measure(s) specified in the plan. If risk cannot be reduced to below the Significant Risk Threshold within five years, the plan shall also include the following:
- 6.1 A request to the district for an extension of time to comply.
 - 6.2 An evaluation of all Risk Reduction Measures available
 - 6.3 A demonstration of technical infeasibility or unreasonable economic burden associated with reducing risk below the Significant Risk Threshold within five years.
 - 6.4 Identification of activities to identify or develop additional Risk Reduction Measures to enable the operator to comply by the specified date.
- 404.7 A certification that the RRAP meets all requirements. The person who makes this certification shall be one of the following:
- 7.1 An engineer who is registered as a professional engineer pursuant to Section 6762 of the Business and Professions Code;
 - 7.2 An individual who is responsible for the operations of the source, or
 - 7.3 An environmental assessor registered pursuant to Section 25570.3 of the Health and Safety Code.

12-16-405 Source-Specific and Refinery-wide SO₂ and PM_{2.5} Emission Limits: No later than June 30, 2017, the APCO shall determine the Potential to Emit (PTE) of each source of SO₂ and PM_{2.5} subject to a District Permit to Operate, and shall establish enforceable, refinery-wide emission limits for SO₂ and PM_{2.5} equivalent to the sum of the PTE values for all sources. For sources that have a combined limit where the combined limit is lower than the summation of the PTEs of the individual sources, the PTE for those sources shall be the combined limit. The APCO shall establish annual limits that will be summed to set the refinery-wide emission limits. The APCO shall also set source-specific hourly limits for SO₂ and daily limits for PM_{2.5} to facilitate comparison with the National Ambient Air Quality Standard (NAAQS) for SO₂ and PM_{2.5}. The APCO may group smaller sources, multiple sources, with single emissions points and multiple sources with existing enforceable limits into categories and determine the PTE for the category as a whole. Source-specific PTE values and refinery-wide limits shall be established as follows:

- 405.1 Before determining PTE values, the APCO shall publish and accept public comment on a protocol for determining and translating to a NAAQS-consistent metric PTE for individual sources and categories of smaller sources.
- 405.2 Within 60 days of a written request by the APCO, the Refinery Owner/Operator shall submit any information needed by the APCO to establish the PTE of any source or group of sources.
- 405.3 The APCO shall publish and accept public comment on the proposed PTE values for each individual source or source category and on proposed refinery-wide PTE limits.
- 405.4 The refinery-wide SO₂ and PM_{2.5} PTE limits shall be rendered enforceable through a revision to the Major Facility Review permit for each refinery.

12-16-406 Refinery-Wide Demonstration of Compliance with SO₂ and PM_{2.5} NAAQS: A refinery owner/operator shall either demonstrate compliance with the SO₂ or PM_{2.5} NAAQS prior to January 1, 2018, by one or more of the following methods, or shall submit an emission reduction plan as required under 12-16-407:

- 406.1 Modelling Demonstration: A dispersion modeling attempt at demonstration of compliance with the SO₂ or PM_{2.5} NAAQS shall be made as follows:
 - 1.1 The refinery owner/operator shall submit to the APCO a proposed dispersion modeling protocol. The protocol may include proposed enforceable reductions

to source-specific values established in Section 12-16-405 and a schedule for adjusting these values through permitting or another enforceable mechanism.

1.2 The refinery owner/operator shall submit to the APCO for review dispersion modelling results obtained in accordance with the approved protocol.

406.2 Air Monitoring Demonstration: An attempt to demonstrate compliance with the SO₂ or PM_{2.5} NAAQS through air monitoring shall proceed as follows:

2.1 The refinery owner/operator shall submit to the APCO a proposed air monitoring study protocol. The protocol must account for the expected points of maximum concentration as indicated by dispersion modelling results. The protocol must account for background concentrations in the Bay Area so as to accurately account for the influence of local sources. The protocol shall conform with any guidance promulgated by the United States Environmental Protection Agency for implementing air quality monitoring for the purposes of characterizing pollutant concentrations relative to the NAAQS.

2.2 The refinery owner/operator shall install and operate the monitoring devices in accordance with the approved protocol.

2.3 The refinery owner/operator shall report air monitoring results to the APCO on a monthly basis.

2.4 If at the end of the first year, the monitoring study shows maximum concentrations exceed the background by less than or equal to 20 percent of the applicable NAAQS, the refinery owner/operator may discontinue the study. If at the end of the third year of the study, the monitoring study shows maximum concentrations exceed the background by less than 50 percent of the applicable NAAQS, then the refinery owner/operator may discontinue the study.

2.5 If at any point during the air monitoring demonstration, results indicate an exceedance of the SO₂ or PM_{2.5} NAAQS, the APCO will determine the contribution to the exceedance by the refinery.

2.6 At the completion of the air monitoring study, the refinery owner/operator shall submit to the APCO for review monitoring results obtained in accordance with the approved protocol.

406.3 APCO Determination of NAAQS Compliance: If the APCO is satisfied that compliance with the SO₂ and PM_{2.5} NAAQS has been demonstrated for a Refinery, then the APCO shall notify the Refinery Owner/Operator in writing and publish the finding on the Air District website. If the APCO determines that a refinery with an approved air monitoring study protocol cannot reasonably be expected to demonstrate NAAQS compliance through air monitoring, then the APCO shall notify the Refinery Owner/Operator in writing and publish the finding on the Air District website. Unless the APCO has given notice and published a finding of compliance, a Refinery will be deemed not to have demonstrated compliance with the SO₂ and PM_{2.5} NAAQS.

12-16-407 Emissions Reduction Plan: Unless a Refinery Owner/Operator has, in accordance with Section 12-16-406, previously demonstrated compliance with the NAAQS for SO₂ and PM_{2.5}, the Refinery Owner/Operator shall, no later than January 1, 2019, submit to the APCO for approval a draft Emissions Reduction Plan that will achieve compliance with the NAAQS for SO₂ and PM_{2.5}. The draft ERP shall be developed in accordance with the following:

407.1 Air Emission Reduction Measures: The ERP shall identify any Air Emission Reduction Measures planned for implementation that will, within two years of submission of a complete ERP, result in compliance with the SO₂ and PM_{2.5} NAAQS. This part of the ERP shall include the following:

1.1 The name and address of the facility.

1.2 The North American Industry Classification System (NAICS) code for the facility.

1.3 A quantification of the emission reductions expected from each Air Emission

- Reduction Measure.
- 1.4 A schedule for the permitting and implementation of each Air Emission Reduction Measure as expeditiously as feasible.
 - 1.5 Dates for filing applications for permits to construct.
 - 1.6 Dates equipment will be installed (if applicable).
 - 1.7 Dates process changes will be completed (if applicable).
- 407.2 Emission Reduction Audit:** If the planned Air Emission Reduction Measures in Section 407.1 are not projected to achieve compliance with the SO₂ and PM_{2.5} NAAQS within two years of submission of the complete ERP, then the ERP must include an Emission Reduction Audit. The Emission Reduction Audit shall include the following:
- 2.1 Identification of all technically feasible Air Emission Reduction Measures that would mitigate to any extent emissions contributing to exceedance of either the SO₂ and PM_{2.5} NAAQS and a quantification of the emission reductions that would be achieved by each measure.
 - 2.2 An estimate of the cost-effectiveness of each technically feasible Air Emission Reduction Measure and a description of the basis for the estimate.
 - 2.3 A schedule for the permitting and implementation of technically feasible Air Emission Reduction Measures sufficient to achieve compliance with the SO₂ and PM_{2.5} NAAQS. A refinery owner/operator is not required to implement Air Emission Reduction Measures that exceed maximum cost-effectiveness in Table 1.

| <u>Pollutant</u> | <u>Maximum Cost Effectiveness (\$/ton of emissions reduced)</u> |
|-------------------------|---|
| <u>SO₂</u> | <u>\$35,000</u> |
| <u>PM_{2.5}</u> | <u>\$50,000</u> |

Note: Maximum cost-effectiveness values are presented in 2015 dollars and shall be adjusted for inflation using the Bay Area Consumer Price Index in other years.

12-16-4083 Review and Approval of Risk and Emission Reduction Plans (Plan): The procedure for determining whether a Plan submitted pursuant to Sections 12-16-403, 404 and 407, 402 or meets the applicable requirements of this rule is as follows:

- 4083.1 Completeness Review:** Within 20 business days of receipt of the draft RRAP or ERP, the APCO will conduct a completeness review of the ERP draft Plan. The APCO will notify the refinery owner/operator in writing if the submitted ERP Plan is lacking information necessary to make an approval determination. The refinery owner/operator shall submit a complete ERP draft Plan within 45 days or receipt of this notification. If the APCO determines that the resubmitted ERP draft Plan is still incomplete, the APCO may disapprove the ERP Plan or may notify the refinery owner/operator that the ERP draft Plan continues to lack necessary information and provide another opportunity to submit a complete ERP draft Plan in 45 or fewer days.
- 4083.2 Public Comment:** The ERP draft Plan, including any revisions made to correct deficiencies, will be made available to the public for 45 days (with exception of confidential information). The APCO will consider any written comments received during this period prior to approving or disapproving the final ERP draft Plan.
- 4083.3 Final Action:**
- 3.1 The APCO will approve the ERP draft Plan if the APCO determines that the ERP draft Plan meets the requirements of Sections 12-16-403, 404 and 407, 402, and will provide written notification to the refinery owner/operator.
 - 3.2 If the APCO determines that the ERP draft Plan does not meet the requirements of Sections 12-16-403, 404 and 407, 402, the APCO will notify the refinery owner/operator in writing and will specify the basis for this determination. Upon

receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the [ERP draft Plan](#) within 45 days.

- 3.3 If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will determine that the refinery owner/operator has failed to meet the requirements of Sections 12-16-~~403, 404~~ and or ~~407, 402~~ and will disapprove the [ERP draft Plan](#).

4083.4 Public Inspection: Within 30 days of the approval of a [ERPPlan](#) under Section 12-16-408.3, the APCO shall post the [ERPPlan](#) on the Air District's website, and shall notify any member of the public, who submitted comments under Section 12-16-408.2, or who otherwise requested such notification of this action in writing. In making information available for public inspection, the confidentiality of trade secrets, as designated by the refinery owner/operator, shall be handled in accordance with Section 6254.7 of the Government Code.

12-16-409 Updated Risk Reduction Audit and Plan: If information becomes available after the initial APCO-approval of an RRAP regarding health risks posed by a refinery or emissions reduction technologies that may be used by a refinery that would significantly impact health risks to exposed persons, the APCO may require a refinery owner/operator to update the RRAP to reflect the information and resubmit the RRAP to the APCO for approval pursuant to 12-16-401.

~~12-16-404 Refinery-Specific Toxic Air Contaminant Trigger Levels:~~ Within 45 days of taking final action to approve a health risk assessment pursuant to Regulation 12-15-406.8, the APCO shall:

~~404.1 Identify one or more site-specific Carcinogenic Toxic Air Contaminant (TAC) Trigger Levels for each refinery. A Carcinogenic TAC Trigger Level shall be an increase in carcinogenic-weighted emissions for a source or group of sources that is projected to correspond to an increase in cancer risk at the maximally exposed individual of 10 in a million cancer risk.~~

~~404.2 Identify one or more site-specific Non-carcinogenic TAC Trigger Levels for each refinery. A Non-carcinogenic TAC Trigger Level shall be an increase in non-carcinogenic-weighted emissions for a source or group of sources that is projected to correspond to an increase in chronic hazard index at the maximally exposed individual of 1.0 hazard index.~~

~~404.3 The refinery-specific increases in toxicity-weighted emissions determined pursuant to Sections 404.1 and 404.2 shall be the TAC Trigger Levels for Section 301.2. The Air District may establish the Refinery-Specific TAC Trigger Levels for a source, a group of sources, or for the entire refinery based on the most relevant predictor of maximum health impacts for a given facility. The Air District's Carcinogenic and Non-carcinogenic TAC Trigger Levels shall be determined using the results of the APCO-approved health risk assessment that was prepared pursuant to Regulation 12-Rule 15.~~

~~404.4 If the District requires the preparation of an updated health risk assessment pursuant to Section 12-16-303, the District shall revise the Refinery-Specific TAC Trigger Levels, if necessary, after the District has approved the updated health risk assessment for the site.~~

~~404.5 Site-specific TAC Trigger Levels shall take effect upon publication on the District's website and written notification to the affected refinery.~~

~~12-16-405 Emission Increases Related to Increases in Crude Oil Throughput:~~ To qualify for the limited exemption in Section 12-16-103, the refinery owner/operator must do the following:

~~405.1 Submit a causal analysis in accordance with Section 12-16-401.1 to justify exemption of the emission increase by demonstrating that it was caused solely by a permitted~~

~~increase in crude oil throughput at the crude oil unit as allowed by an Air District Permit to Operate, and~~

~~405.2 Include in the causal analysis a demonstration that the emission increase proposed to be exempted is the result of crude oil throughput above the crude oil unit throughput that was used to establish the PREP in Regulation 12, Rule 15, and does not represent an increase in the emission rate relative to the volume of processed crude oil by demonstrating that the following is true:~~

$$\frac{E_i}{C_i} \leq \frac{E_{BL}}{C_{BL}}$$

~~Where:~~

~~E_i = total criteria pollutant or greenhouse gas emission increase above the baseline (tons).~~

~~C_i = crude oil throughput increase above the baseline through the Crude Oil Unit associated with E_i (million barrels (million bbl)).~~

~~E_{BL} = total criteria pollutant or greenhouse gas emissions during the baseline period (tons).~~

~~C_{BL} = crude oil throughput through the Crude Oil Unit associated with E_{BL} (million bbl) during the baseline period.~~

12-16-500 MONITORING AND RECORDS

12-16-600 MANUAL OF PROCEDURES

12-16-601 Emissions Inventory Procedures: Each emissions inventory required under this rule shall be prepared following the District's Emission Inventory Guidelines for Petroleum Refineries established under Regulation 12, Rule 15, Section 12-15-409.

ATTACHMENT 4

From: Greg Nudd [<mailto:reg@airqualitymanagementdistrict.ccsend.com>] **On Behalf Of** Greg Nudd
Sent: Friday, October 23, 2015 5:29 PM
To: Wheeler, Kathy P SOPUS-DMW/323
Subject: Request for Comments, Refinery Strategy Hearing Package

Bay Area Air Quality Management District

Dear Kathy,

The staff of the Bay Area Air Quality Management District request comments on the hearing package for four regulatory actions: New Regulation 6, Rule 5: Particulate Emissions from Refinery Fluidized Catalytic Cracking Units and Regulation 9: Inorganic Gaseous Pollutants, Rule 14: Petroleum Coke Calcining Operations and amendments to Regulation 8: Organic Compounds, Rule 18: Equipment Leaks; Regulation 11: Hazardous Pollutants, Rule 10: Hexavalent Chromium from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers.

The hearing package includes the proposed rules, draft staff reports, and a draft Negative Declaration pursuant to the California Environmental Quality Act (CEQA). Draft socioeconomic analyses are being finalized and will be posted early next week.

The hearing package is available on the Air District website at the following URL: <http://www.baaqmd.gov/rules-and-compliance/rule-development/meetings-and-public-hearings>. For additional information or to submit comments, please contact Greg Nudd, at (415) 749-4786 or via e-mail at gnudd@baaqmd.gov. Written comments, submitted by U.S. mail or electronic mail, are requested by close of business, **Monday, November 23, 2015**.

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provider.



Bay Area Quality Management District | 939 Ellis Street | San Francisco | CA | 94109

| Topic | Page | BAAQMD Text | Phillips 66 Response |
|-------|---|---|--|
| | <p>CEQA Analysis, Appendix A</p> <p>CEQA Analysis, Appendix A</p> | <p>scrubbing is disregarded because it will be offset, the expected GHG emissions increase from Rule 9-14 is only 195 MT/yr, which falls below the BAAQMD's Significance Threshold of 1,100 MT/yr</p> <p>Baseline Green Coke Generation Rate = 399,000 tons/yr
 Project Green Coke Generation Rate = 400,000 tons/yr</p> <p>Expected fresh delivery trips = 300 trips/year
 Expected spent delivery trips = 300 trips/year
 Based on 3,893 tons moved in 13 ton per truck</p> | <p>Regulations (CCR), Division 3, Chapter 1, Subchapter 10, Article 2, Subarticle 2 ("MRR Subarticle 2") The applicable elements of MRR Subarticle 2 for the Carbon Plant include §95112 Electricity Generation and Cogeneration Units, §95113 Petroleum Refineries, and §95115 Stationary Fuel Combustion Sources None of these sections stipulate emissions reporting requirements for the reaction of sodium bicarbonate with carbon in flue gas to form CO₂ Therefore, it cannot be assumed that GHG emissions increases associated with increased SO₂ scrubbing will be offset within AB32</p> <p>Green coke throughput in 2011 was 425,000 tpy The baseline and project green coke generation should use this green coke feed rate to better reflect possible green coke feed rates in a given year The Carbon Plant's maximum permitted green coke limit is about 680,000 tpy of green coke across both kilns It is reasonably expected that the facility would run to its permit limits Using either 425,000 tpy or 680,000 tpy and the calculation method in the CEQA Negative Declaration would trip the significance threshold requiring a full Environmental Impact Report (EIR) to be performed.</p> <p>The District estimates the Carbon Plant will require 3,893 additional tons of sodium bicarbonate Based on the Carbon Plant's analysis of past usage and emissions control, we estimate that sodium bicarbonate usage will need to at least 4,200 tons per year This should be recalculated in the CEQA analysis</p> |



TESORO

Tesoro Refining & Marketing Company LLC
Golden Eagle Refinery
150 Solano Way
Martinez, CA 94553-1487
925 228 1220

November 23, 2015

USPS CERTIFIED MAIL: 7014 2870 0001 3488 5402

Eric Stevenson
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

**SUBJECT: Tesoro Refining & Marketing Company LLC Martinez Refinery
Comments to BAAQMD Proposed Rules and Rule Revisions**

Eric,

On behalf of the Tesoro Refining & Marketing Company LLC (Tesoro) Martinez Refinery, I am submitting the following comments to the following proposed BAAQMD rules:

- Regulation 6 PARTICULATE MATTER, Rule 5 PARTICULATE EMISSIONS FROM REFINERY FLUIDIZED CATALYTIC CRACKING UNITS(Rule 6-5);
- Regulation 8 ORGANIC COMPOUNDS, Rule 18 EQUIPMENT LEAKS (Rule 8-18);
- Regulation 9 INORGANIC GASEOUS POLLUTANTS, Rule 14 PETROLEUM COKE CALCINING OPERATIONS (Rule 9-14);
- Regulation 11 HAZARDOUS POLLUTANTS, Rule 10 HEXAVALENT CHROMIUM FROM ALL COOLING TOWERS AND TOTAL HYDROCARBON EMISSIONS FROM PETROLEUM REFINERY COOLING TOWERS (Rule 11-10);
- Regulation 12 MISCELLANEOUS STANDARDS OF PERFORMANCE, Rule 15 PETROLEUM REFINING EMISSIONS TRACKING INDEX (Rule 12-15); and
- Regulation 12 MISCELLANEOUS STANDARDS OF PERFORMANCE, Rule 16 PETROLEUM REFINING EMISSIONS LIMITS AND RISK THRESHOLDS INDEX (Rule 12-16).

Tesoro is a member of the Western States Petroleum Association (WSPA) and the California Council for Environmental and Economic Balance (CCEEB). Tesoro supports the comments submitted by each of these organizations

Tesoro feels strongly that rules 6-5, 8-18 and 11-10 have not had sufficient time in a draft form to gain the necessary input, as the initial concept papers outlining the proposed rulemaking were not published until late May 2015, with actual rule language being issued on October 22, 2015. The rules are flawed, and their bottom line assertions and proposed implementation approach are at odds. We believe that the other rules or proposed revisions to the rules also need significant changes.

Regulation 6 Rule 5 – PM from Refinery FCCUs

The most significant issue with the proposed rule to limit ammonia from CO boilers is the requirement to purchase and operate an ammonia continuous emissions monitoring system (CEMS). Based on recent CEMS installations, Tesoro estimates that a new CEMS shelter would be required. The capital cost would be approximately \$1,000,000, with annual operating costs of \$150,000. There is an appreciable cost associated with the installation, operation and maintenance of such a unit, and it is not clear why a mass balance approach utilizing an ammonia feed meter, consistent with our existing permit condition to monitor ammonia feed, could not effectively lead to the same conclusions at a reduced cost to affected facilities. Notably, the Staff Report associated with the proposed rule does not appear to include the cost of the ammonia CEMS.

The proposed timing for the optimization study needed to potentially increase the ammonia limit from 10-ppm is not long enough. Impacted refineries will need time to assess current emissions and operational impacts in more detail to prepare to demonstrate compliance. Tesoro supports the WSPA amended schedule submitted to staff to allow for this optimization to occur.

The Staff Report for this rule discusses the removal efficiency of condensable particulate matter (PM) for a wet gas scrubber (WGS). Based on Tesoro's knowledge and operation of WGS operations at a sister facility to the Martinez Refinery, reductions in condensable PM emissions are not guaranteed as a result of wet gas scrubber use. Although Tesoro has seen appreciable SO₂ reductions related to the installation of a WGS at its Mandan, ND Refinery, test data, included here as Attachment 1, indicates an increase in condensable PM emissions.

Regulation 8 Rule 18 – Organic Compound Emissions from Equipment Leaks

Several of the proposed revisions to Regulation 8 Rule 18 need to be dropped or changed significantly. We have the following comments on the proposed revisions:

Section 8-18-113

BAAQMD Proposed Rule Language:

8-18-113 Limited Exemption, Initial Boiling Point: Until January 1, 2018, ~~t~~The provisions of Sections 8-18-400 shall not apply to equipment which handle organic liquids having an initial boiling point greater than 302° F.

Tesoro's Comments:

The limited exemption for equipment which handles organic liquids having an initial boiling point greater than 302° F should not be revised as proposed. This proposed addition of "Until January 1, 2018" should not be added.

Heavy liquid components have a low leak frequency. This has been demonstrated through multiple studies since the original U.S. EPA studies of the 1970s. The result of these low leak

Comments to BAAQMD Proposed Rules and Rule Revisions

November 23, 2015

Page 3

rates is demonstrated by the average emission factors for heavy liquid components published in the U.S. EPA's Protocol Document (1995) and republished by CAPCOA (1999). In addition, the American Petroleum Institute examined these leak rates in the 1990s and published the resulting revised average emission factors in API 337 (1996). All of these studies indicate low leak rates for heavy liquid components.

In the past few months several arguments have been offered that have challenged the low leak frequency of the heavy liquid components. In our opinion, none of these arguments survives close scrutiny.

It was suggested in the BAAQMD's concept paper for changes to Rule 8-18 that the application of the U.S. EPA emission factors may under represent actual emissions. The paper states:

*"However, when the California Air Pollution Control Officers' Association (CAPCOA) created fugitive emissions guidelines, CAPCOA stated that "the application of EPA emission factors to California facilities may **under represent** actual emissions. Some of the facilities surveyed by the EPA to develop their emission factors were controlled and should not be used to develop uncontrolled emission factors." ⁵ CAPCOA concluded by proposing that California specific emission factors based on California data be developed."*

CAPCOA's statement is incorrect as it relates to the U.S. EPA studies that are the basis for the average emission factors in the same CAPCOA document (February, 1999). Table IV-1a of the CAPCOA document references the source of the refinery average emission factors as the "1995 EPA Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017, November 1995)." Table 2-2 of this U.S. EPA Protocol Document has the same factors as Table IV-1a of the CAPCOA document and clearly states that the average emission factors were based on the 1980 Petroleum Refining Study (see reference note "a"). Appendix C, pages 2 and 3, of the U.S. EPA Protocol Document clearly states that the data collected during the late-1970s for the 1980 refinery report came from uncontrolled facilities. Therefore, they would not under represent actual emissions of controlled sources.

Please examine the difference in the average emission factors for gas, light liquid, and heavy liquid valves (units of kg/hr/source) found in the CAPCOA document and the U.S. EPA Protocol Document:

- Gas = 2.68E-02 (or 0.00268 kg/hr)
- Light liquid = 1.09E-02 (or 0.00109 kg/hr)
- Heavy liquid = 2.30E-04 (or 0.0000230 kg/hr)

Please note that the light liquid emission factor is 47 times larger than the heavy liquid emission factor and the gas emission factor is 117 times larger than the heavy liquid emission factor. Components in heavy liquid service simply do not leak with nearly the same frequency as those in gas and light liquid service.

Comments to BAAQMD Proposed Rules and Rule Revisions

November 23, 2015

Page 4

Also note that audio, visual, and olfactory (AVO) inspections of heavy liquid components further reduce the potential of emissions from these components.

It has been suggested that heavy liquid components may leak more because they could be in streams at an elevated temperature. However, again, all of the studies done to date were at stream temperatures actually in the field, whether elevated temperatures or not. The leak rates are consistently shown to be much lower for heavy liquid components compared with light liquid or gas components.

Data from multiple refineries in the BAAQMD has been provided to the BAAQMD for your review. We believe that this data also indicates a much lower leak rate for heavy liquid components. Furthermore, Attachment 2 shows the data collected at the Tesoro Martinez Refinery. This data confirms the low leak rate of heavy liquid components at this refinery.

In addition, the Bay Area refineries have suggested working with the BAAQMD to conduct a new study to determine the heavy liquid leak rate. This study, to be monitored by the BAAQMD, should be the definitive word as to the leak rate of heavy liquid components in the BAAQMD. However, since this new study was suggested several months ago, there has been no movement that we are aware of by the BAAQMD to conduct or approve of this study. BAAQMD is proposing new regulations based on emission factors that have not been verified. Proposing this rule without verification ignores the District's responsibility to apply sound science to new rules.

All proposed new regulations should consider the costs to implement the regulations. To implement tagging and inspection of heavy liquid components would be very costly. There are literally hundreds of thousands of heavy liquid components in the BAAQMD. To tag and/or document each of these components would take months of time. To later inspect these components would require hiring additional personnel. All of these costs come with an extremely small amount of reduction in VOC emissions. That is why no other environmental regulatory body requires tagging and inspecting heavy liquid components (with the exception of the South Coast Air Quality Management District (SCAQMD) requiring inspection of the few heavy liquid pumps at each refinery).

Section 8-18-204

BAAQMD Proposed Rule Language:

8-18-204 Connection: *Flanged, screwed, or other joined fittings used to connect any piping or equipment, including any fitting connecting equipment to piping or other equipment, such as a valve bonnet flange or pump flange*

Tesoro's Comments:

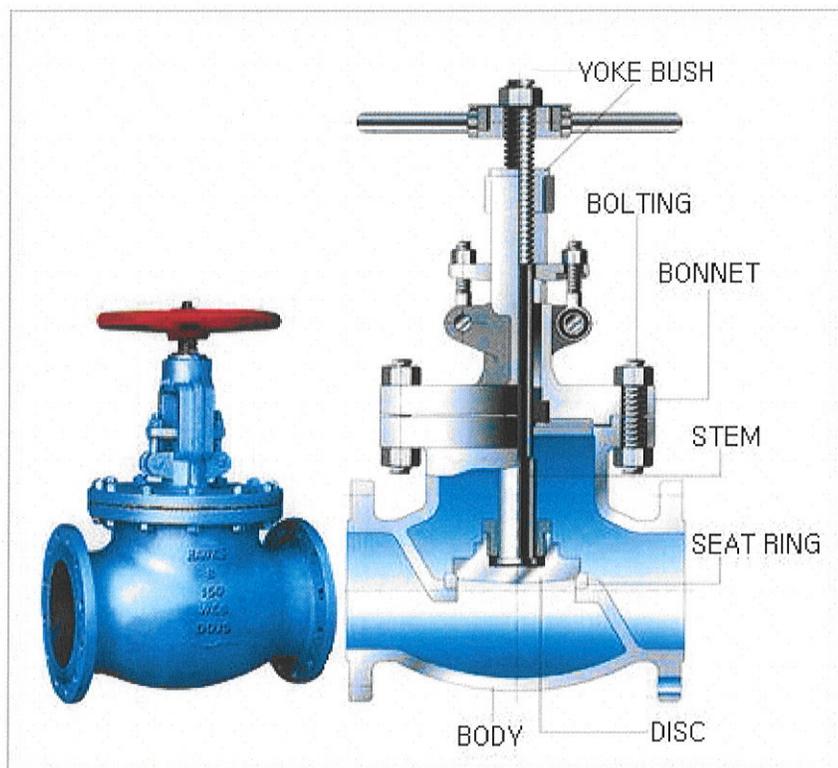
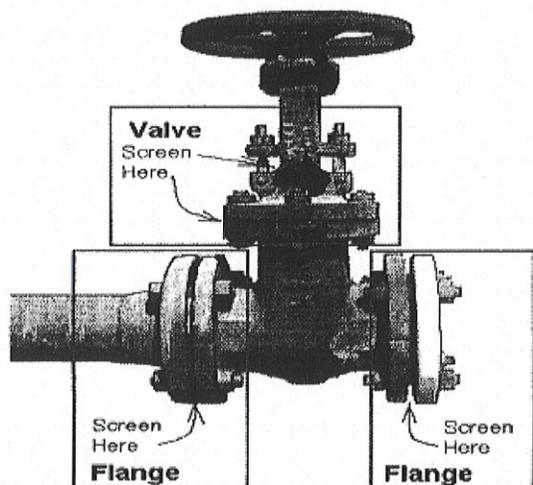
The revision to the definition of a "connection" includes the example of a "valve bonnet flange." This example should instead identify the two flanges on the sides of the valve and not the "valve

Comments to BAAQMD Proposed Rules and Rule Revisions

November 23, 2015

Page 5

bonnet flange.” The bonnet flange is on the vertical portion of the valve (shown as the flange with the comment of “Screen Here” for a valve in the CAPCOA document) and is considered as an integral part of the valve, not a separate component. To count this as a separate connection would confuse the component counts.



Section 8-18-306.1

BAAQMD Proposed Rule Language:

306.1 Any essential equipment leak must be less than 10,000 ppm and mass emissions must be determined within 30 days of placing on the nonrepairable list. The APCO must be notified no less than 96 hours prior to conducting mass emissions measurements. ~~The valve, connection, pressure relief device, pump or compressor is repaired or replaced within 5 years or at the next scheduled turnaround, whichever date comes first.~~

Tesoro's Comments:

The revision excludes all components that are leaking at 10,000 ppm and above from being placed on the delay of repair list. Although we understand the desire to eliminate components that are leaking at higher leak rates, this desire should be balanced with the desire to reduce the emissions associated with shutdowns and turnarounds that may be required to repair these components. Also, there are additional safety concerns associated with shutdowns and turnarounds that should be considered. Shutting down units to make repairs could reduce refinery output putting further strain on the California fuel supplies.

Furthermore, mass emissions determinations are infeasible or unsafe in certain situations. For example, for components that are very hot it could be unsafe to attempt to bag them for a mass emissions determination. Other components could be elevated and require extraordinary efforts to reach for bagging purposes.

It is our recommendation that this revision be dropped.

Section 8-18-306.2

BAAQMD Proposed Rule Language:

Comments to BAAQMD Proposed Rules and Rule Revisions

November 23, 2015

Page 7

| Equipment | Total Number of Non-repairable Equipment Allowed (%) |
|--|--|
| Valves (including Valves with Major Leaks) and Connections as allowed by Section 8-18-306.3 | 0.1530% of total number of valves |
| Valves with Major Leaks as allowed by Section 8-18-306.4 | 0.025% of total number of valves |
| Pressure Relief Devices | 0.510% of total number of pressure relief devices |
| Pumps and Compressors | 0.510% of total number of pumps and compressors |

Tesoro's Comments:

The percentage of components allowed on the delay of repair list has been sharply reduced. As this reduction can also result in significant shutdown and startup emissions, we recommend not revising the percentages.

Even excluding the addition of heavy liquid components, which we believe should not be added to the inspection and monitoring requirements as explained previously, there are several other proposed amendments to the regulation that will result in far more components being inspected. For example, the addition of light liquid and gas service connections to the list of equipment that needs to be routinely inspected (8-18-205) will increase the number of potentially leaking components substantially, but does not add anything to the percentage of total number of valves. For connections, in the calculation of the percentage of non-repairable equipment allowed, the BAAQMD has increased the numerator substantially without changing the denominator at all. In fact, 8-18-306.3 states that a leaking connector must be counted as two leaking valves.

With the other proposed changes in the regulation, and with the potential to add a substantial amount of emissions from shutdown and startups required to repair some components, there is no need to reduce the percentage of components on the delay of repair list and a potential disadvantage of doing so.

Section 8-18-311

BAAQMD Proposed Rule Language:

8-18-311 Mass Emissions: *A person shall not use any equipment that emits total organic compounds in excess of five pounds per day except during any repair periods allowed by Sections 8-18-301, 302, 303, 304, and 305.*

Comments to BAAQMD Proposed Rules and Rule Revisions

November 23, 2015

Page 8

Tesoro's Comments:

Determining mass emissions from certain components is, in some situations, either not feasible or unsafe. As mentioned previously, an example of this is for components that are very hot where it could be unsafe to attempt to bag them for a mass emissions determination. Other components could be elevated and require extraordinary efforts to reach for bagging purposes. Furthermore, this new requirement decreases the allowable mass emission rate for components on delay of repair from fifteen pounds per day to five pounds per day. As this reduction can also result in significant shutdown and startup emissions that could be required to repair some of these components, we recommend that this revision be dropped.

Section 8-18-502.6

BAAQMD Proposed Rule Language:

8-18-502 Records: Any person subject to the requirements of this rule shall maintain records that provided the following information:

502.6 Effective January 1, 2018, Piping and Instrumentation Diagrams (P&IDs) with all components in heavy liquid service clearly identified.

Tesoro's Comments:

This revision requires all components, regardless of component type, to be included on the submitted P&IDs. A component-by-component identification on the P&IDs is impractical, especially for connections.

A large refinery will have tens of thousands of connections in heavy liquid service. These connections are not clearly delineated on P&IDs (e.g. flanges in long piping runs). To identify on a P&ID each of these tens of thousands of components would make the P&IDs unreadable and would require an enormous amount of work by the engineering design group.

Please note that the BAAQMD has been able to effectively administer an equipment leak regulation for decades without the need for the facilities to have marked-up P&IDs with components subject to these regulations. We believe that the BAAQMD does not need to add this requirement for heavy liquid components. Because this requirement is infeasible and would require significant work by the facilities, we recommend that this requirement be dropped.

Regulation 9 Rule 14 – Petroleum Coke Calcining Operations

Although Tesoro does not own any petroleum coke calcining operations in the BAAQMD service area, we do own coke calcining operations in the SCAQMD service area. As regulations from one air district influence regulations in other air districts, we believe it is important to comment on this rule.

The requirements (Sections 502.1 and 502.2) to monitor, calibrate, and maintain records for the sorbent material are unnecessary given that the outlet concentration of SO₂ and the mass emission rate or control efficiency are set by regulation. These new requirements simply add to the demands on the facility's personnel and resources. As an unnecessary additional expense we recommend that these requirements be dropped.

502.1 Effective January 1, 2019:

- 1.1 Maintain records of the annual green coke processed in each kiln and all emissions data used to develop the APCO approved average SO₂ emission factor.
- 1.2 monitor the dry sorbent injection rate on an hourly basis for each kiln using an APCO approved methodology.
- 1.3 Use a calibrated APCO-approved load cell to monitor the mass of sorbent injected per hour for the first kiln to comply with the requirements of Section 9-14-301.

502.2 Effective January 1, 2020:

- 2.1 Use a calibrated APCO-approved load cell to monitor the mass of sorbent injected per hour for each kiln.
- 2.2 calibrate the dry sorbent injection system on an annual basis using an APCO-approved methodology.
- 2.3 Maintain records of the dry sorbent injection rate on an hourly basis.
- 2.4 Prepare monthly summaries for the amount of sorbent material purchased, the amount of spent sorbent hauled away on a daily basis and the amount of sorbent material injected on hourly basis.

Regulation 11 Rule 10 – Total Hydrocarbon Emissions from Refinery Cooling Towers

The basis for the cooling tower monitoring is the EPA emission factor for uncontrolled cooling towers. In its 2011 Information Collection Request (ICR) and associated Emissions Estimation Protocol, EPA stated that the Modified El Paso Method (MEPM) provides the most representative data and that the emission factor for uncontrolled cooling towers would be the lowest quality emission estimate. Refinery cooling towers in the Bay Area are subject to the monitoring and leak reduction requirements found in 40 C.F.R. 63 Subpart CC. Therefore, it is clearly inappropriate for the BAAQMD to use an “uncontrolled” emission factor to justify the proposed rule.

As proposed, the rule requires either continuous monitoring with accuracy down to 84-ppb, daily BAAQMD approved “Modified El Paso Method (MEPM),” or lab sampling 365 days per year on all cooling towers. For the Martinez Refinery, this would include 12 cooling towers operated at the refinery. Continuous monitors would require significant initial capital costs and high maintenance and operating costs. Tesoro estimates that, at a minimum, 5 additional full-time equivalent (FTE) employees would be necessary to implement daily MEPM testing at the refinery. However, no appreciable reduction in actual emissions would occur because the proposed reductions are only demonstrated on paper as the BAAQMD used the inappropriate “uncontrolled” EPA emission factor as a baseline estimate. Further, District staff has received emissions data from all of the Bay Area refineries for their cooling towers, based on the completed MACT CC MEPM testing as well as lab monitoring results completed for specific

refiners' permit conditions. This data clearly demonstrates the District's fugitive emissions inventory from the October 2015 staff report is significantly over-estimated.

The lab analyses suggested by BAAQMD may not encompass many refinery streams that might be found if a cooling tower leak was detected. Finally, Tesoro requests that the addition of the highly prescriptive best management practices for operating a cooling tower be removed.

Regulation 12, Rules 15 and 16 - Petroleum Refining Emissions Tracking and Risk Threshold Rules

Draft Rules

Of particular concern with proposed rule 12-15 is that once the facility Petroleum Refinery Emissions Profile (PREP) is established, there is no proposed mechanism in the rule to adjust for future permitted projects. One example is the installation of a new selective catalytic reduction (SCR) system to control nitrogen oxide (NOx) emissions from a permitted source. SCR requires ammonia with some level of slip in order to maximize NOx reductions. The result is that ammonia emissions increase in order to reduce NOx emissions, emphasizing the importance of being able to adjust for permitted projects. Another example is changing the requirements for transportation fuels intended to reduce vehicle emissions. A project like that is likely to increase certain refinery emissions (which would require offsets) with the intention of reducing mobile source emissions that have a significantly greater impact on the Bay Area's air shed than refineries. To illustrate, when Tesoro replaced its fluid coker with a delayed coker in 2008, this project reduced greenhouse gases by greater than 475,000 metric tons per year, NOx by greater than 275 tons per year, SO₂ by greater than 3,000 tons per year and PM by over 50 tons per year. Even with all of those benefits there was an increase in organic emissions associated with the project that were offset. It is unusual at a facility as complex as a refinery to find projects with no increases.

Tesoro is extremely concerned that proposed rule 12-16 is illegal under California law. The rule is arbitrary and capricious in its imposition of this system on one group of stationary sources. There is no clear need established for this rule. BAAQMD has not shown that this rule is necessary to meet or maintain conformance with National or State Ambient air quality standards.

Beyond the legal concerns, BAAQMD has not shown a sound scientific reason why the rule is necessary. The few air quality exceedances measured by the Bay Area are not associated with the refineries and the BAAQMD's Community Air Risk Evaluation (CARE) program, which looked at toxic risk, clearly demonstrates that the refineries are not a major factor in the identified CARE communities.

Draft Environmental Impact Report (EIR)

- The Draft EIR identifies a number of potential control technologies for PM_{2.5}, SO₂, and/or TAC emissions, however it does not evaluate potential impacts of control technologies at a unit-specific level. For example, while it may be possible to install a

baghouse for PM_{2.5} control at some refinery process units, due to significant pressure drop fluctuations (that occur as the result of operation of a baghouse) it would not be feasible for installation and operation at a FCCU. FCCUs are characteristically sensitive to changes in pressure drop. Therefore, if an affected refinery is not able to demonstrate compliance with NAAQS for SO₂ or PM_{2.5}, individual potentially available control technologies would need to be evaluated based on site-specific and unit-specific operating conditions and should not be globally assumed to reduce emissions without any “significant” impact upon implementation. This is already accomplished during the Best Available Control Technology (BACT) review conducted during new source review permitting.

- Section 3.3.4.2 discusses additional energy requirements, and subsequent GHG emissions, associated with the operation of a WGS due to increased pressure drop in the flue gas system. However, it does not appear that this increased energy demand includes the requirements for operation of the wastewater treatment system. Similarly, energy requirements for wastewater treatment associated with operation of a wet electrostatic precipitator (ESP) are not discussed.
- While section 3.2.5.1.1 discusses the required energy impacts due to increased pressure drop associated with operation of WGS, the impacts associated with increased pressure drop resulting from operation of a baghouse, which can also be significant, is absent from the discussion.
- Due to the site/location specific nature of both water demands and water quality impacts (i.e. wastewater discharge), as noted in the Sections 3.5.4.1 and 3.5.4.2, these impacts need to be evaluated on a facility-by-facility basis and should not be assumed as “insignificant.” Note, the draft EIR does conclude that water demands of WGS may be “significant,” but otherwise, all water related impacts are assumed “insignificant”. No issues associated with waste water treatment or impacts to aquatic life are addressed. Based on operations at sister refineries, Tesoro knows these impacts are significant. Due to the high dissolved solids concentrations in the scrubber purge, the total dissolved solids (TDS) of the refinery wastewater discharge will increase, potentially negatively impacting fish toxicity.
- A WGS can be used to reduce both SO₂ and particulates. However, the draft EIR does not identify that the PM_{2.5} control potential of a WGS is less than that of a baghouse or ESP and individual refineries would need to assess increased PM_{2.5} emissions if a WGS were to be proposed as a replacement of existing particulate control equipment for the added benefit of SO₂ reductions. As an example, Tesoro’s existing ESP is a very efficient unit given both its size and the use of ammonia to improve removal efficiency. The installation of a WGS would result in little or no removal of organic PM_{2.5} and successful operation would also require an increase in the water salts present in the circulating liquids that are entrained out of the scrubber. Based on Tesoro’s experience in the operation of WGS units at sister facilities, an installation at the Martinez Refinery would likely result in almost no reduction of PM_{2.5}, and may result in a small increase due to the salts entrained with the regenerator flue gas.
- Draft EIR lists cyclones as a potential PM_{2.5} control technology. Overall cyclone control efficiencies range from 50% to 90% with higher efficiencies being achieved with large

Comments to BAAQMD Proposed Rules and Rule Revisions

November 23, 2015

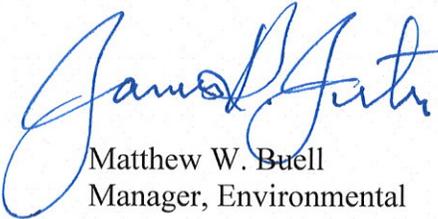
Page 12

particles and low efficiencies for smaller particles < PM₁₀. Cyclones do not affect the temperature of the stream being treated and therefore do not offer any control of condensable PM. Consequently, it should not be anticipated that cyclones would provide any appreciable PM_{2.5} control, and thus do not represent a control technology which would be in compliance with the standards.

We support establishing a clear and technically sound process for conducting annual emission inventories so future rule-making can be based on more accurate information. Although we recommend that the proposed rules not be adopted in their current form, Tesoro welcomes further discussion on these rules, if the decision is made to pursue them, even after all of the concerns we have raised. Tesoro and WSPA collectively have a long-standing track record of collaborating with the District on successful rulemaking which achieve real emissions reductions, and we will continue to work with your staff to develop rules that “get it right” the first time.

Please contact me at 925.370.3275 or Matthew.W.Buell@tsocorp.com if you would like to discuss further.

Sincerely,

 FOR MATT BUELL
Matthew W. Buell
Manager, Environmental

Attachments:

Attachment 1 – Tesoro Mandan WGS Test Results

Attachment 2 – Tesoro Martinez Heavy Liquid Component Monitoring

ATTACHMENT 1

Tesoro Mandan WGS Test Results



PARTICULATE MATTER EMISSIONS ENGINEERING STUDY

Performed At The

Tesoro Refining and Marketing Company LLC

Mandan Refinery

Fluidized Bed Catalytic Cracking Unit (FCCU) Wet Gas Scrubber Stack

Mandan, North Dakota

Test Date(s)

May 19-20, 2015

Report No.

TRC Environmental Corporation Report 233736B

Report Submittal Date

June 30, 2015

TRC Environmental Corporation
1301 Corporate Center Drive - Suite 177
Eagan, Minnesota 55121-1259
USA

T (651) 686-0700
F (651) 686-4434



Report Certification

I certify that to the best of my knowledge:

- Testing data and all corresponding information have been checked for accuracy and completeness.
- Sampling and analysis have been conducted in accordance with the approved protocol and applicable reference methods (as applicable).
- All deviations, method modifications, or sampling and analytical anomalies are summarized in the appropriate report narrative(s).

David Wainio
Project Manager

6/12/15

Date

TRC was operating in conformance with the requirements of ASTM D7036-04 during this test program.

Jeffrey W. Burdette
TRC Air Measurements Technical Director



TABLE OF CONTENTS

| | |
|--|----|
| 1.0 INTRODUCTION | 4 |
| 1.1 Project Contact Information | 4 |
| 1.2 Facility and Process Description | 5 |
| 2.0 SUMMARY OF RESULTS | 5 |
| 3.0 DISCUSSION OF RESULTS | 5 |
| 4.0 SAMPLING AND ANALYSIS PROCEDURES | 6 |
| 4.1 Determination of Sample Point Locations by USEPA Method 1 | 6 |
| 4.2 Filterable PM Determination by USEPA Method 5B | 6 |
| 4.3 Condensable PM Determination by USEPA Method 202 (As Revised December, 2010) | 7 |
| 5.0 QUALITY ASSURANCE PROCEDURES | 7 |
| 6.0 TEST RESULTS SUMMARY | 9 |
| APPENDIX | |
| AETB and QI Information Summary | 12 |
| Qualified Individual Certificate(s) | 13 |
| Process and Pollution Control Equipment Operating Data | 14 |
| Sample Location Information | 15 |
| Sample Train Diagrams | 16 |
| Sample Analysis Data | 18 |
| Calculation Nomenclature and Formulas | 24 |
| Processed Field Data and Results | 31 |
| Sampling Equipment Calibration Data | 37 |
| Raw Field Data Sheets | 51 |



PARTICULATE MATTER EMISSIONS ENGINEERING STUDY

1.0 INTRODUCTION

TRC Environmental Corporation (TRC) performed a total particulate matter (TPM) emission engineering test program on the Fluidized Bed Catalytic Cracking Unit (FCCU) Wet Gas Scrubber Stack at the Mandan Refinery of Tesoro Refining and Marketing Company LLC (Tesoro) in Mandan, North Dakota on May 19-20, 2015. The tests were authorized by and performed for Tesoro.

The purpose of this test program was to determine particulate emission rates during normal operating conditions. The results of the test program will be used for in-house engineering purposes only. The test program was conducted according to the TRC Proposal 233736.9990 dated April 2, 2015.

1.1 Project Contact Information

| Participants | | |
|-----------------------------------|--|--|
| Test Facility | Tesoro Refining and Marketing Company LLC
Mandan Refinery
900 Old Red Trail N.E.
Mandan, North Dakota 58554 | Chris Hanson
Senior Engineer, Environmental
701-667-2542
Chris.C.Hanson@tsocorp.com |
| Air Emissions Testing Body (AETB) | TRC Environmental Corporation
1301 Corporate Center Drive - Suite 177
Eagan, Minnesota 55121-1259 | David Wainio
Project Manager
651-686-0700 x 12107 (phone)
dwainio@trcsolutions.com |

The tests were conducted by David Wainio, Joe Mundth and Jesse Schwarzrock of TRC. Documentation of the on-site ASTM D7036-04 Qualified Individual(s) (QI) can be located in the appendix to this report.

Steve Fasching of the The North Dakota Department of Health (NDDH) was onsite to observe the RATA testing and observed a portion of the TPM testing.



1.2 Facility and Process Description

Tesoro operates a refinery in Mandan, North Dakota that has a capacity of processing 71,000 barrels of oil per day. The FCCU is part of the refining process and is equipped with a wet scrubber and a wet electrostatic precipitator (ESP).

2.0 SUMMARY OF RESULTS

The results of this test program are summarized in the table below. Detailed individual run results are presented in Section 6.0.

| Unit ID | Pollutant Tested | Test Run# | Measured PM Emissions | | |
|-----------------------|------------------|-----------|-----------------------|------------|-------------|
| | | | Total | Filterable | Condensable |
| FCCU Wet Gas Scrubber | Total PM | 1 | 5.31 lb/hr | 1.37 lb/hr | 3.94 lb/hr |
| | | 2 | 6.10 lb/hr | 1.51 lb/hr | 4.59 lb/hr |
| | | 3 | 5.13 lb/hr | 1.16 lb/hr | 3.97 lb/hr |

The table below summarizes the test methods used, as well as the number and duration of each at each test location:

| Unit ID/
Sample Location | Parameter Measured | Test Method | No. of
Runs | Run
Duration |
|-----------------------------|--------------------|-------------|----------------|-----------------|
| FCCU Wet Gas Scrubber/Stack | Filterable PM | USEPA 5B | 3 | 120 min |
| | Condensable PM | USEPA 202 | 3 | 120 min |

3.0 DISCUSSION OF RESULTS

No problems were encountered with the testing equipment during the test program. Source operation appeared normal during the entire test program. No changes or problems were encountered that required modification of any procedures presented in the test plan. No adverse test or environmental conditions were encountered during the conduct of this test program. Soot was blown during the last portion of Run 2. The results of Run 2 were slightly higher because of this. The coloration of the filters were only slightly orange and the rinses appeared mostly clear.



4.0 SAMPLING AND ANALYSIS PROCEDURES

All testing, sampling, analytical, and calibration procedures used for this test program were performed in accordance with the methods presented in the following sections. Where applicable, the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods, USEPA 600/R-94/038c, September 1994 was used to supplement procedures.

4.1 Determination of Sample Point Locations by USEPA Method 1

This method is applicable to gas streams flowing in ducts, stacks, and flues and is designed to aid in the representative measurement of pollutant emissions and/or total volumetric flow rates from stationary sources. In order to qualify as an acceptable sample location, it must be located at a position at least two stack or duct equivalent diameters downstream and a half equivalent diameter upstream from any flow disturbance.

The cross-section of the measurement site was divided into a number of equal areas, and the traverse points were then located in the center of these areas. The minimum number of points were determined from either Figure 1-1 (particulate) or Figure 1-2 (non-particulate) of USEPA Method 1.

4.2 Filterable PM Determination by USEPA Method 5B

This method is applicable for the determination of non-sulfuric acid PM from stationary sources, only where specified by an applicable subpart of the regulations or where approved by the Administrator for a particular application. USEPA Methods 2-4 were performed concurrently with, and as an integral part of these determinations.

Flue gas was withdrawn isokinetically from the source at traverse points determined per USEPA Method 1, and PM was collected in the nozzle, probe liner, and on a glass fiber filter. The probe liner and filter were maintained at a temperature of 160 ± 14 °C (320 ± 25 °F). The collected sample was then heated in an oven at 160 °C (320 °F) for 6 hours to volatilize any condensed sulfuric acid that may have been collected, and the non-sulfuric acid PM was determined gravimetrically.



4.3 Condensable PM Determination by USEPA Method 202 (As Revised December, 2010)

This method is applicable for the determination of condensable particulate matter (CPM) from stationary sources. CPM is measured in the emissions after removal from the stack and after passing through a filter.

The CPM was collected in dry impingers after filterable particulate material had been collected on filters maintained above 30°C (85°F) using Method 5 or 17 (Appendix A, 40CFR60) or 201A (Appendix M, 40CFR51) type sampling train. The sample train included a Method 23 type condenser capable of cooling the stack gas to less than 85°F, followed by a water dropout impinger. One modified Greenburg Smith impinger and a CPM filter followed the water dropout impinger. The impinger contents were immediately purged after the run with nitrogen (N₂) to remove dissolved sulfur dioxide. The impinger solution was then extracted with hexane, and the CPM filter was extracted with water and hexane. The organic and aqueous fractions were then taken to dryness and the residues weighed. A correction, if necessary, was made for any ammonia present due to laboratory analysis procedures. The total of all fractions represented the CPM.

5.0 QUALITY ASSURANCE PROCEDURES

TRC integrates our Quality Management System (QMS) into every aspect of our testing service. We follow the procedures specified in current published versions of the test Method(s) referenced in this report. Any modifications or deviations are specifically identified in the body of the report. We routinely participate in independent, third party audits of our activities, and maintain:

- Louisiana Environmental Lab Accreditation Program (LELAP) accreditation;
- Interim accreditation from the Stack Testing Accreditation Council (STAC) that our operations conform with the requirements of ASTM D 7036-04

These accreditations demonstrate that our systems for training, equipment maintenance and calibration, document control and project management will fully ensure that project objectives are achieved in a timely and efficient manner with a strict commitment to quality.

All calibrations are performed in accordance with the test Method(s) identified in this report. If a Method allows for more than one calibration approach, or if approved alternatives are available, the calibration documentation in the appendices specifies which approach was used. All measurement devices are calibrated or verified at set intervals against standards traceable to the National



Institute of Standards and Technology (NIST). NIST traceability information is available upon request.

ASTM D7036-04 specifies that: “AETBs shall have and shall apply procedures for estimating the uncertainty of measurement. Conformance with this section may be demonstrated by the use of approved test protocols for all tests. When such protocols are used, reference shall be made to published literature, when available, where estimates of uncertainty for test methods may be found.” TRC conforms with this section by using approved test protocols for all tests.



6.0 TEST RESULTS SUMMARY



PARTICULATE TEST RESULTS SUMMARY Page 1 of 1

Company: Tesoro Refining
 Plant: Mandan Refinery
 Unit: Wet Gas Scrubber
 Location: Stack

| Test Run Number | 1 | 2 | 3 | Average |
|---|-----------|-----------|-----------|---------|
| Source Condition | Normal | Normal | Normal | |
| Date | 5/19/2015 | 5/19/2015 | 5/20/2015 | |
| Start Time | 10:40 | 13:15 | 6:40 | |
| End Time | 12:44 | 15:19 | 8:44 | |
| Sample Duration (min): | 120.0 | 120.0 | 120.0 | 120.0 |
| Average Gas Temp (°F): | 147.7 | 148.6 | 147.7 | 148.0 |
| Fractional Gas Moisture Content: | 0.24 | 0.25 | 0.23 | 0.24 |
| Gas CO ₂ Content (%vol): | 12.8 | 12.8 | 12.9 | 12.8 |
| Gas O ₂ Content (%vol): | 5.2 | 5.2 | 5.1 | 5.2 |
| Excess Air (%): | 31.6 | 31.6 | 30.8 | 31.3 |
| Gas Wet MW (lb/lbmole-mole): | 27.26 | 27.13 | 27.41 | 27.27 |
| Average Gas Vel (ft/sec): | 48.23 | 49.34 | 48.33 | 48.63 |
| Measured Volumetric Flow Rate | | | | |
| Q (actual ft ³ /min): | 145,465 | 148,808 | 145,752 | 146,675 |
| Q _{std} (std ft ³ /min): | 119,124 | 121,687 | 118,724 | 119,845 |
| Q _{std(dry)} (dry std ft ³ /min): | 90,034 | 90,669 | 91,111 | 90,605 |
| Sample Volume (dry std ft ³): | 87.938 | 90.868 | 88.832 | 89.213 |
| PM Collected (mg): | | | | |
| Filterable | 10.1326 | 11.4364 | 8.5395 | 10.0362 |
| Condensable: | 29.1000 | 34.8000 | 29.3000 | 31.0667 |
| Total: | 39.2 | 46.2 | 37.8 | 41.1 |
| PM Concentration (gr/dscf): | | | | |
| Filterable | 0.0018 | 0.0019 | 0.0015 | 0.0017 |
| Condensable: | 0.0051 | 0.0059 | 0.0051 | 0.0054 |
| Total: | 0.0069 | 0.0079 | 0.0066 | 0.0071 |
| PM Emission Rate (lb/hr based on measured volumetric flow rate): | | | | |
| Filterable: | 1.37 | 1.51 | 1.16 | 1.35 |
| Condensable: | 3.94 | 4.59 | 3.97 | 4.17 |
| Total: | 5.31 | 6.10 | 5.13 | 5.52 |
| Isokinetic Variance | 99.3 | 101.8 | 99.1 | 100.1 |

APPENDIX

AETB and QI Information Summary

| | |
|-----------------------|-----------------------------|
| Facility Name: | Tesoro – Mandan Refinery |
| Location: | FCCU Wet Gas Scrubber Stack |
| Test Date: | 5/19/15-5/20/15 |



| | | | |
|---------------------------|--|--|--|
| Test Parameters: | Particulate Matter | | |
| QI Last Name: | Wainio | | |
| QI First Name: | David | | |
| QI Middle Initial: | J. | | |
| AETB Name: | TRC Environmental Corporation | | |
| AETB Phone No: | 651-686-0700 x 12107 | | |
| AETB Email: | dwainio@trcsolutions.com | | |
| Group 1 Exam Date: | 11/7/2012 | | |
| Provider Name: | Source Evaluation Society | | |
| Provider Email: | gstiprogram@gmail.com | | |

This is to Certify that:

David Wainio

Is a Qualified Individual as defined in Section 8.3 of ASTM D7036-04 for the following test methods:

EPA Methods 1, 1A, 2, 2A, 2C, 2D, 2F, 2G, 2H, 3, 3B, 4, 5, 5A, 5B, 5E, 5F, 5i, 17, 19, 201A, and 202.

The individual has met the minimum experience requirements defined in Section 8.3.4.2 of ASTM D7036-04 and has successfully passed an internal comprehensive examination for the test methods designated above.

This certification is effective until:

11-07-2017



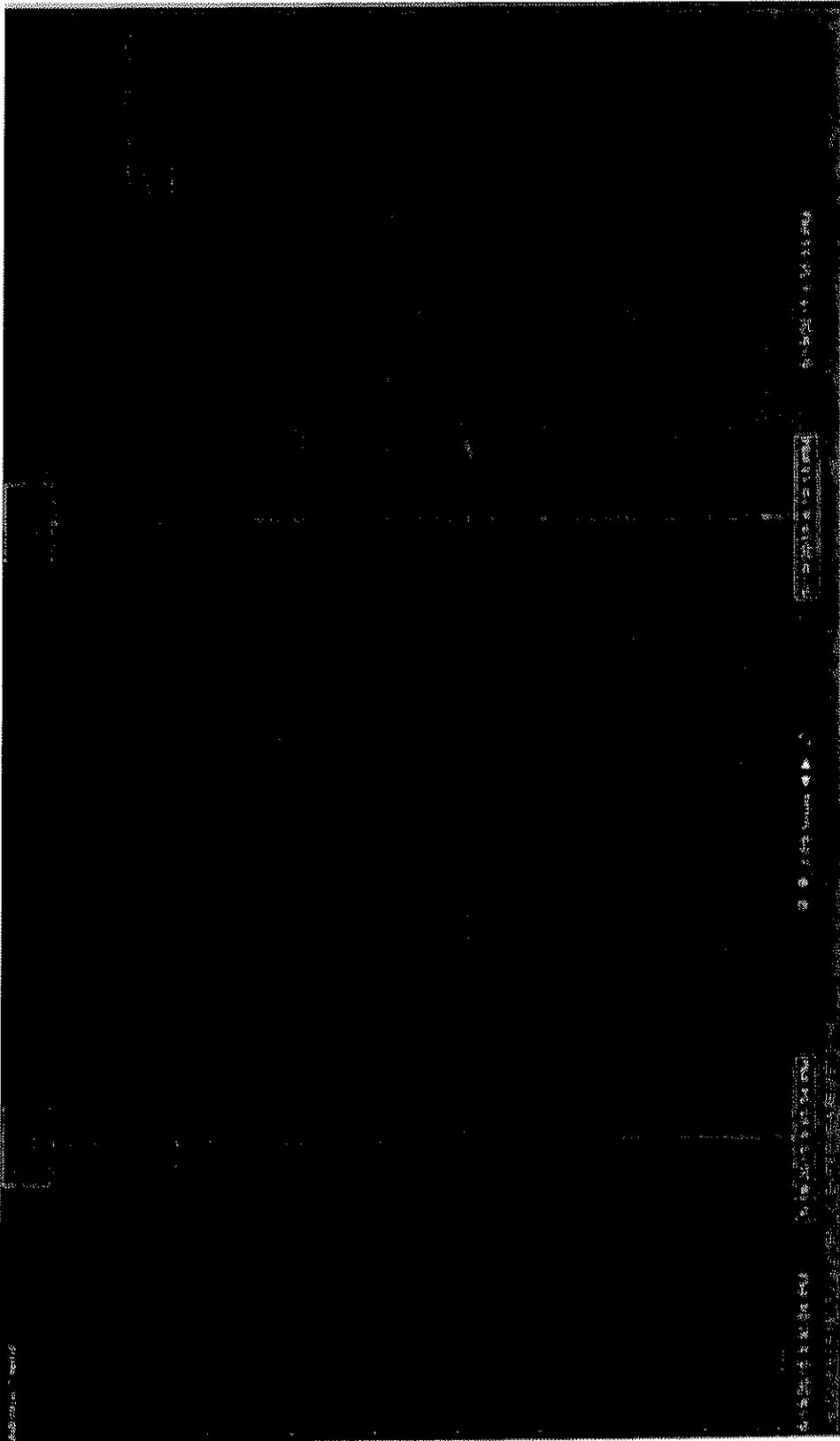
Edward J MacKinnon

Air Measurements Practice Quality Director

Date of Issue: 02-13-2013

Certificate Number: 00489





Steam chart
Showing Soot Blow



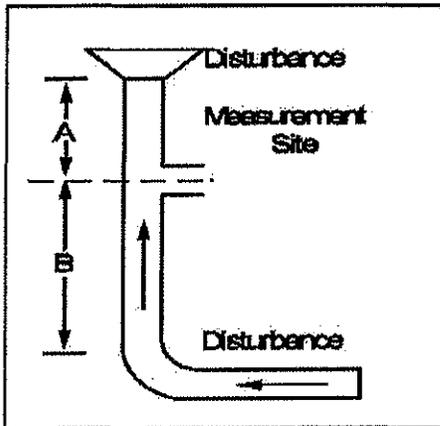
Sample Location Information for Isokinetic Sampling - Round Ducts

Project #: 233736.0
 Company: Tesoro Refining
 Plant: Mandan Refinery
 Unit ID: Wet Gas Scrubber
 Sample Location: Stack

Duct Diameter: 8.00 feet
 # of Ports Used: 2
 # of Points/Diameter: 8
 Sample Plane: Horizontal
 Port Type: Flange
 Port Length: 11.0 inches
 Port Inside Diameter: 6.0 inches

Distance A: 50.00 Feet, 6.25 Duct diameters
 Distance B: 50.00 Feet, 6.25 Duct diameters
 Meets Method 1 criteria

Traverse Point Locations

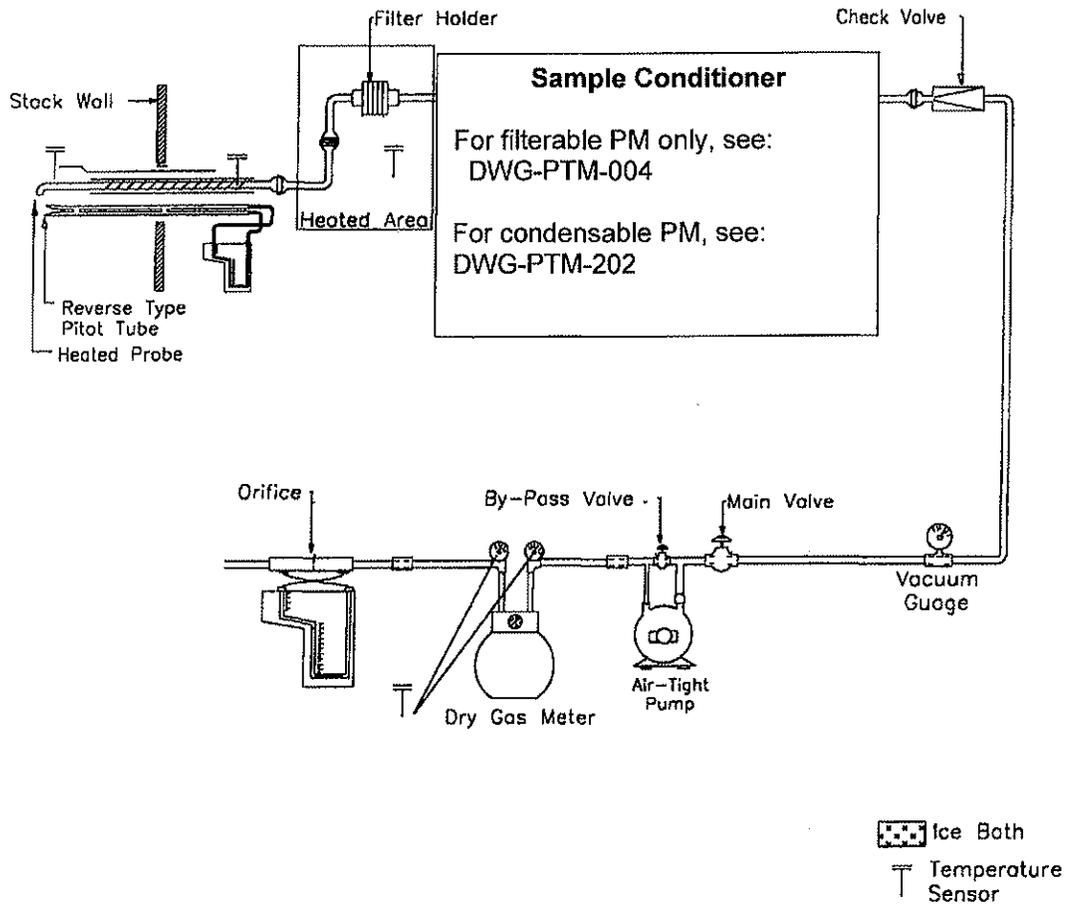


| Point | % of diameter | Inches from wall | Inches from port edge |
|-------|---------------|------------------|-----------------------|
| 1 | 3.2 | 3.1 | 14.1 |
| 2 | 10.5 | 10.1 | 21.1 |
| 3 | 19.4 | 18.6 | 29.6 |
| 4 | 32.3 | 31.0 | 42.0 |
| 5 | 67.7 | 65.0 | 76.0 |
| 6 | 80.6 | 77.4 | 88.4 |
| 7 | 89.5 | 85.9 | 96.9 |
| 8 | 96.8 | 92.9 | 103.9 |
| | | | |
| | | | |
| | | | |

Pre-cyclonic flow check conducted? No Reason: Conducted Previously

Determination of Particulate Emissions From Stationary Sources

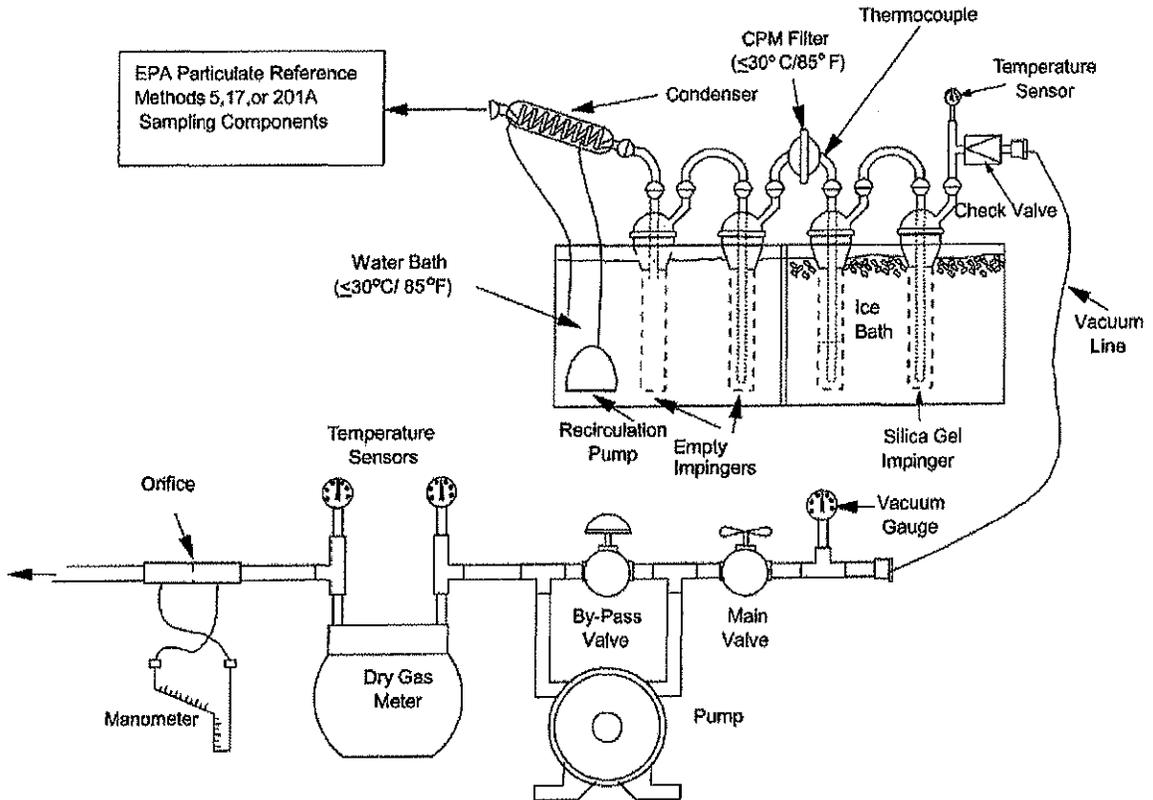
USEPA Promulgated Method 5





Dry Impinger Method for Determining of Condensable Particulate Emissions From Stationary Sources

USEPA Promulgated Method 202 (effective after 1/1/2011)





Method 5/202 Sample Analysis Summary

Project#: 233736
 Company: Tesoro Refining
 Plant: Mandan Refinery

Unit ID: Wet Gas Scrubber
 Location: Stack
 Test Date(s): 5/19/15

| Front-Half PM | <u>Run 1</u> | <u>Run 2</u> | <u>Run 3</u> | <u>Reagent Blank</u> |
|---|----------------|----------------|----------------|----------------------|
| Total filter weight gain (grams): | 0.00810 | 0.00970 | 0.00770 | |
| Front-half acetone rinse volume (ml): | 87 | 82 | 78 | 129 |
| Front-half acetone rinse mass (grams): | 0.00210 | 0.00180 | 0.00090 | 0.00010 |
| Applied acetone blank (grams) | 0.00007 | 0.00006 | 0.00006 | |
| Net front-half acetone rinse mass (grams): | 0.00203 | 0.00174 | 0.00084 | |
| Net front-half PM (grams): | 0.01013 | 0.01144 | 0.00854 | |

| Condensable Particulate Matter (CPM) by USEPA Method 202 as promulgated 1/1/201 | <u>Run 1</u> | <u>Run 2</u> | <u>Run 3</u> | <u>Field Train Blank</u> |
|--|---------------|---------------|---------------|--------------------------|
| Aqueous impinger catch mass (grams): | 0.03000 | 0.03600 | 0.02960 | 0.00130 |
| NH4OH Correction factor (grams): | 0.00000 | 0.00000 | 0.00000 | |
| Mass of Inorganic CPM (grams) | 0.03000 | 0.03600 | 0.02960 | |
| Mass of Organic CPM (grams): | 0.00110 | 0.00080 | 0.00170 | 0.00110 |
| Field Train Blank correction (grams)* | 0.00200 | 0.00200 | 0.00200 | |
| Total Mass of CPM (grams) | 0.0291 | 0.0348 | 0.0293 | |

* Maximum of 0.0020 g combined aqueous and organic field train blank mass.



Project / Project Number: 233736 Tesoro Wet Gas Scrubber PM

Date: 5/29/2015

Analyst: T. Singer

Method 5 / Method 202 (Dry Impinger): Condensable Particulate Emissions

| Description: | | | Initial Weight (g) | Final Weight (g) | Net Weight (g) |
|-----------------------------------|----------|-----|--------------------|------------------|----------------|
| Sample IDs R1F,R1P,R1C
and R1R | | | | | |
| Test #: | 1 | | | | |
| Filter #: | TRC 1988 | | 0.3617 | 0.3698 | 0.0081 |
| Acetone Wash # / Volume (mL): | E406 | 87 | 1.6426 | 1.6447 | 0.0021 |
| | | | | | |
| Organic Fraction # / Volume (mL): | DG | 168 | 75.6479 | 75.6490 | 0.0011 |
| Aqueous Fraction # / Volume (mL): | DT | 670 | 75.5380 | 75.5680 | 0.0300 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Field Blank | | | | | |
| Acetone # / Volume (mL): | E409 | 129 | 1.6586 | 1.6587 | 0.0001 |
| | | | | | |

Initial and final weights for the front half are obtained by drying in an oven at 104 °C for 2 hours, cooling in a desiccator and weighing once. The organic and aqueous fractions are evaporated, desiccated, and weighed to a constant weight.



Project / Project Number: 233736 Tesoro Wet Gas Scrubber PM

Date: 5/29/2015

Analyst: T. Singer

Method 5 / Method 202 (Dry Impinger): Condensable Particulate Emissions

| Description: | | | Initial Weight (g) | Final Weight (g) | Net Weight (g) |
|------------------------------------|----------|-----|--------------------|------------------|----------------|
| Sample IDs R2F,R2P,R2C
and R2IR | | | | | |
| Test #: | 2 | | | | |
| Filter #: | TRC 1991 | | 0.3639 | 0.3736 | 0.0097 |
| Acetone Wash # / Volume (mL): | E407 | 82 | 1.6478 | 1.6496 | 0.0018 |
| | | | | | |
| Organic Fraction # / Volume (mL): | DF | 137 | 73.1615 | 73.1623 | 0.0008 |
| Aqueous Fraction # / Volume (mL): | DL | 728 | 73.6861 | 73.7221 | 0.0360 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Field Blank | | | | | |
| Acetone # / Volume (mL): | E409 | 129 | 1.6586 | 1.6587 | 0.0001 |
| | | | | | |

Initial and final weights for the front half are obtained by drying in an oven at 104 °C for 2 hours, cooling in a desiccator and weighing once. The organic and aqueous fractions are evaporated, desiccated, and weighed to a constant weight.



Project / Project Number: 233736 Tesoro Wet Gas Scrubber PM

Date: 5/29/2015

Analyst: T. Singer

Method 5 / Method 202 (Dry Impinger): Condensable Particulate Emissions

| Description: | | | Initial Weight (g) | Final Weight (g) | Net Weight (g) |
|------------------------------------|----------|-----|--------------------|------------------|----------------|
| Sample IDs R3F,R3P,R3C
and R3IR | | | | | |
| Test #: | 3 | | | | |
| Filter #: | TRC 1992 | | 0.3630 | 0.3707 | 0.0077 |
| Acetone Wash # / Volume (mL): | E408 | 78 | 1.6420 | 1.6429 | 0.0009 |
| | | | | | |
| Organic Fraction # / Volume (mL): | DH | 143 | 76.1194 | 76.1211 | 0.0017 |
| Aqueous Fraction # / Volume (mL): | DD | 624 | 77.1622 | 77.1918 | 0.0296 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Field Blank | | | | | |
| Acetone # / Volume (mL): | E409 | 129 | 1.6586 | 1.6587 | 0.0001 |
| | | | | | |

Initial and final weights for the front half are obtained by drying in an oven at 104 °C for 2 hours, cooling in a desiccator and weighing once. The organic and aqueous fractions are evaporated, desiccated, and weighed to a constant weight.



Project / Project Number: 233736 Tesoro Wet Gas Scrubber PM

Date: 5/29/15

Analyst: T. Singer

Method 202 (Dry Impinger): Condensable Particulate Emissions

| Description: | | | Initial Weight (g) | Final Weight (g) | Net Weight (g) |
|-----------------------------------|----|-----|--------------------|------------------|----------------|
| Field Train Recovery Blank | | | | | |
| Recovery Blanks | | | | | |
| | | | | | |
| | | | | | |
| Organic Fraction # / Volume (mL): | AI | 88 | 63.2804 | 63.2815 | 0.0011 |
| Aqueous Fraction # / Volume (mL): | AW | 163 | 64.1755 | 64.1768 | 0.0013 |
| | | | | | |
| | | | | | |
| TOTAL Train Blank Weight | | | | | 0.0024 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

The back half fractions are evaporated, desiccated and weighed to a constant weight.



Project / Project Number: 233736 Tesoro Wet Gas Scrubber PM

Date: 5/29/2015

Analyst: T. Singer

Method 202 (Dry Impinger): Field and Laboratory Reagent Blanks

| Description: | | | Initial Weight (g) | Final Weight (g) | Net Weight (g) |
|------------------------------|----|-----|--------------------|------------------|----------------|
| Blanks | | | | | |
| Field Reagent Blanks* | | | | | |
| Acetone # / Volume (mL): | AS | 204 | 63.0135 | 63.0129 | -0.0006 |
| Hexane # / Volume (mL): | AK | 209 | 63.6077 | 63.6065 | -0.0012 |
| DM Water # / Volume (mL): | AX | 208 | 63.2023 | 63.2030 | 0.0007 |
| Field Train Proof Blank** | | | | | |
| Acetone # / Volume (mL): | AU | 106 | 63.3698 | 63.3705 | 0.0007 |
| Hexane # / Volume (mL): | AU | 106 | 63.3698 | 63.3705 | 0.0007 |
| DM Water # / Volume (mL): | AF | 93 | 63.3846 | 63.3845 | -0.0001 |
| Laboratory Reagent Blanks*** | | | | | |
| Acetone # / Volume (mL): | C | 100 | 106.6836 | 106.6837 | 0.0001 |
| Hexane # / Volume (mL): | H | 100 | 106.2840 | 106.2834 | -0.0006 |
| DM Water # / Volume (mL): | D | 100 | 106.5819 | 106.5812 | -0.0007 |

* Field Reagent Blanks are collected and analyzed for each test from the wash bottle of reagent that is used in the field for sample recovery.

** Field Train Proof Blanks are collected by rinsing the glassware prior to testing, if glassware was not baked.

***Laboratory Reagent Blanks are collected and analyzed from each lot of reagent received by the laboratory.



Company: Tesoro Refining
 Plant: Mandan Refinery
 Unit: Scrubber
 Test Location: Stack

Run: 1
 Test Date: 5/19/2015

X-Factor Isokinetic Sampling Coefficient (based on pre-test data)

$$\text{X-Factor} = 846.72 \times (D_n)^4 \times \Delta H_{@I} \times C_p^2 \times (1-B_{ws})^2 \times \frac{(M_d \times T_m \times P_s)}{(M_s \times T_s \times (P_{bar} + (\Delta H_{@I}/13.6)))} \times T_s/T_m$$

Where:

- T_s = Temperature of effluent gas (°R)
- T_m = Average dry test meter temperature (°R)
- D_n = Nozzle Diameter (in.)
- ΔH_{@I} = Orifice pressure drop corresponding to 0.75 cfm meter flow rate (in. H₂O)
- C_p = Pitot Tube Coefficient (dimensionless)
- B_{ws} = Effluent gas fractional moisture content (dimensionless)
- M_d = Dry molecular weight of exhaust (lb/lb-mole)
- M_s = Molecular weight of exhaust, wet basis (lb/lb-mole)
- P_s = Absolute flue gas pressure ("Hg)
- P_{bar} = Ambient barometric pressure at sample elevation ("Hg)

| | | | | | |
|--------------------|-------|----------------------|--------------------|-------|-----------------|
| D _n = | 0.275 | in. | P _s = | 28.15 | in. Hg abs. |
| ΔH _{@I} = | 1.77 | in. H ₂ O | M _s = | 27.19 | lb/lb-mole |
| C _p = | 0.838 | (dimensionless) | T _s = | 609 | °R |
| M _d = | 30.25 | lb/lb-mole | P _{bar} = | 28.15 | in. Hg |
| T _m = | 515 | °R | B _{ws} = | 0.250 | (dimensionless) |

X-Factor = 3.741

Dry Molecular Weight

$$M_d = 0.44 \times (\%CO_2) + 0.32 \times (\%O_2) + 0.28 \times \%N_2$$

Where:

- M_d = Effluent gas molecular weight (lb/lb-mole, dry basis)
- %CO₂ = Effluent gas Carbon Dioxide Content (% volume, dry basis)
- %O₂ = Effluent gas Oxygen Content (% volume, dry basis)
- %N₂ = Effluent gas Nitrogen Dioxide Content (% volume, dry basis)

| | | | | | |
|--------------------|------|----------|-------------------|------|----------|
| %CO ₂ = | 12.8 | %vol dry | %N ₂ = | 82.0 | %vol dry |
| %O ₂ = | 5.2 | %vol dry | | | |

M_d = 30.26 lb/lb-mole

Wet Molecular Weight

$$M_s = M_d \times (1-B_{ws}) + (18.0 \times B_{ws})$$

Where:

- M_s = Effluent gas molecular weight (lb/lb-mole, wet basis)
- B_{ws} = Effluent gas fractional moisture content (dimensionless)

| | | | | |
|------------------|-------|------------|-------------------|-------|
| M _d = | 30.26 | lb/lb-mole | B _{ws} = | 0.244 |
|------------------|-------|------------|-------------------|-------|

M_s = 27.26 lb/lb-mole



Company: Tesoro Refining
 Plant: Mandan Refinery
 Unit: Scrubber
 Test Location: Stack

Run: 1
 Test Date: 5/19/2015

Effluent Gas Pressure

$$P_s = P_{bar} + (P_g/13.6)$$

Where:

P_s = flue gas pressure ("Hg)
 P_{bar} = Ambient barometric pressure at sample elevation ("Hg)
 P_g = Flue gas gauge pressure ("H₂O)

$$P_{bar} = \underline{28.20} \text{ "Hg} \qquad P_g = \underline{0.00} \text{ "H}_2\text{O}$$

$$P_s = \underline{28.20} \text{ "Hg}$$

Average Meter Temperature

$$T_m = \frac{\sum_{i=1}^n (T_{min_i} + T_{max_i})/2}{n}$$

Where:

T_m = Average dry test meter temperature (°R)
 T_{min} = Temperature of gas entering dry test meter (°R)
 T_{max} = Temperature of gas leaving dry test meter (°R)

$$\text{Avg } T_{min} = \underline{534.2} \text{ °R} \qquad \text{Avg } T_{max} = \underline{529.0} \text{ °R}$$

$$T_m = \underline{531.6} \text{ °R}$$

ΔH at Sample Point - Example Point

A-2

$$\Delta H_i = X\text{-Factor} \times \Delta P_i \times T_{mi}/T_{si}$$

Where:

ΔH = Pressure drop across calibrated orifice ("H₂O)
 ΔP = Pressure drop across pitot ("H₂O)
 T_s = Temperature of effluent gas (°R)

$$X\text{-Factor} = \underline{3.741} \qquad \Delta P_i = \underline{0.67} \text{ "H}_2\text{O}$$

$$T_{mi} = \underline{526.5} \text{ °R} \qquad T_{si} = \underline{607.0} \text{ °R}$$

$$\Delta H_i = \underline{2.17} \text{ "H}_2\text{O}$$

Sample Volume at Standard Conditions

$$V_{m(std)} = (T_{std}/29.92) \times Y \times V_m \times (P_{bar} + \Delta H/13.6)/T_m$$

Where:

$V_{m(std)}$ = Sample volume collected corrected to 29.92 in. Hg and 528(°R) (R3, dry basis)
 Y = Dry test meter calibration coefficient (dimensionless)
 V_m = V_m = Sample volume collected at actual conditions (ft³, dry basis)
 T_{std} = Standard Temperature 528(°R)

$$Y = \underline{0.995} \qquad V_m = \underline{93.937} \text{ cf}$$

$$P_{bar} = \underline{28.20} \text{ "Hg} \qquad \Delta H = \underline{1.93} \text{ "H}_2\text{O}$$

$$T_m = \underline{531.6} \text{ °R} \qquad T_{std} = \underline{528} \text{ °R}$$

$$V_{m(std)} = \underline{87.938} \text{ dscf}$$



Company: Tesoro Refining
 Plant: Mandan Refinery
 Unit: Scrubber
 Test Location: Stack

Run: 1
 Test Date: 5/19/2015

Volume of Water Vapor Condensed

$$V_{wc(std)} = 0.04715 \times (T_{std} / 528) \times M_{H_2O}$$

Where:
 $V_{wc(std)}$ = Volume of water vapor collected at 29.92"Hg and 528°R (ft³)
 M_{H_2O} = Net weight gain of impingers (grams)

$$M_{H_2O} = 602.6 \text{ grams}$$

$$V_{wc(std)} = 28.413 \text{ wscf}$$

Moisture Content

$$Bws = \frac{V_{wc(std)}}{V_{wc(std)} + V_{m(std)}}$$

$$V_{wc(std)} = 28.413 \text{ dscf}$$

$$V_{m(std)} = 87.838 \text{ wscf}$$

$$Bws = 0.244$$

Average Duct Velocity

$$V_s = 85.49 \times C_p \times \text{Sqrt } \Delta P \text{ (avg)} \times (T_s / (P_s \times M_s))^{1/2}$$

Where:
 V_s = Average velocity of effluent gas (ft/sec)
 C_p = Pitot calibration coefficient (dimensionless)
 $\text{Sqrt } \Delta P \text{ (avg)}$ = Average of the square roots of DP's at all traverse points

$$C_p = 0.838$$

$$T_s = 607.7 \text{ }^\circ\text{R}$$

$$M_s = 27.26 \text{ lb/lb-mole}$$

$$\text{Sqrt } \Delta P \text{ (avg)} = 0.757$$

$$P_s = 28.20 \text{ "Hg}$$

$$V_s = 48.23 \text{ ft/sec}$$

Method 2 Volumetric Flow Rate (Actual Basis)

$$Q = V_s \times A \times 60$$

Where:
 Q = Effluent gas volumetric flow rate at actual conditions (ft³/min)
 A = Cross-sectional area of duct at sample location (ft²)

$$V_s = 48.23 \text{ ft/sec}$$

$$A = 50.265 \text{ ft}^2$$

$$Q = 145,465 \text{ cfm}$$

Method 2 Volumetric Flow Rate (Standard Basis)

$$Q_{std} = \frac{T_{std} \times Q \times P_s}{T_s \times 29.92}$$

Where:
 Q_{std} = Effluent gas volumetric flow rate corrected to 29.92 in. Hg and 528°R (ft³/min)

$$Q = 145465 \text{ cfm}$$

$$T_s = 607.7 \text{ }^\circ\text{R}$$

$$P_s = 28.20 \text{ "Hg}$$

$$Q_{std} = 119,124 \text{ scfm}$$



Company: Tesoro Refining
 Plant: Mandan Refinery
 Unit: Scrubber
 Test Location: Stack

Run: 1
 Test Date: 5/19/2015

Method 2 Volumetric Flow Rate (Standard Dry Basis)

$$Q_{std(dry)} = Q_{std} \times (1 - Bws)$$

Where:

$Q_{std(dry)}$ = Effluent gas volumetric flow rate corrected to 29.92 in. Hg and 528°R (ft³/min, dry basis)

$$Q_{std} = \underline{119124} \text{ scfm} \quad Bws = \underline{0.244}$$

$$Q_{std(dry)} = \underline{90,034} \text{ dscfm}$$

Method 2 Volumetric Flow Rate (Actual Basis in Metric Units)

$$Q_m = Q \times 0.028317$$

Where:

Q_m = Effluent gas volumetric flow rate at actual conditions (m³/min)

$$Q = \underline{145,465} \text{ cfm}$$

$$Q_m = \underline{4119.14} \text{ m}^3/\text{min}$$

Method 2 Volumetric Flow Rate (Standard Basis in Metric Units)

$$Q_{stdm} = \frac{T_{std} \times Q \times P_s}{T_{sm} \times 29.92}$$

Where:

Q_{stdm} = Effluent gas volumetric flow rate corrected to 29.92 in. Hg and 293°K (M³/hr)

T_{sm} = Temperature of effluent gas (°K)

$$T_{sm} = \underline{337.3} \text{ } ^\circ\text{K}$$

$$Q_{stdm} = \underline{3,373} \text{ std. m}^3/\text{hr}$$

Volumetric Flow Rate Calculated Based on Fuel Consumption (Standard Dry Basis)

$$Q_{cfc} = \frac{F_d \times GHV \times FCR \times 20.9}{60 \times 1000000 \times (20.9 - \%O_2)}$$

Where:

Q_{cfc} = Calculated effluent gas volumetric flow corrected to 29.92 in. Hg and 528°R (ft³/min, dry basis)

F_d = Dry basis, oxygen-based fuel factor (dry standard ft³/MMBtu)

GHV = Gross Heating Value of fuel (Btu/unit mass or volume)

FCR = Fuel consumption rate (mass or volume/hr)

$$F_d = \underline{0} \text{ dscf/MMBtu} \quad GHV = \underline{0} \text{ Btu/}$$

$$FCR = \underline{0} \text{ /hr} \quad \%O_2 = \underline{5.2} \text{ \%vol dry}$$

$$Q_{cfc} = \underline{\quad} \text{ - dscf/min}$$



Company: Tesoro Refining
 Plant: Mandan Refinery
 Unit: Scrubber
 Test Location: Stack

Run: 1
 Test Date: 5/19/2015

Volumetric Flow Rate Calculated Based on Fuel Consumption (Standard Dry Basis - Metric Units)

$$Q_{cfcm} = Q_{cfc} \times 60 \times 0.02832 \times (T_{std(metric)} / T_{std(english)})$$

Where:

Q_{cfcm} = Calculated effluent gas volumetric flow corrected to 29.92 in. Hg and 293°K (M3/hr, dry basis)
 Q_{cfc} = Calculated effluent gas volumetric flow corrected to 29.92 in. Hg and 528°R (ft3/min, dry basis)

$$\frac{T_{std(metric)}}{T_{std(english)}} = \frac{293}{528} \text{ } ^\circ\text{R} = \frac{293}{528} \text{ } ^\circ\text{K}$$

$$Q_{cfcm} = \text{---} \text{---} \text{---} \text{ std. m}^3/\text{hr}$$

Isokinetic Variation:

$$I = \frac{0.0945 \times T_s \times V_{m(std)} \times 528}{V_s \times \theta \times A_n \times P_s \times (1 - Bws) \times T_{std}}$$

Where:

I = Percent of isokinetic sampling (dimensionless)
 θ = Total sample collection time (min)
 A_n = Cross-sectional area of nozzle (ft²)

$$\begin{aligned} T_s &= \frac{607.7}{48.232} \text{ } ^\circ\text{R} & V_{m(std)} &= \frac{87.938}{120.0} \text{ dscf} \\ V_s &= \frac{48.232}{28.20} \text{ ft}^3/\text{sec} & \theta &= \frac{120.0}{0.000412} \text{ min} \\ P_s &= \frac{28.20}{28.20} \text{ } ^\circ\text{Hg} & A_n &= \frac{0.000412}{0.244} \text{ ft}^2 \end{aligned}$$

$$I = \text{---} \text{---} \text{---} \text{ } \%$$

PM Concentration - example for filterable only:

$$C_o = \frac{m \times 0.01543}{V_{m(std)}}$$

Where:

C_o = Particulate matter concentration (grains/dry standard ft³)
 m = Net mass of particulate matter collected (mg)

$$m = \text{---} \text{---} \text{---} \text{ mg} \quad V_{m(std)} = \text{---} \text{---} \text{---} \text{ dscf}$$

$$C_o = \text{---} \text{---} \text{---} \text{ gr/dscf}$$

Sample Volume at Standard Conditions (Metric)

$$V_{m(std)(metric)} = (T_{std}/29.92) \times Y \times V_m \times (P_{bar} + \Delta H/13.6)/T_m$$

Where:

$V_{m(std)(metric)}$ = Sample volume collected corrected to 29.92 in. Hg and 293°K (m³, dry basis)
 Y = Dry test meter calibration coefficient (dimensionless)
 V_m = Sample volume collected at actual conditions (m³, dry basis)
 T_{std} = Standard Temperature 293°K

$$\begin{aligned} Y &= \frac{0.995}{28.20} \text{ } ^\circ\text{Hg} & V_m &= \frac{2.660}{1.93} \text{ m}^3 \\ P_{bar} &= \frac{28.20}{295.0} \text{ } ^\circ\text{K} & \Delta H &= \frac{1.93}{293} \text{ } ^\circ\text{K} \\ T_m &= \frac{295.0}{293} \text{ } ^\circ\text{K} & T_{std} &= \frac{293}{293} \text{ } ^\circ\text{K} \end{aligned}$$

$$V_{m(std)(metric)} = \text{---} \text{---} \text{---} \text{ std. m}^3$$



Company: Tesoro Refining
 Plant: Mandan Refinery
 Unit: Scrubber
 Test Location: Stack

Run: 1
 Test Date: 5/19/2015

PM Concentration in Metric Units - example for filterable only:

$$C_{om} = \frac{m}{V_{m(std)(metric)}}$$

Where:

C_{om} = Particulate matter concentration (milligrams/std. m³)

$V_{m(std)(metric)}$ = Sample volume collected corrected to 29.92 in. Hg and 293°K (m³, dry basis)

$m = 10.1$ mg $V_{m(std)(metric)} = 2.490$ std. m³

$C_{om} = 4.07$ mg/std. m³

PM Concentration in Exhaust Gas (gr/dscf or mg/std. m³), corrected to -% O₂

$$C_{corr.} = C_o \times \left(\frac{20.9 - \text{Reference } O_2}{20.9 - \% O_2} \right)$$

Where:

Reference O₂ = -% O₂

C_o = As-measured PM concentration (gr/dscf or mg/std. m³)

% O₂ = As-measured flue gas O₂ content (% volume)

$C_o = 0.00178$ gr/dscf % O₂ = 5.2 % vol

$C_{corr.} = \text{\#VALUE!}$ gr/dscf @ -% O₂

PM Emission Rate Based on Method 2 Volumetric Flow Rate - example for filterable only:

$$ER_{M2} = \frac{C_o \times Q_{std(dry)} \times 60}{7000}$$

Where:

ER_{M2} = Particulate matter emission rate calculated using Method 2 volumetric flow rate (lb/hr)

$C_o = 0.0018$ gr/dscf $Q_{std(dry)} = 90034$ dscf/min

$ER_{M2} = 1.37$ lb/hr

PM Emission Rate Based on Fuel Consumption-Based Volumetric Flow Rate - example for filterable only:

$$ER_{cfc} = \frac{C_o \times Q_{cfc} \times 60}{7000}$$

Where:

ER_{cfc} = Particulate matter emission rate calculated using fuel consumption-based volumetric flow rate (lb/hr)

$C_o = 0.0018$ gr/dscf $Q_{cfc} = 0$ dscfm

$ER_{cfc} = 0.00$ lb/hr



Company: Tesoro Refining
Plant: Mandan Refinery
Unit: Scrubber
Test Location: Stack

Run: 1
Test Date: 5/19/2015

PM Emission Rate Metric - example for filterable only:

$$ER_{\text{metric}} = ER_{(M2 \text{ or cfo})} \times 0.4535$$

Where:

ER_{metric} = Particulate matter emission rate (kg/hr)

$$ER_{\text{metric}} = \underline{0.62} \text{ kg/hr}$$

PM Fuel Specific Emission Rate - example for filterable only:

$$ER_{fs} = \frac{C_o}{7000} \times F_d \times \left(\frac{20.9}{20.9 - \%O_2} \right) \times \frac{T_{std}}{528}$$

Where:

ER_{fs} = Particulate matter per heat rate (lb/MMBtu)

$$C_o = \underline{0.0018} \text{ gr/dscf}$$

$$F_d = \underline{0} \text{ dscf/MMBtu}$$

$$\%O_2 = \underline{5.2} \text{ \%vol dry}$$

$$ER_{fs} = \underline{0.00} \text{ lb/mmbtu}$$



Isokinetic Test Support Data

| | |
|----------------------------------|--------------------------------|
| Company: <u>Tesoro Refining</u> | Project#: <u>233736</u> |
| Plant: <u>Mandan Refinery</u> | Test Method(s): <u>5/202</u> |
| Unit ID: <u>Wet Gas Scrubber</u> | Test Run #: <u>2</u> |
| Location: <u>Stack</u> | Test Date(s): <u>5/19/2015</u> |

| | |
|-------------------------------------|---|
| Console Operator: <u>T. Singer</u> | Unit Operating Mode: <u>Normal</u> |
| Console ID: <u>E54</u> | Duct Shape/Area: <u>Round / 50.27</u> ft ² |
| Meter Y: <u>0.995</u> | Fuel Type: _____ |
| Orifice DH@I: <u>1.766</u> | Fd Factor: _____ dscf/MMBtu |
| Pitot Tube ID: <u>48B</u> | Fc Factor: _____ scf/MMBtu |
| Cal. coefficient (Cp): <u>0.838</u> | Fuel heat content: _____ Btu / _____ |
| Probe Liner Material: <u>Quartz</u> | Process/fuel flow rate: _____ / hr |
| Nozzle Material: <u>Teflon SS</u> | Soot blown? <u>Yes</u> |
| Nozzle Diameter: <u>0.275</u> in | Duration: <u>35</u> min |

| | | | |
|---|------------------------------------|-------------------|----------------|
| Sample collection time | | Tare wt. | Final wt: |
| Total # of points: <u>16</u> | <u>Imp #</u> | <u>(grams)</u> | <u>(grams)</u> |
| Target Sample time/point: <u>7.5</u> min | <u>1</u> | <u>497.1</u> | <u>1072.7</u> |
| Target run duration: <u>120.0</u> min | <u>2</u> | <u>651.4</u> | <u>675.8</u> |
| | <u>3</u> | <u>650.0</u> | <u>678.5</u> |
| Barometric Pressure (P _{bar}): <u>28.20</u> in Hg | <u>4</u> | <u>808.7</u> | <u>839.5</u> |
| Flue Static Pressure (P _g): <u>0.00</u> in H2O | | | |
| Flue Pressure (P _s): <u>28.20</u> in Hg | | | |
| Leak Checks | | | |
| Pre-Test Train Leak Check: <u>0.000</u> CFM @ <u>9</u> "Hg | | Net: <u>669.3</u> | |
| Pre-Test Pitot Leak Check: <u>Pass</u> (Pass or Fail) | Fixed Gas Analysis: | | |
| Post-Test Train Leak Rate: <u>0.000</u> CFM @ <u>8</u> "Hg | CO ₂ : <u>12.8</u> %vol | | |
| Post-Test Pitot Leak Check: <u>Pass</u> (Pass or Fail) | O ₂ : <u>5.2</u> %vol | | |
| Pump/Orifice Leak Check: <u>Pass</u> (Pass or Fail) | N ₂ : <u>82.0</u> %vol | | |
| Filter/Thimble ID: <u>1991</u> | | | |
| Tare Weight: <u>0.3639</u> grams | | | |

| | |
|--|---------------------------------|
| Description of Filter and Front Half Rinses: | Description of Impinger liquid: |
| _____ | _____ |
| _____ | _____ |

General Comments:

Soot was blown starting around 1445 to end of Test.



Isokinetic Test Support Data

| | |
|----------------------------------|--------------------------------|
| Company: <u>Tesoro Refining</u> | Project#: <u>233736</u> |
| Plant: <u>Mandan Refinery</u> | Test Method(s): <u>5/202</u> |
| Unit ID: <u>Wet Gas Scrubber</u> | Test Run #: <u>3</u> |
| Location: <u>Stack</u> | Test Date(s): <u>5/20/2015</u> |

| | |
|-------------------------------------|--|
| Console Operator: <u>T. Singer</u> | Unit Operating Mode: <u>Normal</u> |
| Console ID: <u>E54</u> | Duct Shape/Area: <u>Round</u> / <u>50.27</u> ft ² |
| Meter Y: <u>0.995</u> | Fuel Type: _____ |
| Orifice DH@I: <u>1.766</u> | Fd Factor: _____ dscf/MMBtu |
| Pitot Tube ID: <u>48B</u> | Fc Factor: _____ scf/MMBtu |
| Cal. coefficient (Cp): <u>0.838</u> | Fuel heat content: _____ Btu / _____ |
| Probe Liner Material: <u>Quartz</u> | Process/fuel flow rate: _____ / hr |
| Nozzle Material: <u>Teflon SS</u> | Soot blown? _____ |
| Nozzle Diameter: <u>0.275</u> in | Duration: _____ min |

| | | | |
|---|------------------------------------|--------------|--------------|
| Sample collection time | | Tare wt. | Final wt: |
| Total # of points: <u>16</u> | <u>Imp #</u> | (grams) | (grams) |
| Target Sample time/point: <u>7.5</u> min | <u>1</u> | <u>506.0</u> | <u>992.9</u> |
| Target run duration: <u>120.0</u> min | <u>2</u> | <u>667.6</u> | <u>679.8</u> |
| | <u>3</u> | <u>713.0</u> | <u>740.0</u> |
| | <u>4</u> | <u>953.8</u> | <u>988.7</u> |
| Barometric Pressure (P _{bar}): <u>28.05</u> in Hg | | | |
| Flue Static Pressure (P _g): <u>0.00</u> in H ₂ O | | | |
| Flue Pressure (P _s): <u>28.05</u> in Hg | | | |
| Leak Checks | | | |
| Pre-Test Train Leak Check: <u>0.000</u> CFM @ <u>9</u> "Hg | | Net: | <u>571.0</u> |
| Pre-Test Pitot Leak Check: <u>Pass</u> (Pass or Fail) | Fixed Gas Analysis: | | |
| Post-Test Train Leak Rate: <u>0.000</u> CFM @ <u>8</u> "Hg | CO ₂ : <u>12.9</u> %vol | | |
| Post-Test Pitot Leak Check: <u>Pass</u> (Pass or Fail) | O ₂ : <u>5.1</u> %vol | | |
| Pump/Orifice Leak Check: <u>Pass</u> (Pass or Fail) | N ₂ : <u>82.0</u> %vol | | |
| Filter/Thimble ID: <u>1992</u> | | | |
| Tare Weight: <u>0.363</u> grams | | | |

| | |
|--|---------------------------------|
| Description of Filter and Front Half Rinses: | Description of Impinger liquid: |
| _____ | _____ |
| _____ | _____ |

General Comments:



| | |
|------------------------|------------------------|
| Analyst: | D. Wainio |
| Date: | 5/19/2015 |
| Project Number: | 233736 |
| Client: | Tesoro Refining |
| Test Location: | Wet Gas Scrubber Stack |

Calibration Tools:

Include all of the tools from the field calibration kit that you will be using on this project. (See SOP AM-CAL-025 for instructions on re-verification)

| Item | ID# | S/N | Calibration Due Date |
|--------------------------------|-----------|----------|----------------------|
| Digital Caliper | DC001 | | 1/7/2016 |
| Thermometer | TH001 | 91221496 | 1/7/2016 |
| Barometer | BA001 | 91243987 | 1/7/2016 |
| Calibration Weight, 100 g | W100-001 | 8141 | 1/7/2016 |
| Calibration Weight A, 500 g | W500-001A | 9286 | 1/7/2016 |
| Calibration Weight B, 500 g | W500-001B | 9728 | 1/7/2016 |
| Type A Angle Finder | AF001 | | 1/7/2016 |
| Plastic/Magnetic Torpedo Level | TL001 | | |



Pre Test Thermocouple Calibration Checks

| | |
|-----------------|------------------------|
| Analyst: | D. Wainio |
| Date: | 5/19/15 |
| Project Number: | 233736 |
| Client: | Tesoro Refining |
| Test Location: | Wet Gas Scrubber Stack |

(See SOP AM-CAL-005 for instructions)

| | |
|---------------------------------------|-------------------------------|
| Console/Meter Box ID # | E54 |
| Probe ID# | 10 ft. PM probe with pitot 48 |
| Test Location/Measurement Point Info: | WGS Stack |
| NIST Thermometer ID # | TH001 |

Procedure 1: Calibrate thermocouple against a reference thermometer.

After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer.

Procedure 2: Check the response of the thermocouple to a change in temperature.

Check the "continuity" of the thermocouple by subjecting it to a change in temperature (e.g., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections.

| Measurement | T/C Temp, °F | NIST Thermometer Temp, °F | Difference, °F (± 2) | Continuity Check | Overall Status |
|---------------|--------------|---------------------------|----------------------|------------------|----------------|
| Stack | 65 | 66.1 | 1.1 | Pass | Pass |
| Filter | 65 | 66.2 | 1.2 | Pass | Pass |
| Impinger Exit | 65 | 66.3 | 1.3 | Pass | Pass |
| Meter In | 65 | 66.3 | 1.3 | Pass | Pass |
| Meter Out | 65 | 66.3 | 1.3 | Pass | Pass |
| Probe | 65 | 66.4 | 1.4 | Pass | Pass |
| Heated Line | 66 | 66.5 | 0.5 | Pass | Pass |
| Other | - | - | - | - | - |

Notes:



Post Test Thermocouple Calibration Checks

| | |
|-----------------|------------------------|
| Analyst: | D. Wainio |
| Date: | 5/20/15 |
| Project Number: | 233736 |
| Client: | Tesoro Refining |
| Test Location: | Wet Gas Scrubber Stack |

(See SOP AM-CAL-005 for instructions)

| | |
|---------------------------------------|-------------------------------|
| Console/Meter Box ID # | E54 |
| Probe ID# | 10 ft. PM probe with pitot 48 |
| Test Location/Measurement Point info: | WGS Stack |
| NIST Thermometer ID # | TH001 |

Procedure 1: Calibrate thermocouple against a reference thermometer.

After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer.

Procedure 2: Check the response of the thermocouple to a change in temperature.

Check the "continuity" of the thermocouple by subjecting it to a change in temperature (e.g., removing it from the stack or touching an ice cube). This step will also check for loose connections and reversed connections.

| Measurement | T/C Temp, °F | NIST Thermometer Temp, °F | Difference, °F (± 2) | Continuity Check | Overall Status |
|---------------|--------------|---------------------------|----------------------|------------------|----------------|
| Stack | 70 | 69.9 | 0.1 | Pass | Pass |
| Filter | 70 | 69.9 | 0.1 | Pass | Pass |
| Impinger Exit | 70 | 70.2 | 0.2 | Pass | Pass |
| Meter in | 70 | 70.3 | 0.3 | Pass | Pass |
| Meter Out | 70 | 70.3 | 0.3 | Pass | Pass |
| Probe | 70 | 70.4 | 0.4 | Pass | Pass |
| Heated Line | 71 | 70.5 | 0.5 | Pass | Pass |
| Other | - | - | - | - | - |

Notes:



Control Module I.D. No. E54
 Standard Meter I.D. No.: 13124821
 Standard Meter (Y₆): 0.9892

System Leak Check:
 Standard Meter Calibration Date: 12/31/14
 Standard Meter Calibration Due Date: 12/31/15

Date: 5/6/2015
 Calibrated By: TS
 Barometric Pressure: 29.15

| Run Number | Orifice Setting in. H ₂ O | Meter Pressure in. H ₂ O | Standard Meter Volume Vr | Control Module DGM Volume Vd | Standard Meter Temp. F Tr | Dry Gas Meter Inlet Temp. F Tdi | Dry Gas Meter Outlet Temp. F Tdo | Dry Gas Meter Avg. Temp. F Td | Time Min. | Time Sec. | Gamma Correction Coef. Y | Pressure equal to: 0.75 cfm @ STP (DH@) | Flow Rate (Q) scfm |
|---|--------------------------------------|-------------------------------------|--------------------------|------------------------------|---------------------------|---------------------------------|----------------------------------|-------------------------------|-----------|-----------|--------------------------|---|--------------------|
| Initial | | | 695.763 | 826.519 | 67 | 71 | 70 | | | | | | |
| Final | | | 700.920 | 831.676 | 67 | 73 | 71 | | | | | | |
| Difference 1 | 0.35 | 0.35 | 5.157 | 5.157 | 67 | 72 | 71 | 71 | 15 | 0 | 0.996 | 1.693 | 0.33 |
| Initial | | | 701.481 | 832.258 | 67 | 73 | 71 | | | | | | |
| Final | | | 706.657 | 837.467 | 67 | 76 | 72 | | | | | | |
| Difference 2 | 0.85 | 0.85 | 5.176 | 5.209 | 67 | 75 | 72 | 73 | 10 | 0 | 0.992 | 1.808 | 0.50 |
| Initial | | | 707.381 | 838.199 | 67 | 76 | 72 | | | | | | |
| Final | | | 713.343 | 844.178 | 67 | 80 | 73 | | | | | | |
| Difference 3 | 2.00 | 2.00 | 5.962 | 5.979 | 67 | 78 | 73 | 75 | 7 | 30 | 0.997 | 1.796 | 0.77 |
| Pre Test Calibration Factor (Y _{avg}) | | | | | | | | | | | | 0.995 | 1.766 |

Specifications: CFR 40, Part 60, Appendix A, Method 5, section 10.3.1. Calibration Before Use.



Post Meter Calibration Verification

Project Number: 233736
 Last Test Run: 5/20/2015 Operator(s): T. Singer

| | Run 1 | Run 2 | Run 3 | Average | |
|--|--------|--------|--------|---------|-------|
| Console/Meter ID: | E54 | E54 | E54 | N/A | |
| Run Time (min): | 120 | 120 | 120 | | |
| V _m (cf): | 93.937 | 95.951 | 94.369 | | |
| T _m (°R): | 531.59 | 525.56 | 525.91 | | |
| P _{bar} ("Hg): | 28.20 | 28.20 | 28.05 | | |
| DH _{avg} ("H ₂ O): | 1.93 | 1.99 | 1.95 | | |
| Md: | 30.26 | 30.26 | 30.27 | | |
| Orifice DH@I: | 1.766 | 1.766 | 1.766 | | |
| Meter Yi: | 0.995 | 0.995 | 0.995 | | 0.995 |
| Yqa: | 1.010 | 0.999 | 1.010 | | 1.006 |

Calibration Status: Pass

Specifications: USEPA Emissions Measurement Center Approved Alternative Method (AI
 Alternative Method 5 Post-Test Calibration (SOP GFM-11))

Post Test Leak Checks

Train Leak Check: Pass Pass Pass
 Pump/Orifice Leak Check: Pass Pass Pass



Pre Test Temperature Indicator Calibration
(For K-Type Thermocouples)

Date: 5/6/2015

Name: TS

Control Module Number: E54

Ambient Temperature: 67 °F

Reference std. thermocouple calibrator: Omega Engineering, Inc. Model No. CL23A *

Reference std. thermocouple calibrator serial number: T-124947

Date of reference std. calibration verification: 6/3/2014

Due date of reference std. calibration verification: 6/3/2015

| Reference Thermometer
(°F) | Thermometer Under Test
(°F) | Temperature Difference
(%) |
|-------------------------------|--------------------------------|-------------------------------|
| 0 | 1 | 0.2 |
| 600 | 600 | 0.0 |
| 1200 | 1200 | 0.0 |

$$\text{Temperature Difference, \%} = \frac{\text{Ref. std. temp. } ({}^{\circ}\text{F} + 460) - \text{Therm. under test temp. } ({}^{\circ}\text{F} + 460)}{\text{Reference std temp. } ({}^{\circ}\text{F} + 460)} \times 100 \leq 1.5 \%$$

* Reference std. is directly traceable to NIST (National Institute of Standards and Technology)



Control Console Incline Manometer Calibration Check

Certificate

Verification date: 8/21/2014 Calibration due date: 8/21/2015 Analyst: T. Singer

Instrument

Manufacturer: Dwyer Instruments Model: 10" Incline Manom Serial Number: IM-E54

Conditions

Temperature °C / °F: 75.00 Barometric Pres.: 29.15 Humidity RH%: 54

Standards

| | | | | |
|--------------------------------------|----------------|-------------|------------------|----------------------|
| Description: | Serial Number: | Calibrated: | Calibration due: | NIST Certificate ID: |
| Dwyer Instruments Pressure Manometer | S15866701 | 8/3/2014 | 8/3/2015 | 648417 |

Procedures **Tolerances**

Work Instruction: QMS# CM-07 0-1 inch scale: 0.01
 1 - 10 inch scale: 0.10

| Manometer Channel 1 (Differential Incline Pressure) | | | Manometer Channel 2 (Differential Incline Pressure) | | |
|---|------------------|-----------------|---|------------------|-----------------|
| Inclined Scale = 0 to 1 inch | | | Inclined Scale = 0 to 1 inch | | |
| Reference Value | Instrument Value | In Tolerance(?) | Reference Value | Instrument Value | In Tolerance(?) |
| 0.25 | 0.25 | YES | 0.25 | 0.25 | YES |
| 0.5 | 0.50 | YES | 0.5 | 0.51 | YES |
| 1 | 1.00 | YES | 1 | 1.00 | YES |
| Vertical Scale = 1 to 10 inch | | | Vertical Scale = 1 to 10 inch | | |
| Reference Value | Instrument Value | In Tolerance(?) | Reference Value | Instrument Value | In Tolerance(?) |
| 2.5 | 2.50 | | 2.5 | 2.50 | YES |
| 5 | 5.00 | | 5 | 4.95 | YES |
| 10 | 9.90 | YES | 10 | 9.95 | YES |

The accuracy of this instrument was verified using instruments traceable to the National Institute of Standards and Technology.

Edward A. Peterson, Technical Director

Maintaining Accuracy:

The accuracy of this instrument has been checked and found to be in tolerance unless otherwise noted. The instrument should provide accurate readings until the next accuracy verification due date.



POST TEST TYPE S PITOT TUBE INSPECTION

(See SOP AM-CAL-006 for instructions)

Pitot Tube No.: 48 Date: 5/20/2015 Analyst: D. Wainio
 Project Number: 233736 Client: Tesoro Refining Test Location: Wet Gas Scrubber Stack
 Digital Caliper ID: DC001 Level ID: TL001 Angle Finder ID: AF001

Pitot tube assembly level? yes no

Pitot tube openings damaged? yes (explain below) no

$\alpha_1 = 2^\circ (<10^\circ)$, $\alpha_2 = 1^\circ (<10^\circ)$ $z = A \tan \gamma = 0.033$ (in.); (<0.125 in.)

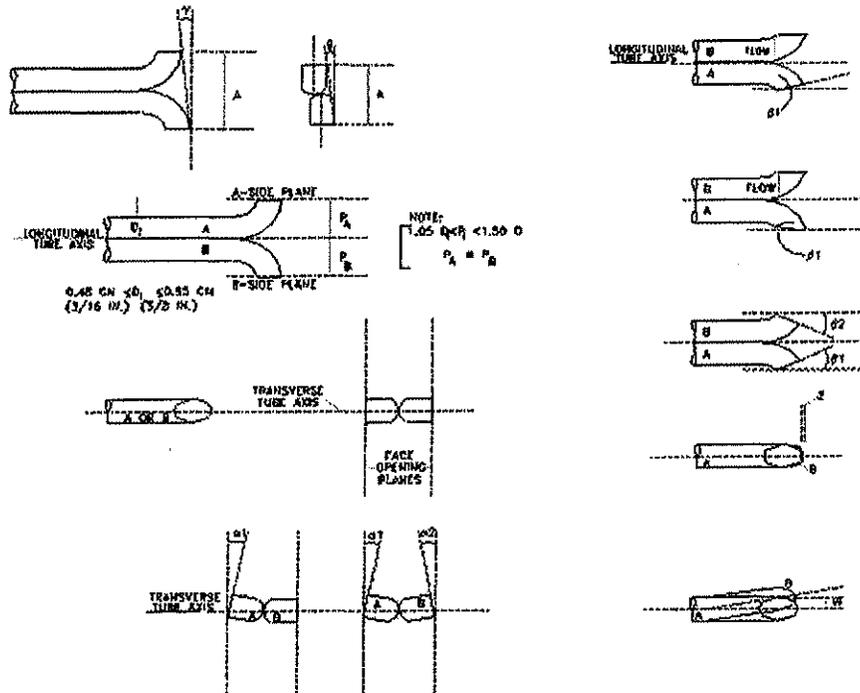
$\beta_1 = 2^\circ (<5^\circ)$, $\beta_2 = 1^\circ (<5^\circ)$ $w = A \tan \theta = 0.016$ (in.); (<0.03125 in.)

$\gamma = 2^\circ$, $\theta = 1^\circ$, $A = 0.943$ (in.) $P_A = 0.472$ (in.), $P_B = 0.472$ (in.), $D_t^* = 0.375$ (in.)

Comments: _____

Note: * D_t = Recommended nominal pitot tube diameter of 0.250 (in.) or 0.375 (in.).

Calibration required? yes no



PITOT TUBE CALIBRATION

UNIT: 048 CALIBRATED BY: TS
 DATE: 01/14/14 STANDARD PITOT: 160-18

A SIDE CALIBRATION

| RUN No. | dPstd
"H2O | dP(s)
"H2O | CP(s) | DEVIATION
Cp(s)-Cp(A) |
|---------|---------------|---------------|-------|--------------------------|
| 1 | 0.58 | 0.81 | 0.838 | 0.000 |
| 2 | 0.58 | 0.81 | 0.838 | 0.000 |
| 3 | 0.58 | 0.81 | 0.838 | 0.000 |
| Cp(A) | | | 0.838 | |

B SIDE CALIBRATION

| RUN No. | dPstd
"H2O | dP(s)
"H2O | CP(s) | DEVIATION
Cp(s)-Cp(B) |
|---------|---------------|---------------|-------|--------------------------|
| 1 | 0.58 | 0.82 | 0.833 | 0.000 |
| 2 | 0.58 | 0.82 | 0.833 | 0.000 |
| 3 | 0.58 | 0.82 | 0.833 | 0.000 |
| Cp(B) | | | 0.833 | |

Avg Deviation A must be less than or equal to 0.01
 Avg Deviation B must be less than or equal to 0.01
 |Cp(A)-Cp(B)| must be less than or equal to 0.01

Avg Deviation (A): 0.00 |Cp(A)-Cp(B)| 0.005
 Avg Deviation (B): 0.00 Cp 0.836



PITOT TUBE ASSEMBLY INSPECTION

| | |
|--------------------------|------------------------|
| Analyst: | D. Wainio |
| Date: | 5/19/15 |
| Project Number: | 233736 |
| Test Location: | Wet Gas Scrubber Stack |
| EPA Probe Configuration: | Method 5 |

(See SOP AM-CAL-006 for instructions)

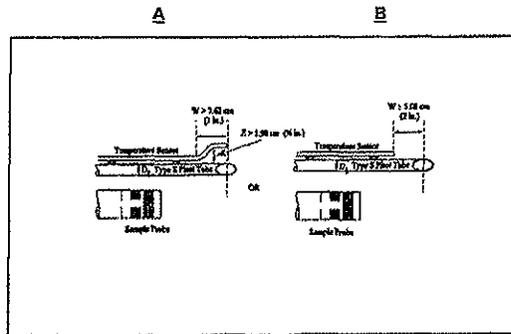


Figure 2-4. Proper temperature sensor placement to prevent interference; D_t between 0.48 and 0.95 cm (3/16 and 3/8 in.).

Configuration (A, B or NA): A
 Tube diameter (D_t), Inch: 0.375
 Distance "W", inch: 7
 Distance "Z" inch: 2.5
 Correct configuration? Yes
 NA - Temperature sensor not mounted on pitot tube
 Configuration A - W > 3 inches, Z > 0.75 inches
 Configuration B - W at least 2 inches

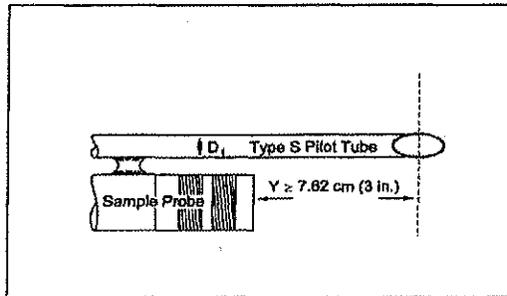


Figure 2-6. Minimum pitot-sample probe separation needed to prevent interference; D_t between 0.48 and 0.95 cm (3/16 and 3/8 in.).

Distance "Y": 4.5 (inch)
 Correct configuration? Yes
 Y must be at least 3 inches

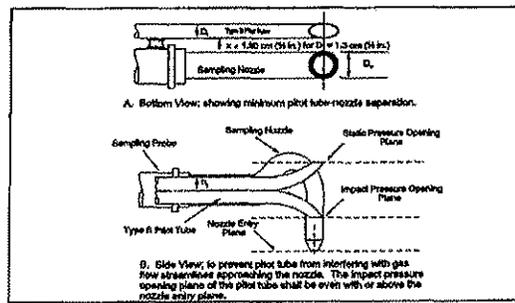


Figure 2-7. Proper pitot tube-sampling nozzle configuration.

Distance "X": 1 (inch)
 Must be ≥ 0.75 inches
 Correct configuration? Yes



Top Loading Field Balance Check

| | |
|------------------------|------------------------|
| Analyst: | D. Wainio |
| Date: | 5/19/15 |
| Project Number: | 233736 |
| Client: | Tesoro Refining |
| Test Location: | Wet Gas Scrubber Stack |

(See SOP AM-CAL-009 for Instructions)

| | |
|---------------|-----------------------|
| Type of Scale | Lab Top-loading Scale |
| Scale ID# | E11 |

Tolerance = +/- 0.5

| Individual Weight | Reference Weight Serial Number | Nominal Weight Value | Weight Found | Difference | Pass |
|--|--------------------------------|----------------------|--------------|------------|------|
| W100 | 8141 | 100.0 | 100.0 | 0.0 | YES |
| W500A | 9286 | 500.0 | 500.0 | 0.0 | YES |
| Combination Weights (Use whichever one corresponds to the scale's capacity) | | | | | |
| W100 + W500A | 8141 | 600.0 | 600.0 | 0.0 | YES |
| | 9286 | | | | |
| W500A + W500B | 9286 | 1000.0 | 999.9 | -0.1 | YES |
| | 9728 | | | | |



Barometric Pressure Determination

| | |
|------------------------|------------------------|
| Analyst: | D. Wainio |
| Date: | 5/19/15 |
| Project Number: | 233736 |
| Client: | Tesoro Refining |
| Test Location: | Wet Gas Scrubber Stack |

Procedure: Use a NIST traceable field barometer for all field measurements. Bring the field barometer to the test location and allow 15 minutes for the instrument to stabilize. Take a measurement before and after each series of tests.

| | |
|---|-----------|
| Date: | 5/19/2015 |
| Barometer Serial Number: | 91243987 |
| Barometer Pressure Prior to Testing: | 28.15 |
| Barometer Pressure After Testing: | 28.20 |
| Average Barometric Pressure: | 28.18 |

Add Day? Yes

| | |
|---|-----------|
| Date: | 5/20/2015 |
| Barometer Serial Number: | 91243987 |
| Barometer Pressure Prior to Testing: | 28.05 |
| Barometer Pressure After Testing: | 28.05 |
| Average Barometric Pressure: | 28.05 |



Nozzle Calibration

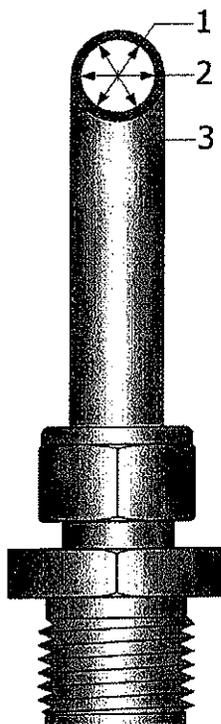
Analyst:
Date:
Project Number:
Client:
Test Location:

| |
|------------------------|
| D. Wainio |
| 5/19/15 |
| 233736 |
| Tesoro Refining |
| Wet Gas Scrubber Stack |

(See SOP AM-CAL-007 for instructions)

Nozzle ID No.: Teflon SS

Maximum - Minimum \leq 0.004 inches



Pre Test

| | |
|-------|---|
| 0.275 | 1 |
| 0.274 | 2 |
| 0.277 | 3 |

PASS - measurements meet specifications.

| |
|----------------|
| Average |
| 0.275 |



Isokinetic Test Support Data

Company: Tesoro Refining and Marketing Co.
 Plant: Mandan Refinery
 Unit ID: Wet Gas Scrubber
 Location: Stack

Project#: 233736
 Test Method(s): 5/202
 Test Run #: 1
 Test Date(s): 5/18/2015

Console Operator: T. SINGER
 Console ID: ES4
 Meter Y: 0.595
 Orifice DH@: 1.766
 Pitot Tube ID: 0488
 Cal. coefficient (Cp): 0.838
 Probe Liner Material: Quartz
 Nozzle Material: 55 Teflon
 Nozzle Diameter: 0.275 in

Unit Operating Mode: Normal Operation
 Duct Shape/Area: Round / 50.27 ft²
 Fuel Type: _____
 Fd Factor: _____ dscf/MMBtu
 Fc Factor: _____ scf/MMBtu
 Fuel heat content: _____ Btu / _____
 Process/fuel flow rate: _____ / hr
 Soot blown? _____
 Duration: _____ min

Sample collection time
 Total # of points: 16
 Target Sample time/point: 7.5 min
 Target run duration: 120.0 min

Barometric Pressure (P_{bar}): 28.20 in Hg
 Flue Static Pressure (P_f): +0.0 in H₂O
 Flue Pressure (P_s): 28.20 in Hg

Leak Checks
 Pre-Test Train Leak Check: 0.000 CFM @ 7 "Hg
 Pre-Test Pitot Leak Check: Pass (Pass or Fail)
 Post-Test Train Leak Rate: 0.000 CFM @ 9 "Hg
 Post-Test Pitot Leak Check: Pass (Pass or Fail)
 Pump/Orifice Leak Check: Pass (Pass or Fail)
 Filter/Thimble ID: 1988
 Tare Weight: 0.3617 grams

| Imp # | Contents | Tare wt. (grams) | Final wt. (grams) |
|-------|-------------|------------------|-------------------|
| 1 | Empty | 471.1 | 945.6 |
| 2 | Empty | 668.4 | 702.5 |
| 3 | 100 ml HPLC | 760.4 | 256.4 |
| 4 | Silica Gel | 535.4 | 978.7 |
| | | Net: | <u>662.6</u> |

Fixed Gas Analysis:
 CO₂: 12.8 %vol
 O₂: 5.2 %vol
 N₂: 82.0 %vol

Description of Filter and Front Half Rinses:

Description of Impinger liquid:

General Comments:



Company: Tesoro
 Plant: Monaca, ND
 Unit: W85
 Location: Stack

Job #: 233736
 Methods: M5/M202
 Run #: 1
 Traverse Sheet: 2 of 2

Test Date: 5/19/2015
 X-Factor: 3.741
 Minutes/pt: 7.5

| Port & Point ID | Clock Time | Meter Volume ft ³ | DP in. H ₂ O | Stack °F | Dry Gas Meter | | Orifice DH in. H ₂ O | Probe Liner °F | Filter Outlet °F | Impinger Train Outlet °F | CPM Filter °F | Pump Vacuum in. Hg |
|-----------------|------------|------------------------------|-------------------------|----------|---------------|-----------|---------------------------------|----------------|------------------|--------------------------|---------------|--------------------|
| | | | | | Inlet °F | Outlet °F | | | | | | |
| A 1 | 1040 | 774.695 | 0.34 | 147 | 66 | 65 | 1.10 | 316 | 324 | 60 | 69 | 1 |
| 2 | 1047.5 | 779.320 | 0.67 | 147 | 68 | 65 | 2.17 | 325 | 328 | 62 | 69 | 4 |
| 3 | 1055 | 785.590 | 0.77 | 149 | 70 | 68 | 2.50 | 324 | 325 | 62 | 69 | 6 |
| 4 | 1102.5 | 790.100 | 0.69 | 148 | 72 | 67 | 2.25 | 324 | 324 | 61 | 78 | 6 |
| 5 | 1110 | 798.710 | 0.70 | 148 | 75 | 68 | 2.29 | 325 | 325 | 64 | 84 | 6 |
| 6 | 1117.5 | 805.090 | 0.73 | 147 | 75 | 68 | 2.39 | 319 | 324 | 64 | 84 | 6 |
| 7 | 1125 | 811.750 | 0.57 | 147 | 77 | 69 | 1.87 | 313 | 325 | 64 | 84 | 5 |
| 8 | 1132.5 | 817.640 | 0.30 | 148 | 77 | 70 | 0.98 | 308 | 325 | 64 | 83 | 6 |
| END | 1140 | 821.921 | | | | | | | | | | |
| 1 | 1144 | 821.981 | 0.32 | 146 | 75 | 70 | 1.05 | 311 | 325 | 63 | 83 | 2 |
| 2 | 1151.5 | 826.480 | 0.70 | 148 | 76 | 71 | 2.30 | 318 | 325 | 63 | 82 | 6 |
| 3 | 1159 | 833.440 | 0.84 | 150 | 78 | 72 | 2.76 | 307 | 325 | 62 | 84 | 8 |
| 4 | 1206.5 | 840.110 | 0.73 | 148 | 74 | 71 | 2.40 | 325 | 325 | 62 | 83 | 7 |
| 5 | 1214 | 846.800 | 0.65 | 148 | 77 | 71 | 2.14 | 324 | 324 | 62 | 83 | 6 |
| 6 | 1221.5 | 853.100 | 0.64 | 147 | 76 | 71 | 2.10 | 325 | 325 | 61 | 83 | 6 |
| 7 | 1229 | 859.280 | 0.47 | 147 | 76 | 70 | 1.54 | 326 | 325 | 62 | 83 | 5 |
| 8 | 1236.5 | 864.510 | 0.30 | 148 | 73 | 68 | 0.98 | 326 | 325 | 60 | 82 | 2 |
| END | 1244 | 868.632 | | | | | | | | | | |

Comments/notes:
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Isokinetic Test Support Data

Company: Tesoro Refining and Marketing Co.
 Plant: Mandan Refinery
 Unit ID: Wet Gas Scrubber
 Location: Stack

Project#: 233736
 Test Method(s): 5/202
 Test Run #: 1
 Test Date(s): 5-19-15

Console Operator: T. Singer
 Console ID: ES4
 Meter Y: 0.995
 Orifice DH@: 1.766
 Pitot Tube ID: 048A
 Cal. coefficient (Cp): 0.858
 Probe Liner Material: Quartz
 Nozzle Material: SS
 Nozzle Diameter: 0.275 in

Unit Operating Mode: Normal Operation
 Duct Shape/Area: Round / 50.27 ft²
 Fuel Type: _____
 Fd Factor: _____ dscf/MMBtu
 Fc Factor: _____ scf/MMBtu
 Fuel heat content: _____ Btu / _____
 Process/fuel flow rate: _____ / hr
 Soot blown? 1445 - end
 Duration: _____ min

Sample collection time
 Total # of points: 16
 Target Sample time/point: 7.5 min
 Target run duration: 120.0 min
 Barometric Pressure (P_{bar}): 28.20 in Hg
 Flue Static Pressure (P_g): +0.0 in H2O
 Flue Pressure (P_e): 28.20 in Hg

| Imp # | Contents | Tare wt. (grams) | Final wt. (grams) |
|-------|-------------|------------------|-------------------|
| 1 | Empty | 497.1 | 1672.7 |
| 2 | Empty | 652.4 | 675.8 |
| 3 | 100 ml HPLC | 650.0 | 678.5 |
| 4 | Silica Gel | 808.7 | 839.5 |

Leak Checks
 Pre-Test Train Leak Check: 0.000 CFM @ 9 "Hg
 Pre-Test Pitot Leak Check: Pass (Pass or Fail)
 Post-Test Train Leak Rate: 0.000 CFM @ 8 "Hg
 Post-Test Pitot Leak Check: Pass (Pass or Fail)
 Pump/Orifice Leak Check: Pass (Pass or Fail)
 Filter/Thimble ID: 1991
 Tare Weight: 0.3539 grams

Fixed Gas Analysis:
 CO₂: 12.8 %vol
 O₂: 5.2 %vol
 N₂: 82.0 %vol

Net: 659.3

Description of Filter and Front Half Rinses:

Description of Impinger liquid:

General Comments:

soot blown 1445 - end



Company: TESORA
 Plant: Mandanay, ND
 Unit: WBS
 Location: Stack

Job #: 233736
 Methods: M5/M202
 Run #: 2 of 2
 Traverse Sheet:

Test Date: 5/19/2015
 X-Factor: 3.741
 Minutes/pt: 7.5

| Port & Point ID | Clock Time | Meter Volume ft ³ | DP in. H ₂ O | Stack °F | Dry Gas Meter | | Orifice DH in. H ₂ O | Probe Liner °F | Filter Outlet °F | Impinger Train Outlet °F | GPM Filter °F | Pump Vacuum in. Hg |
|-----------------|------------|------------------------------|-------------------------|----------|---------------|-----------|---------------------------------|----------------|------------------|--------------------------|---------------|--------------------|
| | | | | | Inlet °F | Outlet °F | | | | | | |
| B 1 | 1315 | 868.915 | 0.49 | 147 | 61 | 60 | 1.57 | 326 | 315 | 55 | 69 | 3 |
| 2 | 1322.5 | 874.220 | 0.79 | 148 | 61 | 59 | 2.53 | 323 | 326 | 54 | 69 | 4 |
| 3 | 1330 | 881.100 | 0.86 | 149 | 65 | 59 | 2.76 | 326 | 325 | 50 | 68 | 4 |
| 4 | 1337.5 | 887.930 | 0.76 | 147 | 67 | 59 | 2.43 | 322 | 324 | 50 | 64 | 5 |
| 5 | 1345 | 894.710 | 0.70 | 147 | 70 | 59 | 2.26 | 314 | 324 | 50 | 69 | 4 |
| 6 | 1352.5 | 901.150 | 0.66 | 147 | 71 | 60 | 2.14 | 308 | 324 | 55 | 73 | 4 |
| 7 | 1400 | 907.420 | 0.42 | 147 | 70 | 60 | 1.36 | 327 | 326 | 61 | 70 | 2 |
| 8 | 1407.5 | 912.500 | 0.31 | 148 | 70 | 61 | 1.00 | 325 | 325 | 62 | 77 | 2 |
| END | 1415 | 910.922 | | | | | | | | | | |
| A 1 | 1419 | 916.922 | 0.30 | 147 | 66 | 61 | 0.97 | 327 | 325 | 65 | 81 | 1 |
| 2 | 1426.5 | 921.500 | 0.70 | 148 | 68 | 61 | 2.26 | 325 | 325 | 64 | 78 | 4 |
| 3 | 1434 | 927.870 | 0.78 | 148 | 71 | 60 | 2.52 | 324 | 326 | 64 | 84 | 5 |
| 4 | 1441.5 | 934.760 | 0.75 | 149 | 74 | 62 | 2.43 | 326 | 326 | 65 | 82 | 5 |
| 5 | 1449 | 941.420 | 0.84 | 151 | 76 | 64 | 2.73 | 320 | 324 | 64 | 84 | 4 |
| 6 | 1456.5 | 948.600 | 0.77 | 151 | 76 | 65 | 2.50 | 305 | 324 | 60 | 69 | 5 |
| 7 | 1504 | 955.430 | 0.42 | 151 | 75 | 65 | 1.36 | 311 | 325 | 60 | 69 | 3 |
| 8 | 1511.5 | 960.550 | 0.29 | 152 | 75 | 67 | 0.94 | 319 | 325 | 61 | 67 | 1 |
| END | 1519 | 964.866 | | | | | | | | | | |

This data not entered in Excel

Comments/notes:
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AM-EMT-15 34
 Revised 12/09/2014



Company: Tesoro
 Plant: Norfolk, NJ
 Unit: WAS
 Location: Stack

Job #: 233736
 Methods: MS/M202
 Run #: 3
 Traverse Sheet: 2 of 2

Test Date: 5/20/2015
 X-Factor: 3.741
 Minutes/pt: 7.5

| Port & Point ID | Clock Time | Meter Volume ft ³ | DP in. H ₂ O | Stack °F | Dry Gas Meter | | Orifice DH in. H ₂ O | Probe Liner °F | Filter Outlet °F | Impinger Train °F | CPI Filter °F | Pump Vacuum in. Hg |
|-----------------|------------|------------------------------|-------------------------|----------|---------------|-----------|---------------------------------|----------------|------------------|-------------------|---------------|--------------------|
| | | | | | Inlet °F | Outlet °F | | | | | | |
| A 1 | 0640 | 905.202 | .28 | 147 | 51 | 49 | 0.88 | 320 | 327 | 41 | 67 | 1 |
| A 2 | 0645 | 909.450 | .782 | 147 | 57 | 52 | 2.28 | 328 | 326 | 44 | 67 | 2 |
| A 3 | 0655 | 975.730 | .81 | 148 | 62 | 54 | 2.58 | 324 | 325 | 45 | 66 | 3 |
| A 4 | 0702.5 | 982.640 | .81 | 149 | 66 | 57 | 2.59 | 325 | 326 | 48 | 68 | 3 |
| A 5 | 0710 | 989.210 | .83 | 147 | 68 | 58 | 2.68 | 322 | 324 | 48 | 71 | 7 |
| A 6 | 0717.5 | 996.220 | .82 | 148 | 70 | 59 | 2.65 | 326 | 326 | 48 | 78 | 7 |
| A 7 | 0725 | 1003.220 | .44 | 148 | 71 | 61 | 1.47 | 325 | 325 | 66 | 82 | 4 |
| A 8 | 0732.5 | 1008.550 | .27 | 147 | 71 | 62 | 0.88 | 324 | 325 | 64 | 75 | 2 |
| END | 0740 | 1012.572 | | | | | | | | | | |
| B 1 | 0744 | 1012.572 | .25 | 146 | 67 | 63 | 0.81 | 329 | 325 | 55 | 68 | 1 |
| B 2 | 0751.5 | 1016.650 | .77 | 147 | 71 | 64 | 2.50 | 324 | 326 | 55 | 68 | 6 |
| B 3 | 0759 | 1023.320 | .88 | 148 | 75 | 65 | 2.87 | 324 | 325 | 54 | 72 | 7 |
| B 4 | 0806.5 | 1030.580 | .80 | 148 | 77 | 67 | 2.02 | 325 | 325 | 65 | 76 | 7 |
| B 5 | 0814 | 1037.570 | .70 | 147 | 78 | 68 | 2.30 | 325 | 325 | 63 | 77 | 6 |
| B 6 | 0821.5 | 1044.210 | .68 | 148 | 78 | 69 | 2.23 | 325 | 325 | 63 | 77 | 6 |
| B 7 | 0829 | 1050.960 | .34 | 149 | 79 | 71 | 1.12 | 326 | 326 | 65 | 77 | 3 |
| B 8 | 0836.5 | 1055.500 | .26 | 149 | 78 | 71 | 0.85 | 326 | 324 | 63 | 74 | 2 |
| END | 0844 | 1059.571 | | | | | | | | | | |

This data not entered in Excel

Comments/Notes:
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AM-EMT-15 34
 Revised 12/09/2014

ATTACHMENT 2

Tesoro Martinez Heavy Liquid Component Monitoring

P-220 summit HEAVY COMPONENT INSPECTION (TEST)

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| A016 | pump seal (inboard) | diesel | 369° | 10-8-14 | 1 | 1 ppm |
| | Flange | | | | 1 | |
| | Flange | | | | 1 | |
| | Flange | | | | 2 | |
| | pump seal (outboard) | | | | 1 | |
| | Valve gt | | 342° | | 1 | |
| | Flange | | | | 1 | |
| | Flange | | | | 1 | |
| | Flange | | | | 1 | |
| | Valve gt | | 153° | | 1 | |
| | TC | | | | 2 | |
| | TC | | | | 2 | |
| | Valve gt | | 169° | | 4 | |
| | TC | | | | 4 | |
| | TC | | | | 3 | |
| | Bonnet | | 232° | | 3 | |
| | Union | | | | 2 | |
| | Valve | | | | 3 | |
| | Flange | | | | 2 | |
| | Flange | | | | 1 | |
| | Flange | | 354° | | 2 | |
| | Flange | | | | 2 | |
| | Flange | | | | 3 | |
| | Flange | | | | 3 | |
| | Flange | | | | 3 | |
| | Valve | | 393° | | 3 | |
| | Valve | | 331° | | 3 | |
| | Valve | | | | 2 | |
| | Flange | | | | 2 | |
| | Flange | | | | 1 | |
| | Valve | | 83° | | 1 | |
| | Valve | | | | 1 | |
| | Valve | | | | 4 | |

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| 51 | Valve | diesel | 83° | 10-8-14 | 2 | 1 ppm |
| | Pump 8773 | | 223° | | 2 | |
| | TC | | | | 2 | |
| | TC | | | | 2 | |
| | Flange | | 170° | | 1 | |
| | Flange | | 457° | | 2 | |
| | Flange | | | | 2 | |
| | Flange | | | | 3 | |
| | Flange | | | | 4 | |
| | Flange | | | | 3 | |
| | Flange | | | | 3 | |
| | Flange | | | | 4 | |
| | Valve | | 858° | | 2 | |
| | Valve | | 257° | | 3 | |
| | Flange | | | | 3 | |
| | Valve | | | | 4 | |
| | Flange | | | | 4 | |
| | Valve | | | | 3 | |
| | Valve | | | | 3 | |
| | TC | | | | 4 | |
| | Union | | | | 4 | |
| | plug | | | | 4 | |
| | Valve | | 391° | | 4 | |
| | Flange | | | | 6 | |
| | Flange | | 420° | | 4 | |
| | Valve | | | | 5 | |
| | Valve | | | | 6 | |
| | Plug | | | | 4 | |
| | Valve | | | | 4 | |
| | Valve BV | | | | 5 | |
| | Valve BV | | | | 5 | |
| | Valve BV | | | | 6 | |
| 60 | | | | | | |

51

60

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| 4016 | valve | diesel | 386° | 10-8-14 | 1 | 1 ppm |
| | Plug | | | | 1 | |
| | Bonnet | | | | 2 | |
| | Union | | | | 1 | |
| | Valve | | | | 1 | |
| | Valve | | 410° | | 1 | |
| | Valve | | | | 2 | |
| | Flange | | | | 2 | |
| | Flange | | | | 2 | |
| | Plug | | | | 2 | |
| | Valve | | 281° | | 1 | |
| | Valve NV | | 221° | | 2 | |
| | Bonnet | | | | 2 | |
| | Union | | | | 3 | |
| | Valve | | | | 4 | |
| | Valve | | | | 4 | |
| | Valve | | | | 2 | |
| | Union | | | | 3 | |
| | Union | Distillate | 245° | | 3 | |
| | pump 9242 | | | | 2 | |
| | TC | | | | 2 | |
| | TC | | | | 2 | |
| | TC | | | | 3 | |
| | Valve | | | | 2 | |
| | Valve NV | | | | 1 | |
| | Valve | | | | 1 | |
| | Union | | | | 1 | |
| | Valve | | | | 3 | |
| | Flange | | 386° | | 3 | |
| | Flange | | | | 2 | |
| | Flange | | | | 2 | |

61

40

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| AD16 | Valve | Diesel | 386° | 10-8-14 | 3 | 1 ppm |
| | Valve | | | | 7 | |
| | Valve | | | | 1 | |
| | plug valve | | 279° | | 2 | |
| | plug valve | | | | 2 | |
| | Flange | | 364° | | 2 | |
| | Flange | | | | 3 | |
| | Valve | | | | 3 | |
| | Valve | | | | 3 | |
| | Union | | | | 2 | |
| | pump 3705 | | 200° | | 2 | |
| | TC | | | | 1 | |
| | TC | | | | 1 | |
| | Flange | | 416° | | 2 | |
| | Flange | | | | 2 | |
| | Flange | | | | 3 | |
| | Flange | | | | 3 | |
| | Flange | | 148° | | 2 | |
| | Flange | | | | 2 | |
| | Valve | | | | 3 | |
| | Valve | | 164° | | 3 | |
| | TC | | | | 4 | |
| | Valve MW | | | | 4 | |
| | Plug | | | | 3 | |
| | Union | | 205° | | 3 | |
| | Plug | | | | 2 | |
| | Valve | | 201° | | 2 | |
| | Booster | | | | 2 | |

91

122

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| A016 | valve | Distillate | 201° | 10-8-14 | 0 | 1000 |
| | Valve | | | | 2 | |
| | TC | | | | 2 | |
| | Valve | | | | 3 | |
| | plug | | | | 3 | |
| | Valve | | | | 3 | |
| | Valve | | | | 4 | |
| | plug | | | | 4 | |
| | Valve | | | | 4 | |
| | Flange | | 198° | | 4 | |
| | Flange | | | | 3 | |
| | Flange | | | | 3 | |
| | Valve | | | | 2 | |
| | Valve | | | | 8 | |
| | TC | | | | 8 | |
| | Valve | | | | 7 | |
| | binnet | | | | 7 | |
| | valve | | | | 7 | |
| | valve | | | | 8 | |
| | valve | | | | 3 | |
| | Union | | | | 0 | |
| | Union | | | | - | |
| | Pump 3634 | | 459° | | - | |
| | TC | | | | - | |
| | TC | | | | 2 | |
| | plug | | | | - | |
| | Flange | | 330° | | - | |
| | Flange | | | | - | |
| | Flange | | | | - | |
| | Flange | | | | - | |
| | Flange | | | | - | |

151

150

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| AD/b | Valve | diesel | 210° | 10-8-14 | 2 | 1000 |
| | Valve | | | | 3 | |
| | Valve | | | | 3 | |
| | Flange | | | | 3 | |
| | Valve | | | | 2 | |
| | Valve | | | | 2 | |
| | Valve | | | | 3 | |
| | Plug Valve | | 382° | | 2 | |
| | Flange | | | | 3 | |
| | Valve | | | | 3 | |
| | Valve | | | | 2 | |
| | Plug Valve | | 103° | | 3 | |
| | Pump (out and seal) | Gas Oil | 397° | | 2 | |
| | TC | | | | 4 | |
| | TC | | | | 1 | |
| | Plug | | | | 1 | |
| | Plug | | | | 1 | |
| | valve | | | | 3 | |
| | Bonnet | | 114° | | 3 | |
| | Valve N | | | | 2 | |
| | Bonnet | | | | 2 | |
| | TC | | | | 3 | |
| | Valve N | | | | 1 | |
| | Valve NV | | | | 1 | |
| | Valve NV | | | | 1 | |
| | Valve BV | | | | 2 | |
| | Valve BV | | | | 2 | |
| | Valve BV | | | | 2 | |

151

150

Seal oil pump

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| AD16 | valve BV | gas oil | 113° | 10-8-14 | 1 | leak |
| | pump | | 96° | | 2 | |
| | TC | | | | 2 | |
| | TC | | | | 3 | |
| | TC | | | | 2 | |
| | TC | | | | 2 | |
| | pump 5193 | | 183° | | 2 | |
| | TC | | | | 1 | |
| | Flange valve | | 176° | | 1 | |
| | plug valve | | | | 1 | |
| | valve | | | | 2 | |
| | TC | | | | 2 | |
| | Flange | | | | 2 | |
| | Bonnet | | | | 2 | |
| | Flange | | | | 2 | |
| | Valve | | | | 2 | |
| | Flange | | | | 3 | |
| | Valve | | | | 3 | |
| | Flange | | | | 2 | |
| | Flange | | | | 2 | |
| | valve | | | | 2 | |
| | valve | | | | 1 | |
| | plug | | | | 1 | |
| | Valve | | | | 2 | |
| | Plug | | | | 2 | |
| | Flange | | | | 3 | |
| | Flange | | | | 2 | |
| | Valve | | | | 2 | |
| | Flange | | | | 2 | |

191

210

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| AD16 | Valve | Gas Oil | 153° | 10-8-14 | 3 | 1 ppm |
| | TC | | | | 2 | |
| | Plug | | | | 2 | |
| | Flange | | | | 2 | |
| | Flange | | | | 2 | |
| | Valve | | | | 4 | |
| | Flange | | | | 4 | |
| | Valve | | | | 4 | |
| | plug | | | | 3 | |
| | valve | | | | 2 | |
| | Plug | | | | 1 | |
| | Flange | | 101° | | 1 | |
| | Valve | | | | 1 | |
| | Flange | | | | 2 | |
| | Flange | | | | 2 | |
| | Valve | | | | 3 | |
| | TC | | | | 2 | |
| | Valve | | | | 2 | |
| | TC | | | | 2 | |
| | Flange | | | | 3 | |
| | Valve | | | | 2 | |
| | Flange | | | | 1 | |
| | Gannet | | | | 1 | |
| | Flange | | | | 1 | |
| | plug | | | | 2 | |
| | valve | | | | 2 | |
| | Valve | | | | 3 | |
| | plug | | | | 3 | |
| | Flange | | | | 2 | |
| | Flange | | | | 2 | |

111

240

| Process Unit | Type of Component, i.e. valve, flange, pump, PRV | Process Stream, i.e. gas oil, diesel, etc. | Approx. Temperature of Pipe | Date of Reading | Monitor Reading | Background Reading |
|--------------|--|--|-----------------------------|-----------------|-----------------|--------------------|
| A010 | Valve BV | Gas Oil | 86° | 10-8-14 | 2 | 1000 |
| | Valve BV | | | | 2 | |
| | Plug | | | | 3 | |
| | Valve | | | | 8 | |
| | Valve | | 137° | | 20 | |
| | Valve | | | | 20 | |
| | Plug | | | | 2 | |
| | Flange | | | | 1 | |
| | Valve | | | | 1 | |
| | Valve | | | | 1 | |
| | TC | | | | 1 | |
| | Valve DV | | 125° | | 2 | |
| | Valve BV | | | | 2 | |
| | Valve BV | | | | 3 | |
| | Valve BV | | | | 2 | |
| | Valve BV | | | | 2 | |
| | Valve BV | | 144° | | 1 | |
| | Pump 9400 | | | | 1 | |
| | Flange | | | | 1 | |
| | Flange | | | | 2 | |
| | TC | | | | 2 | |
| | Plug | | | | 2 | |
| | Valve | | | | 2 | |
| | Union | | | | 6 | |
| | Plug | | | | 6 | |
| | Flange | | 220° | | 7 | |
| | Flange | | | | 8 | |
| | Bonnet | | | | 8 | |
| | Flange | | | | 9 | |
| | Flange | | | | 4 | |
| | Valve | | | | 3 | |
| | Flange | | | | 5 | |

211

210



Benicia Refinery • Valero Refining Company - California

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Overnight Mail UPS # 1Z 951 989 22 1006 311 1

November 23, 2015

Proposed Petroleum Refining Emissions Tracking
Regulation 12, Rule 15 and
Proposed Petroleum Refining Emissions Limits
and Risk Thresholds
Regulation 12, Rule 16 and
Socio-Economic Analysis and
Draft Environmental Impact Report, October 2015
Valero Comments

Mr. Eric Stevenson
Permit Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Stevenson:

Valero Refining Company – California (Valero) offers the following comments regarding the Bay Area Air Quality Management District's (BAAQMD) proposed regulations on the Petroleum Refinery Emissions Tracking Rule and the Petroleum Refining Emissions Limits and Risk Thresholds Rule, both as posted for comment on October 9, 2015, as well as the Draft Environmental Impact Report prepared in connection with the proposed rulemaking. Valero's Benicia, California refinery has a throughput capacity of over 170,000 barrels per day, providing transportation fuels and high quality employment opportunities in the Bay Area. The Benicia refinery will be significantly impacted by the proposals referenced above.

We offer below comments and discussion regarding the current drafts, and we also attach and reference the Valero comment letters (written separately for each rule) submitted on September 25, pertaining to the previously proposed drafts of these rules. The comments from Valero's September letters still apply to the current proposal, inasmuch as the particular sections of the regulation that the comments address remain in the current versions of Regulation 12-15 and/or 12-16, as the District has moved some material and concepts between the two rules. Valero provides general comments on CEQA requirements to assess potential *statewide* impacts and more specific comments on new issues that have arisen in the latest versions of the rules. Valero supports and incorporates by reference the technical and legal comments submitted also today by the Western States Petroleum Association (WSPA), of which Valero is a member.

Statewide Analysis of Proposed Regulations

The October 2015 Draft Environmental Impact Report (EIR) does not adequately disclose the environmental impacts of the proposed regulations because it fails to address air quality impacts that

may reasonably be expected to occur on a statewide level, as required by the California Environmental Quality Act (CEQA). Pursuant to CEQA guidance under 14 CCR § 15003, the lead agency must consider the whole of an action, not simply its constituent parts, when determining whether it will have a significant environmental effect (paragraph h). When considering the whole of the impacts associated with Regulations 12-15 and 12-16, the District is compelled to conduct a CEQA review that incorporates statewide impacts, not just those within the District's air basin. This standard has been applied when evaluating other projects and the BAAQMD should be expected to comply with the same standards that others must meet.

The Draft EIR fails to adequately address cumulative impacts of the proposed regulations because it fails to consider the effects of emissions leakage outside the BAAQMD's jurisdiction. The incremental effects of this regulatory action impose a significant additional regulatory burden on refinery operations in the Bay Area as compared to operations of similar facilities located outside the BAAQMD's jurisdiction. The prospect of being forced to restrict feedstock flexibility based on a perceived correlation of crude slate properties with overall refinery emissions under Regulation 12-15, and the application of source specific and refinery-wide SO₂ and PM_{2.5} emission limits under proposed Regulation 12-16 that restrict emissions well below what has been legally permitted through existing BAAQMD and federal rules, may incentivize shifting production and investment to jurisdictions outside the Bay Area. This shift may result in corresponding increases in production in other parts of California or out of State, which in turn may result in emissions increases elsewhere in California. The Draft EIR fails to consider those potential significant air emissions impacts. Further, the Draft EIR also fails to consider the economic and social effects of production shifting due to the proposed regulations in determining the significance of the impacts caused by the project, as required by Section 15131 of the CEQA guidelines (14 CCR 15131).

Similarly, the draft EIR fails to consider the statewide greenhouse gas emissions impacts of imposing local regulations that are not fully aligned with CARB's cap-and-trade program. In a September 17, 2015 Air Resources Board (ARB) letter to Jack Broadbent, ARB states that California greenhouse gas (GHGs) emissions are limited by a statewide cap, so a local cap on Bay Area refinery emissions will interfere with *statewide* efforts to reduce GHG emissions. ARB points out that reductions from a Bay Area cap would likely be compensated through emissions leakage elsewhere in the State.

These Regulations are Not Needed

As mentioned in our previous comments, the District has not proven the need for this Proposed Regulation 12-15. Specifically, the District has **not** shown (a) that the detailed crude and feedstock composition data to be provided on a monthly basis is needed to further the District's responsibility to regulate air quality; (b) that there is a need for the fenceline monitoring program in addition to what is being required under Federal law; (c) that there is a need for the Bay Area to attempt to duplicate the California Air Resources Board's efforts to address energy efficiency; (d) that there is a gap in scope or coverage in the existing regulations that must be addressed through these new regulations; (e) that there is insufficient ambient air quality data available currently; or (f) that existing ambient air quality data indicates a threat that necessitates the proposed rules.

The District has **not** shown that there is any need or legal authority to support the proposed Regulation 12-16. The stated purpose of this rule is to identify the cause of, and to mitigate, any significant emission increases from petroleum refineries. The District has failed to demonstrate why its current permitting process does not meet this objective. The District has not identified a problem the rule would alleviate and has not identified how it will help obtain air quality standards. Therefore, this rule is not cost effective. Furthermore, as part of the Environmental Protection Agency's (EPA) proposed Risk and Technology Rule, the EPA modeling of all refineries in the United States found no unacceptable risks from air toxics. The District must document why the EPA modeling and resultant

findings are not scientifically sound to the extent that the District must deploy this proposed rule to reduce risks.

Comments on specific provisions of Regulation 12-15 and 12-16 are provided below.

1. Definitions

Greenhouse Gases (GHGs) [Citation 12-15-209]

We appreciate the BAAQMD's revision of this definition to state that "[F]or the purposes of this rule, GHG emissions should be calculated in a manner consistent with California Air Resources Board requirements as contained in §95113 of the Mandatory Greenhouse Gas Reporting Rule." This definition would at least allow an entity to report the total quantity of GHG emissions and to do so in the same manner as done for CARB reporting. This would ostensibly preclude discrepancies in the reported data that could lead the District to look for superficial, alleged violations.

Monthly Crude Slate Report [Citation 12-15-212]

As Valero discussed in its September 25th letter on Regulation 12-15, the crude slate at a refinery should **not** include pre-processed feedstocks. Further regulation should only count what is going through the crude unit and not other process units, which is how crude slate has historically been viewed. Only after going through the crude unit and being broken down into less complex molecules/chains are the resultant streams sent to other units.

A further point here is that the word "slate" was removed from the definition without being red-lined in the proposal. 'Crude slate' is defined in Citation 12-15-206 to include "crude oil and/or crude oil blends to be processed by a crude distillation unit at a petroleum refinery." The Monthly Crude Slate Report is defined as "a summary of crude and other..." with no mention of 'slate,' the inclusion of which would indicate an understanding that a refinery typically runs a crude blend that is optimized for processing at that particular refinery. So, the more accurate definition for Monthly Crude Slate Report should include "crude slate" in its definition.

Petroleum Refinery [Citation 12-15-214 and Citation 12-16-214]

Regarding the definitional change that a refinery includes support facilities (such as power, hydrogen, and sulfuric acid plants) that are not under the control of the refinery ("under common control" being removed), Valero iterates its assertion that these plants should not be included as part of a refiner's responsibility. A refiner, such as the Valero Benicia Refinery, does not own the emissions data generated by those support facilities, nor does it have any control over their operations; therefore, it does not have any control over their emissions or any means of reducing the emissions from those plants.

Petroleum Refinery Owner/Operator [Citation 12-15-217]

This definition requires that the refinery owner/operator be "responsible for compliance with this rule for the entirety of the petroleum refinery, including any refinery processes, auxiliary facilities or support facilities [this last item is new in this draft] that may be separately owned or operated." This is entirely unacceptable, as no entity can be responsible for the environmental compliance of another entity that is not related by corporate association.

2. Annual Petroleum Refinery Emissions Inventory [Citation 12-15-401]

We appreciate the District's revision of Citation 12-15-401.4 to state that the threshold for reporting emissions increases from 10,000 MT to 5% from the PREP. This is a good chance to recognize that large refineries will exceed the 10,000 MT frequently and also that ARB requires accuracy within 5% error. However, the District should understand that there could be increases, or decreases, much

greater than 5% from the PREP simply due to market conditions having nothing to do with operational excellence. This was a point made in Valero's September letter about the profile period (Citation 12-15-216) not being long enough; it should be 10 years instead of 5 years in order to capture years of high utilization before the recession hit in 2009.

Furthermore, the District's requirement in Citation 12-15-401.4 that if emissions increase by more than 5 percent from the PREP, the refinery owner/operator must submit "the actions taken to meet the emissions reductions requirements of the CARB regulation" ignores the fact that a refinery owner/operator can meet reduction targets through participation in the cap-and-trade program administered by CARB, resulting in overall GHG emission reductions. The District should not require additional GHG emissions reductions beyond what CARB requires by the cap on each facility's emissions. If the District tries to enforce any requirements beyond that—aside from the fact that GHGs are global pollutants, not local or even regional—there would clearly be emissions leakage out of the Bay Area, as we discussed in our previous comment letter and which CARB also pointed out to Mr. Jack Broadbent in the September 17, 2015, letter mentioned above.

Again, in Citation 12-15-401.6, the District removed 'slate' from the required Monthly Crude Slate Report, which just mentions "crude and other pre-processed..." As mentioned above in the definition section, only crude slate and the available data on a blend's properties should be required for this monthly report.

3. Revision of Petroleum Refinery Emissions Profile Report [Citation 12-15-403]

Valero welcomes the District's addition of language in Citation 12-15-403 that would allow a revision to a Refinery Emissions Profile Report for the addition of a source, as well as removal or re-permitting. We also appreciate the proposed changes that the public versions of the reports would include only aggregated data and would not include detailed calculation methodologies for individual sources. We ask that the District allow the industry to provide the short methodological descriptions that will be shown in the public reports in order to assure technical accuracy. Industry and agencies (particularly federal trade agencies) view the protection of Confidential Business Information as paramount to the proper functioning of the market.

4. Submittal of Health Risk Assessment (HRA) Modeling Protocol and Health Risk Assessment [Citation 12-15-405]

The latest proposal of this rule adds language in Citation 12-15-405.1 that "[T]he 2015 calendar year inventory may incorporate improved emission estimation calculations. It may also be modified to reflect emission reductions that have been achieved prior to the submittal of the HRA." While this is an improvement in the rule language to allow for the revision of the 2015 report due to improved (but yet-to-be-developed) estimation methods—presumably emission factors that are specific to California refineries, particularly those in the Bay Area—there is still a major concern. Given the long delay in data collection from heavy liquids monitoring programs in relation to the development of the 2015 revised OEHHA Health Risk Assessment Guidance Manual, the conduct of any future health risk assessments should use the most representative emissions factors and actual emissions data. The concern arises from the fact that the Office of the Environmental Health Hazard Assessment (OEHHA) Health Risk Assessment (HRA) Guidance already incorporates artificially high risk factors, some increasing the calculated risk by two or three orders of magnitude, when the actual emissions and associated risks have actually not increased. Coupling the higher risk factors with existing but inflated emission factors will produce many public notifications regarding artificially and erroneously high risk numbers. The proposed regulation should provide an off-ramp for the refining industry if future validated heavy liquid component emission factors were to reveal that the refining industry emits much lower amounts of volatile organic compounds (VOCs) from heavy liquid components

than those assumed and relied upon by the agency for the writing of this rule. Regulations 12-15, 12-16, and 8-18 (on equipment leaks) are proceeding on the BAAQMD's erroneous assumption that refineries emit high amounts of VOCs from heavy liquids. However, the District provides no validated emission data to justify this assumption.

5. Source-Specific and Refinery-Wide SO₂ and PM_{2.5} Emission Limits

[Citation 12-16-405]

Deadline and Enforcement

Since the September 2015 version of the proposed rule, the BAAQMD has changed the deadline from June 30, 2017, to December 31, 2016, for the Air Pollution Control Officer (APCO) to “determine the Potential to Emit (PTE) of each source of SO₂ and PM_{2.5} subject to a District Permit to Operate, and shall **establish enforceable** [bold words have been added since September], refinery-wide emission limits for SO₂ and PM_{2.5} equivalent to the sum of the PTE values for all sources.” Valero refers to its attached September 2015 comment letter and to the attached WSPA letter also submitted today for discussion on the inappropriateness of using PTE to drive down operating limits on refineries. This very letter's purpose is to bring forward issues on the most current proposal; therefore, the moving up of the deadline for the APCO to comply with the rule is unreasonable, as reviewing the PTE for each source at a refinery and establishing enforceable limits is essentially redoing permits at the refinery, which is not possible to do accurately and equitably on such a short timeline. As detailed elsewhere, there is no legal basis for the District to re-open permits that have already gone through the federally mandated and structured permitting process without any new or modified sources coming online at the refinery.

Furthermore, the BAAQMD has added Citations 12-16-405.4, 405.5, and 405.6. The first requires the APCO to “adjust source-specific PTE values to be the same as the values that are the basis for a successful SO₂ and PM_{2.5} NAAQS demonstration.” The next citation requires the APCO to “adjust PTE values to conform to changes in emission inventory methodology.” The third citation requires that the “PTE limits be rendered enforceable through a revision to the Major Facility Review permit.” These changes make it clear that the District intends to ratchet down emission limits from those that were issued and approved in accordance with lawful District policies and regulations. Each NAAQS demonstration using an overly conservative model will artificially and unjustifiably reduce PTE values and the permitted emissions limits. Each change in emission inventory methodology will likely require adjustments that are unfavorable to refinery operations. Finally, making these artificially derived permit limits enforceable through a permit revision makes it clear that whenever one of the above-described changes occurs, the refinery will have to go through another permitting process.

This exercise results in limiting a refinery from utilizing the permitted limits that it has obtained through legal and regulatory means. Furthermore, these changes are not scientifically necessary or technically feasible. Hence, the development of Rule 16 should be abandoned.

6. Updated Refinery-Wide Demonstration of Compliance with SO₂ and PM_{2.5} NAAQS

[Citation 12-16-407]

The most recent change in this section is a requirement that, even after an APCO approves a NAAQS demonstration, if any information becomes available “**regarding methods or factors used in the demonstration** [bolded words are just-added language] the APCO may require a refinery owner/operator to update the demonstration to reflect the information and resubmit the demonstration to the APCO for approval.” There are no prescribed boundaries on the source, timing, or validity of such information, nor is there any mention of a limit on how often the APCO could require updating and re-demonstration.

Socio-Economic Analysis on Regulation 12, Rules 15 and 16

The “Socio-Economic Analysis of the Proposed Regulation 12, Rule 15: Petroleum Refining Emissions Tracking and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds” (‘Socio-Economic Analysis’ from here on), prepared by Applied Development Economics, Inc. (ADE) for the BAAQMD, is based on poor assumptions. Valero focuses on the significance determination of cost impacts to industry.

Corporate Revenue

The Socio-Economic Analysis estimation of refinery revenues and net profits is flawed. ADE’s assumptions of how revenue relates to total crude throughput oversimplify the calculation by converting an entire barrel of crude processed when not all of the volume in a barrel of crude is converted to transportation fuel. The realities of how crude is processed into finished products and affects revenues are too generalized and do not take into consideration the unique operating environmental and additional costs associated with refinery operations in the State of California.

Significance Level

The district has clearly taken an economic snapshot of the Bay Area refineries instead of doing a thorough analysis across a time period representative of the cyclical nature of the refining business. Therefore, the analysis of costs relative to net profits is skewed and not representative of true market conditions. Comparing the total annualized costs for Regulations 12-15 and 12-16 to correct and realistic market conditions would yield cost-to-net-profit percentages much greater than the significance level of 10% that the district has adopted from CARB. Performing the socioeconomic evaluation properly would compel the District to consider other rule alternatives besides the two offered in the Environmental Impact Report.

Draft Environmental Impact Report on Proposed Regulation 12, Rules 15 and 16

Alternatives to Proposed Regulations

The Draft Environmental Impact Report (EIR), required by CEQA Guidelines §15126.6(d) and prepared by Environmental Audit, Inc., discusses alternatives to the proposed regulations being discussed in this comment letter. However, only two alternatives to passing both regulations are considered: not passing either one and passing only Regulation 12, Rule 15 and forgoing Rule 16. As pointed out in our comments, Valero maintains that the District has not justified the need for either rule, and that the current suites of District regulations are adequate to protect the environment and public.

Alternative 2—Adopt Rule 15 but not Rule 16

As the EIR states on page 4-8, “Alternative 2 would also reduce all of the potentially significant impacts and would achieve six of the eight project objectives. Since Alternative 2 would eliminate all of the potentially significant impacts and achieve most of the project objectives, it would be considered the environmentally superior alternative.” The potentially significant environmental impacts, listed in Table 4.5-1 and described throughout the report (particularly on Page 3-69), are the air emissions (dust and GHGs) from construction and the water demand for operating a wet gas scrubber, which is a requirement in Rule 16. Promulgating only Rule 15 would avoid these potential impacts and still enable the District to accomplish the majority of project objectives.

Mr. Eric Stevenson, BAAQMD

November 23, 2015

Page 7

Best Alternative—Allow Current Regulations to Continue

Despite the qualified recommendation above for Alternative 2, Valero still believes that the District should strongly consider not promulgating either rule, as these rules are not only unnecessary (since the BAAQMD is already in attainment for SO₂ and PM_{2.5}), they unfairly target a single industry. This approach is arbitrary and capricious. Consideration should be given to pursuing a more balanced approach.

For all the reasons discussed above and in the attached September comment letter, in the absence of a compelling need to justify the proposed new regulatory program, the proposed new regime appears to be a solution in search of a problem. It appears to us that the underlying purpose of this regulation is to prevent California refineries from being able to access and use crude that is produced within this continent and not to address a real air quality need.

Please contact me at (707) 745-7900 or chris.howe@valero.com if you have any questions.

Sincerely,



Christopher W. Howe, Director
Environmental, Health, Safety
& Community/Governmental Affairs

CWH/RE/IS/tac

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ATTACHMENTS

VALERO September 25, 2015 Letters

Regulation 12-15--Petroleum Refining Emissions Tracking

Regulation 12-16—Emissions Limits and Risk Thresholds

Certified 7011 1150 0001 6525 8052

September 25, 2015

Proposed Petroleum Refining Emissions
Tracking Rule
Regulation 12, Rule 15, Valero Comments

Mr. Eric Stevenson
Permit Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Stevenson:

Valero Refining Company – California (Valero) offers the following comments regarding the Bay Area Air Quality Management District’s (BAAQMD) proposed regulation on the Petroleum Refinery Emissions Tracking Rule, as posted for comment on September 11, 2015. Valero’s Benicia refinery, located within the BAAQMD jurisdiction, has a throughput capacity of over 170,000 barrels per day, providing transportation fuels and high quality employment opportunities in the Bay Area. The Benicia refinery, as well as the rest of the refining industry in the Bay Area, will be significantly impacted by the proposal referenced above.

We offer below comments and discussion in support of our position on the current draft, and we also attach and reference the Valero comment letter submitted on March 27, 2015, pertaining to the previously proposed draft of this rule. The comments from Valero’s March letter still apply to the current proposal, insomuch as the particular sections of the regulation that the comments address remain in the current versions of Regulation 12-15 and/or 12-16, as the District has moved some material and concepts between the two rules.

It should be noted at the outset that the two-week time frame provided to comment on the Tracking Rule and its companion, the proposed Regulation 12-16 (the “Emissions Rule”), is inadequate to address the significant changes made to the proposed rule package as compared to the previous versions. Despite this, Valero provides comments on overall concepts, refers to its previous comment letter to address outstanding issues from the previous draft rule, and provides more developed comments on new issues that have arisen in the latest version of the rule. However, Valero reserves all rights to offer additional comments when the draft rules and CEQA documents are issued in accordance with the California Administrative Procedure Act.

Throughout the regulatory development process, the BAAQMD has circulated and revised proposed regulatory language multiple times, yet it has not fully vetted or evaluated what air quality impacts are reasonable expected on a statewide level. Division 13 of California's Public Resources Code (Environmental Quality) requires that governmental agencies develop standards and procedures necessary to protect environmental quality and consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs, and to consider alternatives to proposed actions affecting the environment. (§21001). Since this regulatory action is an activity directly undertaken by a public agency and is defined as a project under this code due to potential environmental impacts (§21065), the District is required to follow established criteria under California Environmental Quality Act (CEQA) to determine whether or not a proposed project may have a "significant effect on the environment" (§21083). Since the incremental effects of this regulatory action may have a substantial, or potentially substantial, adverse change in the environment due to emission increases elsewhere in the State (emissions leakage) related to production shifts in response to actual or potential regulatory impacts (§21068), the BAAQMD is required to complete an environmental assessment with appropriate and thorough public participation.

The District is required to conduct an environmental review pursuant to CEQA guidance. Under 14 CCR § 15003, the lead agency must consider the whole of an action, not simply its constituent parts, when determining whether it will have a significant environmental effect (paragraph h). In a September 17, 2015 Air Resources Board (ARB) letter to Jack Broadbent, ARB states that California greenhouse gas emissions (GHG) are limited by a statewide cap, so a local cap on Bay Area refinery emissions will fail to reduce overall GHG emissions. ARB points out that reductions from a Bay Area cap would likely be compensated through emissions leakage elsewhere in the State.

In a similar fashion, the objective to attempt correlation of crude slate properties on overall refinery emissions under Regulation 12-15, and the application of source specific and refinery-wide SO₂ and PM_{2.5} emission limits under proposed Regulation 12-16 that restrict emissions well below what has been legally permitted through existing BAAQMD and federal rules, will also result in emissions leakage as production shifts to other parts of California or out of State. When considering the whole of the impacts associated with Regulations 12-15 and 12-16, the District is compelled to conduct a CEQA review that incorporates statewide impacts, not just those within the District's air basin. As Valero can attest, this standard has been applied when evaluating other projects, and the BAAQMD should be expected to comply with the same standards others must meet.

This Regulation is Not Needed

As mentioned in our previous comments, the District has not proven the need for this Proposed Regulation 12-15. Specifically, the District has **not** shown (a) that the detailed crude and feedstock composition data to be provided on a monthly basis is needed to further the District's responsibility to regulate air quality; (b) that there is a need for the fence-line monitoring program in addition to what is being required under Federal law; (c) that there is a need for the Bay Area to attempt to duplicate the California Air Resources Board's efforts to address energy efficiency;

(d) that there is a gap in scope or coverage in the existing regulations that must be addressed through these new regulations; (e) that there is insufficient ambient air quality data available currently; or (f) that existing ambient air quality data indicates a threat that necessitates the proposed rules. We address each of these points below.

a. *The crude and feedstock data required by proposed Regulation 12-15 is not necessary to effectively regulate air emissions in the District.* Proposed Regulation 12-15 would require refineries to provide detailed monthly crude slate reports. These reports would be burdensome to prepare and would pose the risk of confidential business information inadvertently being released publicly, as addressed further below, yet the District has not identified a justifiable reason for requiring submission of this data. Ostensibly, the agency is concerned that changes in crude slate may result in changes in refinery emissions and plans to collect data from the Bay Area refineries to provide support for this proposition. While on a superficial level, it might seem logical that changes in input (crude and feedstocks) would produce changes in output (products and emissions), this is an erroneous assumption when it comes to refinery operations. As the Interim Staff Report acknowledges, refinery operations are already subject to many environmental regulations that require the installation of environmental controls that are designed with excess capacity to handle variations in operations, which include myriad factors in addition to feedstock composition.

The Valero Benicia Refinery is optimized to work within an operational envelope that allows it to produce an ever-shifting array of products, based on market conditions for both products and crude supply. The operational envelope is well-defined by the refinery based on various crude parameters (such as API gravity, sulfur content, etc.), and that envelope falls well within the window of environmental compliance with permit limits. Whether the source is oil sands from Canada or shale oil in the Southwest (and perhaps someday in California), any 'new' crudes are mixed with other crudes into a blend that is optimized for the operation of refinery, both in the production of products and compliance with environmental regulations and permits. Even if a refinery were to run only one type of crude, which is nearly impossible given the global nature of the crude market, refineries must optimize their operations to achieve compliance as well as production targets. This is occurring successfully today under the District's current regulatory programs, notwithstanding wide variations in crude slates derived from non-domestic sources.

As noted in our March letter, Valero believes that this proposed regulation is not a reasonable and necessary exercise of the District's authority to regulate air quality in the Bay Area air basin, because it is not reasonably likely to lead to information that is necessary to regulate air emissions. The District has overlooked evidence disproving the existence of a one-to-one correlation between crude rates/crude slates and emissions rates and has failed to demonstrate in a scientifically justifiable way that the presumed correlation is sufficiently accurate as to justify limitations on emissions and crude charge.

Furthermore, Valero has submitted real operating data to the District that demonstrates how emissions vary over time for reasons other than feedstock qualities. The data provided shows the relationship between catalyst deactivation over time and the corresponding increase in fired duty necessary to sustain the process and meet product quality specifications at a critical

refinery process unit. This real-world example is but one of many complex relationships between refinery operations and the resulting emissions that are not dependent on feedstock qualities. The assertion that variations in crude quality necessarily increase emissions is not provable with actual data.

The data collection exercise envisioned by Regulation 12-15 presumably is intended to provide the missing justification for the District's conclusion that variability in crude composition translates directly to emissions impacts. However, the design of any study that might be attempted using this data would necessarily be flawed by virtue of the exceedingly small sample size, consisting as it does of only five facilities that vary widely in age, processing capacity, array of process units, process unit design, emission controls, and other significant variables. It is not reasonable to require refineries to provide data that is unlikely to result in supporting any legitimate conclusion, particularly when there are alternative means available to address the issue of whether variability in feedstock composition correlates to variability in emissions. As Valero has suggested previously, the District could evaluate existing emission inventory and TRI data. Alternatively, the District could commission a well-designed, scientifically sound, peer-reviewed study that includes an adequate sample size and controls for variables other than crude composition.

Further, the EPA-approved New Source Review program exempts from review any change in raw material that the facility is capable of accommodating. It has been a long-standing policy of all environmental agencies that changes in raw materials or feedstocks that a facility can accommodate is not a change that would be reviewed, unless such a change is prohibited by the permit or another regulation. Thus, unless BAAQMD intends to change the New Source Review rules, the stated purpose of "tracking crude oil composition" cannot mean also that "impacts on emissions" from crude slate changes are reviewed. BAAQMD does not have authority to review those impacts. Thus, tracking crude oil composition serves no purpose and, thus, is not justified as necessary.

b. *An Additional Fenceline Monitoring Program is Not Needed.* The District has not shown that there is a need for the proposed fence-line and community monitoring systems. Existing regulations provide for measuring emissions, both from routine operations as well as from unanticipated releases. The existing permitting process includes requirements for modeling to ensure that permitted levels of pollutants do not exceed levels that adversely impact public health. Refineries are subject to numerous reporting rules under state, local, and federal programs in the event of a release of a toxic or potentially toxic substance above federal and state reporting levels. Investigations of these events are required by numerous federal, state, and local rules. Existing regulations require sites to implement measures to prevent recurrences or be subject to enforcement action for repeat issues. These existing measures are sufficient to notify the community in case of accidental releases. Further, the federal Refinery Risk and Technology Rule, anticipated to be effective by December 2015, will require fenceline monitoring at all petroleum refineries, including those within the BAAQMD's jurisdiction.

c. *There is no need for the District to require energy efficiency information.* Proposed Section 12-15-412 would require the owner/operator of a refinery to submit the energy assessment portion and energy gap analyses from HSB Solomon Associates LLC's "Worldwide Fuels Refinery Performance Analysis" for 2012 and 2014. This is wholly unnecessary, as ARB has already conducted this evaluation for refineries throughout the state. After evaluating Solomon data and the energy efficiency projects that refineries have implemented over the last few decades and after publishing its findings on the refinery sector, ARB has failed to find any need to draft regulations to further enhance energy efficiency at refineries. The reason is that the second highest cost for refineries is incurred by energy use, and refineries have consistently implemented capital projects and optimized heat recovery in order to reduce energy use, which thereby reduces GHG emissions. If the District were to require more energy efficiency reductions, it would penalize those refineries, such as the Valero Benicia Refinery, that have continued to invest in energy saving projects. Furthermore, there is no federal requirement for refineries to reduce energy use, but the refining industry as a whole, especially in California, has been ahead of the curve in reducing energy use. In fact, the Valero Benicia Refinery was designed in the late 1960s to be highly energy efficient and has undergone successive modifications to increase efficiency. Therefore, there is no need for this rule to regulate Bay Area refiners.

d. *Existing regulatory programs are sufficient to address monitoring and regulation of petroleum refinery emissions in the Bay Area.* California, and the Bay Area in particular, are recognized as the most highly-regulated environments in the nation for petroleum refiners. The Interim Staff Report accompanying the release of the current drafts of Regulations 12-15 and 12-16 identifies the plethora of regulations currently in effect which, as the Interim Staff Report notes, "contain standards that ensure emissions are effectively controlled."¹ It is puzzling that the District clearly recognizes the comprehensive nature of the existing regulatory regime but nevertheless goes on to propose a new and largely redundant regulatory program without identifying what gap in environmental regulations at various governmental levels it is attempting to fill with this regulation. For example, regarding the Health Risk Assessment that is intended to be conducted using data collected through this rule, the District would regulate toxics and the assessment requirements through:

- Regulation 12-15,
- Regulation 12-16,
- BAAQMD Regulation 2-5, "New Source Review of Toxic Air Contaminants," evaluates potential public exposure and health risks related to toxic air contaminant (TAC) emissions, and mitigates potentially significant health risks to provide net health risk benefits by improving the level of control when existing sources are modified or replaced.

¹ Bay Area Air Quality Management District, "Interim Staff Report: Proposed Air District Regulation 12, Rule 15; Petroleum Refining Emissions Tracking; and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds," September 2015, at 10, 14.

- the Community Air Risk Evaluation (CARE) Program that identifies areas within the Bay Area where air pollution is contributing to health impacts and establishes effective mitigation measures,
- Federal NESHAPs/MACT regulations, and
- ARB's Airborne Toxic Control Measures.

Given this recognized list of regulations that address most, if not all, of the issues ARB is attempting to regulate under this proposal, we question the district's failure to provide any specific regulatory analysis that identifies how and why this existing regulatory structure has failed, to the extent that the current proposal provides a necessary solution.

State policy is to ensure that the long-term protection of the environment shall be the guiding criterion in public decisions (Public Resources Code §21001). ARB air toxics monitoring data indicates a substantial improvement in air quality and reduction in cancer risk over the past 25 years that the California Office of Environmental Health Hazard Assessment (OEHHA) says are attributable to local Air Districts adopting aggressive toxic reduction rules, as well as implementing statewide measures requiring cleaner fuels, improved technology, or changes in operating practices to address toxics. Sources of air toxics in California typically have the highest level of technological control installed to reduce emissions, as required by State and local regulations, and industry has invested in cleaner equipment and operations.

As previously discussed, the BAAQMD has existing regulations that adequately address air quality and exposure risk. If the BAAQMD sincerely believes that Regulations 12-15 and 12-16 are needed to ensure toxic emissions do not pose an unacceptable health risk to the residents or nearby communities, they are, in effect, stating that they have failed to protect the public through their existing regulations and that these rules are needed to supplant current, ineffective regulations. In light of OEHHA's summary of successes in reducing health risks associated with toxic emissions, this conclusion is not borne out, thereby highlighting the fact that the District's proposed regulations are unjustified and arbitrary.

California law requires regulations to be "reasonably necessary" to survive judicial review [1951 Cal. Stat. 479, §10]. The Office of Administrative Law's (OAL) website states that one of its key functions is to ensure that a rule is necessary. California Government Code section 11349 defines 'necessity':

"Necessity" means the record of the rulemaking proceeding demonstrates by substantial evidence the need for a regulation to effectuate the purpose of the statute, court decision, or other provision of law that the regulation implements, interprets, or makes specific, taking into account the totality of the record. For purposes of this standard, evidence includes, but is not limited to, facts, studies, and expert opinion.

Section 11346.2 (b) provides that each regulation must also include the following in the initial statement of reasons for the action:

A statement of the specific purpose of each adoption, amendment, or repeal, the problem the agency intends to address, and the rationale for the determination by the agency that each adoption, amendment, or repeal is reasonably necessary to carry out the purpose and address the problem for which it is proposed. The statement shall enumerate the benefits anticipated from the regulatory action, including the benefits or goals provided in the authorizing statute.

Section 11350 provides that a regulation may be declared invalid by a court if:

The agency's determination that the regulation is reasonably necessary to effectuate the purpose of the statute, court decision, or other provision of law that is being implemented, interpreted, or made specific by the regulation is not supported by substantial evidence.

The Interim Staff Report does not provide substantial evidence that the action is reasonably necessary. The statement of necessity does not describe a problem that is not already addressed by numerous other rules. Furthermore, the regulation is not designed to address the described problem. Therefore, the District should not adopt Regulations 12-15 and 12-16.

e. *Existing data does not support a need for the proposed new regulations.* The District has not provided data that would indicate poor or declining air quality that necessitates the proposed new regulations. On the contrary, ambient data posted on the District's website indicates that the existing regulatory program has resulted in vast improvements in air quality. OEHHA notes in materials accompanying the revised risk assessment guidelines that "Data from ARB's statewide air toxics monitoring network shows there has been approximately an 80 percent reduction in cancer risk based on monitored air toxics concentrations since 1990 at sites across California...Emission reduction occurred despite 8 million more residents and 8 million more cars on the road, while California's economy grew by 70 percent."²

f. *Sufficient ambient air quality is already available.* The District has also not demonstrated that there is insufficient data to evaluate the impacts of refinery emissions. As discussed above, current regulations require extensive monitoring of refinery emissions. Further, the District maintains a comprehensive and sophisticated network of 33 ambient air quality monitoring stations. It is not clear why the additional data collection and reporting required in the proposed rule is necessary.

Comments on specific provisions of Regulation 12-15 are provided below.

1. Crude Slate and Feedstock Reporting

Definition

² California Office of Environmental Health Hazard Assessment, "Frequently Asked Questions: March 6, 2015 Release of OEHHA Risk Assessment Guidance Manual and ARB Hotspots Analysis and Reporting Program Software."

The regulation in section 12-15-206 defines 'crude slate' as "A record of the characteristics and quantities of crude oil and/or crude oil blends to be processed by a crude distillation unit at a petroleum refinery." This definition does not include anything about intermediates or pre-processed feedstocks; however, in the completely new section of 12-15-212, a 'Monthly Crude Slate Report' is required, and that report, according to new language in section 12-15-401.7 is supposed to include "crude slate and other pre-processed feedstocks" [emphasis added]. If this requirement is meant just to cover any crude and other feedstock that would be introduced into the crude distillation unit, then the regulation needs to be clarified to state such. If the intent, on the other hand, is to capture all intermediates used throughout the refining facility, then this is an onerous and duplicative requirement. Not only would the information be confidential business information (CBI), the agency has not made the case that this information is supportive of the goal of the proposal. If the agency is interested in collecting this data for research and rulemaking purposes for the regulation of greenhouse gas emissions (an effort duplicative of ARB's GHG programs), it would seem that collecting this information would be redundant given the agency's request for energy efficiency information in section 12-15-412 regarding the reporting of energy utilization analyses (also unnecessary, given refiners' history of energy efficiency). If the agency is requiring this information in an attempt to correlate emissions to refinery and/or unit charge, we reemphasize to the district, in the strongest possible terms, that an analysis of the operations and emissions of 3.5% of the U.S. refineries will not provide any meaningful factor or statistic to attain that goal. As previously mentioned, the individual characteristics and operational targets of each refinery preclude the ability to make such judgments based on so little data. The agency should abandon all attempts to make such determinations as factually unsupportable.

Properties

Furthermore, in Section 12-15-401.7, the BAAQMD has expanded the list of physical and chemical properties of crude (and now, also pre-processed feedstocks), adding parameters such as BTEX compounds, metals, vapor pressure, etc.; these newly added parameters are unnecessary for reporting of crude slate. Also, Section 12-15-413 requires that the refinery owner/operator submit Monthly Crude Slate Reports for calendar years 2012, 2013, and 2014. This requirement is retroactive and has not been justified by the agency, and there is no guarantee that the data for all the new parameters were even collected for crude slates going back to 2012. To the extent that the district proceeds with this proposal and that only the *relevant* properties for crude slates are to be reported monthly, that requirement should also be restricted to the reporting of crude slates received on a forward-going basis, not retroactive to a period before the rule is passed and made final. Finally, there are major issues regarding the data's confidential and trade-sensitive nature, now discussed below.

Competition-Sensitive Information

In an extensive process to evaluate data related to measuring and reporting greenhouse gas emissions, EPA determined that certain types of data that are not already available to the public would likely cause competitive harm if the information is disclosed to the public and thus, made

available to competitors in the market. EPA determined that the "quantity or composition of raw materials or products" qualify as competition sensitive data (September 2014 Memo from Lisa Grogan-McCulloch in Docket EPA-HQ-OAR-2010-0929). EPA also determined that the petroleum refinery sector is particularly sensitive to market competition and that West Coast refineries are more sensitive to competition than others in the country (page 10: The FTC found that PADD V was moderately concentrated, receiving a Herfindahl-Hirschman Index (HHI) of concentration score of 1246 in 2003, the highest in the country). However, national HHI scores have increased since 2003; West Coast refineries are more sensitive to competition today than they were in 2003 (see AFPM 2014 Presentation on US Refineries Competitive Positions; access to and ability to use less expensive crude is the key to competition.) EPA's rule would have required refineries to report the annual volume of crude and petroleum received for processing at the refinery. By contrast, Regulation 12-15 requires reporting of monthly crude volumes. Section 12-15-411 provides that refineries can designate specific information as confidential for each report, but refineries must provide a justification for such designation each time. EPA determined that it was not appropriate to require the inclusion of sensitive information in the GHG report rather than develop and implement measures to ensure that the information would not be released to the public. BAAQMD should consider the analysis and reasoning that EPA undertook before finalizing the requirement to report monthly crude volumes and information.

EPA's rules are focused on emissions rather than evaluating the process and economic decisions of individual refineries. By comparison, to focus on emissions, BAAQMD should not focus on monthly crude but on emissions and actual physical changes to accommodate any crude or product changes. The New Source Review program is designed for ensuring that emission increases from critical changes are addressed. Before requiring that refineries report crude information, BAAQMD must make a determination that crude slate information and any raw material information that is reported is confidential business information and is protected from disclosure to the public. BAAQMD should make this determination for all refineries as part of this rule and make it a provision of the rule to ensure that the public is aware that the information will not be available for review and to ensure that refineries will not risk disclosure of their sensitive business information. Refineries risk violating anti-trust laws by reporting such information without taking precautions to protect the information from disclosure to competitors. BAAQMD should consult with the FTC, as EPA did, before mandating reporting of such information without providing full assurance for confidential business information protections.

Interstate Commerce Implications

If the BAAQMD intends to subject crude slate changes to review for emissions impacts, the BAAQMD must consider the interstate commerce implications. BAAQMD has not proposed to change the New Source Review rules regarding changes in raw material or feedstocks, nor has BAAQMD proposed to define crude slate changes as a change that is no longer exempt from "physical or operational changes" under New Source Review or to make such changes subject to some other specific review. However, to the extent that BAAQMD is considering such options or considering evaluating refinery crude slate information in order to impose limits on

refinery use of specific sources of crude, BAAQMD must consider the impacts on interstate commerce and foreign commerce before proposing such changes. If such regulation of crude slate would impact interstate commerce or foreign commerce, the regulation might violate the U.S. Constitution's Commerce Clause. BAAQMD acknowledges that crude oil is sourced from across the U.S. and from outside the U.S., but in that acknowledgement, BAAQMD also indicated a concern about the environmental impacts from such production by referring to sources such as "tar sands" from Alberta, Canada, rather than "oil sands," as the Government of Alberta refers to the resource. BAAQMD has authority to regulate the emissions that result from changes to accommodate new sources of crude but does not have authority to directly limit use of crude from different sources if the refinery can comply with its permits and applicable regulations.

2. Petroleum Refinery Emissions Profile (PREP) Period

As we commented on the previous proposal, Valero requests that the PREP profile period (Section 12-15-216) be modified to state, "A period of 12 consecutive months, from January ~~2010~~**2006** through December 2015..." to be consistent with federal language regarding baseline actual emissions of regulated new source review (NSR) pollutants under 40 CFR §52. A five year window is not representative of a business cycle and would result in a nonrealistic PREP. Going back five years only to January 2010 would capture only years of recession and would not include any years of high refinery utilization rates.

This rule proposal and a 5-year window would not recognize that new equipment and new emissions will occur as a result of growth in the demand for petroleum products or the reformulation of fuels by ARB. Emissions from new and modified equipment are already evaluated and controlled via the well-established NSR process. It is recommended that any emission increases resulting from the addition of new or modified sources resulting from permit modifications that have been evaluated via the NSR process be added to the PREP. Furthermore, there is currently no provision to amend the PREP for future NSR Permitting. Failing to allow adjustments to the PREP to reflect future projects could have the unintended consequence of discouraging modernization or being unable to meet future ARB requirements for reformulated fuels. The District must include a mechanism for adjusting the PREP to allow for, rather than prevent, NSR permitting.

3. Date of Initial Emissions Inventory

Throughout this proposed rule, all provisions with reference to an initial start date of rule applicability are predicated on the initial emissions inventory being conducted on data for calendar year (operational) 2015, as required by Section 12-15-213, an altogether new section that defines "On-going Annual Petroleum Refinery Emissions Inventory." This is essentially a retroactive rule, as we are already nearing the end of the ninth month of 2015, and some of the emissions inventory methodologies proposed by the District in the still-draft rules of the regulatory suite, "Refinery Emissions Reduction Strategy," have not yet been adopted. The Health Risk Assessment (Section 405.1) and the Air Monitoring Plans (Section 407), and many other sections that directly or indirectly tie compliance deadlines to the date of the initial

emissions inventory, would be better served by more accurate and timely data that would result from the first operational year of reporting being 2016.

4. Fence-line and Community Monitors

The District has not shown that there is a need for the proposed fence-line and community monitoring systems. Existing regulations provide for measuring emissions, both from routine operations as well as from unanticipated releases. The existing permitting process includes requirements for modeling to ensure that permitted levels of pollutants do not exceed levels that adversely impact public health. Refineries are subject to numerous reporting rules under state, local, and federal programs in the event of a release of a toxic or potentially toxic substance above federal and state reporting levels. Investigations of these events are required by numerous federal, state, and local rules. Existing regulations require sites to implement measures to prevent recurrences or be subject to enforcement action for repeat issues. These existing measures are sufficient to notify the community in case of accidental releases.

Further, if there were a need for these systems, the proposed regulation unfairly targets refiners to shoulder the burden of installation, maintenance, and data collection. *Community monitors* will record all emissions data in the area, such as emissions from cars and other mobile sources on freeways, fireplaces, lawnmowers, barbecues, etc, and are not specific to monitoring refinery emissions only. Refiners are not the only entities in the Bay Area air basin that emit pollutants, toxic air contaminants (TACs), and greenhouse gases (GHGs). Therefore, it is not be the responsibility of the refineries to own and operate this equipment.

The BAAQMD should follow the lead of others states where the environmental agencies secure funding from legislatures to own and operate community monitoring stations. Having the agency own and operate the community monitors also provides another level of impartiality to the data that is collected. With refineries being required to operate fence-line monitors, which really should only extend to the property line or to the edge of operations (not one mile out into the community as proposed in the rule), the community monitors should be owned and operated by the BAAQMD to provide corroboration or explanation for fence-line data. Because community monitors sample emissions from public sources and not just from refineries, these monitors represent the air quality of the air basin, which is under the jurisdiction of the District. Therefore, the District must accept legal liability for the collection and verification of data that are collected through any community monitors.

5. Greenhouse Gas Inventory

As Valero commented on the previous draft proposal, the District should not be involved in the regulation of greenhouse gas emissions, as ARB already regulates them through the legislative authority granted by AB32, and the resultant climate change programs regulate the sources (including refineries) that emit 90% of all GHG emissions in the state. The BAAQMD has noted that GHGs are not directly associated with local or regional health risks, which are what this rule is purported to address; therefore, there is no reason that GHGs should be included in the rule.

Valero notes and incorporates by reference ARB's letter to your agency on September 17, 2015 [Richard W. Corey, Executive Officer of ARB to Jack Broadbent, CEO of BAAQMD]. To reiterate a few points from that letter, if BAAQMD were to regulate GHG emissions in the Bay Area, it would create carbon emissions leakage from the Bay Area to other parts of the state and would also likely cause industrial operations and commercial enterprises to relocate, thereby reducing jobs and tax revenue from the Bay Area. District regulation of GHG emissions would also undermine the environmental and economic effectiveness of the Cap-and-Trade program.

Furthermore, there is no basis for the 10,000 metric ton CO₂ 'trigger' (term removed from previous draft but applies to emission increases over the PREP), and it is an extremely low threshold that is within the refinery's year-to-year variability, or that of any other refinery in the Bay Area. Based on GHG inventory data available on the ARB website for the years 2011 through 2013, 10,000 metric tons represents less than 1% of total GHG emissions for a refinery. This small variation occurs very frequently during a refinery's operation, simply due to market conditions and the attendant operational requirements, as well as turnarounds. The ARB Mandatory Reporting Rule requires an accuracy of GHG emissions reporting of 95% +/- 5%. There is no reason why the District could not use 10% as an increase threshold, rather than an absolute number that represents such small and insignificant variations.

If the District were to proceed with its request to receive GHG emissions data from the refining industry, all reporting requirements associated with GHG emissions should be deleted except for the requirement to submit GHG data as reported to ARB. Specifically, the ARB Regulation does not require the quantification of GHG from "each source." Furthermore, GHG emissions cannot be determined by source because of the "common pipe" calculation methodology provided by ARB and implemented at Valero's refinery. Any language requiring source-specific GHG emissions must be deleted. Moreover, it is a redundant and unnecessary burden to include GHG emissions in Regulation 12-15, as GHG emission reporting is already addressed by ARB and EPA regulations, and an established program for GHG reductions has already been implemented by ARB.

This rule unfairly targets petroleum refineries. It is inequitable to impose the obligation of monitoring and reporting emissions throughout the air basin exclusively on a single industry when the copious data already available indicates that mobile sources, not refineries or any other stationary source, are the primary sources of the pollutants of concern in the Bay Area air basin. As we write, we have all recently learned that NO_x emissions from a certain diesel engine manufacturer have been significantly underestimated due to that manufacturer's circumvention of diesel engine testing requirements. By our rough calculation, if NO_x emissions in the Bay Area are corrected to reflect actual diesel vehicle emissions, the annual NO_x emissions in the Bay Area alone may be up to 200+ tons greater than previously recognized. These excess emissions attributable to a single mobile source manufacturer are equivalent to approximately 7% of the annual NO_x emissions of the entire Bay Area refining sector. This significant increase from a small vehicular source highlights the need to look beyond the refining sector and underscores the unfairness and the futility of looking to a single industry within the stationary

Mr. Eric Stevenson, BAAQMD
Proposed Petroleum Refining Emissions Tracking Rule
Regulation 12, Rule 15
September 25, 2015
Page 13

source universe to shoulder the responsibility of improving air quality within the Bay Area airshed.

For all the reasons discussed above, in the absence of a compelling need to justify the proposed new regulatory program, the proposed new regime appears to be a solution in search of a problem. It appears to us that the underlying purpose of this regulation is to prevent California refineries from being able to access and use crude that is produced within this continent and not address a real air quality need.

Please contact me at (707) 745-7545 if you have any questions.

Sincerely,



Donald W. Cuffel
Manager – Environmental Engineering

DWC/ksb/is/dc

Enclosure

Certified # 7011 1150 0001 6525 8052

September 25, 2015

Proposed Petroleum Refining Emissions Limits
and Risk Thresholds Rule
Regulation 12, Rule 16, Comments from Valero

Mr. Eric Stevenson
Permit Services Division
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Stevenson:

Valero Refining Company – California (Valero) appreciates this opportunity to provide comments regarding the Bay Area Air Quality Management District's (BAAQMD) proposed regulation on the Petroleum Refining Emissions Limits and Risk Thresholds Rule, as posted for comment on September 11, 2015. Valero's Benicia refinery, located within the BAAQMD jurisdiction, has a throughput capacity of over 170,000 barrels per day, providing transportation fuels and high quality employment opportunities in the Bay Area. The Benicia refinery, as well as the rest of the refining industry in the Bay Area, will be significantly impacted by the proposal referenced above.

Valero supports the comments of the California Council for Environmental and Economic Balance (CCEEB) and incorporates their comments herein. We offer below further comments and discussion in support of our position on the current draft, and we also attach and reference the Valero comment letter submitted on March 27, 2015, pertaining to the previously proposed draft of this rule. Despite the rule being completely rewritten and the very short comment period of two weeks, Valero provides comments on overall concepts, refers to its previous comment letter to address outstanding issues from the previous draft rule, and provides more developed comments on new issues that have arisen in the latest version of the rule.

1. This Regulation is Not Needed

The District has not shown that there is any need or legal authority to support the proposed rule. The stated purpose of this rule is to identify the cause of, and to mitigate, any significant emission increases from petroleum refineries. The District has failed to demonstrate why its

current permitting process does not meet this objective. The District has not identified a problem the rule would alleviate and has not identified how it will help obtain air quality standards. Therefore, this rule is not cost effective. Furthermore, as part of the Environmental Protection Agency's (EPA) proposed Risk and Technology Rule, the EPA modeling of all refineries in the United States found no unacceptable risks from air toxics. The District must document why the EPA modeling and resultant findings are not scientifically sound to the extent that the District must deploy this proposed rule to reduce risks.

Proposed Regulation 12-16 impedes Valero's ability to run permitted sources and needs to be eliminated from the rulemaking process. Though this regulation is entitled "Petroleum Refining Emissions Limits and Risk Thresholds," it is in actuality a means to cap refinery emissions below the levels legally permitted through the District's existing regulatory process. Once permitting is triggered under this rule, the emissions reduction plan (ERP) will require that every source in the refinery be considered for emissions reductions. The requirement to reduce emissions below permitted levels is contrary to BAAQMD and Federal New Source Review (NSR) requirements, circumvents other District permitting and offset rules (Regulations 2-1, 2-2, and 2-5), renders the District's air permitting program fundamentally inconsistent with the Federal New Source Review program, and is not needed to monitor and control emissions and public health impacts. Furthermore, Proposed Regulation 12-16 disregards all health and environmental analyses that go into establishing the refinery's current permitted emission limits in favor of a program that arbitrarily prevents increases above historical actual emissions. The District has failed to explain why these analyses are insufficient.

According to the California Office of Environmental Health Hazard Assessment (OEHHA), there has been approximately an 80 percent reduction in cancer risk based on monitored air toxics concentrations since 1990 at sites across California. The health effects on people living closest to air toxics sources have also been reduced due to changes in equipment and processes, and emission reductions occurred despite 8 million more residents and 8 million more cars on the road. OEHHA attributes these improvements to local Air Districts adopting aggressive toxic reduction rules as well as implementing statewide measures requiring cleaner fuels, improved technology, or changes in operating practices to address toxics. Sources of air toxics in California typically have the highest level of technological control installed to reduce emissions, as required by State and local regulations, and industry has invested in cleaner equipment and operations.

Proposed Regulation 12-16 is duplicative of other District rules which have contributed to the improvements noted above. The District currently regulates toxics pursuant to BAAQMD Regulation 2-5, "New Source Review of Toxic Air Contaminants", the Community Air Risk Evaluation (CARE) Program, Federal NESHAPs/MACT regulations, and California Air Resources Board's (CARB) Airborne Toxic Control Measures. If the BAAQMD maintains that additional regulations are needed to ensure toxic emissions do not pose an unacceptable health risk to the residents or nearby communities, they are, in effect, stating that current regulations are ineffective, which is not supported by OEHHA's conclusions. The BAAQMD has not demonstrated why multiple, existing toxic control regulations are inadequate to protect the public.

The District Workshop Report includes a similar comment regarding flares under Regulation 12-16; i.e., because flares are already covered under Regulations 12-11 and 12-12, they are exempted from these proposed rules. If the District is concerned with avoiding confusion and conflict with existing regulations, as stated in the Workshop Report, proposed Regulation 12-16 should be abandoned.

Proposed Regulation 12-16 would deprive Valero and other refiners of the flexibility to operate within legally obtained and demonstrably protective emission limits established through previous permitting processes, many of which addressed the very concerns cited as the basis for this rulemaking by requiring the installation of pollution control technology that cost hundreds of millions of dollars. In defiance of California's vested rights doctrine, this unreasonable and arbitrary constraint of operational flexibility unfairly reduces the return on previous investments in pollution control technology. This rule will disincentivize future investment in Bay Area refineries. In the absence of any demonstrated harm or threat to human health and the environment, the District has not adequately considered the potential impacts of this rule, nor has it shown that it has the underlying legal authority to establish a regulation that would have such potentially far-reaching economic impacts.

California law requires regulations to be "reasonably necessary" to survive judicial review [1951 Cal. Stat. 479, §10. The Office of Administrative Law's (OAL) website states that one of its key functions is to ensure that a rule is necessary. California Government Code section 11349 defines 'necessity':

"Necessity" means the record of the rulemaking proceeding demonstrates by substantial evidence the need for a regulation to effectuate the purpose of the statute, court decision, or other provision of law that the regulation implements, interprets, or makes specific, taking into account the totality of the record. For purposes of this standard, evidence includes, but is not limited to, facts, studies, and expert opinion. [All emphases are added.]

Section 11346.2 (b) provides that each regulation must also include the following in the initial statement of reasons for the action:

A statement of the specific purpose of each adoption, amendment, or repeal, the problem the agency intends to address, and the rationale for the determination by the agency that each adoption, amendment, or repeal is reasonably necessary to carry out the purpose and address the problem for which it is proposed. The statement shall enumerate the benefits anticipated from the regulatory action, including the benefits or goals provided in the authorizing statute. [All emphases are added.]

Section 11350 provides that a regulation may be declared invalid by a court if:

The agency's determination that the regulation is reasonably necessary to effectuate the purpose of the statute, court decision, or other provision of law that is being implemented, interpreted, or made specific by the regulation is not supported by substantial evidence. [All emphases are added.]

The Interim Staff Report does not provide substantial evidence that the action is reasonably necessary. The statement of necessity does not describe a problem that is not already addressed by numerous other rules. The regulation is not designed to address the ostensibly described problem. Finally, the District's renegeing on NSR permits to industry constitutes an environmental taking and undermines faith in the District's regulatory authority.

2. Inappropriateness of Proposed Regulation of NAAQS

a. NAAQS Compliance Modeling or Monitoring Does Not Apply to Individual Existing Sources In Attainment Areas

Proposed Rule 12-16-406 mandates refineries to complete dispersion modeling or install new monitoring to demonstrate "compliance with the SO₂ or PM_{2.5} NAAQS". The federal Clean Air Act and California air law and regulations mandate that significant new sources and new emissions from existing sources demonstrate through modeling that the relevant NAAQS or increments for the NAAQS are not exceeded. Where an area is classified as attainment for a NAAQS, neither the federal Clean Air Act nor state law or regulations may mandate NAAQS compliance demonstrations for existing permitted sources. Where an area is designated nonattainment for a pollutant, the State is obligated to evaluate all existing sources for potential contribution to the nonattainment and to determine reasonable controls on sources determined to contribute to the nonattainment. Neither the federal Clean Air Act nor California law allow imposing new obligations to demonstrate NAAQS compliance for permitted existing sources without following the New Source Review program for emission increases or the nonattainment SIP development process. The NAAQS have never been standards directly applicable to individual existing sources.

The District is obligated to follow appropriate rulemaking procedures to address known air quality problems. In this case, the District has not identified an air quality problem and is circumventing the New Source Review program, the valid permits issued to the refineries, and the nonattainment SIP development process. The refineries in the District complied with applicable legal requirements when each source was built or installed and those requirements have been incorporated into the current air permits. To mandate demonstrating NAAQS compliance for the existing permit limits and mandate emission reductions until modeling demonstrates that the permit limits comply with current NAAQS violates the due process and legal doctrines against retroactive application of new standards to existing sources absent a compelling public interest.

b. Modeling Refinery-wide Potential Emissions Is Inconsistent with Air Regulation Principles, Due Process and Current Modeling Guidelines and Practice

When sources must model new emission sources or new emissions, the modeling takes into account actual emissions and background emissions for existing sources and potential emissions levels from new or modified sources. The District's new requirement would have refineries modeling maximum potential for its sources as if the sources were all new emissions. Among the reasons that air regulation has treated existing sources differently from new sources are fundamental principles of due process and certainty in permitting as well as the recognition that existing sources can demonstrate actual and normal operations and emissions as compared to new or modified sources. The District violates these principles by mandating modeling for existing sources.

c. Modeling Refinery-wide Potential Emissions Against Current NAAQS Violates Due Process Because New NAAQS Were Issued After Refinery Emission Limits Were Issued

The refineries are subject to many types of pollution control standards that impose emission limits and conditions on all refinery sources. However, new NAAQS have come into effect subsequent to some of those limits. The Clean Air Act and California law and regulations set forth the process for imposing new standards on existing sources to ensure that the new NAAQS are met. The District must follow the appropriate process to resolve any known or foreseeable NAAQS problem.

d. A Violation of NAAQS Is Based on Three Year Average Not One-Time Exceedances

The modeling and monitoring proposed by the District are not consistent with how NAAQS violations are identified. An exceedance of the SO₂ standard is based on the 99th percentile maximum average over three years for the 1 hour standard. This is determined after the air monitoring data is certified. An exceedance of the PM_{2.5} annual standard is based on a three year average. A violation of the 24 hour standard is based on the 98th percentile averaged over three years. It is unreasonable to model a refinery's hourly emissions at all sources at maximum potential emissions for 24 hours. It is beyond unreasonable to model a refinery's maximum hourly emissions at all sources for an annual standard.

3. Designed for Noncompliance

Regulation 12-16 creates a regulatory structure that drives refiners toward noncompliance and/or having to restrict operations well below legally permitted capacities. As outlined below, there are multiple steps toward potential noncompliance.

a. Toxic Air Contaminants

1. *Emissions Inventory.* The Interim Staff Report states that the methodologies used to prepare the On-Going Annual Emissions Inventory and Crude Slate Report are likely to change periodically to reflect any improvements in emissions inventory

methodologies used. It follows that these annual inventories will not provide apples-to-apples comparisons year over year. Therefore, a refinery's emissions inventory, called for in Regulation 12-15, based on erroneously high emission factors for 2015 data, and using overly conservative risk levels set in the Office of Environmental Health Hazard Assessment's (OEHHA)'s revised Air Toxic Hot Spots Risk Assessment Guidelines, could produce results that indicate that emissions have increased, when in fact, they have not; only the methodologies preferred by the District have changed. Using the overly conservative OEHHA models, a facility would appear to have a Refinery-Wide Health Risk exceeds the Significant Risk Threshold set forth in Subsection 12-16-301.2.

2. *Accidental Air Release.* Section 12-16-201 defines an accidental air release as an unanticipated emission of a criteria pollutant, toxic air contaminant, and/or greenhouse gas into the atmosphere required to be reported in a Risk Management Plan (RMP) under 40 CFR §68.168. §68.168 requires the submittal of the five-year accident history in the RMP for all accidental releases from covered processes that resulted in deaths, injuries, or significant property damage on site, or known offsite deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage. 40 CFR §68.3 defines accidental release as an unanticipated emission of a regulated substance or other extremely hazardous substance into the ambient air from a stationary source, and a regulated substance is any substance listed pursuant to section 112(r)(3) of the Clean Air Act as amended, in §68.130. §68.130 does not include greenhouse gases as a regulated substances, therefore greenhouse gases related from accidental releases are not required to be reported in the Emission Inventory as defined in Section 12-16-206. By including greenhouse gases and tying it to the RMP requirements, the District is expanding applicable requirements under other rules to introduce additional opportunities for noncompliance that were not considered during rulemaking.
3. *Reduction Timeline.* The proposed rule affords too much discretion to the APCO to determine whether the reduction timelines should be enlarged or shortened. Section 12-16-403 states that the refinery must reduce emissions or health risk from the refinery to "a level below the Significant Risk Threshold as soon as feasible, but by no later than five years from the date of submission" [of the Risk Reduction Audit and Plan (RRAP)]. Subsection 403.1 states that the District may extend the compliance deadline up to five additional years if the owner/operator demonstrates to the APCO that implementation of the RRAP "places an unreasonable economic burden on the facility operator or is not technically feasible." Subsection 403.2 would allow the APCO to shorten the initial five-year implementation period if the APCO determines that it is technically feasible or economically practicable to more quickly implement the Risk Reduction Measures identified in the RRAP, or if the Unreasonable Risk threshold in 12-16-301.3 is exceeded (which would not be unlikely if the District later revised the threshold

even lower than already proposed). In the first instance, the APCO determines whether the facility operator's demonstration is adequate; in the second, the APCO makes the determination without input from the facility operator. In both cases, the decision-making criteria are not listed or defined, nor are the risk reduction levels defined. The absence of objective criteria creates the potential for poorly-informed or subjective judgments and inconsistency in application.

4. *RRAP Updating.* Section 12-16-409 states that if information becomes available regarding health risks or emission reduction technologies "that may be used by a refinery that would significantly impact health risks to exposed persons, the APCO may require a refinery owner/operator to update the RRAP to reflect the information and resubmit the RRAP to the APCO for approval." Criteria for this determination should be specified and an appeal process should be included in order to safeguard against unnecessary or ill-conceived revisions based on subjective or arbitrary judgments, poor-quality data, unsupported claims by vendors with a fiscal interest in pushing new technology or products, and the like.

b. NAAQS (PM_{2.5} and SO₂)

1. *Compliance Demonstration.* According to Section 12-16-406, a refiner may demonstrate compliance through modeling or monitoring, OR it may simply bypass that step and submit an Emissions Reduction Plan.
 - i. *Modeling.* A refiner attempts to demonstrate compliance with the SO₂ or PM_{2.5} NAAQS using its PTE values in the modeling protocol, as required by Regulation 12-16-405, but due to the overly conservative nature of the model (as the District acknowledges) and of the theoretical PTE emission values, the refinery exceeds a NAAQS concentration limit at a downwind location that has been determined by the District as the receptor point for the Maximally Exposed Individual (a new definition ostensibly created for toxics exposure but likely to be used for the criteria pollutants of concern). The facility should be able to use real emissions data, instead of PTE values, which are really only used for initial permitting because of the lack of real emissions data.
 - ii. *Monitoring.* Subsection 406.2.1 requires that the owner/operator submit a proposed air monitoring study protocol that must account for the expected points of maximum concentration indicated by dispersion modeling results, as well as background concentrations. When ambient air monitoring studies are designed, modeling is used mainly to determine wind direction and spacing of monitors. The language in the proposed regulation creates an ambiguity by implying that perhaps the refinery would have to explain results that are lower than those that would be predicted by modeling. Subsection 406.2.5 states that whenever the monitoring indicates an actual exceedance of the NAAQS, the APCO will determine the refinery's contribution to the

exceedance. This is an unfair targeting of the refining industry, when the Bay Area air basin is clearly populated by other stationary sources, as well as mobile sources, which are the main contributors to ambient air concentrations of these criteria pollutants.

- iii. *Finding of Compliance.* Section 12-16-406.3 states that if a refinery with an approved air monitoring study protocol cannot reasonably be expected to demonstrate compliance, the APCO may publish such finding on the District's website. This ability to preemptively determine future noncompliance is completely without merit. Further, the presumption that a facility is deemed not to have demonstrated compliance unless and until the APCO publishes a finding of compliance suggests that a refinery could be unlawfully targeted for enforcement simply because the APCO has failed to act on the refinery's compliance demonstration.
2. *Emissions Reduction Plan.* Whether a refinery has failed (or is expected by the APCO to fail) to demonstrate compliance through modeling or monitoring, it must submit an Emissions Reduction Plan (ERP). According to 12-16-407.1, the ERP must identify Air Emission Reduction Measures that would result in NAAQS compliance within two years of ERP submittal. Such measures are defined in Section 12-16-203 to include equipment upgrades or modernization, improved emissions capture or control, process changes, operational changes, or feedstock modifications. There is no discretion for the owner/operator to determine which measures would be most effective in achieving the reductions. The proposed rule lacks clear standards or criteria for approval of the emissions reductions plan; rather, it appears that the APCO may disapprove elements of the plan based on subjective and potentially arbitrary disagreement. The proposed rule should be restructured so that the regulated entity identifies measures necessary to reduce any alleged risk and the District evaluates the ERP based on clear, objective criteria.
3. *Emission Reduction Audit.* If the Air Emissions Reduction Measures are not projected to achieve NAAQS compliance within two years of the ERP submittal, the facility must include an Emissions Reduction Audit in the ERP, according to Section 12-16-407.2. Since most capital projects would trigger this audit requirement due to the length of CEQA review and the District's permitting process, the time frame should be expanded to at least five years. Furthermore, the vague requirement to identify "all technically feasible" air emission reduction measures could be construed to include theoretical measures that have not been tested or demonstrated to be effective.
4. *Refinery-wide SO₂ and PM_{2.5} Emission Limits.* 12-16-304 requires a refinery not exceed the refinery-wide PTE limits for SO₂ and PM_{2.5}. Reductions from a Bay Area cap would likely be compensated through emissions leakage elsewhere in the State, and *this impact must be evaluated* as part of the District's CEQA review. Under 14 CCR §15003, the lead agency must consider the whole of an action, not

simply its constituent parts, when determining whether it will have a significant environmental effect (paragraph h). Since the application of source specific and refinery-wide SO₂ and PM_{2.5} emission limits restrict emissions beyond what has been legally permitted through existing BAAQMD and federal rules, emissions leakage can reasonably be expected as production shifts to other parts of California or out of State. When considering the whole of the impacts associated with Regulation 12-16, the District is compelled to conduct a CEQA review that incorporates statewide impacts, not just those within the District's air basin. As Valero can attest to, this standard has been applied when evaluating other projects and the BAAQMD should be expected to comply with the same standards others must meet. By not considering the full potential impacts of the project, the BAAQMD is establishing limits may not have any real impact on reducing emissions.

Please contact me at (707) 745-7545 if you have any questions.

Sincerely,



Donald W. Cuffel
Manager – Environmental Engineering

DWC/KSB/tac

Enclosure



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November 23, 2015

Valero Comments on RERS:
Proposed Regulations 6-5, 8-18, and
11-10; Socio-Economic Analysis

Mr. Greg Nudd
Manager, Rule Development Section
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Nudd:

The Valero Refining Company—California (Valero) offers the following comments regarding the Bay Area Air Quality Management District's Refinery Emissions Reduction Strategy (RERS), which has the goal of reducing refinery emissions of criteria pollutants by 20% within 5 years and to reduce the health risk of toxic pollutants by 20% in the same time frame, as per the request of the BAAQMD Board of Directors. To achieve these reductions, the BAAQMD is proposing revised and new rules that would apply to refineries throughout the District. On October 9, BAAQMD proposed the following rules:

- Rule 6-5 (Condensable and Indirect Particulate Emissions from Refinery Fluidized Catalytic Cracking Units);
- Rule 8-18 (Organic Compounds, Equipment Leaks);
- Rule 9-14 (Petroleum Coke Calcining Operations); and
- Rule 11-10 (Hexavalent Chromium from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers).

BAAQMD's proposed changes to the language of the regulations would have significant impacts to the industry, contrary to the findings of the District's Socio-Economic Analysis. Valero comments on three of these rules and the associated impacts analysis.

Valero owns and operates thirteen (13) refineries throughout the United States, with a combined throughput capacity of approximately 2.6 million barrels per day, making Valero the largest refining company in the United States. Of these 13 thirteen refineries, one, the Benicia Refinery, is located within the BAAQMD area. Valero, as well as the rest of the refining industry in the BAAQMD, will be significantly impacted by the proposed revisions to the rules.

Valero supports and incorporates by reference the comments submitted also today by the Western States Petroleum Association (WSPA), of which Valero is a member. Valero attaches and refers to its June 19, 2015, letter on the May version of the RERS suite of rules, and all comments still apply from that letter and should be considered to be on record, despite the District's lack of acknowledgement of the letter. In this current letter, Valero iterates a few general but important comments on the development of this suite of rules and provides comments on a few of the new issues that have arisen in the latest versions of the rules.

General Comments on Concept Development and Rulemaking Process

1. *Appropriateness of Rule Development and Prioritization of Issues:* The proposed rule amendments, emissions reduction solutions, and monitoring methods must be technically feasible and cost-effective (based on district or federal standards), as determined by an independent third party to neutralize any perceived bias in that analysis. The third-party analysis should determine whether there is a problem that needs to be addressed, as the BAAQMD currently meets all the NAAQS and ambient air quality continues to improve without the agency having to resort to artificial goals such as "20% reductions within 5 years." Furthermore, the RERS would needlessly create a competitive disadvantage for the refineries in the Bay Area compared to refineries and industries in other parts of California and the United States. In short, without a technical justification and a transparent process for selecting options in BAAQMD's quest to reduce refinery criteria pollutant emissions and associated health risk by 20% within the next five years, the BAAQMD should not pursue these rulemakings without further study, input from the regulated community, sufficient time to address the technical complexity and feasibility of each rule, and with the assurance that environmental tradeoffs (e.g., GHG vs. criteria; ammonia minimization vs. PM control) are mitigated or justified.
2. *Regulatory Flexibility:* For the sake of technical feasibility, cost-effectiveness, and environmental compliance, state and federal rules must be consistent and not at odds with each other. The proposed regulations should avoid strict prohibitions, such as removing all alternative compliance methods. The regulated community should have the flexibility to determine the most feasible and cost-effective compliance method for each rule, as each refinery is different in its operations, equipment configuration, and technical complexity.
3. *Comment Acknowledgement:* Valero notes that in the Staff Report for the September workshop versions of the rules, the District did not mention that Valero had provided comment in June, nor did it address any of Valero's comments. Verbally, Valero was told that its letter was not recognized because its comments were similar to WSPA's comments. The District must acknowledge comment letters and address comments from all stakeholders, particularly a regulated party, regardless of any perceived similarity to or difference from comments from any other stakeholder. Failure to do so is unethical and distorts the perception of the public to the scope and depth of concerns raised by stakeholders.

Specific Comments on Each Proposed Regulatory Revision

Rule 6-5 (Condensable and Indirect Particulate Emissions from Refinery Fluidized Catalytic Cracking Units)

1. *Description:* Citation 6-5-101 has been changed to read: “For the purposes of this rule, commingled **ammonia, condensable particulate and sulfur dioxide** emissions from an FCCU and one or more other sources from a single exhaust point shall all be considered to be FCCU emissions” [emphasized words are new]. While this ostensible clarification would suggest that only those emissions from a non-FCCU unit related to particulate emissions or their precursors would be counted as FCCU emissions if the FCCU and non-FCCU unit shared the same stack, the effect is really the same. For Valero, the coker and FCCU share a stack, but that does not mean that any particulate emissions or precursors from the coker can be attributed to the FCCU. Even the apparent justification by the District that the regulation will require the installation of a wet gas scrubber to treat FCCU emissions does not mean that the shared stack really belongs to the FCCU.
2. *(In)applicability of Technology:* While the agency is correct in saying that the Valero Benicia Refinery has installed a wet scrubber, the main purpose for the scrubber was to treat SO₂ emissions from the Fluid Coker, which shares a common stack with the FCCU. Valero disagrees with the agency’s statement that the proposed regulations will not require any additional controls, as the regulation may require additional controls with future standards developed in Table 1 [Citation 6-5-301] for condensable particulate matter and sulfur dioxide, which are to be proposed in future rulemaking, and which must be subject to the public review process. Because the configuration of each facility has unique characteristics, a one-size-fits-all compliance methodology may not be appropriate or feasible, especially for complex units and abatement systems.
3. *Inappropriate Emission Limit [Citation 6-5-301]:* Valero’s scrubber was designed to reduce SO₂ from the Fluid Coker as required by the Consent Decree. The entire system was oversized to scrub FCCU gas as well; however, it was not designed explicitly for FCCU abatement alone. The combined gases present a different pollutant loading than either process unit would alone. Therefore, applying new emissions standards for an FCCU-only situation would be inappropriate for a combined Fluid Coker/FCCU stack.
4. *Commingled Emissions:* Citation 6-5-101 states that commingled emissions from the FCCU and other units shall be considered FCCU emissions. This is completely unacceptable for Valero, because it effectively reduces the proposed FCCU emissions standards by the contribution of the Fluid Coker. The CO gas from the Fluid Coker and FCCU are commingled prior to combustion in the crude/reduced-crude preheat furnaces, then treated in the parallel SCR_s, Belco PM scrubber, and Cansolv SO₂ scrubber before being released to the atmosphere at a single emission point. Applying this rule to a combined stack is effectively a rulemaking on the Fluid Coker without due process of examining the underlying data and regulatory requirements.
5. *Wet Scrubber Exemption [Citation 6-5-111]:* This section, inserted in the workshop version of the rule, states, “The emission limits in Section 5-301 shall not apply [emphases added] to emissions that are abated by a wet scrubber that is required to be operated by a District permit and that constitutes best available control technology (BACT) for any pollutant.” Valero welcomes this exemption, which would remove from

consideration as FCCU pollutants those that come from the coker and are directed to a stack shared with the FCCU and treated through the wet gas scrubber, a unit that has been permitted by the District. Allowing this exemption coincides with the District's assertion in the May concept paper that the installation of new or additional controls would not be necessary.

6. *Analytical Methods [Citations 6-5-301 and 6-5-501]:* Enforcement of emissions limits that are proposed in current or future rulemakings must be accomplished by methods (i.e., analyzers and analyses) that have been federally approved, are repeatable within prescribed confidence intervals, achieve accurate analyses within a reasonable run time, and have been demonstrated in practice for the sampling conditions (temperature, pressure, and moisture content) for which testing will be conducted. Emissions limits based on methods other than direct analysis (such as 'indirect particulate matter', which may form later in the atmosphere and is not measurable) cannot be enforceable.
 - a. *Ammonia [Citations 6-5-201 and 6-5-403]:* It is unknown whether an ammonia slip analyzer can be made to work in a saturated 'wet' environment of the scrubber stack. Typical Continuous Operational Monitors (COMs) do not work for opacity, so an Alternative Monitoring Plan (AMP) was prepared for parametric monitoring at the Belco scrubber to provide equivalent compliance assurance. There is no corresponding AMP opportunity in this rule for ammonia.
 - b. *Condensable Particulate Matter [Citation 6-5-203]:* Particulate matter is measured by source test (the "front-half", meaning those particles which exist at stack conditions). The "back half," or condensables, can be assessed with certain test methods; however, it cannot be concluded that all of the condensable material created by the cooling of stack gases required by the test method would necessarily be created in the atmosphere. The facility cannot control, or be responsible for, atmospheric chemistry.
 - c. *Emission Limits [Citation 6-5-301]:* The emission limits for condensable PM and SO₂ are to be determined in the future. Valero and the rest of industry cannot possibly comment on emission limits that have not yet been proposed. This is a clear indication that the agency is rushing this rulemaking process.

Rule 8-18 (Organic Compounds, Equipment Leaks)

1. *Health Risk Assessment:* Given the long delay in data collection from heavy liquids monitoring programs in relation to the development of the 2015 revised Office of Environmental Health Hazard Assessment (OEHHA) Health Risk Assessment (HRA) Guidance Manual, the conduct of any future health risk assessments should use the most representative emissions factors and actual emissions data. The proposed regulation does not provide an off-ramp for the refining industry if the data collection study on emission factors for heavy liquid components were to reveal that the refining industry emits much lower amounts of volatile organic compounds (VOCs) from heavy liquid components than those assumed and relied upon by the agency for the writing of this rule. This rule is proceeding on the BAAQMD's erroneous assumption that refineries emit high amounts of VOCs from heavy liquids, even though the individual Bay Area refineries have submitted data to the District that contradicts that assumption.
2. *Reduction of Mass Emissions Limit:* In the current version of Rule 8-18, Citation 8-18-306.4 states that a piece of equipment with a major leak can be considered non-

repairable equipment if the mass emission rate is less than 15 pounds per day, and this is consistent with the limit in Rule 8-2. However, in the proposed rule revision, Citation 8-18-311 states that “a person shall not use any equipment that emits total organic compounds in excess of five pounds per day except during any repair periods allowed by Sections...” There is no apparent basis for this lowering of the mass emission limit. The District needs to provide worked out calculations to justify the need for this reduction.

3. *Essential Equipment:* Citation 8-18-226 adds a new concept to the rule by defining as “essential equipment” those pieces of equipment that cannot be taken out of service without shutting down the process unit that is served by the equipment. This language is too restrictive in that some equipment is custom-made and cannot be replaced until the replacement is manufactured and/or received. The language is also counterproductive with respect to controlling emissions, because it is often better to allow an item to be put on the Delay of Repair (DOR) list than to shut down an entire process unit to repair a small emissions leak; the shut down often causes much higher emissions than the original leak. The reporting of the reason for the designation of equipment as essential is not necessary on a repeat basis. Furthermore, the definition of essential equipment would seem to be subject to future redefinition by the BAAQMD based upon comparisons among refineries, thereby leading to re-interpretation through future BAAQMD compliance advisories or rulemaking.
4. *Non-Repairable Equipment:* Citation 8-18-306 requires the determination of the emissions from a leak on essential equipment within 30 days of the equipment being placed on the non-repairable equipment list. Once the rule becomes effective, a refinery would have only 30 days to conduct leak testing on all equipment that is on the non-repairable list. Another interpretation is that any piece of essential equipment that has been on the non-repairable equipment list for more than 30 days at the time of effective date of the rule would automatically be considered noncompliant. These conflicting interpretations reveal a problem: the rule is not written with the clarity required by the California Health & Safety Code § 40727.

The District in *Citation 8-18-306.2* has cut in half the possible number of pieces of equipment by type that can be on the DOR list. A refinery that may have 400 pumps and compressors would be able to have only two such pieces of equipment on the DOR list. Tying this requirement with the inability to use a piece of equipment with concentration greater than 10,000 ppm but less than 5 lbs/day, or even 15 lbs/day of emissions, would be onerous. A high-concentration leak at low emission rates would probably not reach a significance threshold. The District should explain by text and calculations how it determined these percentages of allowable non-repairable equipment for valves, pressure relief devices, and pumps and compressors. As the numbers appear now, it seems they were chosen arbitrarily by the BAAQMD.

5. *Leak Limits, Mass Emissions, and Delay of Repair:* Citation 8-18-225 was struck to remove the definition of a major leak as one that cannot be minimized below 10,000 ppm TOC as methane. In combination with setting leak standards at 500 ppm for compressors, pumps, and pressure relief devices, and at 100 ppm for valves and all other equipment (too stringent, as South Coast has 500 ppm), the rule has precluded the use of good professional engineering judgment by the refinery to determine the best course of action regarding repair time for equipment. For example, the existing version

of the rule had allowed in Citation 8-18-306.4 for a valve with a major leak to be placed on the non-repairable equipment list if the mass emissions rate had been measured as being < 15 lb/day. Equipment with leaks that were not considered major did not have to be measured for mass emission rates. The scheduling of equipment repair or replacement was achievable within the allowed 5 years and most turnaround (TA) planning. The combination of this change with Citations 8-18-301 and 8-18-401 would not allow any equipment to leak with a concentration greater than 10,000 ppm, regardless of the flow rate. It would create immediate unavoidable non-compliance because the mass emissions quantification usually requires more than 7 days. In the event a component leaks more than 5 lb/day, the determination achieved after day 8 would imply an immediate violation with no compliance schedule to shut equipment down. While it is commendable to desire that all equipment leaks be eliminated or minimized to near zero emission rates, the practical point is that some equipment simply cannot be removed from service until the next planned shutdown of the unit or the refinery (turnaround).

6. *Leak Minimization*: Citation 8-18-209 requires leak minimization techniques beyond the traditional cleaning, scrubbing, or washing of equipment to other best modern practices such as tightening nuts and bolts, injecting lubricants, and installing plugs/caps into open-ended lines or valves. The rule should give flexibility for technicians to determine what is necessary or beneficial to minimize the leak below a leak standard or a mass emissions rate. If a traditional method works, then good professional engineering judgment should not require more work to be done on the piece of equipment. The BAAQMD's concern that traditional leak minimization techniques (such as cleaning scrubbing and washing) may be ineffective and potentially cause recurrent leaking has already been addressed through the proposed recurrent leaker concept in Citations 8-18-310 and 8-18-405.

In addition, adjustments to control valves or motor-operated valves may involve very sensitive instrumentation, meters, or safety critical items. Pumps cannot be tightened, and shutdown and clearing is not always immediately feasible. Leaks from these pieces of equipment may be more appropriately addressed with techniques, such as cleaning, that have been demonstrated to be sufficient and effective. Also, the proposed rule does not have any provisions for sampling or monitoring unsafe equipment. This indicates the District's lack of understanding of equipment conditions and configurations. The federal EPA recognizes real world constraints, which led it to adopt provisions that would allow for the use of good professional engineering judgment to determine the best timing and method of repairing leaks; hence, the DOR list and allowance for repairing non-major leaks during the next scheduled turnaround.

Furthermore, Valero would also argue that the best modern practices proposed by the agency would be duplicative of, not only the recurrent leaker provisions, but also the California Process Safety Management rule's concepts of preventing accidental releases, which allow similar practices in accordance with good professional engineering judgement on the part of refinery operators.

7. *Background Concentrations*: Citations 8-18-401.11 and 8-18-502.5 require the owner/operator to identify and report all equipment and/or sources that contribute to any background concentration reading greater than 50 ppm. Not only is this limit low, it may not be possible to track the source, especially if it is offsite. Additional equipment and

software, as well as extra personnel resources, would be required to comply with these provisions of the rule.

8. *Alternate Compliance and Emission Reductions:* Citations 8-18-308 and 8-18-405 removed all alternate options for compliance and for effecting emission reductions. The agency should show justification and explain the reasoning behind removing these provisions. The agency is required by CEQA to evaluate alternative compliance methods. See discussion in attached comments from WSPA.
9. *Piping and Instrumentation Diagrams.* Citation 8-18-502.6 requires that a refiner maintain records, beginning on January 1, 2018, of "(P&IDs) with all components in heavy liquid service identified." This exercise does not produce any emission reductions but causes an onerous increase in the refinery workload. Citation 8-18-503.5 requires that the refiner submit these P&IDs to the District by January 1, 2018, and "annually thereafter for information that has changed since last submittal." This requirement is unnecessary, creates a burden on the regulated community, and could present a security issue for the refining industry.

Pursuant to the requirements of the California Process Safety Management (PSM) regulations, a refiner has to produce P&IDs that it has on file for any inspector onsite. However, that requirement does not extend to providing records at the inspector's office. The requirement by the proposed Rule 8-18 to submit P&IDs would do nothing to increase the stringency of the rule or even reduce any emissions. Valero suggests that, like a PSM auditor, an inspector for Rule 8-18 could request and have access onsite to all P&IDs but would not be able to take electronic or hard copies. This would allow the refinery to control Confidential Business Information, which is critical to ensuring the stability and honesty of the market, and it would ensure the physical safety of the refinery against the risk of attack by terrorists or radical activists. If the District were to keep track of multiple annual copies of the P&IDs for a refinery, it would sooner or later start discarding thousands of pages of P&IDs for a single refinery, thereby increasing the chance of compromising data as well as the physical security of the refinery and its employees.

Rule 11-10 (Hexavalent Chromium Emissions from Cooling Towers and Non-Methane Organic Carbon Emissions from Petroleum Refinery Cooling Towers)

1. *Method Accuracy.* In the concept paper and staff reports that the District has written on this proposed rule, the agency expresses concern about the Modified El Paso Method's (MEPM) sampling method's "ability [to] provide representative hydrocarbon emissions data on a consistent basis." The method is sensitive but does require following procedures to attain the precision and accuracy requirements. The MEPM is very sensitive between 0.1 to 0.5 ppm, by volume methane, in the stripped air when using the Flame Ionization Detector (FID) analyzer. Valero uses methane at different concentrations for generating calibration curves and checks. The Leak Detection and Repair (LDAR) contractor conducts the sampling with a dedicated FID. In the May concept paper, the agency stated that "Air District staff will consider MEPM and other methods if the refineries are able to demonstrate that they provide comparable data and consistent results."

Valero requested the opportunity to demonstrate the accuracy of the MEPM and followed up with a successful field test. However, the October 2015 Staff Report, on

page C:3, states, "The Air District will allow the MEPM sampling method to be used as one of the three possible THC detection methods provided the petroleum refineries follow the Air District's Manual of Procedures methodology that will update the MEPM by July 1, 2016." Valero believes that the agency does not need to update the MEPM. Any refinery that chooses to use that particular method will simply have to prove that the refiner or its contractor can demonstrate the accuracy of the method for its particular operation. Furthermore, updating the MEPM would have to occur earlier if the refinery is supposed to attain compliance by July 1, 2016.

Also, the proposed rule in Citation 11-10-204.2 allows the use of "APCO-approved alternative method" to detect 6 ppmv (as methane) in stripped air. The District should keep that language permanently but not change the MEPM method. The District is allowing the APCO the discretion to approve a method, but the District is requiring that the alternative method be its own modification of the MEPM. That does not really provide flexibility to the refiner to find an alternative and demonstrate its effectiveness and accuracy.

2. *Leak Action Requirement.* Citation 11-10-305 requires that a leak be minimized within five days and repaired within 21 days. This is an aggressive schedule and would be a major impact on environmental and operations staff, because leak identification usually takes time, as each cooling tower services numerous heat exchangers. Tracing back to each heat exchanger to find the leak is time-consuming and cannot always be completed within five days of detection of a leak, especially one that is as small as would generate a concentration in water as low as 84 ppbw. This requirement would require round-the-clock staffing just to detect leaks and minimize them within five days of detection. The requirement to repair within 21 days also precludes the possibility of placing a unit on the DOR list. The agency should provide more realistic requirements and allow for the placement of equipment on the DOR list.

In addition, the newly proposed requirement to "speciate and quantify the Toxic Air Contaminants (TACs) associated with the leak within one calendar day of discovering the leak until the leak is fully repaired" would take away time from environmental and operations staff in detecting the leak and attempting repairs to equipment. Particularly, if the cooling tower has a low leak and could place the equipment on the DOR list, it would not serve any purpose to sample daily; weekly would be more appropriate.

3. *Best Modern Practices.* Citation 11-10-402 lists many practices that the District would require refiners to follow, starting July 1, 2016. Valero would argue that the best modern practices proposed by the agency would be duplicative of the California Process Safety Management (PSM) regulations intended to prevent accidental releases, which allow similar practices in accordance with good professional engineering judgement on the part of refinery operators. In particular, the turnaround items in 402.1 through 402.3, "visual examination and/or non-destructive testing of all heat exchangers upstream...", "repassivation of steel contained in heat exchangers," and the sealing of tubes within heat exchangers if there is pitting or corrosion, all are covered by the PSM regulation and would be duplicative in this current proposed rulemaking effort by the District. Other "best modern practices" are tasks directed to be performed every shift. While this requirement might seem reasonable, it could become onerous; a better solution would be to require the tasks on a daily or weekly basis. The District should justify performing these tasks every shift and evaluate other schedule alternatives.

Socioeconomic Impacts Analysis

The “Socio-Economic Analysis: Proposed Amendments to Regulation 8, Rule 18 (“Equipment Leaks”), Regulation 11, Rule 10 (“Hexavalent Chromium from All Cooling Towers and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers”), and Draft New Regulation 6, Rule 5 (“Particulate Emissions from Refinery Fluidized Catalytic Cracking Units”), called ‘Socio-Economic Analysis’ from here on, prepared by Applied Development Economics, Inc. (ADE) for the BAAQMD, is based on poor assumptions. Valero focuses on the significance determination of cost impacts to industry.

Corporate Revenue

The Socio-Economic Analysis estimation of refinery revenues and net profits is flawed. ADE’s assumptions of how revenue relates to total crude throughput oversimplify the calculation by converting an entire barrel of crude processed when not all of the volume in a barrel of crude is converted to transportation fuel. The realities of how crude is processed into finished products and the affects on revenues are too generalized; and do not take into consideration the unique operating environmental and additional costs associated with refinery operations in the State of California. The district has clearly taken an economic snapshot of the Bay Area refineries instead of doing a thorough analysis across a time period representative of the cyclical nature of the refining business. Therefore, the analysis of costs relative to net profits is skewed and not representative of true market conditions.

Piecemeal Analysis

Table 4 of the Socioeconomic Impact Analysis is incomplete and provides an erroneous estimate of the costs of complying with the three rules under consideration, which are separated from the other rules that comprise the Refinery Emissions Reduction Strategy (RERS). From Section 3.2.2.1 of the draft Environmental Impact Report (EIR) written for the evaluation of proposed Regulations 12-15 and 12-16 is a list below of the rules that the District is working on as part of the overall RERS, which targets reductions of emissions and associated risks by 20% by 2020.

“The Air District is considering revisions to several rules and the development of new rules that may affect refinery operations. In addition to proposed Rules 12-15 and 12-16, potential revisions to the following existing rules may affect refinery operations:

- Regulation 1: General Provisions & Definitions;
- Regulation 2, Rule 1: Permits, General Requirements;
- Regulation 2, Rule 2: New Source Review, including GHG evaluation;
- Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants;
- Regulation 6, Rule 1: Particulate Matter General Requirements;
- Regulation 8, Rule 18: Equipment Leaks;
- Regulation 9, Rule 1: Sulfur Dioxide; and

- Regulation 9, Rule 9: Nitrogen Oxides and Carbon Monoxide from Stationary Gas Turbines.
- Regulation 11, Rule 10: Cooling Towers;

New rules that are being considered that may affect refinery operations, in addition to those proposed in draft Rules 12-15 and 12-16, are:

- Regulation 6, Rule 5: Particulate Emissions from Refinery; Fluidized Catalytic Cracking Units (FCCUs);
- Regulation 9, Rule 14: Petroleum Coke Calcining Operations;
- Rule addressing risk from Stationary Back-up Diesel Generators."

This excerpt makes it abundantly clear that the District views Regulations 12-15 and 12-16 as being tied with the RERS and sees the RERS as encompassing many more rules than just the four currently under consideration and being evaluated in this Socio-Economic Analysis. Therefore the cost evaluation in general is incomplete. While the cost of any one rule may not meet a significance threshold of 10%, the combined effect would surely do so.

Significance Level—Errors and Scope

Nevertheless, regarding the current evaluation of the three rules Valero is commenting on, there are some specific errors that bear mentioning. In row 11, regarding Option 3 for compliance with Regulation 11-10 for cooling towers, the estimated cost of \$50 per tower per day is ludicrously low. The current cost per sample using the Modified El Paso Method (MEPM) is about \$400 at regular time rates, versus overtime or double time. If the District modifies the method further, one would expect the cost to increase, depending on the extent of the District's changes. This would put a realistic cost at about \$500 per tower per day, a cost that is an order or magnitude higher than that assumed by BAAQMD.

Regarding compliance with Regulation 6-5 on fluid catalytic cracking, ADE simply listed the cost as negligible. It is incorrect to assume a negligible cost for all the refineries when the intent of the exercise is to determine the significance of the costs. The calculation should be shown, or the "negligible" cost should be explained in detail. Regardless, it is inappropriate to determine *a priori* that a specific cost is negligible until after the significance determination of the total cost is completed.

As described in Valero's comment letter on Regulation 12-15 and 12-16, comparing the total annualized costs for Regulations 12-15 and 12-16 to correct and realistic market conditions would yield cost-to-net-profit percentages much greater than the significance level of 10% that the district has adopted from CARB. Further, using realistic cost and revenue numbers for the three rules that are the subject of this comment letter would yield a cost-to-net-profit ratio that is at least 60% of the significance threshold. Were ADE and the District to consider the other rules in the RERS suite (current and future rulemakings) and evaluate them as a whole, along with Regulation 12-15 and 12-16, the significance threshold would certainly be exceeded. Therefore, it is clear that the District attempted to avoid scrutiny for the costs of its rulemaking by performing its analysis in piecemeal fashion.

Mr. Gregg Nudd, BAAQMD
November 23, 2015
Page 11

A proper evaluation would compel the District to consider other rule alternatives, even the alternative of *not passing any new regulations*.

For all the reasons listed above, in the attached previous comment letters from Valero, and in the attached current comment letters from WSPA, it is manifest that the District has rushed unnecessary rulemaking that would have deleterious effects on the refining industry. Nevertheless, Valero is committed to assisting the BAAQMD in explaining or demonstrating to the public that there is no unacceptable or increased risk to the community from past or current refinery operations. We look forward to further dialogue on this issue. Please contact me at 707-745-7534 or chris.howe@valero.com should you have any questions.

Sincerely,



Christopher W. Howe, Director
Environment, Health, Safety
& Community/Government Affairs

CWH/RE/IS/tac

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ATTACHMENT

VALERO June 19, 2015 Comment Letter

Petroleum Refinery Emissions Reduction Strategy



Benicia Refinery • Valero Refining Company - California
3400 East Second Street • Benicia, California 94510-1097 • Telephone (707) 745-7011 • Facsimile (707) 745-7432

June 19, 2015

Via E-mail (GNudd@baaqmd.gov)

**Valero Comments on PRERS:
Initial Report and Concept Papers**

Mr. Greg Nudd
Manager, Rule Development Section
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Dear Mr. Nudd:

The Valero Companies ("Valero") appreciates the opportunity to provide comments regarding the Bay Area Air Quality Management District's Refinery Emissions Reduction Strategy (RERS) and Concept Papers. We understand that the goal of the BAAQMD's RERS is to reduce refinery emissions of criteria pollutants by 20% within 5 years and to reduce the health risk of toxic pollutants by 20% in the same time frame, as per the request of the BAAQMD Board of Directors. To achieve these reductions, the BAAQMD is proposing concepts to revise current rules and to draft new rules that would apply to refineries throughout the District. On May 26, 2015, BAAQMD released concept papers and regulatory proposals for:

- Rule 6-5 (Condensable and Indirect Particulate Emissions from Refinery Fluidized Catalytic Cracking Units);
- Rule 8-18 (Organic Compounds, Equipment Leaks);
- Rule 9-1 (Inorganic Gaseous Pollutants, Sulfur Dioxide);
- Rule 11-10 (Hexavalent Chromium Emissions from Cooling Towers and Non-Methane Organic Carbon Emissions from Petroleum Refinery Cooling Towers); and
- Rule 9-9 (Stationary Gas Turbines).

BAAQMD's proposed changes to the language of the regulations would have significant impacts to the industry.

Valero owns and operates thirteen (13) refineries throughout the United States, with a combined throughput capacity of approximately 2.6 million barrels per day, making Valero the largest refining company in the United States. Of these 13 thirteen refineries, one, the Benicia Refinery, is located within the BAAQMD area. Valero, as

well as the rest of the refining industry in the BAAQMD, will be significantly impacted by the proposed revisions to the rules and as a result is participating in the regulatory development process, so much as the BAAQMD is allowing. The short time frame within which to comment (about three weeks) is not sufficient to address the technical feasibility and cost-effectiveness of these policy and regulatory changes. However, Valero has evaluated the concepts and the proposed regulatory changes to determine overall reasonableness. Valero is submitting comments within the requested time frame, noting that to effectively and more completely evaluate the volume of changes proposed, additional time is necessary. Valero supports and incorporates by reference the comments submitted also today by the Western States Petroleum Association (WSPA), of which Valero is a member. Valero offers the following comments to further elaborate and amplify our position. Valero reserves the right to supplement these comments as additional or different information is made available to the public about the proposed regulatory changes.

General Comments on Concept Development and Rulemaking Process

1. *Appropriateness of Rule Development and Prioritization of Issues:* Because of the short time frame for development of these rules, it is imperative that the BAAQMD identify the *actual needs* based on current air quality data in comparison with the National Ambient Air Quality Standards (NAAQS). Those criteria pollutants that are the furthest out of compliance with the NAAQS should be addressed first. The BAAQMD should then identify and compare current contributors (including both stationary and mobile sources) to those exceedances and quantify potential emissions reductions that can be achieved in practice from targeted sources within the BAAQMD's jurisdiction. The agency should only then propose rule amendments that would most effectively address the identified compliance issues. The proposed rule amendments, emissions reduction solutions, and monitoring methods must be technically feasible and cost-effective (based on district or federal standards). It would be beneficial to have technical feasibility and cost-effectiveness for each proposed solution or method to be documented and reviewed by an independent third party to neutralize any perceived bias in that analysis. The third-party analysis should determine whether there is even a problem that needs to be addressed, as the BAAQMD currently meets all the NAAQS, and the ambient air quality continues to improve without the agency having to resort to artificial goals such as "20% reductions within 5 years." Furthermore, the RERS would needlessly create a competitive disadvantage for the refineries in the Bay Area compared to refineries and industries in other parts of California and the United States. In short, without a technical justification and a transparent process for selecting options in BAAQMD's quest to reduce refinery criteria pollutant emissions and associated health risk by 20% within the next five years, the BAAQMD should not pursue these rulemakings without further study, input from the regulated community, sufficient time to address the technical complexity and feasibility of each rule, and with the assurance that environmental tradeoffs (e.g., GHG vs. criteria; ammonia minimization vs. PM control) are mitigated or justified.

2. *Regulatory Flexibility*: For the sake of technical feasibility, cost-effectiveness, and environmental compliance, state and federal rules must be consistent and not at odds with each other. The proposed regulations should avoid strict prohibitions, such as removing all alternative compliance methods. The regulated community should have the flexibility to determine the most feasible and cost-effective compliance method for each rule, as each refinery is different in its operations, equipment configuration, and technical complexity.
3. *Comment Period*: Because quick review periods for rule amendments tend to produce rules that generate unintended consequences with respect to operations and emissions, the five proposed rule amendments should have at least a 60-day comment period to allow the District and the regulated community the opportunity to 'stress test' the proposed amendments and to make constructive comments that would help overall compliance and environmental effectiveness.
4. *Consistency of Terms*: Each proposed rule generates definitions that are common to all rules. Statements for common definitions should refer the reader to the relevant rules (usually Reg. 2-1 or 2-2); an example: the definition of 'Petroleum Refinery' was stated in two proposed rules, (11-10-209) and (6-5-207). Any inconsistency in the use of terminology can create unnecessary compliance gaps or the prescription or installation of equipment that may meet one version of the definition but not another.
5. *Natural Gas*: Though the current list of proposed rule developments does not include a new rule regulating natural gas at refineries, the June 3, 2015, Board of Director's Meeting presentation included an item on natural gas. If natural gas rules are planned to be developed, the appropriate regulated industries should be consulted and brought into the discussion early with the BAAQMD, prior to the drafting of rule language, to ensure that the issues are properly identified and that accompanying rule(s) to resolve those issues are properly developed with concern to technical feasibility and cost effectiveness.

Specific Comments on Each Proposed Regulatory Revision

Rule 6-5 (Condensable and Indirect Particulate Emissions from Refinery Fluidized Catalytic Cracking Units)

1. *(In)applicability of Technology*: While the agency is correct in saying that the Valero Benicia Refinery has installed a wet scrubber, the main purpose for the scrubber was to treat SO₂ emissions from the Fluid Coker, which shares a common stack with the FCCU. Valero disagrees with the agency's statement that the proposed regulations will not require any additional controls. Because the configuration of each facility has unique characteristics, a one-size-fits-all compliance methodology may not be appropriate or feasible, especially for complex units and abatement systems. The agency should have discussed the technical issues pertaining to this rule with the regulated community, particularly Valero, in order to understand the technical nuances and regulatory history of each facility, especially before holding up one refinery's technological solution as the best practice for a problem that has not been defined and

that is presumably different from the one for which the technological solution was designed. Valero would propose that the emission limits apply only to the FCCU.

2. *Inappropriate Emission Limit:* Valero's scrubber was designed to reduce SO₂ from the Fluid Coker as required by the Consent Decree. The entire system was oversized to scrub FCCU gas as well; however, it was not designed explicitly for FCCU abatement alone. The combined gases present a different pollutant loading than either process unit would alone. Therefore, applying new emissions standards for an FCCU-only situation would be inappropriate for a combined Fluid Coker/FCCU stack. Citation 6-5-101 states that commingled emissions from the FCCU and other units shall be considered FCCU emissions. This is completely unacceptable for Valero, because it effectively reduces the proposed FCCU emissions standards by the contribution of the Fluid Coker. The CO gas from the Fluid Coker and FCCU are commingled prior to combustion in the crude/reduced-crude preheat furnaces, then treated in the parallel SCRs, Belco PM scrubber, and Cansolv SO₂ scrubber before being released to the atmosphere at a single emission point. Applying this rule to a combined stack is effectively a rulemaking on the Fluid Coker without due process of examining the underlying data and regulatory requirements.

3. *Exemption:* Citation 6-5-111 removes limited exemptions for complying with the emission limits. The requirements of Section 6-5-301 (emission limits) shall **not** apply to FCCU or combined stack emissions during startup, shutdown, bypass & emergency bypass period of sources utilizing the combined stack as defined and allowed in a District Permit to Operate. Not allowing this exemption would absolutely necessitate the installation of new or additional controls, contrary to the agency's statement in the concept paper.

4. *Analytical Methods:* Enforcement of emissions limits must be accomplished by methods (i.e., analyzers and analyses) that have been federally approved, are repeatable within prescribed confidence intervals, achieve accurate analyses within a reasonable run time, and have been demonstrated in practice for the sampling conditions (temperature, pressure, moisture content) for which testing will be conducted. Emissions limits based on methods other than direct analysis (such as 'indirect particulate matter', which *may* forms later in the atmosphere and is not measurable) cannot be enforceable.

- a. *Ammonia:* It is unknown whether an ammonia slip analyzer can be made to work in a saturated 'wet' environment of the scrubber stack. Typical COMs do not work for opacity, so an AMP was prepared for parametric monitoring at the Belco scrubber to provide equivalent compliance assurance. There is no corresponding AMP opportunity in this rule for ammonia.
- b. *Condensable Particulate Matter:* Particulate matter is measured by source test (the "front-half", meaning those particles which exist at stack conditions). The "back half" or condensables, can be assessed with certain test methods; however, it cannot be concluded that all of the condensable material created by the cooling of stack gases required by the test method would necessarily be created in the atmosphere. The facility cannot control, or be responsible for, atmospheric chemistry.

- c. *Emission Limits*: In the concept paper, the emission limits for condensable PM and SO₂ are to be determined in the future. Valero and the rest of industry cannot possibly comment on emission limits that have not yet been proposed. This is a clear indication that the agency is rushing this rulemaking process.

Rule 8-18 (Organic Compounds, Equipment Leaks)

1. *Health Risk Assessment*: Given the potential delay or lag time in data collection from heavy liquids monitoring programs in relation to the development of the 2015 revised OEHHA Health Risk Assessment Guidance Manual, the conduct of any future health risk assessments should use the most representative emissions factors and actual emissions data.
2. *Timing*: According to Citation 8-18-113, the exemption for monitoring heavy liquid components expires on January 1, 2016, meaning that monitoring of heavy liquid components must begin on that date. This is a very aggressive timeline for an issue that has not clearly been defined as a problem worth pursuing with rulemaking that would be cost-effective. Most facilities would not have the resources or the time to re-tag and document tens of thousands of components by the fall of 2015, which is about the latest that data can be collected in a meaningful way to troubleshoot any technical issues and allow for the generation, collection, and analysis of representative data beginning on the first day of 2016.
3. *Reduction of Mass Emissions Limit*: Citation 8-18-311 is a new section that proposes to lower the mass emissions limit from 15 lb/day to 5 lb/day; however the mark-up of the proposed regulation does not show this section in blue ink, thereby giving the appearance that this section pre-existed in the proposed rule. Valero is concerned that the edited version of the proposed rule was apparently not developed from the existing rule 8-18 as promulgated. In the current rule, Citation 8-18-306.4 states that a piece of equipment with a major leak can be considered non-repairable equipment if the mass emission rate is less than 15 pounds per day, and this is consistent with the limit in rule 8-2. However, in the language that is struck in the proposed 8-18 rule, the wording is 5 pounds per day, as if this limit were pre-existing. There is no apparent basis for this lowering of the mass emission limit, nor is there any reason for the BAAQMD to engage in sleight-of-hand in its rulemaking. The reduction to 5 lb/day should be clearly expressed and identified in the rulemaking package (initial report, concept paper, and proposed regulatory language) so that the regulated community can comment on this proposed change. Valero strongly requests that all references in the regulatory package of a 5 lb/day mass emission limit revert to the 15 lb/day limit. If the agency insists on proposing a revision to the mass emission limit, then the agency should re-issue the regulatory package with the agency's desired change and allow for a full comment period as suggested above in General Comment #3.
4. *Leak Limits, Mass Emissions, and Delay of Repair*: Citation 8-18-225 was struck to remove the definition of a major leak as one that cannot be minimized below 10,000 ppm TOC as methane. In combination with setting leak standards at 500 ppm for compressors, pumps, and pressure relief devices, and at 100 ppm for valves and all

other equipment (too stringent, as South Coast has 500 ppm), the rule has precluded the use of environmental engineering judgement by the refinery to determine the best course of action regarding repair time for equipment. For example, the previous version of the rule had allowed in Citation 8-18-306.4 for a valve with a major leak to be placed on the non-repairable equipment list if the mass emissions rate had been measured as being < 5 lb/day. Equipment with leaks that were not considered major did not have to be measured for mass emission rates. The combination of this change with Citations 8-18-301 and 8-18-401 would require that all equipment leaking above 5 lb/day be repaired within 7 days and would not allow any equipment to leak with a concentration greater than 10,000 ppm, regardless of the flow rate. While it is commendable to desire that all equipment leaks be eliminated or minimized to near zero emission rates, the practical point is that some equipment simply cannot be removed from service until the next planned shutdown of the unit or the refinery (turnaround).

5. *Leak Minimization*: Citation 8-18-209 requires leak minimization techniques beyond the traditional cleaning, scrubbing, or washing of equipment to other best modern practices such as tightening nuts and bolts, injecting lubricants, and installing plugs/caps into open-ended lines or valves. The rule should give flexibility for technicians to determine what is necessary or beneficial to minimize the leak below a leak standard or a mass emissions rate. If a traditional method works, then good engineering judgement should not require more work to be done on the piece of equipment. In addition, adjustments to control valves or motor-operated valves may involve very sensitive instrumentation, meters, or safety critical items. Pumps cannot be tightened, and shutdown and clearing is not always immediately feasible. Leaks from these pieces of equipment may be more appropriately addressed with techniques, such as cleaning, that have been demonstrated to be sufficient and effective. The BAAQMD's concern that traditional leak minimization techniques (such as cleaning scrubbing and washing) may be ineffective and potentially cause recurrent leaking has already been addressed through the proposed recurrent leaker concept.
6. *Essential Equipment*: Citation 8-18-226 adds a new concept to the rule by defining equipment that cannot be taken out of service without shutting down the process unit that is served by the equipment. This language is too restrictive in that some equipment is custom-made and cannot be replaced until the replacement is manufactured and/or received. The language is also counterproductive with respect to controlling emissions, because it is often better to allow an item to be put on the DOR list than to shut down an entire process unit to repair a small emissions leak; the shut down often causes much higher emissions than the original leak. The reporting of the reason for the designation of equipment as essential is not necessary on a repeat basis. Furthermore, the definition of essential equipment would seem to be subject to future redefinition by the BAAQMD based upon comparisons among refineries, thereby leading to re-interpretation through future BAAQMD compliance advisories or rulemaking.

7. *Background Concentrations:* Citations 8-18-401.11 8-18-502.5 require the owner/operator to identify and report all equipment and/or sources that contribute to any background concentration reading greater than 50 ppm. Not only is this limit low, it may not be possible to track the source, especially if it is offsite. Additional equipment and software, as well as extra personnel resources, would be required to comply with these provisions of the rule. We suggest that the BAAQMD share the perceived issue and encourage comments for resolution from the regulated community.
8. *Reductions and Costs:* Table B2 in the concept paper lists the 'minimum' emission reductions that would be effected by the proposed rule at the five refineries, and it also lists the capital and annualized costs. The supporting calculations and assumptions should be shown for the development of these numbers and their characterization as conservative estimates. Further, in addition to the capital costs, there is the upfront labor cost that is significant for tagging, inventory documentation, and monitoring. The BAAQMD cost estimate seems to include costs only for tagging and not for any other initial expenses.
9. *Bagging Requirements:* The bagging requirements throughout the rule are onerous, especially for low volume emissions. Having to bag all equipment on the DOR list (8-18-306.4), regardless of concentration, creates a significant burden that is unwarranted by field conditions and potentially unsafe. Also, bagging for hot or irregular equipment is not feasible and should not be required by the rule.
10. *Alternate Compliance and Emission Reductions:* Citations 8-18-308 and 8-18-405 removed all alternate options for compliance and for effecting emission reductions. The agency should show justification and explain the reasoning behind removing these provisions.
11. *Relaxing of Monitoring Frequency:* Citation 8-18-407.3 should automatically allow equipment to revert back to quarterly monitoring after four months of being leak free. The rule should not require the refinery to submit a letter to the agency, nor should the refinery have to await BAAQMD approval to return to its normal monitoring schedule. The potential additional monitoring frequency incurred while awaiting BAAQMD response and assisting the BAAQMD in tracking the response process is onerous.
12. *Annual Inventory Report:* Citation 8-18-503.2 requires that an inventory be submitted on January 1, 2016 and annual updates every January 1st. As this is a national holiday and the United States Postal Service as well as the BAAQMD are not conducting mail operations on that day, it is not reasonable to submit a report on that day. Valero recommends that the inventory count be determined as of December 31st or January 1st and submitted in a report by January 31st.

Rule 9-1 (Inorganic Gaseous Pollutants, Sulfur Dioxide)—Refinery Fuel Gas Sulfur Limit

1. *Fuel Gas Definition:* Citation 9-1-212 defines Refinery Fuel Gas [RFG] as "any gas which is generated at a petroleum refinery and combusted to generate heat or power," including "any proportion of natural gas combined with gas generated at the refinery." Valero suggests that, due to very low sulfur limits that the BAAQMD is

concurrently proposing, the definition of RFG should be clarified to mean any such gas that is generated by a process unit and is amenable to amine treatment (which is critical to meeting lower H₂S limits). This would preclude the inclusion of gasses from tank degassing, thermal oxidizers, etc.

2. *H₂S Limit and Basis*: Citation 9-1-314 prohibits any person from burning refinery fuel gas having a sulfur content in excess of 40 ppmv, calculated as H₂S, on a 3-hour rolling average basis. In the concept paper, the agency gives the public the false impression that 4 of 5 refineries in the district can meet the proposed standard. Unfortunately, the agency used incorrect data in its calculation of Valero's emissions and determination of its ability to meet the 40 ppm standard. The District used a 4Q2013 report for the cogeneration facility, which is separate from the refinery fuel gas system. The cogeneration facility combusts a higher percentage of natural gas, which is why the 4Q2013 report shows 3-hr H₂S data below 40 ppm. The 40 ppm 3-hr H₂S limit is not achievable for the Valero RFG system. Valero has a current permit condition for four sources which combust RFG with a calendar day H₂S limit of 100 ppm and should be able to continue complying with that standard, so long as RFG is defined as: a) generated by a process unit, b) combusted as a fuel, and c) amenable to amine treatment.
3. *Upset Conditions*: Valero would not be able to comply with the proposed standard under upset conditions, as the T-1201 low pressure fuel gas MEA scrubber tower currently circulates amine at maximum recommended rates, which leaves no room to increase circulation rates on the existing tower. Valero hired consultants in 2012 to perform an evaluation of its amine system and optimize system performance. To assure compliance with the proposed 3-hr limit would require the installation of a new LPFG scrubber, regenerator, hydrotreater, and the use of a different amine solution (an estimated cost of \$50 million to \$200 million). A detailed engineering study would be needed to determine the appropriate equipment to be installed. The agency does not include these cost estimates in its concept paper and needs to adjust the H₂S standard accordingly.
4. *H₂S vs. TRS vs. TS*: The rule also needs to clarify the compounds the limit is set for, since there are conflicting statements of whether the limit is H₂S and/or other sulfur compounds (see page C:3 and Citations 9-1-314, 9-1-505, and 1-237). An H₂S CEMS is currently installed on the refinery fuel gas stream; monitoring of other sulfur compounds would require the additional engineering/purchase/installation expense of a new CEMS. Valero recommends continuing to monitor the sulfur in fuel gas as H₂S.
5. *Timing*: Rule needs to allow for sufficient time for permits and installation of necessary additional equipment to meet the proposed regulations.

Rule 11-10 (Hexavalent Chromium Emissions from Cooling Towers and Non-Methane Organic Carbon Emissions from Petroleum Refinery Cooling Towers)

1. *Method Accuracy*: In the concept paper, the agency expresses concern about the Modified El Paso Method's (MEPM) sampling method's "ability [to] provide representative hydrocarbon emissions data on a consistent basis." The method is

sensitive but does require following procedures to attain the precision and accuracy requirements. *Valero would like the opportunity to demonstrate that the MEPM is sufficiently accurate.* The MEPM is very sensitive between 0.1 to 0.5 ppm, by volume CH₄, in the stripped air when using the FID analyzer. Valero uses methane at different concentrations for generating calibration curves and checks. The LDAR contractor conducts the sampling with a dedicated FID. In the concept paper, the agency states that "Air District staff will consider MEPM and other methods if the refineries are able to demonstrate that they provide comparable data and consistent results." Valero requests that flexibility be given to each refinery to select and demonstrate its own choice of method.

2. *Leak Action Level:* Citation 11-10-206 sets a standard of 84 ppbw THC in cooling tower water for existing cooling towers and a standard of 42 ppbw for new cooling towers constructed after July 1, 2016. There is no basis or calculation given for these numbers, nor is there any explanation given for why the standard would differ between existing and new cooling towers. It is a leak from a heat exchanger that generates the contaminant in the cooling tower water; cooling tower technology does not determine the amount of hydrocarbons that exist in the cooling tower water. The district needs to provide engineering calculations and assumptions for its determination of the leak action levels that support the proposed limits.
3. *Two Compliance Regimes:* The BAAQMD's proposal to have an 84 ppb NMOC action level trigger would cause unnecessary conflict and duplication with the federal EPA's 6.2 ppm VOC method. Refineries in the Bay Area would have to keep two sets of books for the differing levels. For detections below 6.2 ppm but above 84 ppb, the Bay Area refineries would have to take action. The lower leak definition appears to have a possible conflict with Rule 8-18 (Equipment Leaks), in which background levels greater than 50 ppm would have to be investigated. This is a clear example of the BAAQMD rushing out rules without fully considering how they work together; the background level of THC for one rule is well above the leak definition for another rule. While there is online TOC analyzer technology available to measure in the range required by the proposed rule, it is not practical to set such a low leak definition as 84 ppb. The agency should release its modeling data to indicate how such a small leak would lead to any appreciable increase in health risk due to that portion of the TOC that is volatilized and released to the atmosphere and is transported downwind to potential receptors.
4. *Online Analyzer:* The concept paper states that two refineries are using online analyzers, but Valero's understanding is that those facilities have had issues with accuracy. The concept paper does not give any information on the type of technology. Our research indicates that online analyzers would be expensive to acquire, install, and optimize for cooling tower application. Furthermore, Citation 11-10-602 requires the installation of continuous monitors on both the inlet and the return line for each cooling tower. There is no need for two analyzers on a cooling tower; such a requirement obviously doubles the cost and the work required by the refinery for no added benefit. While the agency is correct in stating that this standard does not propose any additional controls, only additional monitoring and



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November 23, 2015

Via email

Greg Nudd – gnudd@baaqmd.gov
Eric Stevenson – estevenson@baaqmd.gov
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

**Re: Comments of the Western States Petroleum Association on Proposed Rules:
Regulation 12, Rules 15 and 16, including the CEQA Draft EIR and the
IS/ND on Regulation 6, Rule 5; Regulation 8, Rule 18; Regulation 9, Rule 14;
and Regulation 11, Rule 10**

Dear Messrs. Nudd and Stevenson:

I write on behalf of the Western States Petroleum Association (“WSPA”) to comment on the above-referenced rules proposed by the Bay Area Air Quality Management District (“BAAQMD” or the “District”). These extensive new proposals fundamentally rewrite the rules that will apply to refineries operating in the Bay Area, effectively undermining the existing rules under which existing operations were legally permitted and imposing entirely new and unnecessary layers of regulatory requirements on top of the multitude of existing requirements. WSPA members have significant concerns with these proposals, some of which include:

- The District fails to comply with statutory obligations. The California Health & Safety Code requires the District to meet six statutory requirements before issuing new regulations: necessity; authority; clarity; consistency; nonduplication; and reference. The California Environmental Quality Act (“CEQA”) further requires the District to appropriately consider the effects of any proposed regulation. As WSPA’s more detailed comments make clear, the District has repeatedly failed to fulfill these statutory obligations.
- The District has not considered the combined impacts of these proposals, both as a whole and in conjunction with the additional new rules that the District intends to propose under its Petroleum Refining Emissions Reduction Strategy. The combined suite of regulations is part of a larger plan to reduce purported refinery emissions in the Bay Area by at least 20% within just a few years. It is impossible to understate the magnitude of the impact the proposed changes will have on the regulated industry. And yet the District has done

just that: its multiple analyses of the rule, including both the costs and benefits analyses and the analyses required by CEQA, consistently fail to consider the combined impacts of even the six currently-proposed rules – much less the additional impact of the rules that are still under development.

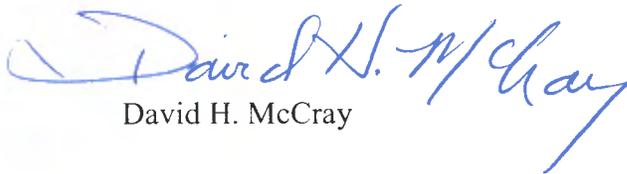
- The District has not demonstrated the need or authority for such sweeping new regulations. The Bay Area has attained the National Ambient Air Quality Standards (“NAAQS”) for both PM_{2.5} and SO₂, and emissions of both criteria pollutants and Toxic Air Contaminants (“TACs”) continue to decline. Furthermore, these pollutants are already extensively regulated at the federal, state, and local level; this plethora of existing regulations ensure that emissions will continue to decrease and air quality will continue to improve without these new draconian measures. Indeed, the record does not even begin to assess the impacts of the many existing requirements, much less demonstrate that additional reductions are necessary.
- The District exceeds its authority under state law in requesting competitively sensitive and economically damaging data without sufficient protection. The rules require submittal of highly confidential information (*e.g.*, refinery crude oil slate, Solomon reports) that exceeds the District’s authority under state law and will not provide the useful information the District assumes it will. Yet the rules do not provide adequate protection for this information; indeed, they do not even provide the minimum level of protection required by the California Health & Safety Code.
- Application of NAAQS to modeled emissions from already-permitted sources is illegal and unsupported. The proposals fundamentally rewrite forty years of air regulation by illegally subverting ambient air standards – which, by definition, apply to entire air quality control regions – into individually enforceable emissions limits for each refinery. No precedent for such an interpretation exists – the District’s approach is simply not supported by statute, case law or regulatory interpretation. Moreover, compliance with these standards must be demonstrated based on emissions assumptions that grossly inflate actual worst-case refinery emissions. These new requirements are neither necessary in light of the current attainment status of the Bay Area nor authorized under California law.
- The rules are illegally broad in scope. For example, the proposed rules hold the refineries responsible for emissions from other entities that are beyond the refineries’ control and, with respect to vessels and cargo carriers, beyond the District’s regulatory jurisdiction.
- The District is requiring refineries to conduct monitoring that the District should conduct itself. The proposals require the refineries to conduct extensive monitoring, including community monitoring on property that the refineries neither own nor have the right to condemn. The District alone has the legal authority to conduct community monitoring, and the District alone has the power of eminent domain to ensure access for those monitors.

- Ammonia emissions are not a significant contributor to PM_{2.5} formation and do not require additional regulation. Proposed Rule 6-5 demands significant reductions in ammonia emissions from refineries as part of an effort to control emissions of PM_{2.5} precursors. These requirements are included even though the District both maintains that ammonia is not a significant contributor to PM_{2.5} formation and ignores even larger sources of ammonia within its authority to regulate.
- The District's existing emissions estimates are based on unsupported assumptions, overstate the current risk from refinery emissions, and oversell the benefits that the District assumes the new rules will achieve. Many of the proposals are based on artificially inflated estimates of existing emissions. For example, Proposed Rule 11-10 assumes that cooling tower emissions are an order of magnitude higher than the available data demonstrate. Similarly, Rule 8-18 is founded on an unsupported and unstated new interpretation for calculating emissions from heavy liquid components that increases the assumed emissions from these components by several orders of magnitude.

These concerns represent just a few of the many issues identified by WSPA and its members. WSPA's detailed comments on these proposals are set forth in five attachments. Attachment A addresses WSPA's legal comments on the proposals. Attachment B includes more specific technical comments on the proposals. Attachments C through E include WSPA's legal and technical comments on the District's CEQA and socio-economic analyses.

Should the BAAQMD Staff, Mr. Broadbent or members of the Board wish to discuss these issues with WSPA, please contact Ms. Catherine Reheis-Boyd, WSPA President at 916-498-7752.

Sincerely,



David H. McCray

Attachments

- A: Legal Comments on Proposed Refinery Regulations
- B: Technical Comments on Proposed Refinery Regulations
- C: Comments on Draft Environmental Impact Report for Proposed Rules 12-15 and 12-16
- D: Comments on Initial Study/Negative Declaration for Proposed Rules 9-14, 6-5, 8-18, and 11-10
- E: Comments on Socioeconomic Report for Proposed Rules 12-15 and 12-16

cc: Cathy Reheis-Boyd, WSPA

Attachment A
WSPA Legal Comments on Proposed Refinery Regulations

Regulation 12-15: Petroleum Refining Emissions Tracking
Regulation 12-16: Petroleum Refining Emissions Limits and Risk Thresholds
Regulation 6-5: FCCU
Regulation 8-18: Equipment Leaks
Regulation 11-10: Cooling Towers

I. Introduction

The California Health and Safety Code imposes six specific statutory requirements that must be met before District can issue new regulations:

- Necessity
- Authority
- Clarity
- Consistency
- Nonduplication
- Reference

CA H&S Code § 40727.

The California Health and Safety Code §40727 makes clear the legal standards the District must meet to satisfy each of the six required findings cited above.

With respect to the requirement of “Necessity,” the statute states that it is the “record of the rulemaking” that must demonstrate the need for the new regulation. This statutory reliance on the record to demonstrate “need” subjects the District to a “substantial evidence” standard of review of the record with respect to Necessity. *Substantial evidence requires that the record of rulemaking contain sufficient objective information and expert opinion based on objective information to support the logical inference of the “need” for the regulation.* The “necessity” that must be demonstrated is defined by the common meaning of that word: “Absolutely required;” “Required by obligation, convention or compulsion.” (*See, Webster’s II, New Riverside University Dictionary.*) The requirement that the District demonstrate the “need” for a regulation is not a lightly tossed off obligation: It subjects the adoption of a BAAQMD regulation to a substantive showing that the regulation is not merely desirable or of potential use, but that the regulation is “necessary” before it can be imposed on the governed.

The criterion of “necessity,” as with all of the other five required findings, is subject to *de novo* review. In other words, there is no deference given to the District’s own assertion that it

has satisfied the statutory requirements for rulemaking. The District's compliance with its statutory obligations must be based on an independent review of the rulemaking record.

We address below the areas in which the proposed rules do not satisfy these criteria, based on the record that has been provided. We begin with comments that apply to the rule as a whole or large portions of the rule, and then provide more specific comments on individual provisions.

II. Comments on All Rules

At the outset, the District has not complied with the obligation in Section 40727(b)(6) to identify the specific provision of law that each proposed regulation implements or interprets. As discussed in more detail below, the District here has identified eight statutory provisions as providing the legal authority for all six proposed regulations. However, many of the new regulatory requirements are not authorized by the specific provisions cited. To the extent the District intends to rely on statutory provisions beyond those cited in the Staff Reports,¹ its determination violates the reference requirement of Section 40727(b)(6).

This is not a mere technical violation. Sections 40725 through 40728 are designed to ensure that the public has a full and fair opportunity to evaluate and comment on proposed regulations before they are adopted. The District is required to hold a public hearing before it may promulgate any new rules; to provide a fair comment period, it must publish the rule and its analyses at least 30 days before that hearing. Any member of the public who objects to any provision of a rule may set forth all of its statements, arguments, and contentions at or before the hearing. § 40726. However, in order for that comment period to be meaningful, the District must set forth its full analysis, so that the public may evaluate the District's factual and legal support. Relying on statutory provisions beyond those set forth in the analysis made available during the comment period deprives the public of a full and fair opportunity to evaluate and comment on the District's compliance with all of the legal requirements set forth in Section 40727.

WSPA is further concerned with the rapid pace at which the District has developed – and apparently intends to continue to develop – these rules. Section 40923(a) requires the District to promulgate by January 1 a list of regulatory measures that are scheduled to be considered the following year; rules that are not on this list may be promulgated only under extremely limited circumstances not present here (*e.g.*, to satisfy EPA requirements or abate a “substantial endangerment” to health). WSPA is unaware of any list that contained these proposed measures as of January 1, 2015; indeed, given that the District did not release even a concept paper on the four equipment rules until May of 2015, it seems unlikely that these measures were appropriately identified.

¹ Citations to the “Staff Report” refer to the specific Staff Report published for the referenced rule on the District's website.

This rush to regulation is exacerbated by the District's piecemeal approach to regulation. As the District has made clear, the six proposed rules are part of a District-wide initiative to decrease emissions from refineries by at least 20% within no more than five years. *See* Petroleum Refinery Emissions Reduction Strategy: Staff Report (October 2015) at 1-2. In fact, the six currently-proposed rules represent only the first three steps of this process; the Staff Report makes it clear that additional rules are currently in development to obtain even greater reductions. *Id.* at 2, 6.

The six proposed rules, along with the additional rules that are currently under development, will fundamentally rewrite the regulatory compliance obligations of an entire industry. And yet the District's analysis insists on evaluating these rules separately: the Staff Report for the four "Refinery Emissions Reduction Strategy" contains separate appendices that are limited to the individual rules; the Environmental Impact Report is limited to the Emissions Tracking and Risk Rules (Rules 12-15 and 12-16), while the rules that compel immediate additional controls have been severed and declared to have no significant environmental impact.

The District has admitted that all six currently-proposed rules and three future rules are part and parcel of the same strategy to reduce emissions from refineries but failed to consider the cumulative costs of compliance with so many substantive new requirements at the same time. Nor has the District considered the resource constraints associated with developing multiple new compliance programs within the same extremely short timeframe; nor the economic feasibility of making so many expenditures within the same short timeframe; nor, finally and most fundamentally, why this comprehensive revision of the District's current, successful program is needed in the first place.

In addition, the District has not evaluated the extent to which this separate treatment of the various rules *overstates* the degree of emissions reductions assumed by these rules. Thus, for example, any controls required by Rule 12-16 would also likely reduce emissions from equipment leaks and FCCU operations, as refineries are forced to curtail production to comply with these limits. Yet the District's emissions reduction analysis under Rule 6-5 assumes that the FCCUs will be operating under their current regulatory status and does not account for emissions reductions that will be achieved under Rule 12-16. In other words, the District double-counts emissions reductions: it assumes that each individual rule will reduce emissions from the current baseline, without considering how that baseline will already be reduced by the other three proposed rules. The District cannot fully evaluate either the costs or the impacts of so many new rules by pretending that each exists in a vacuum, unaffected by any of the other proposed changes.

Finally, the District's required analyses under Section 40727.2 of the California Health & Safety Code are uniformly cursory and do not provide the level of detail required by law. Section 40727.2 requires a detailed comparison of the "elements" of each new rule to the same elements of all relevant existing rules, including not just the level of control required, but averaging time, units of measurements, operating parameters, work practices, monitoring requirements, reporting requirements, and recordkeeping obligations (including test methods,

format, content, and frequency). CA H&S Code § 40727.2(c)-(d). As discussed in more detail in the individual comments below, many of the proposed rules overlap extensively with existing rules. The Section 40727.2 analyses, however, provide only a high-level, cursory review. Thus, for example, the analysis for Rule 12-15 notes that the emissions inventory requirement overlaps with various other emissions reporting program, but it does not analyze the differences in the scope of information required to be submitted (*e.g.*, the inclusion of vessel and railroad emissions under the new rules), the level of detail required (*e.g.*, the highly-detailed, equipment-by-equipment approach under the new rules), or the differences in required measurement approaches (*e.g.*, reporting based on actual emissions from detailed monitoring under the proposed rules, vs. AP-42 emissions factors under the existing emissions fee program). *See* Staff Report, Appx. E. A detailed analysis as required by Section 40727.2 would demonstrate the very real burden posed by these duplicative and inconsistent requirements.

III. Comments on Regulation 12, Rule 15

A. *General Comments*

1. Emissions inventories, crude slate reporting, and emissions profiles

WSPA and its members support the goal of developing an accurate inventory of refinery emissions, because such an inventory is necessary for the Department to develop appropriate regulations and accurately assess the costs and benefits of those regulations. As proposed, however, the emissions inventory requirements in Rule 12-15 will not meet these goals. We outline below specific legal concerns with the emissions inventory requirements as currently written; additional information is provided in the attached technical comments.

Necessity.

As proposed, Rule 12-15 does not meet the “necessity” requirement set forth in § 40727(b)(1).

By far the most significant and concerning aspect of the emissions reporting required by Rule 12-15 is the new obligation for refineries to report information characterizing their crude slate and preprocessed feedstocks, including detailed operational data, on a monthly basis. The only justification provided for gathering this highly confidential operational data is the possibility that, as unspecified new sources of crude oil become available, the changes might, at some unspecified future time, result in increased emissions of VOCs and H₂S from storage, loading, and equipment leaks. Staff Report at 12-16-17. Thus, the District hypothesizes, directly tracking monthly crude slate composition, preprocessed feedstock composition, and annual emissions may help the District determine “any relationship between overall emissions and crude oil composition.” *Id.*

This is an academic exercise, not a “need” that justifies an entirely new regulatory program. The District hypothesizes that changes in crude oil supply may affect refinery

emissions. It further hypothesizes that tracking both emissions and crude slate will allow it to discover a correlation between the origin or composition of specific crude oil supplies and subsequent refinery emissions. And, finally, it hypothesizes that correlation equals causation, and that this new knowledge will then allow it to develop new regulations – regulations that will, presumably, restrict or prohibit crude oil supplies that the District concludes are “bad.”

The Staff Report directly admits that refinery emissions have consistently decreased over time, with only periodic increases due to short-term factors. Staff Report at 12-16-17. This conclusion is fully supported by existing ambient monitoring data and emissions inventories, which demonstrate consistent decreases in emissions and improvements in air quality. Accordingly, the data demonstrate – and the District admits – that there is no *current* need for this data; rather, the concern is limited to the possibility of *future* emissions increases based on future changes in the crude slate. The mere possibility of future feedstock changes does not demonstrate the “necessity” for the new rules.

However, even if this desire to perform academic experiments could be construed as a legitimate “need” supporting immediate regulation, the proposed regulation will not obtain the desired results, because it is built on a number of false assumptions and faulty logic.

First, the District seems to assume that the possible new sources of crude oil will generate a sea change in crude slate composition. *See* Staff Report at 12-16-10. This is simply unsupported by any relevant facts; indeed, existing crude oil supplies already provide a high degree of variability in the crude slate composition. The “new” crude oil sources of which the District is so afraid are well within the ranges of the existing crude slates that refineries have been using for years. Or, to put it another way, refineries are designed to process a specific range of crude blends. Therefore, they can use only those “new” supplies of crude oil to the extent that they can blend them to fall within their existing design parameters. If a refinery wanted to process new crude oil blends that fall outside these design parameters, it would first need to modify its equipment and/or metallurgy to do so – changes that would already be regulated under existing permit rules. Availability of “new” crude sources is not a new phenomenon, yet the District’s emissions inventory continues to decline.

Second, the assumption that changes in crude oil supply will necessarily increase refinery emissions ignores the fact that refineries are currently subject to stringent emissions limits that apply irrespective of the feedstocks used. For example, refineries must meet stringent SO₂ limits under federal and state law, and they must ensure that the fuels they produce comply with stringent fuel composition requirements. Therefore, any refinery that processes high-sulfur crude blends must, as the District notes, “have the capacity to remove large amounts of sulfur from the crude oil[.]” Accordingly, if the change in crude oil supply results in the use of higher-sulfur crude blends, the result will not necessarily be higher sulfur emissions – as the District itself acknowledges, the result will be the installation of more controls to comply with existing regulatory limits *see* Staff Report at 12-16-10 (“refineries will update and/or modify their equipment to meet more strict regulatory fuel requirements and potentially to process crude oil

from different sources”).² And even these upgrades themselves will trigger additional control requirements, under either the federal New Source Review program or the District’s construction permitting program. Thus, it is very unlikely that a change in crude oil supply will result in emissions increases from refineries, because any such emissions increases would already be addressed and mitigated under the many programs that already apply to refineries.

Third, the proposed regulations will not generate the kind of data necessary to identify correlations between crude blends processed and air emissions. Before any given batch of crude oil received at a refinery is processed, it is typically blended with other batches of crude with different properties, so that the crude blend meets all refinery specifications for properties such as vapor pressure, acidity, and other characteristics before it is stored and processed. Thus, reports of the crude blends processed by a refinery will not allow the District to assess the emissions associated with individual deliveries of crude oil from a specific location – nor will the annual emissions inventory allow the District to trace emissions to the specific hours when a specific crude blend was processed at a specific process unit, or account for the many entirely unrelated factors that may affect emissions (*e.g.*, ambient temperatures, characteristics of catalysts and other processing materials). In other words, even though the rule would require reporting of the specific composition of crude handled during a specific time period, it will not trace that composition back to specific deliveries of crude oil from a specific location; nor will the emissions inventory allow the District to trace the emissions that occurred at the precise time a crude blend containing that crude oil was being processed. In fact, the District’s requirements do not even clearly delineate between crude oil and crude blends.

Finally, the District’s proposed experiment is simply not designed to be able to identify causal links between crude composition and refinery emissions (the purported ultimate goal of this entire regulation). At best – assuming that all of the other problems identified above could be addressed – the data collected could indicate only whether there is some as-yet-undefined correlation between the composition of a particular crude and the emissions from that crude. But as any freshman student knows, correlation does not mean causation. To identify a causal link, an experiment must be limited to testing a single variable, with all other variables held constant; otherwise, the effects of the other correlated variables will confound the results, preventing any conclusions about which variable caused the observed effects. Here, the District itself acknowledges three other macroeconomic factors that can lead to increased refinery emissions (increased demand; compensation for production losses in other areas; and upset conditions/accidents). Staff Report at 12-16-17. The District ignores many other variables, such

² The Staff Report seems to implicitly recognize that the existence of these required controls and regulatory limits will minimize or eliminate any emissions increases associated with processing heavy crude oil, as it instead focuses on increased emissions from storage, loading, and equipment leaks. The proposed rules, however, apply to all refinery operations, not merely storage, loading, and equipment leaks. The possibility of future emissions increases from a small subset of refinery operations does not support the necessity of regulations across all other refinery operations.

as the existing operational or permit limits discussed above, that will further confound the results.

Authority.

The proposed emissions inventory and crude reporting requirements also do not satisfy the “authority” criterion of § 40727. Note that the District is, by definition, a subsidiary body; as discussed in more detail below, its authorization to act is limited to the authority vested in it by the State and Federal governments. Accordingly, each regulation must be authorized by a specific state or federal statutory provision. Here, the Staff Report identifies eight specific provisions of the California Health and Safety Code as authority for these provisions: §§ 40000, 40001, 40702, 40725, 40726, 40727, 40728, and 44391. We address each of these in turn.

Section 40000 grants the District the “primary responsibility” for control of air pollution from stationary sources. This provision does not grant authority to issue specific rules; rather, it allocates responsibilities between the District and the State.

Section 40702 authorizes the District to “adopt rules and regulations” and take action as “necessary or proper to execute the powers and duties granted” to it by the California statutes. This provision also does not independently authorize the instant regulations; rather, it is merely a general grant of rulemaking authority, to the extent those rules are otherwise authorized by California law.

Sections 40725-28, in turn, set forth the process the District must follow to adopt new regulations. This includes compliance with the six specific criteria set forth at § 40727(a); meeting the public notice and hearing requirements of § 40725-26; and preparing the required analyses under § 40728. These provisions, again, do not grant authority to issue specific rules.

The only substantive statutory provisions that the Staff Report cites as authority for the current rules are Sections 40001 and 44391. We therefore address these in more detail.

Section 40001 grants the District the general authority to adopt rules and regulations “to achieve and maintain the state and federal ambient air quality standards”; to “enforce all applicable provisions of state and federal law”; and to prevent or abate air pollution episodes. Here, the rules in question do not enforce existing provisions of state or federal law, but instead represent new legal obligations that go well beyond these other requirements. Similarly, the new rules do not address air pollution episodes. Accordingly, the only relevant provision in Section 40001 is the authorization to adopt rules “to achieve and maintain the state and federal ambient air quality standards[.]”

This constraint means that Section 40001(a) can authorize only those provisions of this rule that regulate criteria pollutants (*i.e.*, those that are subject to state and federal ambient air quality standards.” Therefore, this section cannot be used to authorize any regulation of toxic air contaminants (“TACs”) or greenhouse gases (“GHGs”). We address the regulation of TACs

below, in the discussion of Section 44391. However, neither Section 40001 nor Section 44391 authorizes the adoption of new requirements for GHGs. Accordingly, all greenhouse gas requirements set forth in Regulation 15 are *ultra vires* and not authorized by any of the cited statutory provisions.

Section 40001(c) further requires that, before adopting any rule or regulation to reduce criteria pollutants, the District must first “determine that there is a problem that the proposed rule or regulation will alleviate[.]” As discussed above in the “necessity” section, the District has identified no such “problem” here; rather, the District has merely hypothesized that there may at some point in the future be a problem, if more crude oil is transported from different sources, and if refineries change their crude blends in response to the changing supply, and if this change then results in an increase in emissions of criteria pollutants. For the reasons discussed above, this string of conjectures does not arise to the level of a “problem” requiring regulation.

Section 40001(c) also requires that before regulating criteria pollutants, the District determine “that the rule or regulation will promote the attainment or maintenance of state or federal ambient air quality standards.” The crude and preprocessed feedstock reporting requirements, however, are monitoring and reporting only; the District has provided no demonstration of how gathering and reporting the detailed information requested will improve the area’s attainment status.

This omission is especially relevant given the significant and detailed emissions information refineries are already compelled to report. The District has not even attempted to evaluate the extent to which the existing refinery emissions reports are already providing data to assist the District in developing the correlations it seeks. Indeed, Section 40001(d) specifically compels the District to provide alternative vehicles for regulated entities to achieve the same results via alternative monitoring and recordkeeping. Yet here, the District has not even evaluated the extent to which the existing reporting obligations *already* meet these criteria.

Section 44391 is a portion of the Air Toxics “Hot Spots” Act, which implemented a statewide program to characterize risks from TACs and reduce risks that exceeded a threshold set forth in the statute. Section 44391 implements a portion of that program: it requires facilities to perform a toxic risk reduction audit and develop a plan to reduce TAC emissions when a health risk assessment (“HRA”) indicates that the facility’s emissions pose a significant risk. It further allows the District to review the plan (§ 44391(f)-(g)); shorten or lengthen the time for implementation (§ 44391(b)-(c)); to provide assistance to small businesses (§ 44391(d)); and to require updates to the plan when new risk information or new emissions controls technologies become available (§ 44391(i)).

Nothing in Section 44391 authorizes the District to adopt regulations implementing the Hot Spots Act; indeed, all of the authorities referenced in this provision involve individual case-by-case determinations and plans, not industry-wide requirements.

None of these authorities support reporting of the detailed operational information and crude slate and preprocessed feedstock composition that the proposed rules require. Section 44340 requires that emissions inventory plans collect or calculate emissions data at “the primary locations of actual and potential release for each hazardous material,” but nothing in this section requires – or authorizes – any operational data as part of this submission.

Finally, outside the scope of the statutory authorities cited by the District,³ we note that Section 40701(g) grants the District the authority: “To require any owner or operator of any air pollution emission source, except a noncommercial vehicular source, to provide (1) a description of the source, and (2) disclosure of the data necessary to estimate the emissions of pollutants for which ambient air quality standards have been adopted, or their precursor pollutants, so that the full spectrum of emission sources can be addressed equitably pursuant to Section 40910.” This provision generally allows the District to obtain data to calculate emissions for criteria pollutants – something that the District has already done through its many existing programs. Nothing in this provision allows the District to obtain detailed operational data, such as ongoing crude slate and preprocessed feedstock reporting, that is not necessary to develop the requested emissions data.

Clarity

Section 40727(a) requires that before adopting or amending a rule or regulation, the District shall make a finding of clarity, which in turn is defined as meaning “that the regulation is written or displayed so that its meaning can be easily understood by the persons directly affected by it”. WSPA members are directly affected by the proposed rules, but many provisions set forth unclear or inconsistent requirements. See the attached technical comments for a detailed discussion of specific issues.

Consistency and Nonduplication

Section 40727(b)(4) & (5) requires the District to demonstrate both that any new regulation harmonizes with existing requirements, and that such regulation does not duplicate requirements already imposed under federal or state law, unless the duplicative regulation is necessary for the District to execute its powers and duties. The emissions inventory obligation in the proposed Rule 15 violates both of these requirements, and in doing so imposes even more significant burdens on the regulatory community.

³ As discussed above, the “reference” obligation of § 40727(b)(6) requires the District to identify the specific authority that it is implementing or interpreting in adopting these new regulations. Accordingly, to the extent the District relies on statutory authority beyond that it has specifically identified, its failure to refer to this other authority violates § 40727(a). Nevertheless, for the purpose of assisting in the development of a complete record, we address additional statutory provisions that it appears likely that the District may rely on.

First, the emissions inventory requirement duplicates a variety of emissions reporting obligations. Comprehensive criteria pollutant and toxic pollutant emissions inventories are required in the form of annual updates to District Permits to Operate; EPA Toxic Release Inventories; and Toxic Substances Control Act Inventories. Both EPA and CARB require submission of annual Greenhouse Gas inventories. Innumerable Title V emissions reports are required for specific sources, based on the litany of existing rules establishing emissions reporting, pursuant to the requirements of specific District and Federal rules.

At the same time, the new emissions inventory requirements differ from these existing programs in critical ways. For example:

- BAAQMD Title V permits require emissions reports by source and pollutant to satisfy specific permit conditions (e.g. quarterly criteria pollutant emissions reports for Ultra Low Sulfur Diesel Process unit) or BAAQMD rules (e.g. Reg 9-10 NO_x reports for pre-1994 heaters and boilers).
- GHG inventories for EPA and CARB are determined by source type (e.g. combustion sources, H₂U plants, etc.), whereas Rule 12-15 requires GHG emissions to be reported for the entire “source” (defined as the refinery and any co-located operations). This requires an entirely new and inconsistent approach to developing emissions inventories under both programs.
- EPA TRI reports emissions to air by chemical compound distinguishing emissions by point or fugitive source groups, not individual sources.
- BAAQMD annual update emissions estimates usually include criteria pollutants only for those sources selected each year (a subset of the entire facility) and selected VOCs for fugitive components.
- Emissions calculations that facilities are required to perform to determine their annual fee payments are based on emissions factors, while the new emissions inventories must be based on actual emissions data.
- The new program includes emissions from additional sources not regulated under any other federal, state, or local refinery emissions inventory requirement (e.g., co-located sources, cargo carriers).

WSPA and its members support the need for an accurate emissions inventory based on actual refinery operations. As currently structured, however, Rule 12-15 imposes both duplicative and inconsistent emissions reporting obligations on refineries. The District has not even evaluated the scope of this overlap, much less the additional costs that such duplicative reporting will impose on refineries. Nor has the District determined whether the proposed changes will result in documented improvements to the emissions inventory. WSPA requests that the District re-evaluate the emissions inventory requirements under Rule 12-15 and existing laws and regulations to minimize these many inconsistencies that impose significant compliance costs on refineries while providing no environmental benefits.

2. HRA Modeling Protocol, Modeling, and HRA

Necessity

In addition to the new emissions inventory requirements, proposed Rule 12-15 requires an entirely new Health Risk Assessment (“HRA”) Modeling Protocol and HRA. However, the District’s record of rulemaking has not demonstrated that a need exists for these new regulations.

The Staff Report attempts to demonstrate a need for the regulation by referring to the existing TAC inventories, noting that the five regulated refineries are among the top ten facilities in the District for risk-weighted TAC emissions, based on 2012 data. Staff Report at 12-16-17. The fact that refineries are on a “top ten” list of risk-weighted TAC emissions does not demonstrate that any of the facilities on that list pose a significant risk that requires additional assessment or control. Sources that are not even included on this list, such as mobile sources, may pose a far greater risk to the public than any of these sources. The rulemaking record does not contain any documentation demonstrating that the District reviewed the extensive available TAC emissions data from each refinery and determined that those emissions pose an unacceptable risk that requires additional action. In fact, the District’s Community Air Risk Evaluation (CARE) Program was formed to identify most vulnerable populations to air pollution health impacts, and of the five Bay Area refineries, only one refinery is located in a CARE identified impacted community. All the impacted communities are adjacent to high-traffic corridors, strongly suggesting that the true driver for air pollution vulnerable community impacts are freeways, not refineries. Improving Air Quality and Health in Bay Area Communities, Community Air Risk Evaluation Program Retrospective & Path Forward (2004 -2013), BAAQMD 2014.

Furthermore, to the extent emissions from a refinery did pose any remaining risk, the Hot Spots program would already require that refinery to further reduce emissions to minimize those risks. The Hot Spots program specifically requires increasing levels of response if facilities do not decrease their impact below the established risk thresholds. The rulemaking record contains no data or analysis of the ongoing effect of the Hot Spots program, or of the extent to which any risks may remain after full implementation of the controls required by that program; indeed, there is no information at all in the record to suggest that this program is not already effectively addressing any remaining TAC risks associated with refinery operations. In fact, the Staff Report directly acknowledges that refinery emissions have decreased over time. Staff Report at 12-16-17.

Authority

The sole authority cited for the new HRA requirements is Section 44391. Section 44391, however, does not authorize HRAs.

Indeed, no provision of the Hot Spots program authorizes Districts to compel across-the-board submissions of HRAs. Rather, after the submission of the emissions inventories, the

District was required to prioritize each facility into three tiers; HRAs were then required on a schedule, with the highest-priority category first. § 44360. These HRAs, in turn, led to airborne toxic risk reduction audits and, where appropriate, the development of individual plans to mitigate significant risks. § 44391. After this initial evaluation and implementation, updates may be required on a case-by-case basis where “new information becomes available” on the risks posed by a specific facility, or new emission reduction technologies would significantly impact risks to exposed persons. § 44391(i). The District has made no such facility-specific findings here, nor has it identified any such new technology.

Clarity

Please see the attached technical comments.

Consistency/Nonduplication

Please see the attached technical comments. Because the HRA is based on modeling, which in turn is based on data from the emissions inventories, the significant concerns with the accuracy and consistency of the emissions inventories will lead to inaccurate modeling results.

3. Ambient Monitoring Requirements

Necessity

The District has identified no need supporting additional monitoring requirements, either at the refinery fenceline or within the community. The Bay Area already has an extensive network of ambient monitors for criteria pollutants; similarly, the federal Refinery Maximum Achievable Control Technology (“MACT”) standards that were signed on September 29, 2015 will require refineries to implement fenceline monitoring for benzene.

Authority

None of the specific statutory provisions cited in the Staff Report authorize the District to require either ambient monitoring or community monitoring.

Other provisions not cited by the District do address monitoring, but none authorize the monitoring required here. Section 40715 requires the District to establish and implement its own TAC monitoring network, pursuant to the state board’s guidelines. However, nothing in this rule allows the District to assign this obligation to specific stationary sources operating within the District. Indeed, even if the District could delegate this obligation, it is not clear how the District could delegate its eminent domain powers to private entities, as would be necessary to allow individual companies to obtain access to property at appropriate locations throughout the community to install the required monitors.

Section 44342 authorizes the state board to develop requirements for source testing and measurement; Section 44342(c) further clarifies that the state board may identify fenceline monitoring as one mechanism of measuring source emissions. However, none of these provisions address community monitoring; indeed, the purpose of fenceline monitoring under 44342(c) is specifically to confirm emissions from the facility; community monitoring can serve no similar purpose, as such monitors will necessarily capture emissions from a variety of sources operating in the area. Further, the authorization to require monitoring as part of an emissions inventory is specifically granted to the state board, “in consultation with” the districts; individual districts are granted no authority to act except through the state board itself.

Clarity

There is a substantial lack of clarity with respect to the Monitoring Guidelines and specific regulatory requirements. Please refer to the attached technical comments.

Consistency/Nonduplication

The fenceline monitoring obligation is duplicative of monitoring requirements imposed under the Refinery MACT. Therefore, to minimize the incurrence of unnecessary costs and duplicative compliance requirements, the fenceline monitoring requirements should be consistent with federal Refinery MACT requirements. Furthermore, any monitoring requirements imposed as part of the Hot Spots program under Section 44342 or other state or local requirements should be harmonized with these monitoring protocols, so that the data collected by the fenceline monitors required under the Refinery MACT may be used as part of the required emissions inventories and HRAs.

Further, based on our inquiry of reputable vendors, there is no commercially-available technology that will accurately detect the wide array of TACs proposed by the District at the extremely low thresholds required. Furthermore, there is no sufficiently accurate way to ascribe the emissions back to a source when a refining facility is situated between two Interstates with considerable automotive congestion and emissions, as well as other municipal and industrial sources. This is an active area of research.

B. Comments on Specific Provisions

1. 12-15-207: Inclusion of cargo carrier emissions

Section 12-15-207 expressly requires facilities to include emissions from cargo carriers in their facility emission inventories, and the HRA protocol requirements do not clearly identify that mobile source emissions be excluded from the HRA, in spite of WSPA's previous comments identifying the importance of clarifying this exclusion. If emissions from cargo carriers are included in the HRA, then the requirements of Rule 12-16 are regulating those cargo carrier emissions through District limitations on facility emissions – a result that is clearly in conflict with the stated intent of AB 2588.

Federal law preempts the District's proposed section 12-15-207. The Interstate Commerce Commission Termination Act ("ICCTA") includes an express preemption clause that grants the Surface Transportation Board ("STB") "exclusive" jurisdiction over:

(1) transportation by rail carriers, and the remedies provided in this part with respect to rates, classifications, rules (including car service, interchange, and other operating rules), practices, routes, services, and facilities of such carriers; and

(2) the construction, acquisition, *operation*, abandonment, or discontinuance of spur, industrial, team, switching, or side tracks, or facilities, even if the tracks are located, or intended to be located, entirely in one State."

49 U.S.C. § 10501(b)(1)-(2) (emphasis added). The STB's exclusive jurisdiction over these areas "preempt[s] the remedies provided under Federal or State law." 49 U.S.C. § 10501(b).

Ninth Circuit precedent makes clear that the "ICCTA 'preempts all state laws that may reasonably be said to have the effect of managing or governing rail transportation.'" *Ass'n of Am. Railroads v. S. Coast Air Quality Mgmt. Dist.*, 622 F.3d 1094, 1098 (9th Cir. 2010) (internal citation omitted). The District's proposed rules regulate rail transport emissions by including such preempted rail operations in the facility emission inventories and imposing emission limits on such facility emissions, thereby regulating the rail operation emissions. The Ninth Circuit expressly held in *Association of American Railroads* that SCAQMD rules limiting emissions from idling trains were rules managing or governing rail transportation and were, therefore, preempted by the ICCTA.

Moreover, the District lacks the authority under California law to regulate emissions from railroad locomotives, and its attempt to do so through these proposed rules is unlawful. The California Health and Safety Code explicitly prohibits the District from regulating air contaminants from railroad locomotives. *See* California Health and Safety Code § 40720 ("No order, rule, or regulation of any district shall, however, specify the design of equipment, type of construction, or *particular method* to be used in reducing the release of air contaminants from railroad locomotives.") (Emphasis added.) As discussed above, the District's proposed rules

would regulate air emissions from railroad locomotives by requiring that such emissions be included in the facility emission inventory and then imposing limits on facility emissions.

Similarly, the District lacks the authority to regulate emissions from marine vessels. In *Pacific Merchant Shipping Ass'n v. Goldstene*, 517 F.3d 1108 (9th Cir. 2008), the 9th Circuit found that CARB regulations limiting emissions from the auxiliary diesel engines of ocean-going vessels within 24 miles of the California coast were emission standards and thus preempted by the Clean Air Act. The court stated: “In the end, Clean Air Act § 209(e)(2) preempts the Marine Vessel Rules and requires California to obtain EPA authorization prior to enforcement because the Rules are ‘emissions standards’ that require the engines ‘not emit more than a certain amount of a given pollutant.’”) *Id.* at 1115 (internal citation omitted).

Existing law similarly restricts the District’s ability to make a stationary source owner responsible for emissions from marine vessels. The D.C. Circuit Court of Appeals has already ruled that “it is entirely implausible that a vessel’s ‘to-and-fro’ emissions could be attributed to a marine terminal owner under any approach that the [Clean Air Act] would tolerate[.]” *NRDC v. EPA*, 725 F.2d 761, 764 (D.C. Cir. 1984). EPA has concluded that “[t]he ‘to and fro’ emissions and ‘hotelling’ emissions from the vessels are associated with the normal seagoing activities of the vessels and not with the industrial activities associated with the port[.]” Letter from C. Sheehan (EPA Region 6) to M. Cathey, El Paso Energy, and D. Dutton, Akin, Gump (Oct. 28, 2003).

Furthermore, emissions associated with the transport of goods are already being managed under various state-level programs. *See, e.g.*, the Goods Movement Emission Reduction Program, CA Health & Safety Code §§ 39625 *et seq.*; *id.* § 39630-32 (restricting incineration on vessels). These programs clearly allocate responsibility for implementation and enforcement to the state, not the District. *See, e.g., id.* §§ 29625.02(c); 39631(a). The Air Resources Board has further adopted, and continues to consider, a variety of emissions reductions measures that relate to many aspects of port operations, including cargo handling, operation of commercial harbor craft, fuel usage, and the use of shore power. No statutory provision provides similar authorization to the District; indeed, in those few instances in which the District is authorized to implement and enforce a program, the Code clearly says so. *See, e.g., id.* § 44299.80 *et seq.* (authorizing the District to provide grants for projects under the California Port Community Air Quality Program).

2. 12-15-217: Inclusion of emissions from non-refinery activities

In addition to the obligation to include cargo carriers under Section 12-15-207, Section 12-15-217 further requires that facilities include in their emissions inventories (and thus, by extension, their HRAs and subsequent emissions reductions plans) emissions from non-refinery sources that are located on or near refinery property, regardless of whether the refinery owns or operates the sources that generate these emissions. This obligation exceeds the District’s authority.

At the outset, and as discussed above, none of the authorities cited in the Staff Report grant the District this authority. Moreover, while Section 40701(g) authorizes the District to collect information regarding emissions from “any air pollution emission source,” the District may seek this information *only* from the “owner or operator” of the “air pollution emission source.” Here, the “air pollution emission sources” in question – such as co-located hydrogen plants under § 217, or vessels or railcars under § 207 – are both owned and operate by unrelated third parties, *not* the owner or operator of the refinery itself. Accordingly, to the extent the District requires additional data regarding the air emissions from these “air pollution emission sources,” it must seek this information from the owners and operators of those sources directly.

Indeed, it is not clear how the District expects a refinery owner to quantify and report accurate emissions data from sources and operations that it neither owns nor controls. Refineries do not have statutory or regulatory authority to compel a third party to provide data regarding that entity’s emissions – much less the detailed, point by point operational data required under Rule 15. We note that Section 217 purports to require the owner/operator of any “support facility” to provide this information to the Petroleum Refinery Owner/Operator, but there is no mechanism for the Refinery Owner/Operator to enforce this obligation. Moreover, vessels and railcars are not “support facilities” and so are not even subject to this obligation.

Accordingly, Section 217 impermissibly holds refineries legally responsible for failing to provide information they have no authority to compel others to provide. Furthermore, even if the third party were to voluntarily provide the requested information, the refinery itself would have no legal right or mechanism to review and validate the data to ensure that it is true, accurate, and complete, as the proposed rule provides no private right of action for the refinery owner against the owner or operator of the co-located source, railcar, or vessel.

3. 12-15-409 to 12-15-410: Emissions inventory and modeling guidelines

As currently proposed, Rule 12-15 states that the District will develop guidelines for developing the emissions inventories and modeling protocols; the Rule further provides that the District will periodically review and update these guidelines. Because the legal authorization for this program rests largely in the Hot Spots program, WSPA requests that the guidelines for developing the TAC inventories and modeling be consistent with the guidance established by the State under Section 44342.

Furthermore, the emissions inventories and modeling results that are the subject of these guidelines have highly significant ramifications on refinery owners and operators, as the results determine to what extent additional controls are necessary. Accordingly, it is critical that the District’s guidelines be based on a complete, objective review of the best available science and technology, with an opportunity for all interested parties to submit information and comments on the proposed guidance. Proposed Rule 12-15 do not allow for any review of the District’s emissions inventory guidelines.

See the attached technical comments for a more detailed discussion of concerns with the existing guidelines and the guideline development process.

4. 12-15-411: Confidentiality Provisions

The trade secret protections set forth in § 12-15-411 are insufficient to adequately protect highly confidential data, such as that contained in the requested crude slate reports and in the Solomon reports. Given that the legal authorization for disclosure of such data rests largely on the Hot Spots program, the trade secret provisions in the proposed rule must provide all of the protections guaranteed in § 44346, including the right to notification before any information is disclosed and criminal enforcement against District employees who knowingly and willfully disclose such information. Further, to the extent the information required to be submitted will be submitted or maintained by the District in electronic form, the District has not demonstrated that it is equipped to provide adequate cybersecurity measures to protect this sensitive information.

5. 12-15-412: Energy utilization analyses

Section 12-15-412 requires refineries to provide to the District copies of fuels studies performed by HSB Solomon Associates. The Staff Report indicates that the basis for this requirement is the District's desire to minimize GHG emissions within the District:

Although the GHG Cap-and-Trade program under AB 32 requires an overall GHG emission reduction in the state, it is possible that Bay Area refineries will partially meet their GHG reduction requirements by purchasing GHG allowances generated outside the Bay Area.

The Energy Audit element of Rule 12-15 (Section 12-15-412) would provide refinery data that Air District staff could use to determine whether less-than-optimum energy management is occurring at Bay Area refineries. If there are areas of energy management that can be significantly improved—and especially if the refineries opt to purchase GHG allowances rather than implement best practices in energy management—the Energy Audit would allow Air District staff to determine whether a targeted rule-making should be pursued to achieve actual GHG emission reductions at Bay Area refineries in order to ensure the achievement of GHG emissions reduction goals as well as the realization of associated co-benefits.

Staff Report at 12-16-25 to 26.

As discussed above in WSPA's comments on the emissions inventory requirements, none of the statutes that the District cites as authorization for this proposal allow the District to regulate GHG emissions. Indeed, WSPA has not identified *any* statutory provision that authorizes the District to regulate GHG emissions; all of the existing GHG programs are operated and implemented at the state or national level. *See, e.g.*, CA Health & Safety Code §

38510 (“The State Air Resources Board is the state agency charged with monitoring and regulating sources of emissions of greenhouse gases that cause global warming in order to reduce emissions of greenhouse gases.”). It would be entirely inappropriate for the District to regulate GHG emissions directly, given that the sole basis for regulation is their national/international effects; indeed, localized regulation of GHGs may even interfere with state and national control efforts. *See* Letter from R. Corey, California Air Resources Board, to J. Broadbent, BAAQMD (Sept. 17, 2015). The purpose of the state cap-and-trade program is to provide market mechanisms to facilitate GHG reductions. By restricting activity in one part of the market, the District’s actions would frustrate the efficient operation of the cap-and-trade market. Further, there is no need within the District to reduce GHG emissions locally, as GHGs are a global pollutant with no localized emission impacts.

The District also seeks to compel refineries to provide documents that they do not have the right to disclose. The studies in question were performed by Solomon, and are the property of Solomon, not the refineries. The District already has access to the same underlying data that Solomon reviewed, as the refineries are already required to report this data under their existing annual emissions inventory requirements. Accordingly, to the extent the District has a legitimate basis to investigate the refineries’ energy efficiency, it already has the information required to do so.

Further, the District’s effort to compel energy efficiency data are duplicative of CARB’s energy efficiency assessment and the energy assessment required under the Boiler MACT, 40 C.F.R. Part 63, Subpart DDDDD. Even assuming the District had both the authority to regulate GHG emissions and a demonstrated need to compel additional GHG reductions within the Bay Area, it has not even evaluated the extent to which these existing requirements already provide the necessary data to enable it to do so.

IV. Comments on Regulation 12, Rule 16

A. General Comments

1. Health Risk Thresholds and Risk Reduction Requirements

Necessity

While Rule 15 establishes new requirements for quantifying health risks from TACs, Rule 16 implements the remainder of the Hot Spots Act: the determination of whether the HRA from a particular facility exceeds acceptable Health Risk levels; and the ensuing obligation to take specific actions to reduce any excess risks to below these levels. Yet the District has identified no need justifying such an extensive revision to the Hot Spots program.

First, as discussed above in the comments on Rule 15, the existing Hot Spots program has been highly effective. That program remains in effect: facilities continue to implement the emissions reductions actions called for under their existing plans; and the existing rules continue

to require re-assessments when new information or control technology is developed. The District has identified no data suggesting that these ongoing facility actions and regulatory obligations are insufficient to achieve the program's goals.

The proposed rules, however, go beyond merely implementing the state program: they directly redefine what is considered an acceptable Health Risk Threshold. Again, however, the District has identified no data or analysis indicating that these lower thresholds are necessary.

For example, Section 44360 requires the District to prioritize and categorize various facilities for purposes of preparing HRAs, based on the evaluation of a number of factors; Section 44363, in turn, requires the District to prepare an annual report that describes these priorities and categories. Yet the rulemaking record does not contain any such reports indicating that, for example, the District had concluded that the existing categorization was insufficiently protective, or that regulated facilities were not making sufficient progress in reducing excess risks.

The District appears to justify these new HRAs by referring to the new HRA guidelines issued by the Office of Environmental Health Hazard Assessment ("OEHHA"). These guidelines, however, simply provide updated methodologies to be used in future routine HRA updates; they do not provide new information about risks to the public that warrant immediate revision to any specific refinery HRA, much less regulation requiring across-the-board revisions to all refinery HRAs.⁴ Moreover, the California Air Pollution Control Officers Association ("CAPCOA") has already indicated that, in light of these new methodologies, it will develop guidelines to assess appropriate public notification and risk reduction thresholds in 2016. There is no need for the District to rush to re-assess risks before CAPCOA has the opportunity to fully evaluate and assess the import of these changes.

Authority

The sole authority cited by the District for its regulation of TACs is Section 44391; that section states that, when the District determines that a particular facility's HRA presents a "significant risk" associated with TAC emissions from the facility, the facility must prepare an audit and develop a plan to reduce risks to below this "significant risk" level within the next five years.

This provision is part of a larger program that established a stepwise approach to regulation of TACs. First, facilities developed and submitted an initial emissions inventory plan, followed by an emissions inventory. §§ 44340-44341. Next, the District reviewed those

⁴ Proposed Regulation 12-15 references OEHHA's Air Toxic Hot Spots Risk Assessment Guidelines. This guidance document states that the risk assessment process has a great deal of uncertainty and is designed to err on the conservative side. As a result, calculated refinery risks will be significantly higher compared to previous HRAs, even though there has not been an actual increase in refinery emissions.

emissions inventories and established priorities for performing HRAs. § 44360). Facilities then conducted HRAs based on the priorities established by the District (§§ 44360-44361); if the HRA demonstrated that the risks from a specific facility exceeded established thresholds, the facility conducted a risk reduction audit and developed a plan to implement risk reduction measures. § 44391. The only ongoing authority granted the District is to require case-by-case updates of facility risk reduction plans when new information becomes available on either the risk posed by a specific facility or the available control technologies; it does not grant the power to impose across-the-board updates by regulatory fiat. In short, Section 44391 allows the District to force revisions to individual plans in light of new information on existing risks or controls; it does not allow the District to move the goalposts of what qualifies as a “significant” risk in the midst of these efforts.

Similarly, Section 39650(d) clearly states the Legislature’s intent “that the identification and regulation of toxic air contaminants should utilize the best available scientific evidence gathered from the public, private industry, the scientific community, and federal, state, and local agencies, and that the scientific research on which decisions related to health effects are based should be reviewed by a scientific review panel and members of the public.” Yet the rulemaking record contains no indication that the District has conducted such an objective, thorough review – much less the scientific and public review process envisioned by the Legislature – to determine that the existing Health Risk Thresholds are insufficiently protective of public health.

Clarity

Please see the attached technical comments.

Consistency/Nonduplication

As described in WSPA’s comments to Rule 12-15, the proposed revisions to the Hot Spots program pose significant concerns about the duplicative nature of these requirements, yet with significant distinctions including both the differences in the scope of coverage and in the different health risk thresholds under the proposed regulations.

Section 40727.2 requires the District to perform a detailed analysis of the overlap between the proposed rule and all existing federal, state, and local air pollution control requirements that apply to the regulated sources – including a detailed review of each element of these programs, such as averaging provisions, units of measure, operating parameters, work practice requirements, monitoring requirements, reporting and recordkeeping, test methods, and others. The District’s Section 407.27 analyses for Rules 12-15 and 12-16, however, do not identify any requirements that apply to refineries under the existing Hot Spots program. This assertion is incorrect: as described above, the Hot Spots program requires facilities to continue to implement their risk reduction plans until emissions have been reduced below the significance thresholds; similarly, the District continues to have authority to compel revisions to existing plans when new information or technology is developed. The District has conducted no analysis

of the extent to which these statutory provisions continue to apply to the refineries at issue here and overlap and/or conflict with the proposed new rules.

2. Refinery-Wide SO₂/PM_{2.5} emissions limits

Necessity

The District has not identified any need that justifies such extensive additional regulation. The Staff Report bases the need for the emissions caps solely on the size of the facilities: “Refineries are among the largest single sources of criteria pollutants . . . in the Bay Area.” Staff Report at 12-16-17. This rationale is legally insufficient: it is based solely on the size of the facilities involved, without any analysis of the extent to which existing regulations are already adequately controlling emissions from these sources, or whether additional regulation is needed to meet air quality goals, or whether additional controls on the refining industry are technologically achievable or cost-effective.

In fact, the District’s narrow focus on the quantity of refinery emissions obscures the fact that air quality in the Bay Area is already good for SO₂ and PM_{2.5}. The proposed rule requires each individual refinery to demonstrate attainment with the National Ambient Air Quality Standards (“NAAQS”) at the facility’s fence line. The District’s analysis, however, ignores the fact that the Bay Area is *already* in attainment with the NAAQS for both SO₂ and PM_{2.5}.⁵

Indeed, the District’s analysis under its current rules directly controverts its recent arguments to EPA opposing more stringent regulation of certain PM_{2.5} precursors. As the District stated in 2014:

EPA has determined that PM levels in the Bay Area do not exceed any PM_{2.5} NAAQS (i) by formally designating the region as “attainment of the standard, in the case of the annual PM_{2.5} NAAQS; and (ii) by administratively determining that the region’s PM_{2.5} levels do not exceed the standard, in the case of the 24-hour PM_{2.5} NAAQS. Because the Bay Area does not have any PM_{2.5} levels that exceed the standards, *by definition there are no sources of PM_{2.5} precursors that currently contribute, significantly or otherwise to any PM_{2.5} levels that exceed the standards.*

Letter from J. Karas, BAAQMD, to G. Rios, EPA Region 9 (Dec. 22, 2014) (“First Karas Letter”) (emphasis added, footnote omitted). EPA agreed with this assessment and concluded that additional regulation of specific PM_{2.5} precursors was *not* warranted. See 80 Fed. Reg. 52236, 52242 (Aug. 25, 2015). Given the District’s own conclusion a year ago that further

⁵ The District has been designated as attainment of the annual PM_{2.5} NAAQS, and more than two years ago, EPA affirmed that the Bay Area has achieved attainment with the 24-hour standard. See 78 Fed. Reg. 1760 (Jan. 9, 2013).

regulation was *not* warranted to ensure compliance with the NAAQS, the District cannot now demonstrate that further regulation is not only warranted but necessary to achieve this same goal.

The District also ignores the significant improvement in emissions over the past decade. CAPCOA's recent report on the individual air districts' progress shows this dramatic change: based on 2000-2002 data, every single Bay Area county with available data failed to attain the PM_{2.5} NAAQS; based on 2012-14 data, every single one of those counties has now attained the NAAQS. See "California's Progress Toward Clean Air" (CAPCOA 2015), Appx. G, pp. 65-66.

All of this improvement has been achieved without the additional controls that will be required by the proposed rules. The District cannot justify source-specific NAAQS compliance demonstrations for PM_{2.5} and SO₂ when the area has already achieved the NAAQS for these pollutants, and when existing rules continue to improve air quality.

The District staff presentation to its Board of Directors on October 21, 2015 shows that during the winter, when ambient PM_{2.5} concentrations are highest, wood smoke is by far the largest source of PM_{2.5} emissions in the Bay Area.⁶ Refineries do not produce wood smoke. The presentation shows that all Bay Area industry contributes less than 20% of winter PM_{2.5} emissions. In fact, both wood smoke and mobile sources individually contribute more PM_{2.5} emissions than all industry PM_{2.5} emissions combined.

Furthermore, assuming the District could justify any additional regulation in light of these significant air quality improvements, the proposed rules go well beyond any demonstrated need. The Staff Report points out one alleged "hole" in the existing regulatory program: the fact that refineries have certain "grandfathered" equipment that is not subject to mass emissions limits. Staff Report at 12-16-12.

At the outset, the Staff Report is incorrect in characterizing the treatment of grandfathered sources as a regulatory oversight. The federal Clean Air Act was expressly designed to apply more stringent requirements for new and modified equipment while allowing for the continued operation of existing sources.

This regulatory difference, however, does not create a "hole" that the District must fill. As the Staff Report notes, refineries are already subject to multiple overlapping requirements. See the "partial" list at Staff Report 12-16-16 to 12-16-17. Many of these programs *do* directly limit emissions from grandfathered sources. Just a few of these programs include:

- Regulation 9, Rule 10 imposes NO_x limits on pre-1994 heaters and boilers.
- Federal MACT standards apply to both new *and* existing (grandfathered) sources. For example, fluidized catalytic cracking units are subject to particulate matter and SO₂ emission limits under the Refinery MACT.

⁶ "Public Hearing on Proposed Amendments to Regulation 6, Rule 3: Wood Burning Devices," October 21, 2015 presented by Tracy Lee, Page 6.

- Sulfur reduction units are subject to District Rule 9-1 and Refinery MACT SO₂ emission limits.
- Fuel gas combustion devices' SO₂ emissions are similarly restricted by Title V permit conditions and consent decrees.

The District does not even evaluate the extent to which grandfathered sources are already regulated under these and many other existing regulations and permit requirements. Instead, the District simply ignores the presence of these programs and controls by focusing on the units by which emissions are measured. Specifically the Staff Report implies that the only acceptable regulatory limit is one that directly limits mass emissions from a refinery (*e.g.*, lb/hr). The mass emissions limit, however, is just a way to measure performance; it is not the only way, nor does it ensure better control than emissions limits based on a required removal effectiveness (*e.g.*, 98% reduction), a maximum concentration (*e.g.*, 100 ppm), production efficiency (*e.g.*, lb per ton produced), or even an equipment standard (*e.g.*, using floating roofs on tanks). Focusing on the format of the emissions standard, rather than the degree of emissions reductions needed to achieve the NAAQS and the cost-effectiveness of the controls available to do so, is putting the cart before the horse.

In sum, the District's focus on a mass emissions limit as the only "acceptable" mechanism to ensure an appropriate level of emissions reductions from grandfathered equipment leads it to ignore the significant controls that already apply to this equipment. As a result, the Staff Report does not even evaluate whether a regulatory gap exists, much less assess the additional degree of controls that might be necessary to close this gap. Therefore, the District has failed to demonstrate a need for additional regulation to address this alleged regulatory gap.

To the extent any regulatory gap remains, it is a small one. As the Staff Report itself points out, equipment is grandfathered only if (i) it was constructed before 1979, and (ii) it has not been modified at any time in the past 35 years. Staff Report at 12-16-12. As the Staff Report also points out, all refinery equipment installed since that time demonstrates that all other refinery equipment – in sum, any equipment installed or modified at any time over the past 35 years – is already extensively regulated under a panoply of regulations. Staff Report at 12-16-11 to 12, 12-16-16 to 17. Accordingly, to the extent the District can demonstrate any need for additional regulation, that need is limited to grandfathered sources. Nothing in the Staff Report demonstrates a need for an additional layer of controls on non-grandfathered sources.

Finally, the proposed regulation is far more intrusive than is necessary to ensure attainment of the NAAQS. The proposal requires each refinery to perform an individual NAAQS compliance demonstration, assuming that each individual piece of equipment is operating at its maximum hourly emissions rates, at the same time. These assumptions result in conservatively high emission rate estimates that are far beyond any scenario in which the refineries could actually operate. As a result, the proposed rule will require facilities to reduce their permitted emissions rates from equipment across the refinery, even though the maximum emission rates during actual operation would never cause an exceedance of the NAAQS. EPA

guidance for demonstrating compliance with the NAAQS states that actual, rather than allowable, emissions may be modeled.⁷

This degree of over-regulation is intrusive and unnecessary to meet the District's legitimate air quality goals. Existing regulations already provide many alternatives to ensure facility-wide emissions do not exceed specified levels, without requiring overly stringent controls on each individual piece of equipment. For example, facility-wide caps or Plant-wide Applicability Limits ("PALs"), coupled with ongoing monitoring and emissions tracking, can ensure that overall facility emissions do not exceed specified levels, without imposing unnecessary restrictions on each individual piece of equipment. There is simply no need that justifies the existing proposal when significantly less burdensome alternatives are available to achieve the stated goal.

Authority

BAAQMD's attempt to require refineries to demonstrate that, at their maximum hourly operating rates for each process unit, their emissions will not violate the NAAQS at the facility boundaries runs afoul of the federal Clean Air Act and is therefore unlawful.

First, the Clean Air Act's framework makes clear that NAAQS are not intended to be enforced against individual facilities. To set the NAAQS, EPA must evaluate a variety of impacts. The primary NAAQS must be set at a level to protect the public health with an adequate margin of safety; this analysis, therefore, focuses on the human health effects of the pollutant at ambient concentrations. 42 U.S.C. § 7408(a)(2). Secondary NAAQS, in turn, must be set at a level to protect public welfare. 42 U.S.C. § 7409(b)(2).

The NAAQS itself is not directly enforceable against individual facilities. *See American Trucking Associations, Inc. v. EPA*, 175 F.2d 1027, 1044 (D.C. Cir. 1999) ("NAAQS themselves impose no regulation upon small entities. Instead, the several States regulate small entities through the state implementation plans (SIPs) that they are required by the Clean Air Act to develop."). Rather, once EPA establishes a NAAQS, Congress directs individual states and authorized Districts develop individual SIPs to achieve and maintain the NAAQS within each regulated area. The states and districts then submit demonstrations to EPA that implementation of and compliance with the SIP requirements will ensure compliance with the NAAQS across the area (the "attainment demonstration").

The Clean Air Act, however, limits the types of requirements that the state or district may take credit for in its SIP. Specifically, the Act provides that the SIP is limited to "enforceable emissions limitations and other control measures, means, or techniques[.]" 42 U.S.C. § 7410(a)(2)(A). A general obligation to comply with the NAAQS is *not* an "emissions limitation"

⁷ SO₂ NAAQS Designations Modeling Technical Assistance Document, U.S. EPA, Page 10, <http://www3.epa.gov/airquality/sulfurdioxide/pdfs/SO2ModelingTAD.pdf>.

or a “control measure, means, or technique” that can be used for this purpose. As EPA has noted,

The NAAQS should not be confused with emission standards. The latter standards apply to individual sources of air pollution or categories of industrial sources. The NAAQS, on the other hand, serve as benchmarks from which each state derives the total emission reductions necessary to be accomplished in a given area. The requisite total emission reductions are translated into specific emission limitations that sources must meet on a continuous basis. Consequently, EPA does not enforce the NAAQS per se. Instead, EPA enforces emission standards designed to contribute to achievement and maintenance of the NAAQS.

U.S. EPA Clean Air Act Compliance / Enforcement Guidance Manual (1986) at 1-201, 1-202 available at (<http://envinfo.com/caain/enforcement/caad131.html>).

Courts have also long recognized that NAAQS do not regulate individual facilities and thus refused to enforce the NAAQS against individuals. *Cf. League to Save Lake Tahoe, Inc. v. Trounday*, 598 F.2d 1164, 1173 (9th Cir. 1979) (“The effect of appellants' position is to blur the established distinction between an ‘emission standard or limitation’ and the ambient air quality standards. To adopt their view would not only contravene the principle that such air quality standards are not emission limitations . . . but would also sanction federal jurisdiction based solely upon allegations of a prospective violation of the ambient air quality standards.”);

Of course, the District may elect to regulate more stringently than is required under the Clean Air Act, to the extent such additional regulation is authorized by State law. Here, however, the only statutory authority the District cites that allows it to regulate criteria pollutants is Section 40001, which gives the District the authority to adopt regulations to “achieve and maintain” the NAAQS. As described above, however, the proposed regulations are *not* authorized to “achieve and maintain” the NAAQS, and therefore they exceed the scope of this provision.

The proposed regulations also do not comply with the other requirements set forth in Section 40001. First, Section 40001 requires the District to identify a problem the proposed rule will alleviate before regulating. As discussed above in WSPA’s comments on the necessity of the rule, the District has not identified a problem that justifies the proposed requirements.

Second, Section 40001 also requires District to determine that the proposed rule will promote attainment/maintenance of NAAQS. As discussed above, however, the area has already attained the NAAQS for both pollutants the rule regulates. The District has not demonstrated how additional regulation is required to attain standards that have already been attained.

Third, Section 40001 requires the District to provide for alternative methods of achieving compliance with control requirements. As discussed above, other less-burdensome alternatives exist for ensuring that total facility emissions do not contribute to a NAAQS exceedance, such as facility-wide caps based on actual emissions, coupled with emissions tracking to ensure the cap

is not exceeded. The proposed rule, however, allows no such less-burdensome alternatives, nor does it explain why such alternatives would not achieve the stated goals of the regulation.

Indeed, taken as a whole, Section 40001 demonstrates a legislative intent to provide facilities with the maximum operational flexibility possible, within the constraints of the overall emissions limits that EPA, the State, and the District have determined are necessary to protect health and the environment. Rule 12-16 completely violates this principle, imposing highly detailed operating, modeling, and monitoring requirements at a minute level, despite the fact that far less intrusive means are available to meet these same goals.

Clarity

See the attached technical comments.

Consistency/Nonduplication

Proposed Rule 16 imposes a significant new layer of requirements on refineries, as it compels them to adopt a site-wide emissions limit, which may then be decreased based on modeling results. This refinery-wide limit will therefore necessarily duplicate, and in some cases conflict with, the many other regulatory and permit limits that already apply to each of these sources.

The Staff Report has identified many existing regulatory requirement at the federal, state, and District level that apply to refineries; the District itself acknowledges that the full page of rules it cites represents only a “partial” list of applicable rules. Staff Report at 12-16-16. However, the District’s Section 40727.2 analysis fails to evaluate the duplicative and conflicting requirements set forth in any of these rules. That analysis does not even mention the obligation in §§ 12-16-304 and 405 to obtain and comply with a refinery-wide emissions cap; indeed, the only mention made of the “cap” is a note that such caps may be required under various permits.

This cursory evaluation does not come close to the detailed analysis required by Section 40727.2. That section requires the District to prepare a written analysis of “all existing federal air pollution control requirements,” including BACT, and “any of that district’s existing or proposed rules and regulations that apply to “the same equipment or source type” as under the proposed rule. § 40727.2(a). This statute does not merely ask the District to identify existing federal or District rules that impose *exactly the same requirement* as the proposed rule; rather, it demands that the District identify all other rules that “*apply to the same equipment or source type*” (emphasis added).

Section 40727.2 also requires that the District do more than merely identify these other rules: it must then “compare the elements of each of the identified air pollution control requirements to the corresponding element or elements of the district’s proposed new or amended rule or regulation.” § 40727.2(c). These elements include: a comparison of averaging provisions, units of measurement, and other elements associated with emissions limits; operating parameters and work practice requirements; monitoring, reporting, and recordkeeping

obligations; and any other element warranting review. § 40727.2(d). Where any element of the proposed rule differs from the corresponding element of an existing obligation, the analysis must “note the difference or differences.” § 40727.2(e).

Here, the District’s 40727.2 analysis does not even identify the many other regulatory requirements that already apply to refinery equipment, much less conduct the detailed comparison of each element of the new rule to each of these existing requirements.

B. Comments on Specific Provisions

See attached technical comments.

V. Comments on Regulation 6, Rule 5

A. General Comments

Necessity

The stated purpose of Rule 6-5 is to reduce ammonia emissions, which are a precursor to PM_{2.5}, and thus to reduce formation of PM_{2.5} and assist in compliance with the NAAQS and the state ambient standards. Staff Report at A-1. As discussed above, the District has not demonstrated a need for additional reductions of PM_{2.5}, as the area has already achieved attainment of the PM_{2.5} NAAQS, and mobile sources and wood smoke individually contribute more to ambient PM_{2.5} levels than all Bay Area industrial operations combined.

Beyond this, it is unclear how the District can demonstrate a need for additional ammonia controls as a precursor to PM_{2.5} generation when the District has just spent the past two years convincing EPA that ammonia from stationary sources is *not* a significant contributor to PM_{2.5} formation in the Bay Area.

Section 189(e) of the CAA requires the District to ensure that its New Source Review (“NSR”) program applies to any PM_{2.5} precursors that contribute “significantly” to any exceedance of the NAAQS. The District’s recent revisions to its NSR program, however, excluded ammonia. The District justified this exclusion by pointing out (i) that the District is currently in attainment with all NAAQS for PM_{2.5}; and (ii) ammonia is “not a significant contributor to secondary PM formation[.]” First Karas Letter at 2. EPA agreed with this assessment and concluded that additional regulation of ammonia as a precursor to PM_{2.5} was *not* warranted. *See* 80 Fed. Reg. 52236, 52242 (Aug. 25, 2015). The current proposal provides no data or justification to explain why additional regulation of ammonia was not warranted a year ago, but is “necessary” a year later.

The District has further not explained why additional ammonia reductions are necessary from refineries in particular. During discussions with EPA over the exclusion of ammonia from the NSR program, the District fought to exclude three major sources of ammonia emissions from

the program. See Letter from J. Karas, BAAQMD, to G. Rios, EPA Region 9 (July 15, 2015) (“Second Karas Letter”). Each of these three sources generated between 164 and 308 tons per year (“tpy”) of ammonia alone, for a total of 686 tpy ammonia, and an average of 229 tpy per facility. Conversely, the total secondary PM emissions (*i.e.*, ammonia + all other precursors) from the three refineries that would be regulated under Rule 6 range from 91 to 255 tons per year, for a total of 444 tpy secondary PM_{2.5} and an average of 148 tpy per facility. Staff Report at 12.

In other words, the three major ammonia sources generate more than 50% more ammonia per year than the refineries generate in *all PM_{2.5} precursors combined*. Yet only last year, the District determined that these sources’ ammonia emissions did not significantly contribute to PM_{2.5} nonattainment. The District cannot now reasonably conclude that three refineries, with total PM_{2.5} emissions 1/3 *lower*, do pose a significant threat to the area’s attainment status that necessitates immediate regulation. If 686 tpy of ammonia emissions is not significant for PM_{2.5} attainment, certainly 444 tpy of total precursor emissions is even less so.

Of course, the District may change its position when new data or analysis demonstrates that its earlier assumptions or conclusions are incorrect. However, the record that the District has made available for public comment does not contain any data or analysis that would justify this change in position over the past year. Furthermore, if data were available to support additional ammonia reductions, the appropriate mechanism for doing so would be to evaluate *all* significant ammonia sources to evaluate what controls are available and cost-effective – not to specifically target a single industry regardless of whether it contributes significantly to the problem.

B. Comments on Specific Provisions

Section 6-5-301 imposes an unachievable timeframe for optimizing ammonia emissions. As described more fully in the attached technical comments, the proposed rule requires a protocol by March, provides two months for District approval or disapproval, and then allows only six months (assuming the protocol is approved) to initiate and complete the optimization. An appropriate optimization study, however, must be able to evaluate the refinery’s performance across a variety of operating conditions, and each such operating condition must be maintained for a sufficiently long period to account for natural variability. Because the results of the optimization study will become an enforceable emissions limit, the rule must provide sufficient time to ensure that those results accurately characterize refinery ammonia emissions under all foreseeable operating scenarios.

Section 6-5-501 requires both continuous emissions monitors to measure the performance of the emissions controls and parametric monitors to monitor the ammonia injection rate. These requirements are duplicative and overly restrictive. As discussed above, § 400001 requires that the District allow for alternative compliance mechanisms, including alternative monitoring. Most specifically, Section 40001(d)(3) states:

If a district rule specifies an emissions limit for a facility or system, the district shall not set operational or effectiveness requirements for any specific emission control equipment operating on a facility or system under that limit. Any alternative method of emission reduction, emissions monitoring, or recordkeeping proposed by the facility shall include the necessary operational and effectiveness measurement elements that can be included as permit conditions by the district to ensure compliance with, and enforcement of, the equivalent performance requirements[.]

The District should allow individual facilities to propose appropriate monitoring sufficient to demonstrate compliance with the applicable ammonia limit.

VI. Regulation 8, Rule 18

A. General Comments

Necessity

Proposed Rule 8-18 will require refineries to conduct frequent leak monitoring of components in heavy liquid service. The District justifies the necessity of Rule 8-18 based on two asserted facts: (1) that current emissions from equipment in heavy liquid service are estimated at 1,476 tpy, *see* Staff Report at B:2; and (2) that these components are currently exempt from instrument monitoring, *see id.* at B:1.

The District's has not provided a reasonable basis for the extremely elevated emissions that the District assumes are attributable to leaking components in heavy liquid service. As of May 2014, the District's emissions inventory report identified only 0.6 tons per day (219 tpy) of *total* fugitive emissions from all Bay Area refinery processes; equipment leaks are only one portion of these total emissions, and leaks from equipment in heavy liquid service are only a small portion of that portion. *See* attached Technical Comments. The Staff Report now asserts that leaks from equipment in heavy liquid service alone are more than 6 ½ times larger than the total fugitive emissions inventory a mere 18 months ago, based on District staff's unexplained interpretation of the available data.

The District has not identified any new data to support this dramatic change; there are no new studies of emissions from equipment in heavy liquid service suggesting that emissions from these components are dramatically higher than previously believed, nor have there been any changes in the emission inventory guidelines for reporting emissions from equipment leaks. In fact, CAPCOA/CARB guidelines identify that components in heavy liquid service "are not included in component counts used for the quantification of fugitive emissions." Emissions data submitted by WSPA members are support that exclusion, identifying negligible emissions from these components – *not* the almost 1,500 tpy the District now calculates. *See id.* Hence, the District overstates the actual emissions from leaking components in heavy liquid service, and then uses that inflated figure to justify a rule that would otherwise be prohibitively costly. The

District has failed to demonstrate that substantial evidence supports its highly-inflated calculations of emissions from these components, and it is arbitrary and capricious to ignore longstanding, CARB-approved calculation methodologies.

In fact, in prior discussions with WSPA, District staff agreed that additional information was required to characterize emissions from equipment in heavy liquid service more accurately. Over eight months ago, the District committed to proposing a data collection study by late March, 2015. The District reneged on this commitment. Instead, it rushed to regulate leaks from heavy liquid equipment – without first obtaining the data necessary to demonstrate whether these additional controls are even necessary. At best, the record supports the need to obtain more direct data regarding emissions from equipment leaks in heavy liquid service; the record provides no substantial evidence to support the need for additional regulation in the absence of this additional data, and it would be arbitrary and capricious to finalize Rule 8-18 without first obtaining such additional data.

The District also ignores the impact of existing inspection requirements on emissions from equipment leaks from components in heavy liquid service. The Staff Report focuses on the fact that heavy liquid equipment is exempt from instrument monitoring requirements. Staff Report at B:2. This equipment is not entirely unregulated, as the Staff Report implies: as the District acknowledges, heavy liquid components *are* monitored under federal law using “visual, audible, olfactory, or any other detection method,” Staff Report at B:1; any leaks detected through this method must be repaired within the same timeframes as provided for other leaking equipment. *See, e.g.*, 40 C.F.R. § 60.482-8. Furthermore, refineries typically inspect for leaks each shift and repair leaks promptly both for environmental and Process Safety Management reasons. The District has not evaluated the degree of emissions control already provided by these programs, nor has it assessed whether instrument monitoring would more accurately and effectively characterize leaks from this equipment.

Moreover, the different regulatory treatment of equipment in heavy liquid service is intentional, not an oversight on EPA’s part: equipment in heavy liquid service is not subject to the same instrument monitoring requirements as equipment in light liquid/gas service both because it poses a much less significant environmental risk, and because heavy liquid leaks are more readily observable through visual inspections (because they do not volatilize as leaks of gaseous materials do). *See, e.g.*, 46 Fed. Reg. 1136, 1148 (Jan. 5, 1981) (“Flanges in all services, relief valves in light liquid service, and all components in ‘heavy liquid’ (VOC fluids with vapor pressures less than 0.3 kPa at 20°C) VOC service were excluded from the routine monitoring and inspection requirements. . . . These sources would be excluded from routine monitoring on the basis of data from EPA testing in petroleum refineries. . . . Components in ‘heavy liquid’ VOC service have emission rates that are much lower than “light liquid” or gas service components. *Since all three of these types of sources contribute a very small portion of overall emission, including them in the monitoring and equipment requirements was not considered reasonable.*) (emphasis added). Even as EPA has reviewed and updated these requirements over the years, the Agency has not identified any basis to change this fundamental regulatory structure. *See, e.g.*, Petroleum Refinery Sector Risk and Technology Review and New Source Performance

Standards (signed Sept. 29, 2015) at 143-144, 351-361 (residual risk and technology review did not result in any changes to heavy liquid component requirements). While the District may elect to regulate more stringently than EPA, that decision must be based on substantial evidence and may not be arbitrary and capricious.

The Staff Report simply assumes that the existing regulatory structure is insufficient to control leaks from equipment in heavy liquid service; without providing any factual basis or reasoned argument to support this assumption.

Authority

Proposed Rule 8-18 deletes the existing alternative compliance options set forth at 8-18-308 and 8-18-405. This deletion directly contravenes Section 40001(d), which specifically requires the District to allow facilities to implement alternative emissions reductions and monitoring plans.

Clarity

See attached technical comments.

Consistency/Nonduplication

See attached technical comments.

B. Comments on Specific Provisions

Section 8-18-311 imposes both maximum concentration and mass emissions limits on equipment that is on the non-repairable list under Section 8-18-306. These new obligations defeat the purpose of the non-repairable equipment list and risk forcing facilities into unplanned shutdowns – the very problem Section 306 was designed to prevent.

By definition, the non-repairable equipment list is limited to:

- (1) Leaks that the facility has already reduced to the lowest achievable level using best modern practices;
- (2) Leaks that that cannot be further repaired while the unit is operating; and
- (3) Leaks from “essential equipment” that “cannot be taken out of service without shutting down the process unit that it serves.”

§§ 8-18-209, 8-18-226, 8-18-306. The District’s own data demonstrate that this is a very limited universe of equipment, with an average of only .04% of equipment on refineries’ existing lists. Staff Report at B:3.

Section 306 provides a necessary exemption that allows the facility to continue operating until the next planned process unit shutdown, at which point the leak must be repaired. The proposed revisions to Rule 18 would further limit the equipment that can be placed on this list by limiting the exemption to leaks that are below both (1) 10,000 ppm, and (2) 5 lbs/day of total organic compounds. The District justifies this additional constraint by noting that repairing these leaks as soon as possible “is better than allowing equipment to remain on the non-repairable list for up to five years[.]” Staff Report at B:4.

The District’s analysis ignores the consequences of forcing immediate repairs to this equipment. As discussed above, the non-repairable list is already limited to equipment that cannot be repaired without shutting down the process unit. Therefore, if equipment on this list exceeds the 5 lb/day or 10,000 ppm leak rate, the refinery would be forced to shut down the process unit immediately, instead of waiting until the next planned shutdown. These unplanned process unit shutdowns, in turn, generate significantly more emissions than a single unrepaired leak, due to the need to clear vessels and piping and to flaring emissions necessitated by shutdown and restart. Indeed, that is precisely why these exemptions are a common and necessary part of every LDAR program – because forcing an immediate unplanned process unit shutdown is *not* “better than allowing equipment to remain on the non-repairable list” until the next planned shutdown. *See* 57 Fed. Reg. 62608, 62681 (Dec. 31, 1992) (explaining that “the [negotiated rule] Committee recognized that there are circumstances when repair of equipment is not feasible without a process unit shutdown and this may result in greater emissions than delaying repair until the next scheduled shutdown. The Committee, therefore, included the delay of repair provisions in the existing rules in the negotiated standard.”). Unplanned shutdowns also risk disrupting product supply. The District should consider the perspectives of the California Energy Commission and the FTC before adopting a regulation that may result in unnecessary market volatility for no compelling environmental benefit.

In addition, the District’s analysis of the costs and emission reductions associated with Rule 8-18 does not address the costs and additional emissions associated with unplanned process unit shutdowns. *See* Staff Report at B-5. At a minimum, the District must perform a new analysis that addresses these impacts.

Section 8-18-401 also requires inspections of all equipment, including annual inspections of inaccessible valves and pressure relief devices and quarterly inspections of essential equipment placed on the non-repairable list. § 8-18-401.3, 401.9. These provisions fail to account for equipment that is unsafe to monitor, such as connections near the tip of operating flares. Because these flares are necessary safety devices, compliance with the rules as written would require shutting down the entire refinery annually. Again, these are precisely the considerations that have led to the routine exclusion of these kinds of components from quarterly and annual inspection requirements, because the excess emissions from a few leaking components are far outweighed by the additional emissions associated with an unplanned refinery shutdown. The District has failed to consider the additional costs and emissions associated with these unplanned shutdowns.

VII. Comments on Regulation 9, Rule 14

A. *General Comments*

The stated justification for proposed Rule 9-14 is the control of SO₂, which would then presumably result in reduced PM_{2.5} formation. As discussed above, however, Section 40001 authorizes regulation only as necessary to achieve and maintain the NAAQS. Yet the Bay Area has long been in attainment with the SO₂ NAAQS for years, and EPA recently determined it has achieved the PM_{2.5} NAAQS.

Furthermore, while the District mentions that SO₂ can contribute to PM_{2.5} formation, it has not even evaluated the extent to which SO₂ emissions actually contribute to PM_{2.5} formation within the Bay Area, much less demonstrated that reducing SO₂ emissions will significantly affect ambient PM_{2.5} levels. Indeed, as discussed above, the available evidence indicates that mobile sources and wood smoke are the two largest contributors to ambient fine particulate levels during the winter months, when PM_{2.5} levels are highest, and that the contribution from each of those sources exceeds the contribution of all industrial facilities combined.⁸ As a result, the District has demonstrated neither the need nor the authority for additional regulation.

For this same reason, the Staff Report's cost-effectiveness analysis is flawed, because it bases its evaluation of "acceptable" costs (\$/ton removed) on cost-effectiveness thresholds used for VOC and NO_x control measures. The Bay Area, however, is nonattainment for ozone, and the Clean Air Act has long impose more stringent requirements – and less consideration of costs – in nonattainment areas than in attainment areas. *See, e.g.*, CAA Parts C and D. The District has neither explained nor demonstrated why it is appropriate or necessary to apply nonattainment cost-effectiveness thresholds to a rule that specifically targets pollutants for which the area is already in attainment.

Furthermore, the emissions limits selected appear to be inconsistent with the stated rationale in the Staff Report. Specifically, the Staff Report notes that the District intends to provide two alternatives: one based on the District's preferred 80% control; and an alternative based on 70% control, based on the socioeconomic impacts associated with achieving an 80% control standard. Therefore, the rule allows the facility to either demonstrate that it is achieving 80% control on an annual basis, or meet a 770 tpy mass limit that is based on 70% control. Staff Report at 4-5, 12, 15.

As written, however Rule 9-14 also requires the facility to comply with an hourly emissions limit in addition to the annual emissions limit. *See* § 9-14-301. That hourly emissions limit, in turn, is based on an 80% standard. Staff Report at 11-12. Accordingly, since the rules will require the facility to attain the 80% standard for every hour it operates, the facility will be forced to install the very controls that the District determined were unwarranted under its

⁸ "Public Hearing on Proposed Amendments to Regulation 6, Rule 3: Wood Burning Devices," October 21, 2015 presented by Tracy Lee, Page 6.

socioeconomic impacts analysis. The hourly emissions rate should therefore be adjusted to avoid these significant impacts.

B. Comments on Specific Provisions

Section 9-14-502 requires the facility to monitor and comply with a minimum dry sorbent injection rate. Dry sorbent is required only for dry scrubbing systems. While the facility currently uses a dry scrubbing system, there are several other available control technologies that can be used on these kinds of equipment. As discussed above, Section 40001 does not allow the District to specify control technology or monitoring requirements; rather, the District may simply establish a limit and allow the facility to determine how best to comply. Accordingly, the proposed regulation should merely require the facility to identify appropriate monitoring parameters and limits to demonstrate compliance with the required emissions reductions.

VIII. Comments on Regulation 11, Rule 10

A. General Comments

Necessity

The Staff Report justifies adding new, stringent leak monitoring and repair requirements based on its assumptions of the magnitude of the organic emissions that can result from heat exchanger leaks into cooling tower water, *e.g.*, one 2010 leak that resulted in 52 tons of reported VOC emissions. *See* Staff Report at C-2. The District bases its emissions estimates on EPA's AP-42 emissions factors – factors that EPA has rated a “D,” based on the questionable sources of data on which these factors were based.

The District has access to much more recent and relevant data regarding actual emissions from cooling towers: actual sampling data from 24 of the 32 regulated cooling towers, using the EPA-approved Modified El Paso Method (“MEPM”). Both EPA and District guidance prioritize sampling data over AP-42 emissions factors in evaluating the emissions associated with a particular type of activity; indeed, AP-42 emissions factors are typically the last resort when no other, more reliable data are available. Here, the District's refusal to consider this available MEPM sampling data is a critical flaw in its evaluation of the “necessity” of the proposed rule.

A closer analysis of data from one refinery that is currently required to take monthly samples of cooling water demonstrates that real-world hydrocarbon concentration is over an order of magnitude smaller: an average well below 0.6 pounds per million gallons, as compared to the 6 pounds per million gallons assumed by the District. *See* attached technical comments. In fact, these real-world data demonstrate that average emissions are *already* at or below the level of hydrocarbons that the District assumes the proposed rule will achieve (0.7 pounds per million gallons). *See id.* The District has not identified substantial evidence to support the necessity of the proposed rule; to the contrary, the substantial available evidence demonstrates that these rules are *not* necessary to achieve the emissions levels that the District hopes for.

The Staff Report ignores the impact of the existing regulatory controls on heat exchange systems. The Staff Report notes that EPA's MACT rules (Subpart CC) require monitoring of heat exchangers; the available sampling data demonstrates that cooling towers regulated under Subpart CC have *already* reduced emissions to the level the District hopes to attain through Rule 11-10. The Staff Report ignores these significant improvements, dismissing these rules by noting that they do not apply to all cooling towers. Staff Report at C-3. The Staff Report ignores the obvious solution: simply extending Subpart CC requirements to currently-exempt cooling towers.

The available sampling data demonstrate that compliance with Subpart CC is sufficient to achieve the low hydrocarbon concentrations that the District seeks. Subpart CC is also much less burdensome than the proposed rules, achieving the very benefits the District hopes to attain at much lower costs. The District has not even evaluated the impacts and costs of extending Subpart CC to exempt facilities. Nor has it evaluated the incremental costs and benefits of imposing Rule 10 on the many cooling towers that are already subject to Subpart CC. Accordingly, not only has the District not demonstrated the necessity of proposed Rule 10 by substantial evidence, it would be arbitrary and capricious to promulgate Rule 10 in the face of actual monitoring data demonstrating that these extreme controls are not necessary to achieve the desired benefits.

Clarity

See attached technical comments.

Consistency/Nonduplication

The Staff Report notes that EPA regulations already require refineries to comply with heat exchanger monitoring and leak requirements, but notes that not all cooling towers are subject to these requirements. Staff Report at C-3. Given the extensive federal regulation, if additional regulation is required, the appropriate approach would be to apply the existing federal program to these exempt sources – not to create an entirely new program for both regulated and unregulated sources.

B. Comments on Specific Provisions

See the attached technical comments.

Attachment B
WSPA Technical Comments BAAQMD Proposed Refinery Regulations

Regulation 12-15: Petroleum Refining Emissions Tracking
Regulation 12-16: Petroleum Refining Emissions Limits and Risk Thresholds
Regulation 6-5: FCCU
Regulation 8-18: Equipment Leaks
Regulation 11-10: Cooling Towers
Aggregate Cost Estimates
Tables of Detailed Comments
Figures 1, 2, 3

Regulation 12, Rules 15 and 16

Rule 12-15 is incomplete, unclear, requires the unnecessary submittal of confidential business information, requires the monitoring of ambient air for pollutants that are not emitted by refineries (and in some cases are not even regulated), and identifies completely infeasible deadlines for interdependent submissions.

Many of the requisite submissions are contingent on a reasonably accurate emissions inventory that is required to be developed in accordance with District guidelines. District staff have not completed the emissions inventory guidelines nor have they used responsible interpretations of the guidelines that are in place. Lastly the proposed requirement for an emissions inventory and guidance is duplicative with several other regulatory requirements that the District did not identify as required by H&SC 40727.2.

Rule 12-16 is also unclear, requires an unrealistic deadline for submittals, and includes mandatory risk reduction thresholds that District staff have not adequately evaluated with respect to feasibility or cost.

The District is asking for confidential business information that is not necessary for establishing emission reduction regulations. District staff have not provided justifiable rationale for requiring crude oil and energy efficiency information.

Rule 12-15: Emissions Inventory (EI) Guidelines Are Subjective & Incomplete

The District's staff report identifies that a key result of the proposed Rule 12-15 is to "enhance emissions inventory information"⁹; WSPA supports the goal of clear, consistent and

⁹ BAAQMD, "[Staff Report: Proposed Air District Regulation 12, Rule 15: Petroleum Refining Emissions Tracking; and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds](http://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/workshops/2015/100915/sr12151216-pdf.pdf?la=en)", October 2015 (available from <http://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/workshops/2015/100915/sr12151216-pdf.pdf?la=en>), p. 12-16-4.

accurate emissions inventory guidelines. However, the District's emissions inventory guidelines¹⁰ do not accomplish this goal, as they are too open to subjective interpretation and have substantial omissions.

For example, in the case of fugitive emissions from components (i.e., leaks from valves, flanges, etc.), the District identified only 0.6 tons per day of fugitive emissions from all refinery processes in their May 2014¹¹ concept paper. Staff have now identifying 4.0 tons per day of fugitive emissions from components handling heavy liquids, an additional 6.6 tons per day from components handling other materials, plus 3 tons per day from cooling towers¹² (see Figure 1). There have been no new studies of these fugitive emissions to support this change, no substantive changes in the number of components or the degree to which they are maintained, and no changes to the "guidelines". Instead, the District "guidelines" cross-reference 1999 CAPCOA/ARB guidelines,¹³ and the recent increase is a result of District staff making a novel interpretation.

While the CAPCOA/ARB guidelines include a list of "components not included in component counts used for the quantification of fugitive emissions" [emphasis added]¹⁴, District staff have required that (a) one of the items in that list ("components in heavy liquid service"¹⁵) be included, and (b) that those items be assigned artificially high emission factors that are not supported by any data for components in heavy liquid service.

¹⁰ BAAQMD, "[Refinery Emissions Inventory Guidelines: An Assessment of EPA Document Emission Estimation Protocol for Petroleum Refineries \(Version 2.1.1, May 2011\)](#)", September 2013, available at

<http://www.baaqmd.gov/~media/Files/Engineering/Refinery%20Emissions%20Inventory%20Guidelines/Draft%20Refinery%20Emissions%20Inventory%20Guidelines.ashx?la=en>, last accessed October 15, 2015.

¹¹ BAAQMD, "[Bay Area Emissions Inventory Summary Report: Criteria Air Pollutants, Base Year 2011](#)", May 2014, obtainable from

http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_CAPSummary.ashx?la=en, Tables 6 and 7 (pp. 11-12).

¹² BAAQMD, "[Petroleum Refinery Emissions Reduction Strategy: Staff Report](#)", October 2015, obtainable from <http://www.baaqmd.gov/~media/files/planning-and-research/public-hearings/2015/102215/staffreport1-pdf.pdf?la=en>, p. B:2 and C:5.

¹³ CAPCOA/ARB, "[California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities](#)", February 1999, available from <http://www.arb.ca.gov/fugitive/fugitive.htm>, last accessed October 15, 2015.

¹⁴ *Ibid.*, p. 23.

¹⁵ This refers to the CAPCOA/ARB listing (see footnote 14) of "components handling exclusively liquids which evaporate 10% or less at 150 °C". (Many of these were actually already being monitored, given that the promulgated version of the regulation only exempts components handling liquids with initial boiling points below 150 °C = 302 °F [8-18-113].)

There has been no clarification of whether any of the other items in the CAPCOA/ARB exclusion list may be required by the refineries to include in the future, nor is there anything in the rule or guidance which safeguards against such an interpretation.

Another example is the District's guidelines for cooling towers. Between September 2015 and October 2015, District staff increased their estimate of cooling tower emissions reductions associated with proposed Rule 11-10 from 517 tons per year to 997 tons per year; even though there were essentially no changes in the rule language between September and October that justify this change. The District's October staff report identified that the new number is based on the use of AP-42 emission factors for each refinery¹⁶. The AP-42 factors are the worst-ranked emissions inventory methodology identified in the District's "guidelines"¹⁷. Staff did not use actual cooling tower monitoring data that US EPA and/or the District have already required the refineries to implement that the District's "guidelines" identify as being superior emissions inventory methodologies.

The District's guidelines also contain no information regarding air emissions from cargo carriers, i.e., ships and trains, even though ships are the most likely source to trigger the HRA emission mitigation requirements and are explicitly included in the proposed rule's emissions inventory requirements.¹⁸ The abovementioned examples are only a sample. WSPA and its members met with District staff in September 2014 to identify technical issues with the District's "guidelines" and offered to meet and have further technical discussions to resolve ambiguities and omissions, however District staff have not amended its written emissions inventory "guidelines" in any way.

The guidelines and the proposed regulation that incorporates them by reference are not clear, as required by H&SC 40727. The proposed rule includes no restrictions on when District staff can change the emissions inventory "guidelines", no review by affected parties or the Board if changes are made, and no appeals process for contesting new guidelines. It is also unclear when changes to the guidelines would be required to be implemented, and/or whether they would apply retroactively. While there is an explicit requirement to revise the Petroleum Refinery Emissions Profile report (PREP) when the guidelines change,¹⁹ it is also unclear how to adjust the PREP for changes in the guidelines in order to address "artificial"

¹⁶ BAAQMD, "[Petroleum Refinery Emissions Reduction Strategy: Staff Report](http://www.baaqmd.gov/~media/files/planning-and-research/public-hearings/2015/102215/staffreport1-pdf.pdf?la=en)", October 2015, obtainable from <http://www.baaqmd.gov/~media/files/planning-and-research/public-hearings/2015/102215/staffreport1-pdf.pdf?la=en>, p. C:5.

¹⁷ BAAQMD, "[Refinery Emissions Inventory Guidelines: An Assessment of EPA Document Emission Estimation Protocol for Petroleum Refineries \(Version 2.1.1, May 2011\)](http://www.baaqmd.gov/~media/Files/Engineering/Refinery%20Emissions%20Inventory%20Guidelines/Draft%20Refinery%20Emissions%20Inventory%20Guidelines.ashx?la=en)", September 2013, available at <http://www.baaqmd.gov/~media/Files/Engineering/Refinery%20Emissions%20Inventory%20Guidelines/Draft%20Refinery%20Emissions%20Inventory%20Guidelines.ashx?la=en>, last accessed October 15, 2015, p. 8.

¹⁸ Per the definition of "Emissions Inventory" at 12-15-207.

¹⁹ This is required by proposed section 12-15-403.

increases or decreases as a result of changes in emissions inventory methodology, rather than real changes due to changes in operations.

The District staff have not analyzed duplicative Federal and State emission inventory requirements and guidance as required by H&SC 40727.2. Although the staff report does list some applicable regulations, the list is not complete, and does not analyze the relevant elements of these rules as required by H&SC 40727.2 and compare those elements to what is being proposed. This is important because there is a large degree of overlap. For example, federal regulations at 40 CFR 98 and the State’s Regulation for the Mandatory Reporting of GHGs already include very prescriptive emissions inventory methods for refineries’ reporting of GHG emissions (and have been revised frequently):

- Federal Toxics Release Inventory (TRI) regulations and State AB2588 regulations already require emissions inventories of air toxics and refer to their own emissions inventory methods (and ARB has identified that they expect to update the AB2588 emissions inventory methods in 2016);
- US EPA developed its own petroleum refinery emissions inventory guidelines (the District’s “guidance” is in actuality a draft review of an older version of these), which were also used to update US EPA’s “AP-42” emissions inventory guidance in 2015;
- US EPA has several other sections of AP-42 that apply to sources that are not necessarily specific to refineries (such as fuel combustion sources);
- US EPA’s “Emissions Inventory Improvement Program” (EIIP) identifies other emissions inventory guidelines for specified source types (and is referenced by US EPA’s State Implementation Plan regulations; and
- The District has its own emissions inventory guidance in its Permitting Handbook.

Other resources have been used by EPA and ARB to inventory emissions from mobile sources. Given the overwhelming number of emissions inventory guidance that already exist, there is no justification for entirely new guidance from the District; there is however a need for clarification on how to interpret the guidance for the key source types where there are significant discrepancies and ambiguities.

Regarding fugitive emissions from components in heavy liquid service, WSPA met with the District in September 2014, and the District asked for and was provided with refineries’ monitoring data for components in heavy liquid service in late 2014.²⁰ The data included surveys of thousands of components in heavy liquid service—far more than were surveyed to

²⁰ Electronic mail messages from Oscar Garcia (Chevron) to Bhagavan Krishnaswamy (BAAQMD), September 8, 2014; Jennifer Ahlskog (Phillips 66) to Greg Stone (BAAQMD), September 2014; and Kathy Wheeler (Shell) to Greg Stone (BAAQMD), “Shell DHT Heavy Emissions 2014 to BAAQMD (2).xlsx”, October 14, 2014; letter from Iren Suhami (Valero) to Greg Stone (BAAQMD), November 11, 2014.

generate the emission factors that the District used. The data showed very low occurrences of leaks, consistent with emissions being more than an order of magnitude lower than what the District is estimating.

District staff disregarded the data, and instead identified in March 2015 that they would work with WSPA and its consultant to develop a protocol for an emissions quantification study for components in heavy liquid service.²¹ Despite requests by WSPA, District staff did not return calls from WSPA and have not released a protocol promised by staff for the study.

The first “overriding principle” identified in the District’s “guidelines” is that “The [EPA refinery emissions guidelines] and [District] staff’s corresponding recommendations are guidelines only, and do not necessarily dictate the emission calculation method in all possible cases. There are many variables at refineries that may warrant specific approaches not included in these recommendations.” (p. 1). This is not unique. Similar statements are in other guideline documents, demonstrating the complexity of sources involved and the need for engineering judgment. It is inappropriate for the proposed regulations to identify these as “criteria” for approval/disapproval by District staff, and to require a public comment period in between two District review periods.

Rule 12-15: Current EI interpretations of District staff grossly overstate emissions

In our opinion, the District’s emissions inventory guidelines are too open to subjective interpretation and have substantial omissions, and available data indicates that the District’s interpretations grossly overestimate emissions. The consequence of erroneous, inflated emission calculations is that the refineries would be required to notify neighbors of health risk that does not exist and/or install emission mitigation technology that has not been accounted for in the District’s economic analysis.

The data in Figure 1 shows that District staff are now identifying emissions from fugitive leaks alone as being higher than the 4.2 tons per day that District staff identified in 2014 for all refinery processes combined),¹¹

In recent years, District staff have forced refineries to accept their estimation of emissions, and pay the corresponding fees, or risk not receiving a permit renewal. Both EPA guidance and District guidance identify the preferred emissions inventory method as being based on sampling data collected using EPA-specified methods. Thousands of samples have been analyzed by the five refineries using this method, and Figure 2 shows that the emissions are far lower than what the District estimated.

The District’s overestimations are misleading to the public when looking at trends over time, will result in an overestimation of the impacts of the proposed rule, will cause impacts

²¹ Jim Karas (BAAQMD), meeting with BAAQMD staff and WSPA, March 9, 2015.

predicted by dispersion modeling and health risk assessments to be overestimated, and may unnecessarily trigger the need for public notifications and risk reduction plans as well.

Rule 12-15: Many deliverables depend on the EI/proposed schedule for Rules 12-15 and 12-16, which is unworkable

Within the framework of proposed Rules 12-15 and 12-16, the accuracy of the inventory is critical. The proposed rules have multiple important additional requirements that are dependent upon the inventory, and each is also required to go through a public review process in addition to District technical review. Proposed rules 12-15 and 12-16 require the refineries to do the following:

- develop and submit a “petroleum refinery emissions profile” (PREP) report that is based on the application of District staff’s emissions inventory “guidance” to historical data²² by September 1, 2016 [12-15-402];
- develop and submit annual emissions inventories for 2015 and future years (again, based on the District staff’s emissions inventory “guidance”) annually starting September 1, 2016 [12-15-401];
- develop and submit a Health Risk Assessment (HRA) Modeling Protocol (including the 2015 emissions inventory data mentioned above)²³ by March 1, 2017 [12-15-405] and an HRA Modeling Assessment within 90 days of the District’s approval of that Protocol [12-15-405.2];
- develop and submit an Air Monitoring Plan (based on the 2015 emissions inventory data—and, somehow, the HRA mentioned above, even though the HRA Protocol is due later and needs to be reviewed and approved before an HRA can be conducted²⁴) by December 31, 2016 [12-15-407]; and

²² Proposed section 12-15-216 identifies a PREP Period going back to January 2010; however, as WSPA has previously pointed out, it may not always be possible to apply the emissions inventory guidelines to historical data, in cases where the input data needed for the calculations may not be available.

²³ Proposed section 12-15-405.1 requires that the HRA Protocol include 2015 emissions inventory data that is due to be submitted to the District by September 1, 2016; the District has 90 days from September 1 to conduct a “preliminary review” [12-15-406.1] and refineries have 45 days to make corrections and resubmit the protocol for “additional review”.

²⁴ Specifically, 12-15-407 and -408 requires that the air monitoring plans be based on the District’s Air Monitoring Guidelines, and page 6 of the August 2015 version of these Guidelines (that was released on September 11, 2015) identifies that “Multiple [monitoring] stations must be considered where chemical component mixtures differ in composition and/or differ in concentration by such that overall risk, as defined by Health Risk Assessments required as part of Regulation 12, Rule 15, is greater than 10 in one million.”

- develop and submit a proposed modeling protocol for SO₂ and PM_{2.5} (and protocols are generally expected to include an emissions inventory²⁵) by March 1, 2017 [12-16-406.1] (although the District has also included the alternative of providing an air monitoring demonstration instead).

Each of these deliverables is a major undertaking for a petroleum refinery. Each of the requirements listed above includes an mandatory review by the District and, in all cases except the protocol for SO₂ and PM_{2.5}, review by the public. This is expected to result in comments on each submittal, responses to comments, re-reviews of the responses, etc. Although the plans and protocols that depend on the emissions inventory are all required between September 1, 2016 and March 1, 2017, Figure 3 shows that inventories of actual emissions are likely to not be approved and finalized by either of these dates. If the District takes the full allotted time to review the submittals, identifies no deficiencies that need to be corrected, and provides no extensions, the approval would occur 135 days after submittal (January 14, 2017). If the District does have comments, there will need to be an additional 45 days to address them, plus the proposed rule allows the District to extend its review timeframe. If the District changes its emissions inventory guidance, which the rule allows without any approval or review, the inventory would need to again be revised within 45 days and reviewed again.

WSPA believes the proposed rule is likely to result in a multitude of reviews, revisions, and responses that neither the regulated community nor District staff have adequate resources to address. While the District's staff report identifies "a significant workload increase for the Air District", it does not quantify those costs in the economic analysis (instead stating only that they will assess fees to regulated entities to recover the costs),²⁶ nor does it consider the corresponding costs associated with all of the reviews, revisions, responses, etc. to the regulated community.

The emissions inventory guidance needs to be reasonably clear, consistent, and accurate before timescales like those identified in the proposed rules should even be considered. Lastly, the District's ability to change the guidelines and/or make major reinterpretations of the existing guidelines without review affects the stringency and impacts of the other specific regulatory requirements and would constitute underground rulemaking.

²⁵ See, for example, BAAQMD, "[Permit Modeling Guidance](#)" (June 2007) at http://www.baaqmd.gov/~media/Files/Engineering/Air%20Toxics%20Programs/pmt_modeling_guidance.ashx?la=en.

²⁶ BAAQMD, "[Staff Report: Proposed Air District Regulation 12, Rule 15: Petroleum Refining Emissions Tracking; and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds](#)", October 2015 (available from <http://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/workshops/2015/100915/sr12151216-pdf.pdf?la=en>), p. 12-16-32.

Rule 12-15: Mobile source inclusion needs to be restricted

WSPA opposes the proposed blanket inclusion of mobile sources in the emissions inventory for a facility [12-15-207]. The D.C. Circuit Court of Appeals has already ruled that “it is entirely implausible that a vessel's ‘to-and-fro’ emissions could be attributed to a marine terminal owner under any approach that the [Clean Air Act] would tolerate”²⁷.

US EPA has made the interpretation that “The ‘to and fro’ emissions and ‘hoteling’ emissions from the vessels are associated with the normal seagoing activities of the vessels and not with the industrial activities associated with the port”²⁸. Recent industrial port permits also make those interpretations.²⁹

The District’s Staff Report included language limiting the rule’s coverage of mobile sources,³⁰ but this language is not in the rule itself. There is therefore a lack of the clarity that is required by H&SC 40727.

The current rule language indicates that the District’s intent is to include marine vessel emissions in the inventory like any other emissions, and this would construe them as being included in the HRA and SO₂/PM modeling required by proposed Rule 12-16 as well. These vessel emissions could be a key source that needs to be reduced to meet the proposed requirements, possibly to a level that is infeasible, however they are not under the control or owned by the refineries. Staff have not notified owners of mobile sources, including the shipping industry and locomotives, that the proposed Rules 12-15 and 12-16 will affect them and has not engaged feedback on the rules from either industry.

Rule 12-15: Solomon Reports

Rule 12-15 requires that refineries provide reports of their energy efficiency developed by HSB Solomon Associates. As WSPA has identified repeatedly in the past, this is extremely confidential business information that the provisions of proposed section 12-15-411 do not

²⁷ NRDC v. EPA et al., Jan. 17, 1984, 725 F.2d 761.

²⁸ See, for example, Charles Sheehan (Regional Counsel, EPA Region 6), letter to Michael Cathey (El Paso Energy Bridge Gulf of Mexico) and Diana Dutton, Esq. (Akin, Gump, Strauss, Hauer & Feld), October 28, 2003.

²⁹ See, for example, Oregon DEQ, [Air Contaminant Discharge Permit for Jordan Cove LNG terminal, Permit number 06-0118-ST-01](#), June 16, 2015, available from <http://www.oregon.gov/deq/WR/Documents/JordanCoveFinalAQpermit.pdf>.

³⁰ Specifically, the October 2015 Staff Report stated that “Stationary sources, as opposed to mobile sources such as trucks and other vehicles, are the sources over which the Air District has regulatory jurisdiction. However, there are instances in which the Air District desires to understand emissions from these mobile sources, such as when ships and trains are unloading or loading products at the refinery, and thus emissions from these operations are included in the requirements of the rule.” (p. 12-16-20)

adequately protect, would be subject to District staff's evaluation of confidentiality, and have no bearing on establishing emissions limits.

Rule 12-15: Crude Slates

Rule 12-15 requires that refineries report nine "crude slate characteristics" on a monthly basis.³¹ As with the Solomon reports, this is confidential business information that the provisions of proposed section 12-15-411 do not adequately protect, nor has staff provided any basis for needing this information to establish emission limits.

Rule 12-15: Crude Slate Characteristics and Emissions

The District's staff report identifies that "The Air District would use this crude oil composition information to examine potential relationships between emissions and input to the refinery"³². WSPA believes this requirement is effectively funding data collection for a "research project" for District staff that could lead to false conclusions. While the District is capable of evaluating correlations, correlations are not causation. WSPA believes that given the complexities and various details associated with refinery operations, it is not feasible to determine what the true dependencies are through this type of analysis.

Rule 12-15: Monitoring

The monitoring requirements in the rule cross-reference the District's Air Monitoring Guidelines, but the Guidelines have not been finalized³³ and do not clearly identify the extent of the monitoring. H&SC §40727 requires that the regulation have "clarity"—i.e., meaning that "the regulation is written...so that its meaning can be easily understood by the persons directly affected by it". More importantly, the proposed regulations are requiring the refineries to conduct ambient monitoring research which would include designing, setting up, and operating monitoring networks that the guidance explicitly acknowledges can be affected by a number of sources other than the refineries themselves.

³¹ The nine characteristics are identified in 12-15-401.6.1 through 6.9 and 12-15-413.2.1 through 2.9.

³² BAAQMD, "[Staff Report: Proposed Air District Regulation 12, Rule 15: Petroleum Refining Emissions Tracking; and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds](#)", October 2015 (available from <http://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/workshops/2015/100915/sr12151216-pdf.pdf?la=en>), p. 12-16-22.

³³ BAAQMD, "[Air Monitoring Guidelines for Petroleum Refineries](#)", draft (August 2015), available from <http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Rules%20and%20Regs/Workshops/2015/Reg%2012%20Rule%2015%2016/Draft%20Air%20Monitoring%20Near%20Refineries%20Guidance%2001282015.ashx?la=en>, last access October 27, 2015.

The District has failed to make the finding of “necessity” for this requirement as required by H&SC §40727, and there is no necessity for the refineries to be doing this sort of research.

Regarding fenceline monitors, the Guidelines state that “Measurements must cover populated areas within 1 mile of the refinery fence-line likely to be affected when the annual mean wind direction lies in an arc within 22.5 degrees of a direct line from source to receptors 10% of the time, or greater, based on the most representative meteorological measurements for sources likely to emit the compounds listed above at the refinery.”

There is no clarity provided with regard to the number of monitors that would be required to satisfy that requirement. There are no details regarding the determination of annual mean wind direction (i.e., over what time period must data be averaged) in which “sources” need to be considered, nor what would need to be done if a refinery’s arc does not fall over any community receptors.

Regarding fixed community monitors, the Guidelines specify “at least one” station (p. 6). While it includes a statement that “The Expert Panel suggested that a maximum of three...permanent sites should be located in communities near refineries, with a maximum of two being located in the predominantly downwind location” (p. 14), this is not written as a clear cap on the maximum number of community monitoring locations that District staff could require.

Regarding the “gradient study” of temporary monitors, the Guidelines state that “If gradient measurements are taken, they must be of long enough duration to properly determine the gradients and the potential effects of variations in meteorological conditions, inform the location of the permanent site(s) and develop relationships and correlations. Once this has been accomplished, only periodic gradient measurements need to take place to confirm those relationships and correlations remain valid.”

There are essentially an innumerable number of meteorological condition combinations that can occur, along with an infinite number of release scenarios involving different types of sources with different stack parameters and dispersion characteristics, and dispersion modeling science identifies that each will produce a different gradient. There is no clarity with regard to how much monitoring the District is requiring (and for how long), and when the District provides that clarity, there also needs to be consideration of those efforts in the economic analysis.

The guidance requires installation of monitors in the community on property that the refineries do not own. These guidelines may be problematic or impossible to achieve because the refineries do not have access to install the monitor itself or install electrical infrastructure needed for the monitor in a public location where the public may oppose placement of a monitor. The guidance also ignores security issues with installing the monitor on public property. The public may steal multimillion dollar equipment sitting unobserved on public property 24 hours a day. The guidance also ignores personnel safety issues, and ignores obstructions or interfering pollution sources that may be present in areas that the guidance requires installation of a monitor.

The comments above are just a few of the technical comments that WSPA has on the draft monitoring guidance that is cross-referenced by the proposed Rule 12-15; additional technical comments submitted by WSPA in December 2014 are incorporated by reference.

The monitoring guidance would constitute requiring the refineries to fund and execute a research project to analyze ambient air, rather than manage just their own emissions and impacts. The guidance requires analysis of elemental carbon, organic carbon, and black carbon for purposes of estimating the extent to which measured concentrations are associated with roadways and sources other than refineries; this type of analysis (“source apportionment”) is an open area of research that does not have the level of certainty or precision needed to quantitatively attribute emissions to the refineries and enforce requirements. The guidance also requires the monitoring of PM number concentration, which is not even a regulated pollutant.

Lastly, US EPA promulgated their own fenceline monitoring requirements for benzene on September 29, 2015 (40 CFR 63 Subpart CC). The District failed to identify these Federal requirements and establish that the District’s proposed rules were not duplicative, as required by H&SC 40727.2.

Rule 12-16: Health Risk Thresholds

The rule requires Health Risk Assessments (HRAs) be conducted per the new OEHHA risk assessment guidance³⁴ and identify that if the lifetime cancer risk result at the worst-case receptor is more than 10 in a million, the public must be notified. If the lifetime cancer risk is 25 in a million or more, the facility must enact a mandatory risk reduction program. These thresholds were arbitrarily established by staff, based on:

1. The District’s own CARE study identified that (a) under the new OEHHA guidance, background air quality in the Bay Area corresponds to average area risks of 510-in-a-million (and in some areas over 1700-in-a-million), and (b) background air quality in the Bay Area is four times better than it was in 1990.³⁵
2. The ARB/CAPCOA Risk Management Guidance identifies that given the new OEHHA guidance, CAPCOA will be working on guidelines to assess public notification and risk reduction thresholds in 2016; but while they identify that the risk reduction program

³⁴ OEHHA, “[Air Toxics Hot Spots Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments](http://oehha.ca.gov/air/hot_spots/hotspots2015.html)”, February 2015. Available from http://oehha.ca.gov/air/hot_spots/hotspots2015.html.

³⁵ BAAQMD, “Improving Air Quality & Health in Bay Area Communities: Community Air Risk Evaluation Program Retrospective & Path Forward (2004 – 2013)”, April 2014, p. 3 and p. 18 identify average risks of 300-in-a-million and show risks in excess of 1000-in-a-million under the old OEHHA guidance; footnote 15 identifies that corresponding risks under the new OEHHA guidance are 70% higher).

threshold should not correspond to greater than 100 in a million, but they also identify that they will “develop Industrywide Guidelines for the highest priority sources that support essential goods and essential public services where their emissions may result in cancer risk estimates using the new OEHHA Manual that are above District thresholds”.³⁶ So it is clearly not so “unacceptable” that calculated risks be above those thresholds.

As has always been the case for the cancer risk thresholds, there is no quantitative public health basis for the lifetime cancer risk thresholds. Instead, they have been developed as targets that regulators believe are feasibly achievable by stationary sources. In the late 1980s and early 1990s, when facilitywide HRAs under AB2588 were first required, the District threshold was 10 in a million for public notification and 100 in a million for a risk reduction program,³⁷ and those are generally considered to have been feasible for stationary sources.

However, District staff have been making interpretations that some sources have increased emissions by an order of magnitude or more (and is now proposing to incorporate marine vessels into the emissions inventory). Dispersion models have changed significantly since then, and even without those changes, District staff has identified that the new OEHHA guidance yields HRA risk results that are 2 to 5 times higher than the old OEHHA guidance.³⁸

ARB and CAPCOA have estimated that the increase is a factor of 1.5 to 3 for inhalation-only assessments, but acknowledged that there are additional increases associated with the use of newer dispersion models and when multipathway assessments are required.³⁹ There has been no evaluation (by either ARB/CAPCOA or the District) that incorporates all of these changes and can reasonably assess the feasibility of applying these risk thresholds to the refineries.

Finally, the rule language is unclear as to whether the HRA analysis is identical to what is already required under State AB2588 regulations or not, and the District has not conducted an analysis that compares the elements of the existing state AB2588 regulatory requirements to the proposed HRA requirements as required by H&SC 40727.2(c).

The State’s AB2588 regulations (H&SC 44304) defines “Facility” as including structures, appurtenances, installations, and improvements on land. The rule should clearly

³⁶ ARB/CAPCOA, “[Risk Management Guidance for Stationary Sources of Air Toxics](#)”, July 23, 2015 (available from <http://www.arb.ca.gov/toxics/rma/rmgssat.pdf>), p. 22 and p. 42.

³⁷ ARB/CAPCOA, “[Risk Management Guidance for Stationary Sources of Air Toxics](#)”, July 23, 2015 (available from <http://www.arb.ca.gov/toxics/rma/rmgssat.pdf>), Table G-1.

³⁸ Daphne Chong, “[Health Risk Assessment \(HRA\) Guideline Revisions](#)”, presentation given at the November 17, 2014 BAAQMD Board of Directors Meeting (available from <http://www.baaqmd.gov/~media/files/board-of-directors/2014/z-presentations/111714-bod-presentations.pdf?la=en>), slide 6.

³⁹ ARB/CAPCOA, “[Risk Management Guidance for Stationary Sources of Air Toxics](#)”, July 23, 2015 (available from <http://www.arb.ca.gov/toxics/rma/rmgssat.pdf>), pp. 1-2.

identify whether it is requiring the same analysis required by AB2588, or whether it is requiring an entirely separate, duplicative analysis based on an emissions inventory that includes mobile sources.

The State regulations also require that the HRA be based on actual TAC emissions calculated in accordance with ARB Emissions Inventory Criteria and Guidelines (which ARB has projected will be amended in 2016),⁴⁰ and the District is required to identify whether the proposed HRA requirements are also based on that inventory or are instead based on the 12-15 inventory of actual TAC emissions developed using the District's guidelines.

The District also needs to correct a common misperception (perpetuated by language in the CARE study) that the risks of "x-in-a-million" are the best estimates of what the actual lifetime cancer risks associated with air pollutant exposures are, and this misperception has been perpetuated by BAAQMD.⁴¹

OEHHA's Guidance Manual for Preparation of HRAs⁴² notes that on the contrary, "...there is a great deal of uncertainty associated with the process of risk assessment...The assumptions used in these guidelines are designed to err on the side of health protection in order to avoid underestimation of risk to the public...Risk estimates generated by an HRA should not be interpreted as the expected rates of disease in the exposed population but rather as estimate of potential for disease, based on current knowledge and a number of assumptions..." (pp. 1-5 through 1-6).

Rule 12-16: NAAQS Compliance

The requirements for the "demonstration of compliance with the SO₂ and PM_{2.5} NAAQS" are unclear and therefore do not meet the requirements of H&SC 40727; for example:

⁴⁰ ARB/CAPCOA, "[Risk Management Guidance for Stationary Sources of Air Toxics](http://www.arb.ca.gov/toxics/rma/rmgssat.pdf)", July 23, 2015 (available from <http://www.arb.ca.gov/toxics/rma/rmgssat.pdf>), pp. 1-2.

⁴² OEHHA, "[Air Toxics Hot Spots Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments](http://oehha.ca.gov/air/hot_spots/hotspots2015.html)", February 2015. Available from http://oehha.ca.gov/air/hot_spots/hotspots2015.html.

⁴² OEHHA, "[Air Toxics Hot Spots Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments](http://oehha.ca.gov/air/hot_spots/hotspots2015.html)", February 2015. Available from http://oehha.ca.gov/air/hot_spots/hotspots2015.html.

⁴³ 40 CFR 58.11 specifies that "PM_{2.5} measurement data from all eligible monitors that are representative of area-wide air quality are comparable to the annual PM_{2.5} NAAQS...[but]...PM_{2.5} measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, or localized hot spot, or unique middle-scale impact sites are not eligible for comparison to the annual PM_{2.5} NAAQS." [emphasis added]

- There is no clarity as to whether the analysis is including mobile sources (that are included in the actual emissions inventory required by 12-15) or not.
- 12-16-406.2 identifies that “The protocol must account for background concentrations in the Bay Area so as to accurately account for the influence of local sources”, but accounting for the influence of the refineries themselves would inaccurately double-count their emissions.
- There is no detail provided with regard to how to determine the background concentrations associated with only emissions that aren’t being modeled in the protocol.

The statement in 12-16-406.2.1 that “the protocol shall conform to guidance promulgated by the United States Environmental Protection Agency for implementing air quality monitoring for the purposes of characterizing pollutant concentrations relative to the NAAQS” is also unclear, in that it does not specify which guidance is being referred to.

The proposed rule also does not reflect the Federal restriction that only monitors/receptors that are representative of area-wide air quality can be compared to the annual PM_{2.5} NAAQS, not those that are more localized.⁴³

Economic Impact Analysis for both Rules 12-15 and 12-16

With regard to costs, the economic impact analysis in Section V of the District’s staff report is insufficient, for several reasons already mentioned when discussing the emissions inventory and the requirements that are based on the inventory. The District’s staff report also provides no details for any of its cost estimates, provides no estimate of the costs associated with implementing a Risk Reduction Plan (even though the staff report states that it is assumed that each refinery will require such a plan),⁴⁴ and no support for the assumption that a wet gas scrubber is sufficient for compliance with the SO₂ and PM requirements.

The District’s contractor makes the assumption that retrofitting land-based diesel engines with particulate filters will be sufficient for compliance, without any evidence of this and without any consideration of the marine vessel emissions that are required to be included in the emissions inventory.

Given the lack of appropriate emissions inventory guidance, the current interpretations of that guidance being made by the District in its proposed revisions to Regulation 8 Rule 18 and

⁴³ 40 CFR 58.11 specifies that “PM_{2.5} measurement data from all eligible monitors that are representative of area-wide air quality are comparable to the annual PM_{2.5} NAAQS...[but]...PM_{2.5} measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, or localized hot spot, or unique middle-scale impact sites are not eligible for comparison to the annual PM_{2.5} NAAQS.” [emphasis added]

⁴⁴ BAAQMD, “[Staff Report: Proposed Air District Regulation 12, Rule 15: Petroleum Refining Emissions Tracking; and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds](#)”, October 2015 (available from <http://www.baaqmd.gov/~media/files/planning-and-research/rules-and-regs/workshops/2015/100915/sr12151216-pdf>), p. 12-16-30 (Table 4).

Regulation 11 Rule 10, and the potential inclusion of marine vessel emissions into the HRA analysis, the costs associated with complying with the Health Risk Threshold requirements could exceed all other costs associated with these rules combined.

Regulation 6-5: FCCU

The District is proposing to restrict the quantity of ammonia emissions from fluid catalytic cracking unit (FCCU) exhaust despite the fact that there are several issues that undermine both the need for the rule and the rule's implementation schedule.

The District has already concluded that ammonia emissions by themselves are such insignificant contributors to ambient PM_{2.5} that ammonia should be exempted from permitting rules, and US EPA recently agreed with that assertion.⁴⁵

District staff have stated that the intent for the rule is based on the presumption that restricting emissions of ammonia will also decrease the quantity of "condensable" particulate matter (CPM)⁴⁶. However, because the District is identifying the true problem as being associated with CPM, the more pertinent limit will be the limit on "condensable" particulate matter that the District has identified that they will propose in 2016,⁴⁷. This therefore asserts that the proposed additional quantitative limit on ammonia is unnecessary. Similarly, the District is presuming that reductions in "condensable" particulate matter (CPM) will impact ambient PM concentrations, despite the fact that ambient PM_{2.5} monitoring data show that the region is already in compliance with Federal and State ambient air quality standards.

Regulation 6-5 does not provide adequate time for completion of an Optimization and Demonstration Protocol (Protocol). The rule identifies that there are emission limits for Condensable Particulate Matter and SO₂ without specifying the values of those limits. The rule requires unnecessary monitoring that conflicts with H&SC §40001(d)(3). Finally, the rule needs to clarify the definition of FCCU with regard to the phrase "[including] ancillary equipment including blowers, and all equipment for controlling air pollutant emissions and recovering heat";⁴⁸.

⁴⁵ FR 52242, Aug 28, 2015.

⁴⁶ BAAQMD, "Petroleum Refinery Emissions Reduction Strategy: Staff Report," October 2015, pages 9 and A:1.

⁴⁷ BAAQMD, "Petroleum Refinery Emissions Reduction Strategy: Staff Report," October 2015, page 6.

⁴⁸ i.e., at some refineries, ammonia/urea injection occurs not at the FCCU but at the CO boilers that vent upstream of the FCCU

Rule 6-5: Timeframe

Proposed section 6-5-301 requires each refinery subject to the rule to optimize its ammonia emissions to the following timetable:

- March 1, 2016: Protocol due to the District
- April 30, 2016 (i.e., within 60 days of submittal): District approves or disapproves the Protocol
- December 31, 2016: Commence and complete optimization

The December 31, 2016 implementation date is onerous because it provides only seven months from the date that the Protocol is approved for the completion of the optimization.

This date is unreasonable because each refinery must conduct an evaluation of different injection rates to ensure that there are no adverse consequences on emissions or operations.⁴⁹ This analysis needs to occur over an extended period of time. Moreover, each refinery will need to assess the long-term response of plants and control equipment to lower ammonia levels. A significant time period for demonstration is important because the output of this step would become an enforceable limit.

Operation at the optimized level would occur prior to the proposed ammonia standard effective date of January 1, 2018, however establishing the enforceable ammonia emissions limit requires additional time. WSPA has proposed an amended schedule that has not been incorporated by staff in the rule.

Rule 6-5: Promulgating “[future]” Emission Limits

The District has identified the intent to propose emission limits for Condensable Particulate Matter and SO₂ in the future. Since such limits have not yet been identified, WSPA does not believe the District can legally approve rule language that identifies “future” emission limits.

Rule 6-5: Monitoring

Rule 6-5-501 requires permanent installation of both an ammonia emission monitoring system (per 501.1) and parametric monitors for measuring operational data (per 501.2). The requirements should allow for one or the other but not both. If an ammonia emission monitoring system is in place, requiring additional monitoring of operational data conflicts with H&SC §40001(d)(3); this code specifies that “If a district rule specifies an emission limit, the district

⁴⁹ Ammonia/urea is injected primarily for purposes of air pollution control that is required by the District—i.e., for purposes of reducing NO_x, and also for purposes of ensuring the efficiency of existing PM control equipment

shall not set operational requirements for any specific emission control equipment operating on a facility or system under that limit.”

Definition of FCCU

WSPA members are familiar with the term “FCCU” referring to the fluidized catalytic cracking unit, but the proposed definition 6-5-205 is overly broad to include “ancillary equipment including blowers, and all equipment for controlling air pollutant emissions and recovering heat”. This provision is a regulatory overreach by the District.

Regulation 8-18: Equipment Leaks

Summary

The refineries were surveyed via an independent consultant on the estimated costs for initial implementation of the rule that will include approximately 800,000 components. Prior to the October draft of the rule, the projected costs were expected to exceed \$6 million, however this estimate did not incorporate the costs associated with the provisions in the October 2015 draft rule for process and instrument diagrams (P&IDs). Refineries have estimated a wide range of additional costs associated with just the P&ID requirements, ranging anywhere from \$6 million to \$42 million.

The District has overestimated leak emissions from equipment in heavy liquid service, and is therefore proposing an unnecessarily extensive effort requiring each refinery to identify and take a handheld monitor to periodically monitor tens of thousands of components annually.

As late as May 2014, the District published an emissions inventory summary report that identified only 0.6 tons per day of total fugitive emissions (leak emissions are a subset of fugitive emissions) from all Bay Area refinery processes,⁵⁰. However the staff report for these rule revisions⁵¹ now identifies 4.0 tons per day (1,476 tons per year) fugitive emissions from components handling only the least volatile components (i.e., “heavy” liquids).

⁵⁰ BAAQMD, "[Bay Area Emissions Inventory Summary Report: Criteria Air Pollutants, Base Year 2011](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_CAPSummary.ashx?la=en)", May 2014, obtainable from http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_CAPSummary.ashx?la=en, Tables 6 and 7 (pp. 11-12).

⁵¹ BAAQMD, "[Petroleum Refinery Emissions Reduction Strategy: Staff Report](http://www.baaqmd.gov/~media/files/planning-and-research/public-hearings/2015/102215/staffreport1-pdf.pdf?la=en)", October 2015, obtainable from <http://www.baaqmd.gov/~media/files/planning-and-research/public-hearings/2015/102215/staffreport1-pdf.pdf?la=en>, p. B:5.

There have been no new studies of emissions to support this change, nor have there been any changes in the 1999 ARB/CAPCOA emissions inventory guidelines for leak emissions⁵² or the District’s referencing of those guidelines;⁵³. We believe the recent increase is a result of District staff making a speculative interpretation and forcing the refineries to report emissions based on that interpretation.

This contentious issue impacted refinery operations as prior to this rulemaking the District was holding up renewal of refinery operating permits unless refineries agreed to their new methodology and paid the associated fees. At the District’s request, WSPA members submitted monitoring data for thousands of equipment in heavy liquid service, which confirmed the emissions overestimates⁵⁴.

Unfortunately these data were subsequently dismissed by District staff. Details of WSPA’s expressed concerns with this issue were provided in a March 5, 2015 letter from WSPA to the District.⁵⁵ In a March 9 meeting with WSPA, District staff identified that they would work on a proposal for a data collection study to resolve issues and have the proposal ready by the week of March 23. The District did not return calls from WSPA’s consultant, and WSPA is still waiting to see a draft of that study.

In the meantime, the District has proceeded with its overestimates for purposes of this rulemaking. If Regulation 8-18 is amended as proposed, the resulting monitoring data will confirm overestimated emissions. There are also several details in the rule that do not satisfy the H&SC §40727 requirement for clarity, as their meaning is not “easily understood by the persons directly affected by it”.

The rule will require an extraordinary effort by the refineries. The District’s staff report estimates that 287,700 components in heavy liquid service will need to be tagged and identified

⁵² CAPCOA/ARB, [“California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities”](http://www.arb.ca.gov/fugitive/fugitive.htm), February 1999, available from <http://www.arb.ca.gov/fugitive/fugitive.htm>, last accessed October 15, 2015.

⁵³ BAAQMD, [“Refinery Emissions Inventory Guidelines: An Assessment of EPA Document *Emission Estimation Protocol for Petroleum Refineries \(Version 2.1.1, May 2011\)*”](http://www.baaqmd.gov/~media/Files/Engineering/Refinery%20Emissions%20Inventory%20Guidelines/Draft%20Refinery%20Emissions%20Inventory%20Guidelines.ashx?la=en), September 2013, available at <http://www.baaqmd.gov/~media/Files/Engineering/Refinery%20Emissions%20Inventory%20Guidelines/Draft%20Refinery%20Emissions%20Inventory%20Guidelines.ashx?la=en>, last accessed November 10, 2015.

⁵⁴ Electronic mail messages from Oscar Garcia (Chevron) to Bhagavan Krishnaswamy (BAAQMD), September 8, 2014; Jennifer Ahlskog (Phillips 66) to Greg Stone (BAAQMD), September 2014; and Kathy Wheeler (Shell) to Greg Stone (BAAQMD), “Shell DHT Heavy Emissions 2014 to BAAQMD (2).xlsx”, October 14, 2014; letter from Iren Suhami (Valero) to Greg Stone (BAAQMD), November 11, 2014.

⁵⁵ G. Bjerke (WSPA), letter to J. Karas (BAAQMD) “Re: BAAQMD Methods for Calculating Fugitive Emissions from Components in Heavy Liquid Service”, March 5, 2015.

on piping & instrumentation diagrams (P&IDs); this however does not identify the number of other connectors that will need to be tagged.

WSPA member refineries have estimated the total number of components affected to be in excess of 800,000. The rule requires annual monitoring regardless of any safety or accessibility constraints, and limits the number of equipment for which repairs can be delayed until the next turnaround. In the past, efforts to comply with even the current rules have required extraordinary efforts. These efforts include retaining Texas contractors to build repair boxes on a priority schedule, fly them to client Bay Area refinery, with the addition of having out-of-state contractors being flown in to conduct mass emissions sampling.

The South Coast AQMD, which is designated as a severe ozone non-attainment area and is required by law to implement all feasible measures to reduce ozone, exempts valves and connectors handling heavy liquids. The South Coast AQMD also has much higher leak thresholds, namely 10,000 ppm for gases and three drops per minute for liquids; the BAAQMD's thresholds are 100-500 ppm).⁵⁶

Rule 8-18: Emissions Quantification

The District's staff report incorrectly states that WSPA's comments "suggest that compounds larger than C9 carbon chains do not emit" and that the classification of mineral spirits is based on WSPA's comment. WSPA has made no interpretation of what is or isn't a "heavy liquid"; WSPA have cited only the definitions in the ARB/CAPCOA guidelines and current District rules. Nor has WSPA stated or implied that "compounds larger than C9 do not emit".

What WSPA has stated is that the evaporation from gases and higher-volatility liquids is greater than that from lower-volatility liquids, that the emission factors that the District is using are far too high and unrealistic when compared to actual monitoring data, and that the ARB/CAPCOA guidelines identified that components in heavy liquid service should be exempted from emissions inventories.

This is the reason that such components have been exempted from Federal and state/local requirements since the time that those studies were conducted. WSPA has been waiting for the District to fulfill their promise to draft a protocol for information to better quantify emissions since March 2015.

Lastly, the staff report identifies that the rule will reduce emissions by approximately 83%, but provides no information regarding how that value was calculated.

⁵⁶ South Coast Air Quality Management District, Rule 466.1 only applies to valves and flanges with Reid vapor pressures (RVPs) greater than 1.55 psi or absolute vapor pressures greater than 0.7 psi at 20 °C [per §466.1(b)(1) and (a)(3)].

Rule 8-18: Unreasonable Requirements

The rule will require that all components in heavy liquid service be tagged with a unique permanent identification code and identified on piping & instrumentation diagrams (P&IDs), P&IDs be physically submitted to the District, and all connectors in other service (which have been regulated for decades) also be tagged.

These requirements will involve a major effort considering that several hundred thousand components will need to be tagged at the refineries alone, plus the chemical plants, bulk plants, and bulk terminals in the Bay Area are also subject to these requirements, with no demonstrated emissions benefit.

The District has underestimated costs, identifying a total up-front capital cost of \$0.25 million for all five refineries combined. Before the District proposed the P&ID requirement in October, the refineries identified costs between two and seven times this value, which were based on both vendor quotations and past costs.

Each refinery has on the order of 1000 or more P&IDs (typically on large-scale hard copy paper) for its components in heavy liquid service. Furthermore, P&IDs are Confidential Business Information (CBI) and would reveal details about refinery configurations. The District has provided no justification for having to submit these to the District.

Although the rule requirements apply to chemical plants, bulk plants, and bulk terminals in the Bay Area, neither the District's staff report or its contractor's socioeconomic analysis included any evaluation of the impacts of these requirements on sources other than refineries, nor was there any assessment of contractor availability issues associated with all of these facilities needing contractors on the same timeframe.

In the case of the refineries alone, the identification and tagging (excluding P&ID modifications) at each refinery was identified as requiring nearly a year's worth of time and over ten thousand man-hours solely in contractor labor. This does not include the significant amount of refinery staff time associated with compliance with these requirements.

The District's monitoring requirements also identify no provisions for components that are unsafe to monitor. Such components can only be monitored safely when associated equipment is shut down. District staff have commented verbally that an unsafe to monitor provision is too difficult to write; however language in the Federal rules provides for this issue in component leak detection. The rule could place worker safety in jeopardy.

The rule also requires that the concentration associated with any visible leaks be determined within 24 hours. It is often unsafe for a refinery worker to approach operating equipment when a leak is found visually. WSPA maintains that there should be an option to shutdown the equipment and/or take action to minimize the leak rather than waiting for a trained technician to arrive for purposes of quantifying the concentration (using EPA Method 21).

In addition, several component locations may require a man-lift and other diesel-powered equipment for access. The District did not analyze the extent to which these emissions may be “significant” under CEQA and the extent to which emissions associated with having to monitor inaccessible equipment exceeds the emissions reduction associated with potentially finding and fixing a leak.

The District is also proposing to revise the definition of “Leak Minimization” to require “best modern practice” to exclude cleaning, scrubbing, or washing. WSPA contends that a large portion of “leaks” can be addressed by cleaning, scrubbing, or washing, for several reasons. The intrusion of solid particles into a seal can create a leak or seal gap, can cause valves to not seat properly, and cleaning can often resolve the leak. In other cases, what is detected as a “leak” may not be a leak at all, but rather liquid spillage originating from elsewhere. Many of the District’s suggestions involve bolt or nut tightening, which is not always the best approach. More judgment is required than this, since bolts and nuts can be overtightened such that leaks are actually increased.

Rule 8-18: Unnecessary / Inconsistent / Duplicative Requirements

H&SC 40727 requires that before adopting or amending a rule or regulation, the District needs to make findings of necessity, consistency and non-duplication. H&SC 40727.2 requires a written analysis that identifies all existing Federal requirements “and guidelines that apply to the same equipment or source type”, including a review of all of the following:

- (a) Averaging provisions, units, and any other pertinent provisions associated with the emission limits
- (b) Operation parameters and work practice requirements
- (c) Monitoring, reporting and recordkeeping requirements, including test methods format

The District’s staff report incorrectly identified that US EPA only requires leak detection and repair (LDAR) for chemical manufacturers but not petroleum refineries. US EPA regulations at 40 CFR 63.648 subject the refineries to LDAR requirements in 40 CFR 60 Subpart VV, and District staff should be aware of this given that they incorporate these requirements into each refinery’s Title V permit. The District’s staff report does correctly identify that these requirements do not require instrumental monitoring of components in heavy liquid service; this is for the same reason that such components have always been exempted from instrumental monitoring by Federal and local regulations.

The District’s staff report also failed to identify that the ARB and CAPCOA jointly developed implementation guidelines⁵⁷ that specify how equipment should be counted and

⁵⁷ CAPCOA/ARB, “California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities”, February 1999.

screened. This includes, among other things, identification that a “valve” is “a device that regulates or isolates the fluid flow in a pipe, tube, or conduit by means of an external actuator. Each valve is counted once regardless of the number of body flanges, bonnet flanges or plus that are part of the valve.” Illustrations in the Guidelines confirm that “valve” includes the valve’s bonnet flange and that the latter should not be counted separately. This is contrary to the District’s proposal to modify the definition of “connector” to include “a valve bonnet flange”.⁵⁸

In accordance with requirements in the statute, the staff report needs to (but does not) identify and review the details in Subpart VV as well as the ARB/CAPCOA guidelines, compare what is already required to the proposed rule.

Rule 8-18: Issues of Clarity

H&SC 40727 requires that before adopting a rule, the District board shall make a finding of “clarity”; i.e., “the regulation is written or displayed so that its meaning can be easily understood by the persons directly affected by it”. While the proposed rule refers to the term “heavy liquid”, there is no definition for it. There are many other provisions in the rule that are not clear and are too numerous to be identified here.

Regulation 11-10: Cooling Towers

Summary

The District staff report asserts both the need for this rule and its cost by estimates of substantial reductions in cooling tower emissions, however the staff report measurably overestimates cooling tower emissions and then proposes a method to reduce these inflated emissions.

Both US EPA’s guidance⁵⁹ and the District’s own guidance⁶⁰ identify that the preferred means to estimate emissions is to use actual sampling data collected using the Modified El Paso Method (MEPM). Such data are available for 24 of the 32 refinery cooling towers covered by 40 CFR 63, subpart CC.

⁵⁸ Ibid., pp. 22 and 24-25 and p. 33.

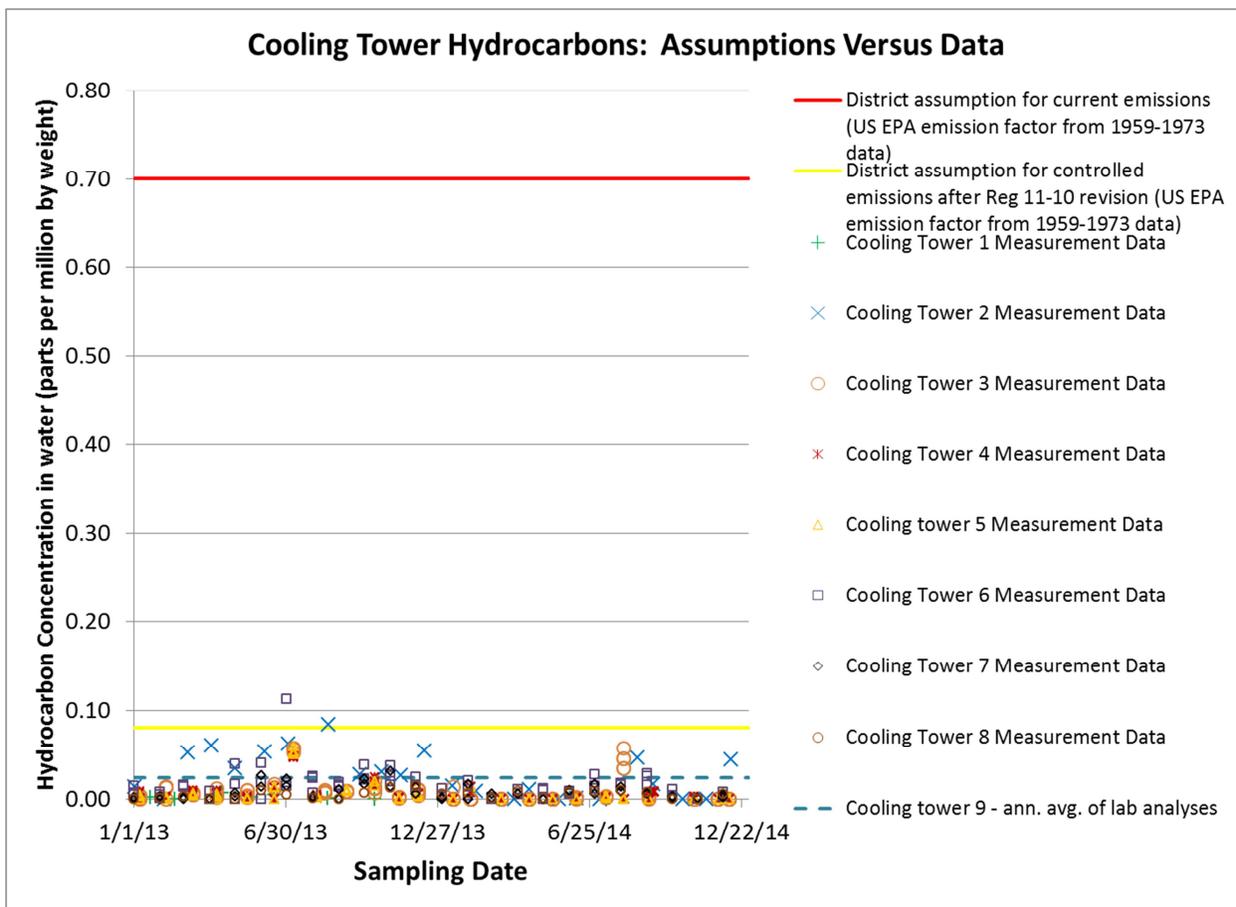
⁵⁹ US EPA, “Emissions Estimation Protocol for Petroleum Refineries”, Version 3, April 2015, available from <http://www3.epa.gov/ttn/chief/efpac/protocol/Protocol%20Report%202015.pdf>, p. 8-2.

⁶⁰ BAAQMD, “Refinery Emissions Inventory Guidelines: An Assessment of EPA Document *Emission Estimation Protocol for Petroleum Refineries* (Version 2.1.1, May 2011)”, September 2013, p. 8.

⁶⁰ BAAQMD, “Refinery Emissions Inventory Guidelines: An Assessment of EPA Document *Emission Estimation Protocol for Petroleum Refineries* (Version 2.1.1, May 2011)”, September 2013, p. 8.

In addition to the MEPM data, one refinery is currently required by their operating permit to take monthly samples of cooling water at the inlet and outlet of each cooling tower. This data, which BAAQMD staff has received and used in the 2014 BAAQMD emission inventory for the refinery, indicates that the 3.3 tons of emissions are well below BAAQMD estimates of 84 tons in the Staff Report.

The figure below illustrates the District’s emissions overestimates. The red line shows the District’s estimate of current emissions; the yellow line shows the District’s estimate of emissions after promulgation of the proposed rule; and the other data shown are the actual MEPM data.



Based on the monitoring data, the rule is unnecessary and is imposing burdensome monitoring requirements that will not achieve any appreciable emissions reduction and are therefore not cost-effective.

In addition, the proposed rule includes requirements that are infeasible and unnecessarily burdensome. Monitoring data shown in the figure above are based on monthly or quarterly

sampling, but the rule will increase that frequency to daily and require “permanent” fixes to leaks within 21 days without any allowances for the infeasibility or safety associated with doing so.

The costs associated with these requirements are far in excess of what the District identifies, and are also not justified given that the associated emissions reductions are far lower than what the District identifies.

Rule 11-10: Emissions Quantifications are Erroneous and Inconsistent with Guidance

The District staff report estimated cooling tower emissions before promulgation of the proposed rule revisions based on EPA AP-42 emission factors.⁶¹ US EPA gives these factors a below average “D” rating, identifies the sources for these factors dating as far back to 1959-1973,⁶² and contains prepared guidance for petroleum refineries⁶³ that identifies these as the worst possible means of quantifying emissions.

EPA’s guidance identifies the best means of quantifying emissions as being based on measurement data using the Modified El Paso Method (MEPM), which are the data points plotted in the figure above. The District’s own emissions inventory guidance⁶⁴ cross-references US EPA’s guidance, indicates that MEPM-based data are preferable to AP-42 emission factors.

The District staff report identified that “staff is concerned about the MEPM sampling method’s ability [to] provide representative hydrocarbon emissions data on a consistent basis”, but has identified no evidence for this concern, despite requests by the refineries.

The MEPM is required by US EPA for compliance with Federal MACT standards. Staff have failed to justify why the MEPM is not satisfactory for the proposed Rule, yet the US EPA has gone through a Rulemaking process and required the use of MEPM for MACT compliance.

The District staff concern is inconsistent with data collected at one Bay Area refinery that uses a different method to analyze cooling tower water; this method includes the collection of water samples upstream and downstream of cooling towers, and GC analysis by an offsite laboratory. The data was found to be consistent with the MEPM sampling.

⁶¹ BAAQMD, “Petroleum Refinery Emissions Reduction Strategy: Staff Report,” October 2015, page C:5 (including footnote 6).

⁶² US EPA, “Petroleum Refining”, Section 5.1 of AP 42, *Compilation of Air Pollutant Emission Factors* (rev. 4/15), available from http://www3.epa.gov/ttn/chief/ap42/ch05/final/c05s01_2015.pdf, Table 5.1-3, footnote a.

⁶³ US EPA, “Emissions Estimation Protocol for Petroleum Refineries”, Version 3, April 2015, available from <http://www3.epa.gov/ttn/chief/efpac/protocol/Protocol%20Report%202015.pdf>, p. 8-2.

⁶⁴ BAAQMD, “Refinery Emissions Inventory Guidelines: An Assessment of EPA Document *Emission Estimation Protocol for Petroleum Refineries* (Version 2.1.1, May 2011)”, September 2013, p. 8.

The District staff's concern is also at odds with a 2015 refinery permit. A District staff engineer used that same laboratory data as part of the permit renewal process to calculate emissions for calendar year 2014 that were approximately 35 times lower than what the District is currently identifying.

The District's own calculation of refinery's cooling tower emissions is 3.3 TPY. Assuming 100% emissions reduction, the District's costs for that refinery correspond to a cost-effectiveness of \$64,500-\$232,500 per ton of emissions reduction, rather than the \$2,533-\$9,125 per ton identified in the staff report.

The rule also does not exclude cooling towers that are not in hydrocarbon service as exempt from the rule.

Rule 11-10: Unnecessary / Inconsistent / Duplicative Requirements

H&SC 40727 requires that before adopting or amending a rule or regulation, the District needs to make findings of necessity, consistency and non-duplication. H&SC 40727.2 requires a written analysis that identifies all existing Federal requirements, including a review of all of the following:

- Averaging provisions, units, and any other pertinent provisions associated with the emission limits
- Operation parameters and work practice requirements
- Monitoring, reporting and recordkeeping requirements, including test methods format

The District's staff report identified that "not all cooling towers are subject to MACT" but omitted the fact that Federal MACT standards apply to the majority of the Bay Area refinery cooling towers (24 of the 32).⁶⁵

The staff report also identified that MACT "requires periodic monitoring (monthly or quarterly)" however it did not mention that existing cooling towers subject to monthly hydrocarbon monitoring are required to take corrective action when a monitoring result exceeds 0.084 ppmw = 84 ppbw (the yellow line identified in the figure above),⁶⁶ whereas existing cooling towers subject to quarterly hydrocarbon monitoring (and new cooling towers) are required to take corrective action when a monitoring result exceeds 42 ppbw.⁶⁷

⁶⁵ The District identified 34 cooling towers, but misidentified Shell as having 5 cooling towers instead of 3.

⁶⁶ The MEPM action level is identified as 6.2 ppmvC1 in the air stripped by the MEPM device, which corresponds to 0.084 ppm = 84 ppbw in the water at typical atmospheric temperature and pressure.

⁶⁷ 40 CFR 63.654(c)(4)(i) and (ii).

The staff report also failed to mention that if those levels are exceeded, MACT regulations allow 45 days for the facilities to repair the leak (if concentrations are less than 10x those indicated by the yellow line), but makes allowances for certain situations where repair is technically infeasible without a shutdown or when necessary equipment, parts, or personnel are not available.⁶⁸

The staff report also failed to mention the fact that the District's identification of "Best Modern Practices" [in 11-10-402] includes a list of several requirements (i.e., -402.1 through 402.3) that are actually OSHA Process Safety Management (PSM) requirements⁶⁹ and associated guidance.

OSHA's PSM requirements and associated guidance are more specific than what the District is proposing, and PSM is not an area of expertise by District staff. These requirements are duplicative and should be removed; PSM is the focus of agencies other than the District.

Rule 11-10: Unnecessary and Overly Burdensome Requirements

The District's proposed rule includes requirements for:

- continuous or daily hydrocarbon monitoring,
- reporting of data above the yellow line to the District "within one calendar day",
- the fixing of leaks "permanently" within 21 days, (11-10-305) with no provisions for if the leak is technically infeasible without a shutdown or when necessary equipment, parts, or personnel are not available, and
- additional daily monitoring of process parameters (that are for the most part less sensitive than the requisite hydrocarbon monitoring).

These are unreasonable and overly burdensome. The District's cost-effectiveness analysis reflects emission reductions have been grossly overestimated and the costs have been grossly underestimated.

As indicated by the actual data plotted above, there is no reason to monitor more frequently than monthly. With regard to the proposed requirements for continuous or daily hydrocarbon monitoring, the rule identifies three options:

1. daily monitoring via water sample analysis,
2. continuous monitoring via hydrocarbon analyzer, and
3. daily monitoring via "an alternative APCO-approved method" that is unspecified.

Each of these is infeasible or unreasonable for the reasons detailed below.

⁶⁸ 40 CFR 63.654(f).

⁶⁹ 29 CFR 1910.119

As WSPA identified in a previous meeting with the District, monitoring via Option 1 (above) as described in the proposed rule is not something that can be executed by refinery operators; the collection of samples “prior to exposure to air” requires specialized equipment and specialized training.

In order to execute the sampling daily on all cooling towers, some refineries would need both additional equipment and additional personnel, which the District’s cost analysis did not account for. The daily requirement would likely also necessitate the need for redundancy (in case of equipment malfunction or personnel absence), given that 24-hour timeframes do not necessarily provide sufficient time for repair or replacement.

The District’s cost analysis estimated \$85,000/year for additional staffing at facilities with four or more cooling towers,⁷⁰ however this is not accurate. One refinery estimated that a single operator could not collect water samples on more than seven towers per day. In order to conduct monitoring seven days a week and factoring in the need to manage fatigue, the one facility would need at least four people to address the new daily hydrocarbon monitoring requirements at all of their cooling towers.

For refineries that opt for the off-site laboratory analysis, typical laboratory turnaround time is approximately two weeks. Sufficient time is necessary for samples to be transported to laboratories, laboratory analysis, and laboratory QA/QC and reporting. Additionally, it is infeasible to “speciate and quantify the [TACs] associated with [a] leak” within one calendar day as required by 11-10-305. Moreover, the turnaround time is further evidence that monitoring on a daily basis does not make sense.

As WSPA identified previously, two refineries that have continuous monitors for their cooling tower water have found the monitors to be operationally problematic. In one case, calibrating the instrument takes 4-8 hours per week. The membrane technology in the monitors is prone to fouling by algae and other similar materials which will not be volatilized into the air.

In addition, some continuous monitors are based on solid state electrochemical detectors, which are not accurate enough to quantify mixtures of hydrocarbons accurately. US EPA and District guidance also does not allow for the use of continuous monitors to quantify emissions for emissions inventories. The District’s socioeconomic analysis also identified an assumption

⁷⁰ Applied Development Economics, “Socio-Economic Analysis: Proposed Amendments to Regulation 8, Rule 18 (“Equipment Leaks”), Regulation 11, Rule 10 (“Hexalent [sic] Chromium Emissions and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers”, and Draft New Regulation 6, Rule 5 (“Particulate Emissions from Refinery Fluidized Catalytic Cracking Units”, p. 13, Table 4, Row 12 item (e2).

of “1 analyzer for 2 towers”,⁷¹ but this is not a valid assumption because cooling towers are typically not collocated, requiring a separate analyzer for each cooling tower.

The most cost-effective monitoring option identified in the District’s staff report is an “APCO approved alternative monitoring method”; however, there is no detail in the rule language or staff report as to what that method might consist of.

Although the Staff Report identifies that “The Air District will allow the [MEPM] sampling method to be used...provided the petroleum refineries follow the Air District’s Manual of Procedures methodology that will update the MEPM by July 1, 2016”, there is no time for the refineries to design apparatus and train personnel based on that MOP methodology, given that the rule language specifies that the refineries need to comply by the same date (July 1, 2016).

Until the District requests and obtains approval from US EPA that any of their methodologies is equivalent to what US EPA requires, the refineries would also be required to do duplicative monitoring. US EPA does not authorize the District to unilaterally change monitoring methodologies required by Federal rules.

In the event hydrocarbon concentrations exceed the 84 ppbw threshold, the rule requires the refinery to file a report with the District “within one day”. That is unreasonable, in part because the focus of the refinery should be on fixing the leak rather than filing reports, and in part because it is unnecessarily burdensome. Regulation 1-522.7 requires notification within 96 hours of an indicated excess. This rule should be consistent with that requirement which is more reasonable, and would account for occasions of holidays, etc.

The District has no basis to require a “permanent” fix or replacement/permanent isolation of a heat exchanger”, as in proposed Section 11-10-205.1. Fixes are typically temporary until such time as the heat exchange in question can be safely taken off-line for a permanent repair. The District’s requirement is contrary to the H&SC 40001(c)(3) requirement that “if a District rule specifies an emission limit...the district shall not set operational or effectiveness requirements for any specific emission control equipment operating...under that limit”.

Although some leaks may be repairable in 21 days, others—particularly the smallest leaks, which are often the most time-consuming to find—will not be. Given the District’s proposed language and lack of any consideration for the extent of efforts made or feasibility or safety of repair, the rule would effectively force refineries to shut down operations. The District gave no consideration to the costs associated with this type of shutdowns in their analyses.

⁷¹ Applied Development Economics, “Socio-Economic Analysis: Proposed Amendments to Regulation 8, Rule 18 (“Equipment Leaks”), Regulation 11, Rule 10 (“Hexalent [sic] Chromium Emissions and Total Hydrocarbon Emissions from Petroleum Refinery Cooling Towers”, and Draft New Regulation 6, Rule 5 (“Particulate Emissions from Refinery Fluidized Catalytic Cracking Units”, p. 13, Table 4, Row 7.

The Best Management Practices in 11-10-402 should be deleted from the proposed rule. Compliance with the monthly cooling tower water sampling or with MEPM sampling is sufficient to meet the “best modern practices” definition as it is used in Regulation 8 Rule 2. The monitoring proposed in 11-10-402 is unnecessary, burdensome and provides no additional emission reduction benefit.

There is no need for the daily monitoring identified in 11-10-402.4 through 402.9; these are redundant, less sensitive, and less directly relevant to emissions than the MEPM monitoring or lab sample of cooling tower water. If these requirements are kept in the rule, there are significant additional costs at some refineries associated with having to conduct monitoring once “per shift” instead of once per day that are not incorporated in the cost estimates.

Rule 11-10: Other Technical Problems with Rule Language

The regulation should be targeting only relatively volatile hydrocarbons that would be emitted to the air in a cooling tower, and not those with lower volatilities that would remain in the water. The MEPM method is specifically designed to capture strippable hydrocarbons, but the other methods in the rule are not.

For the monitoring option involving off-site laboratory analysis, the District is proposing the use of both EPA Method 8260 (for “volatile” organics) and Method 8270 (for “semi-volatile” organics). Since Method 8260 allows for laboratories to use purge-and-trap sample handling, this requirement does not address the very issue that the District acknowledges MEPM was design to address: i.e., “compounds with lower molecular weights and boiling points that are generally lost when sampled for purge/trap analyses”.⁷²

The Leak Action Requirement in 11-10-305 does not designate a specific subset of the TACs in Table 2-5-1 of Regulation 2 Rule 5 which require speciation. It is infeasible to test for all TACs listed in Table 2-5-1 as currently required in the proposed rule. There is no rationale supporting why the majority of TACs in Table 2-5-1 would be present in a cooling tower leak and to require testing for all the components would be unnecessarily time consuming and costly.

Rule 11-10-401.2 requires a demonstration that total hydrocarbon emissions from a leak are below 15 pounds per day (lb/d) and that TAC emissions for the leak are below their corresponding acute and chronic trigger levels in Table 2-5-1 of Regulation 2 Rule 5.

The staff report indicates that the requirement to demonstrate total hydrocarbon emissions are below 15 lb/d was included to demonstrate compliance with Regulation 8-2-301. This requirement is unnecessary because the proposed rule itself qualifies the cooling towers for the ‘best modern practices’ exemption Regulation 8-2-114 and, therefore, the limit in Regulation 8-2-301 is not applicable.

⁷² BAAQMD, “Petroleum Refinery Emissions Reduction Strategy: Staff Report,” October 2015, page C:3.

The trigger levels in Regulation 2 Rule 5 are designed for new and modified sources to determine whether or not the New Source Review requirements for TACs in Regulation 2 Rule 5 applies to that new or modified source. These trigger levels are considered an arbitrary emission limit for unpredictable emissions from leaks in 11-10-401.2.

Overall Aggregate Costs Estimates

The refineries were surveyed via an independent consultant on the estimated costs and ranges.

The cost of potential crude window restrictions / restrictions on operating crudes associated with rule 12-15 could exceed tens of millions annually. The impacts of this rule are difficult to project, however this ball park estimate is based on District staff's intent to develop a "crude operating window".

The cost of meeting the rule 12-16 risk reduction threshold of 25-in-a-million may be impracticable for several of the refineries, as this has been associated with reductions well in excess of 50% and possibly more for pollutants that are already largely maxed out on controls. Estimates of diesel particulate reductions for "cold ironing" marine vessels have been estimated as being in the \$50-\$100 million range for capital expenditure costs alone. This however does not include the necessary electric costs associated with that as well. Estimates of capital expenditure costs for retrofitting all diesel engines possible with particulate filters and then replacing the others with Tier 4 engines have fallen in the \$10-50 million range. And it is still possible that under the new HRA guidelines (and with the District's emissions inventory interpretations) neither of these would reduce the potential for lifetime cancer risk at the maximum impact point to 25-in-a-million.

The costs for initial implementation of rule 8-18 will include about one million components. The projected costs for all five refineries without the new P&ID requirements are expected to exceed \$6 million. Estimates of additional costs associated with the P&ID requirements indicate that the total costs of those requirements alone will be between \$6 million to \$42 million.

The capital expenditure costs for a rule 6-5 FCCU wet gas scrubber ranged from \$300 million to over \$700 million each, far in excess of what the District estimated. This may in part be due to the fact that past experience has indicated the backpressure associated with such an addition also necessitates the rebuild of CO boilers that share the stack with the FCCU. Operation costs ranged from \$10-\$20 million annually, on top of the capital expenditures.

Capital expenditure costs for the rule 11-10 continuous monitors was estimated to range \$10-\$15 million. Alternatively, for MEPM sampling, the time needed to conduct one MEPM sample is approximately four man-hours. Changing the monitoring frequency from once per month to once per day will increase this resource demand and costs by 30 fold.

Tables of Detailed Comments on Specific Rules

Rule 8-18

| Existing Rule Language and District Proposed Changes in Underline/Strikeout | Problem/Issue |
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| <p>8-18-113
 Limited Exemption, Initial Boiling Point: <u>Until January 1, 2018</u> The provisions of Sections 8-18-400 shall not apply to equipment which handle organic liquids having an initial boiling point greater than 302°F.</p> | <p><u>Necessity:</u> The District has not made a finding of necessity for this proposed revision. It does not make sense to require that such liquids (“heavy liquids”) be monitored in perpetuity, given that (a) they have been exempted from statewide guidelines for nearly 15 years, (b) data submitted by WSPA members shows that these components do not have any appreciable vapor leaks, and (c) the District has identified that they will be conducting a study to determine which components in heavy liquid service it would possibly make sense to monitor. This is especially true for bulk plants and bulk terminals, where the heavy liquids handled are refined products (i.e., diesel fuel) that are not heated, and the District has made no estimate of any emissions reductions associated with applying this requirement to those facilities. It would make far more sense to extend the exemption until such time as the District has done the study and determined based on data rather than speculation whether there is an issue with these components (or a subset of them) that needs to be addressed.</p> <p><u>Consistency:</u> The proposed removal of the limited exemption is inconsistent with the 1999 statewide guidelines (CAPCOA/ARB, “California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities”, February</p> |

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| | <p>1999) which include a list of “components not counted” that includes “components handling exclusively liquids which evaporate 10% or less at 150 °C”.</p> |
| <p>8-18-115
 Limited Exemption, Storage Tanks:
 The provisions of this rule shall not apply to appurtenances on storage tanks including pressure relief devices, which are subject to requirements contained in Regulation 8, Rule 5: Storage of Organic Liquids.</p> | <p>Clarity: Given the proposed removal of the exemption at 8-18-113 and recent District interpretations of the 1999 statewide guidelines (CAPCOA/ARB, “California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities”, February 1999), there needs to be additional clarity of this exemption, as WSPA has identified previously to the District. Specifically, Regulation 8 Rule 5 only includes requirements for appurtenances on storage tanks when the liquid being stored has a vapor pressure of > 0.5 psia (8-5-117) or is under pressure or blanketed (8-5-307.3). If this rule were to now apply to storage tanks having a vapor pressure of ≤ 0.5 psia that are neither under pressure nor blanketed, the District’s analysis of the rule needs to incorporate the fact that capital investment would be needed to reinforce the structural integrity of some tanks to support the weight of a person for periodic monitoring, since an articulating boom lift will not be able to reach the pressure vacuum valve of many fixed roof tanks.</p> |
| <p>8-18-204
 Connection: Flanged, screwed, or other joined fittings used to connect any piping or equipment, including any fitting connecting equipment to piping or other equipment, such as a valve bonnet flange or pump flange.</p> | <p>Consistency: The proposed revised language is inconsistent with the 1999 statewide guidelines (CAPCOA/ARB, “California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities”, February 1999) which clearly identifies that “each valve is counted once regardless of the number of body flanges, bonnet flanges or plugs that are part of a valve (see section on component identification and screening illustrations)” (p. 23) and the associated illustrations on pages 24 and 25 also show that valve bonnet flanges should not be counted as separate flanges.</p> |
| <p>8-18-209
 Leak Minimization: Reducing the leak to the lowest achievable level using best modern</p> | <p>Necessity: The District has not made a finding of necessity for this proposed</p> |

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| <p><u>practices and without shutting down the process the equipment serves. Leak minimization is the most common method for repair. Leak minimization includes but is not limited to tightening of packing gland nuts, injecting lubricant into lubricated packing, tightening bonnet bolts, tightening flange bolts, or installing plugs or caps into open ended lines or valves. Cleaning, scrubbing, or washing equipment alone is not considered best modern practice.</u></p> | <p>revision. It does not make sense to require tightening when (a) oftentimes what counts as a “leak” can be due to liquid dripped from somewhere else, the presence of liquid in a weepole, a moving piece of equipment that didn’t seat properly due to material that is in the way, or solid particles that work their way into crevices, lubricating material, etc. and (b) overtightening can cause leaks as well.</p> <p>Clarity: The District only identifies that cleaning/scrubbing/washing is not considered best modern practice, and almost all of the things that are identified as “best modern practice” include tightening, which is not always a good idea. The current language is too unclear as to what other activities do or do not qualify as “best modern practices”.</p> |
| <p>8-18-210
 Leak Repair: The tightening, adjustment, or addition of material, or the replacement of the equipment using best modern practices, which reduces the leakage to the atmosphere below the applicable standard in Section 8-18-300.</p> | <p>Necessity: The District has not made a finding of necessity for this proposed revision. See comment on 8-18-209 above.</p> <p>Clarity: Inclusion of this language begs the need for a definition of what constitutes “best modern practices”. See comment on 8-18-209 above.</p> |
| <p>8-18-214
 (Current) Pressure Relief Device: The automatic pressure-relieving device actuated by the static pressure upstream of the device including, but not limited to pressure relief valves and rupture disks.</p> <p>(Proposed) Pressure Relief Device: The automatic pressure-relieving device actuated by the static pressure upstream of the device or used to control breathing losses from a fixed-roof tank by allowing slight positive or negative pressure variations in a tank while preventing the</p> | <p>Clarity: Confusion as to what is struck – the language struck was only in previous drafts, not in current rule to be eligible for removal.</p> |

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| <p>movement of gas into or out of the tank including, but not limited to pressure relief valves, pressure vacuum valves and rupture disks.</p> | |
| <p>8-18-306
 Non-repairable Equipment: Any essential equipment leak valve, connection, pressure relief device, pump or compressor which that cannot be repaired as required by Section 8-18-302, 303, 304 or 305 may be placed on a non-repairable list provided the operator shall comply complies with the following conditions:</p> | |
| <p>306.1
 <u>Any essential equipment leak must be less than 10,000 ppm and mass emissions must be determined within 30 days of placing on the nonrepairable list. The APCO must be notified no less than 96 hours prior to conducting mass emissions measurements.</u> The valve, connection, pressure relief device, pump or compressor is repaired or replaced within 5 years or at the next scheduled turnaround, whichever date comes first.</p> | <p><u>Necessity:</u> There is no justification for why this is required or why it even makes sense. This means that if the leak is > 10,000 ppmC1 – even if the mass emissions are less than 5 lb/day – the District is requiring the process to shut down in order to fix it, rather than allowing the repair period to be delayed or extended. Having to shut down a unit because there is a leak > 10,000 ppmC1 but less than five pounds a day result in more emissions than if the unit had continued to operate. It is not feasible to fix all leaks > 10,000 ppmC1 within seven days; for example, equipment that requires a box clamp or other technical repair requires more than 7 days in some cases, such as unusual metallurgy. Technicians routinely make multiple attempts to stop the leak without encapsulation. The design, construction, and air freight delivery of a custom clamp can require 7 days. In addition, the geometry and safety requirements for some equipment (feed vlv, CV, pump and compressor seals, etc) cannot be encapsulated. Pump seals and compressor seals cannot be encapsulated because the moving shafts cannot be sealed. Also, bagging for all equipment on the Delay Of</p> |

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| | <p>Repair list is not necessary because equipment will be monitored more frequently, and is sometimes infeasible and/or unsafe (e.g., in confined spaces or compressor seals).</p> <p>Clarity: The rule does not specify how equipment that is already on a delay of repair list on the date the rule becomes final must comply. For example, it is not possible to measure the mass emission rate within 30 days of the date the equipment was placed on delay of repair, because that date occurred more than 30 days in the past. At least 6 months from the rule’s finalization date is needed to measure mass emission rates of equipment placed on delay of repair before rule finalization. In addition, it is not clear what the District is requiring when bagging is not possible or unsafe. Many conditions are foreseeable that will prevent bagging a leaking component. For example, equipment that is not repaired in 7 days but is shutdown and in turnaround (TA) in the 8-30 day window is not possible to bag for mass emissions. Equipment that is not repaired in 7 days, but can be repaired in less than 30 should not require bagging.</p> <p>Other Issues: As proposed this requirement potentially jeopardizes worker safety. Also, mass emissions needs GC lab analysis and calculations that occur after the bagging event; logistically it is tough to get the configuration, bagging specialist and total calculations achieved by day 30, especially if there is a long lead time on parts.</p> |
| <p>306.2
 Effective July 1, 2004, The the number of individual pieces of equipment awaiting</p> | <p>Necessity: There is no justification of the necessity of this. The sole sentence in the staff report (p. B:3) which addresses this</p> |

repair does not exceed ~~the percentages~~ that portion of the total population for each equipment type expressed in the table below ~~or 1 piece of equipment,~~ rounded to the next higher whole number.

| Equipment | Total Number of Non-repairable Equipment Allowed (%) |
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| Valves (including Valves with Major Leaks) and Connections as allowed by Section 8-18-306.3 | 0.15 0.30% of total number of valves |
| Valves with Major Leaks as allowed by Section 8-18-306.4 | 0.025% of total number of valves |
| Pressure Relief Devices | 0.5 1.0% of total number of pressure relief devices |
| Pumps and Compressors | 0.5 1.0% of total number of pumps and compressors |

states that “The average percentage of valves and connectors on a non-repairable list is 0.04 percent (allowable percentage of valves including connectors is 0.30 percent), which indicates the LDAR programs implemented at the five refineries can achieve a much lower fraction of equipment placed on a non-repairable list than the fraction currently allowable by the rule.” This makes no sense; i.e., the District seems to be stating that on average the refineries are able to do much better than required under the current regulation, so lowering the percentages will not have an impact. If that is the case, and there is no impact, then there is no necessity. On the other hand, what is going to happen is that sometimes there will be deviations from the average, such that what used to be a reasonably manageable issue now becomes an extremely expensive one that could trigger a process shutdown.

Other: The reductions in percentages will create hardship and additional costs which the District has not estimated. This is especially so for the reduction in the percentage of pumps and compressors, given the relatively small number of pumps and compressors operated, this reduction leaves too little room for contingencies (e.g., a facility with 400 pumps and compressors is currently allowed to have four such components on its Non-Repairable list; the District’s proposed change would cut this down to only two.) It is also less likely for a refinery to have spares of this type of equipment on the shelf, than it is for valves and connectors. The staff report dismisses this by stating (p. B:4) that “If the heavy liquid equipment produces the minimal emissions claimed by industry,

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| | <p>then the added heavy liquid equipment inventory will compensate for the lowered non-repairable percentages by affording each facility additional equipment allowed on the non-repairable list”. This is both technically incorrect (the number of equipment on the non-repairable list is not correlated with the quantity of emissions; in fact, the District is proposing to disallow anything with high emissions from the list) and disingenuous (the District cannot simultaneously claim massive emissions reductions and then say that because industry claims otherwise, the costs will be negligible). The costs of addressing the regulation are there regardless of the quantity of emissions. Also, there needs to be some amount of time provided to facilities to comply with these new percentages.</p> |
| <p>8-18-309 Open-Ended Valve or Line: Open-ended valves or lines shall be equipped with a cap, blind flange, plug or second valve which shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.</p> | <p><u>Necessity:</u> There is no need for these requirements to be more restrictive and less safe than the similar Federal requirements identified at 40 CFR 60 Subpart VV, §60.482-6 (see below).</p> <p><u>Consistency:</u> The proposed revised language conflicts with similar but different Federal requirements at 40 CFR 60 Subpart VV, §60.482-6; these identify that the following do not need to be capped/flanged/plugged/equipped with a second valve:</p> <p>(d) Open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset.</p> <p>(e) Open-ended valves or lines containing materials which would autocatalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system.</p> |

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| | <p>Other Issues: As proposed this requirement jeopardizes worker safety.</p> |
| <p>8-18-310 Recurrent Leaks: If a valve, pump, compressor or PRD is found leaking more than 3 consecutive quarters, the inspection frequency shall change from quarterly to monthly pursuant to Section 8-18-407.</p> | <p>Clarity: There is no Section 8-18-407 in the proposed rule.</p> |
| <p>8-18-311 Mass Emissions: A person shall not use any equipment that emits total organic compounds in excess of five pounds per day except during any repair periods allowed by Sections 8-18-301, 302, 303, 304, and 305.</p> | <p>Necessity: There is no need for this requirement, given the limited number of equipment that is allowed to be placed on the Delay Of Repair list. The omission of mentioning Section 306 means that any leak that is more than five pounds per day cannot be placed on the Delay Of Repair list, even if the concentration is less than 10,000 ppm. Shutting down and restarting a process unit because a component leaks results in much more emissions than the leaking component.</p> <p>Clarity: The District did not identify this language as a change, but is a significant change from the existing language in 8-18. For Title V facilities that need to certify compliance with all requirements, it is unclear how they could possibly certify compliance with this requirement for all of the equipment where concentrations are below the leak thresholds in 8-18-300 (given that there is no guarantee that just because the concentration is below 100 ppm that mass emissions are below 5 lb/day). It is also not clear how to interpret this requirement when bagging (which is needed to determine the pounds per day emissions rate) is not possible or is unsafe. And for equipment that is bagged, it is not always possible to get results within the repair period (7 days); i.e., if an operator has a leak, bags it and 10 days later and gets a result of 6 lb/hr, does that mean that they</p> |

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| | <p>are automatically out of compliance (because they have been emitting > 5 lb/hr for a period that is greater than 7 days? Would they be considered to have been out of compliance for three days, even though there was no way of knowing they were out of compliance until after the bags were set up and the results came back? If out of compliance, when does a shutdown need to occur? Immediately when calcs are completed? A week later? After a plan to BAAQMD for shutdown is communicated? What about the situation where the first time the component is bagged the emission rate is 4 lb/hr (OK to put on Delay Of Repair) and then the next year when it's bagged the emission rate is 6 lb/hr? Is the component considered to have been out of compliance for a year?</p> |
| <p>401.2
Except as provided under Subsection 8-18-401.3, 404, 405, and 406 all valves, pressure relief devices, pumps or compressors subject to this Rule shall be inspected quarterly.</p> | <p>Clarity: Given the proposed removal of the exemption at 8-18-113 and recent District interpretations of the 1999 statewide guidelines (CAPCOA/ARB, “California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities”, February 1999), there needs to be additional clarity of the term “subject to this Rule”. In past years, it was the understanding of both the refineries (and several District engineers that estimated emissions for the refineries) that the list of “Components Not Counted” on page 23 of that Guidance meant that the components “were not to be included in component counts used for the quantification of fugitive emissions” (as stated on that page). The District needs to clarify which components are “subject to this Rule”; i.e., does it include any of the other “Components Not Counted” on page 23 besides the “components handling exclusively liquids which evaporate 10% or less at 150 °C” that are proposed for</p> |

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| | <p>inclusion, and if so, which ones? For example, does it now include “components handling non-volatile lubricating fluids”—such as components handling lubricating oil designed for high-temperature applications (or similar substances) that have such low volatility at the temperatures that they are being handled that it is not physically possible to exceed the leak thresholds—and if not, how is “non-volatile” being defined? Does it include “components handling fluids of 10% by weight or less volatile organic compound”, such as components in wastewater collection service that are (or aren’t) regulated under Regulation 8 Rule 8? Does it include “components handling commercial natural gas”, even though the facility does not have the authority to fix leaks in such equipment that is owned by utilities? etc.</p> |
| <p>401.3
 <u>Inaccessible valves and pressure relief devices subject to this Rule shall be inspected at least once a year. unless found leaking pursuant to Subsection 403.2.</u></p> | <p><u>Necessity:</u> There is no finding of necessity. First, inspection even on just an annual frequency is not practical for valves in heavy liquid service, which can add a high level of safety concern for access and also cost and manpower. Inaccessible valves require multiple personnel and a high safety risk. WSPA sees no reason why the District cannot have “unsafe to monitor” provisions that are similar to those promulgated by US EPA.</p> <p><u>Clarity:</u> There is no “Subsection 403.2.”</p> <p><u>Other:</u> The proposed language does not contain a provision for unsafe to monitor components that can only be monitored when associated equipment is shutdown. Shutting down and restarting all process units tied to the flare annually would be detrimental to the environment. More</p> |

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| | <p>emissions would be generated by the annual shutdown, startup, and thermal cycling of process units than emissions from the unsafe to monitor components.</p> <p>District staff verbally commented that an unsafe to monitor provision is difficult to write. The District should not place lives in jeopardy because an unsafe to monitor provision is too much of a challenge to write. The District should not expect refinery technicians to complete a monitoring task that they would not ask their inspectors to validate. Inspections on a flare might be possible with the process units operating if a technician wears special heat resistant protective equipment. However, the safety risk is unjustified for the miniscule emissions possible. Historically, refineries only work on flare stacks during turnarounds when the equipment tied to the flares are shut-down for optimal personnel safety.</p> |
| <p>401.6
Any connections <u>subject to this rule</u> that is shall be inspected annually or <u>be</u> that is part of an APCO and EPA approved connection inspection program is subject to the provisions of Subsection 8-18-304.2.</p> | <p><u>Necessity:</u> Connectors are the most numerous components but have the lowest emissions rates; adding this requirement adds significant cost and complexity for little emissions reduction.</p> <p><u>Other:</u> The proposed language does not contain a provision for unsafe to monitor components. Unsafe to monitor connectors can only be monitored safely when associated equipment is shutdown. For example, flare pilot natural gas line connectors are not safe to inspect when process units tied to the flare are operating. Shutting down and restarting all process units tied to the flare annually would be detrimental to the environment. More emissions would be generated by the annual shutdown, startup, and thermal cycling of process units than emissions from the unsafe to monitor components.</p> |

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| <p>401.10
 Effective July 1, 2004, tThe mass emission rate of any <u>essential equipment valve with a major leak</u> placed on the non-repairable list in accordance with Section 8-18-306 shall be determined at least once per calendar year. The APCO shall be notified no less than 96 hours prior to conducting the measurements required by this section.</p> | <p>Clarity: Mass emissions monitoring is not feasible for all equipment. What are people supposed to do in those situations? Also, results are not always going to be consistent; for example, what happens if a valve on the Delay Of Repair list is bagged with an emission rate at 4 lbs/day, but the next year the emission rate is 7 lbs/day? Is the component automatically out of compliance?</p> |
| <p>8-18-403
 Visual Inspection Schedule: <u>All pumps and compressors shall be visually inspected daily for leaks. If a leak is observed, the concentration shall be determined within 24 hours of discovery pursuant to Section 8-18-602.</u> All pumps and compressors subject to this rule shall</p> | <p>Necessity: There is no need for these requirements to be unsafe.</p> <p>Other: It is often unsafe for a person to approach equipment when a leak is found visually. Emissions would be minimized if the equipment is shutdown upon the leak’s discovery rather than waiting for a trained technician to arrive to monitor the leak rate.</p> |
| <p>8-18-404
 Alternative Inspection Schedule: The inspection frequency for valves <u>or pumps</u> may change from quarterly to annually provided all of the conditions in Subsection 404.1 and 404.2 are satisfied.</p> | <p>Necessity: The District has not identified a need for <u>each component</u> to have a different skip period; doing this will increase confusion and the likelihood of noncompliance</p> <p>Consistency: The proposed language is inconsistent with what is identified in EPA’s LDAR rule (40 CFR 60 Subpart VV), which identifies an alternate inspection schedule on a process unit basis.</p> |
| <p><u>8-18-405</u>
 Recurrent Leak Schedule: <u>For any valve, pump, compressor or pressure relief device found leaking in more than three consecutive quarters, a person subject to this Rule shall comply with the following requirements:</u></p> | <p>Clarity: Inserting a new Section 405 is going to conflict with existing permit requirements that reference the existing Section 405.</p> <p>Consistency: Completely changing out a rule Section, rather than giving new sections a new number and marking deleted sections as [Deleted], is going to cause inconsistency with current requirements/permit conditions.</p> |

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| <p><u>407.1</u>
 <u>The inspection frequency shall be changed from quarterly to monthly; and Bay Area Air Quality Management District October 16, 2004 8-18-9</u></p> | <p>Clarity: The number of this section should follow Section 407, not Section 405.</p> |
| <p><u>404.2</u>
 <u>Records of each valve, pump, compressor and pressure relief device changed to monthly monitoring shall be submitted to the District each quarter pursuant to Section 8-18-503.1.</u></p> | <p>Clarity: There are now two Sections 404.2. The number of this section should follow sequentially after that of the preceding section.</p> |
| <p><u>404.3</u>
 <u>If the valve, pump, compressor or pressure relief device remains leak free for four consecutive months pursuant to Sections 8-18-302, 303 and 305 the inspection frequency will revert back to quarterly upon request and after APCO approval.</u></p> | <p>Necessity: The District has not identified why it is now necessary for the APCO to approve reverting back to quarterly monitoring for recurrent leaks. What is there to approve? And why wouldn't the APCO approve more frequent monitoring?</p> <p>Clarity: There are now two Sections 404.3. The number of this section should follow sequentially after that of the preceding section. The criteria for approval are not identified. The draft rule language allows that if two refineries request approval of an alternative inspection schedule on the same basis, one refinery may be denied and one refinery may receive approval because the reviewers are different and there are no clear criteria for approval. Also, the way the language currently reads, if the APCO approval is not obtained, then the facility is not required to (and should not) revert back to quarterly monitoring, which doesn't make any sense.</p> <p>Other: Approval of the APCO causes delays or is often unattainable. Approval</p> |

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| | <p>from the APCO for the alternative inspection schedule could result in the refineries monitoring at inconsistent frequencies.</p> |
| <p>401.11
 The owner/operator shall identify the equipment and/or source of any background reading greater than 50 ppm.</p> | <p>Other: Identifiable causes of this are likely to be maintenance events. A maintenance event exclusion would help address this issue.</p> |
| <p>8-18-501
 Portable Hydrocarbon Detector: Any instrument used for the measurement of total organic compounds shall be a combustible gas indicator that has been approved by the APCO and meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A).</p> | <p>Clarity: Method 21 Section 8.1.1.2 requires that “instrument response factors for each of the individual VOC to be measured shall be less than 10....When no instrument is available that meets this specification when calibrated with the reference VOC...the available instrument may be calibrated with one of the VOC to be measured, or any other VOC, so long as the instrument then has a response factor of less than 10 for each of the individual VOC to be measured.” Has the District identified whether any commercially available portable instrument is able to meet this criteria for heavy liquids, and if not, whether there is any availability of heavy liquid calibration gases for calibrating the instrument? It is entirely infeasible to have to manually evaluate the response factors for all of the individual hydrocarbons stored, and it is also very unlikely that equipment vendors will have reference values for all of these compounds (as allowed by Section 8.1.1). What exactly are people supposed to do with regard to this requirement? The District’s cost analysis fails to account for this issue.</p> |
| <p>502.6
 Effective January 1, 2018, Piping and Instrumentation Diagrams (P&IDs) with all components in heavy liquid service clearly identified.</p> | <p>Necessity: The District has not identified why it is necessary for P&IDs in heavy liquid service to be submitted. WSPA does not agree that it is necessary. The heavy liquid components will be tagged in the field and monitored. All requirements in Rule 8-18 are the same regardless of</p> |

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| | <p>whether the component contains heavy liquid or light liquid. The refineries can most expeditiously and comprehensively tag all the components in heavy liquid service by highlighting lines on P&IDs that do not contain hydrocarbon, then tag all components that are not already tagged and not highlighted on the P&IDs. The number of lines that do not contain hydrocarbon that would be highlighted on P&IDs is much less than the number of lines that contain heavy liquids. The more expeditiously that the refineries can tag the components, the sooner the refineries can begin monitoring the components and reducing emissions. The more comprehensively the refineries can comply with the rule, the more emissions will be reduced.</p> <p><u>Clarity:</u> There is no definition of “heavy liquid”.</p> <p><u>Other:</u> Compliance with this requirement is unduly burdensome and not included in the District’s economic analysis. The volume of P&ID’s is enormous (thousands or tens of thousands) and they change every day. P&IDs will be needed for a tagging effort, but P&IDs have more than just heavy liquid streams information on them. They are Confidential Business Information (CBI) because they provide detailed information about the layout of the facility. Compliance with this requirement would involve an engineering evaluation to distinguish whether the initial boiling point of material in the pipe is greater or less than 302 degrees Fahrenheit for every foot of piping in the refinery. The refineries have thousands of miles of piping. In many cases, the refineries have conservatively tagged and</p> |
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| | <p>are monitoring components below the 302 degrees Fahrenheit threshold because process streams vary and to simplify and more comprehensively ensure compliance with the current Rule 8-18. Many samples would need to be analyzed for initial boiling point to determine the sections of piping that are heavy liquid versus light liquid in order to comply with this section. This requirement was not in either the May or September versions of the draft rule. If this requirement is kept the District has not made “a good faith effort to minimize adverse socioeconomic impacts” as required by H&SC 40728.5.</p> |
| <p>503.2 Effective July 1, 2016, a person subject to this rule shall submit to the District a An inventory identifying of the total numbers of valves, pressure relief devices, pumps and compressors and connections to which this rule applies broken down per unit or other grouping if component is not associated with an individual unit. After review and approval of the initial inventory by the APCO, annual inventory updates shall be submitted to the District every January 1st. to which this rule applies shall be submitted to the District at least once a year.</p> | <p><u>Necessity:</u> The District has not identified why it is necessary for them to “approve” the inventory.</p> <p><u>Clarity:</u> The District has not identified on what basis they will or will not approve the inventory.</p> |
| <p>503.5 By January 1, 2018, submit records required by Section 8-18-502.6 and annually thereafter for information that has changed since last submittal.</p> | <p><u>Necessity:</u> The District has not identified why it is necessary for P&IDs to be submitted.</p> <p><u>Other:</u> The volume of P&ID’s is enormous (thousands or tens of thousands) and they change every day; it is completely infeasible to submit them to the District, track which ones changed over the last year, etc. They are Confidential Business Information (CBI) because they provide detailed information about the layout of the facility. This requirement was not in either the May or</p> |

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| | <p>September versions of the draft rule. If this requirement is kept the District has not made “a good faith effort to minimize adverse socioeconomic impacts” as required by H&SC 40728.5. There are also security concerns; i.e., descriptions of relevant pipeline details or features or activity given to any agency would expose key infrastructure components if information from the locations, routes, drawings, capacity, monitoring equipment, wiring or controls of the pipeline would expose its vulnerabilities, including cyber sabotage. The campaign against the world’s vulnerable pipelines is real and likely to continue to spread and cause harm to the Bay Area critical infrastructure.</p> |
| <p>8-18-602
 Inspection Procedure: Inspections of equipment shall be conducted as prescribed by EPA Reference Method 21 (40 CFR 60, Appendix A).</p> | <p>Clarity: Method 21 Section 8.1.1.2 requires that “instrument response factors for each of the individual VOC to be measured shall be less than 10....When no instrument is available that meets this specification when calibrated with the reference VOC...the available instrument may be calibrated with one of the VOC to be measured, or any other VOC, so long as the instrument then has a response factor of less than 10 for each of the individual VOC to be measured.” Has the District identified whether any commercially available portable instrument is able to meet this criteria for heavy liquids, and if not, whether there is any availability of heavy liquid calibration gases for calibrating the instrument? It is entirely infeasible to have to manually evaluate the response factors for all of the individual hydrocarbons stored, and it is also very unlikely that equipment vendors will have reference values for all of these compounds (as allowed by Section 8.1.1). What exactly are people supposed to do with regard to this requirement? The</p> |

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| | District's cost analysis fails to account for this issue. |
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Rules 12-15 and 12-16

| Citation | Proposed Rule Language | Problem/Issue |
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| 12-15-101 | Description: The purpose of this rule is to track air emissions and crude oil composition characteristics from petroleum refineries over time, to complete health risk assessments for petroleum refineries, and to establish monitoring systems to provide detailed air quality data along refinery boundaries and in nearby communities. | <p>Necessity: The District has not made a finding of necessity for this rule. The District already tracks air emissions and there is no need to track crude oil composition characteristics in addition to that, nor is there a need to duplicate existing AB2588 health risk assessment requirements or establish monitoring systems given all air quality data obtained to date with existing monitoring systems.</p> <p>Nonduplication: The District’s proposed requirements for health risk assessments for emissions from refineries are duplicative of AB2588 requirements. The proposed requirements for fence-line monitoring at refineries are duplicative of US EPA requirements for fence-line monitoring at refineries that were signed and released on September 29, 2015.</p> |
| 12-15-206 | Crude Slate: A record of the characteristics and quantities of crude oil and/or crude oil blends to be processed by a crude distillation unit at a petroleum refinery. | Clarity: As WSPA has commented to District staff many times over the past year (including the attachment to WSPA’s March 27, 2015 comment letter), in industry parlance, the “crude slate” is only the crude oil blend processed by a crude distillation unit – i.e., not the individual crude oils that are transported to the refinery (prior to blending). There is a significant difference and these two things should not be combined into one definition. |
| 12-15-207 | Emissions Inventory: A comprehensive accounting of the types and quantities of criteria pollutants, toxic air contaminants, and greenhouse gases that are released into the atmosphere based on state-of-the-art | Consistency: As identified in the attachment to WSPA’s March 27, 2015 comment letter, the inclusion of accidental air releases is not consistent with the PREP definition (which excludes them). The inclusion of |

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| | <p>measurement technologies and estimation methodologies. For the purposes of this rule, emissions inventory data shall be collected or calculated for: (1) all continuous, intermittent, predictable, and accidental air releases resulting from petroleum refinery processes at stationary sources at a petroleum refinery, and (2) all air releases from cargo carriers (e.g., ships and trains), excluding motor vehicles, that load or unload materials at a petroleum refinery including emissions from such carriers while operating within the District or within California Coastal Waters as specified in Regulation 2-2- 610 (adopted Dec. 19, 2012).</p> | <p>emissions from cargo carriers, including emissions while operating in District or California Coastal waters, is not consistent with US EPA and California ARB emissions inventory requirements (40 CFR 98, Mandatory GHG Reporting, AB2588).</p> <p><u>Non-duplication:</u> The requirement for a GHG emissions inventory is largely duplicative of both US EPA and California ARB requirements; the requirement for a TAC emissions inventory is largely duplicative of California AB2588 requirements; and the requirement for a criteria pollutant emissions inventory is largely duplicative with District Regulation 3 (Schedule M) requirements.</p> |
| <p>12-15-210</p> | <p><u>Health Risk Assessment (HRA):</u> A detailed and comprehensive analysis to evaluate and predict the dispersion of hazardous substances in the environment and the likelihood of risk for exposure of the human population and to assess and quantify both the individual and populationwide health risks associated with those levels of exposure. HRAs required by this rule shall be prepared in accordance with Section 12-15-602.</p> | <p><u>Clarity:</u> Current wording suggests that this is an estimate of “likelihood of risk”, which is inaccurate. OEHHA’s February 2015 Risk Assessment Guidelines state that “Risk estimates generated by [a health risk assessment] should not be interpreted as the expected rates of disease in the population, but rather as estimates of potential for disease, based on current knowledge and a number of assumptions” (p. 1-6) and that “The assumptions used in these guidelines are designed to err on the side of health protection in order to avoid underestimation of risk to the public”.</p> |
| <p>12-15-211</p> | <p><u>Health Risk Assessment Modeling Protocol:</u> A detailed plan identifying the steps that will be taken during the air dispersion modeling and health risk assessment process. This plan shall be prepared in accordance with the most recent guidelines adopted by the Office of Environmental Health Hazard Assessment (OEHHA) under Health and Safety Code Section 44360(b)(2)</p> | <p><u>Clarity:</u> It is unclear whether this definition is referring to a protocol that models the sources covered by AB2588 (which would exclude marine vessels, etc.) or whether the District is proposing that this is a protocol for an entirely separate HRA that incorporates marine vessels, etc. – which would have very substantial impacts on the cost estimates associated with the HRA requirements</p> |

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| | <p>for use in the Air Toxics “Hot Spots” Information and Assessment Act of 1987 (Health and Safety Code Section 44300 et seq.) and shall identify the specific basis or references for all input data (such as emissions data, stack parameters, building dimensions, terrain data, meteorological data, health effects values, etc.) and the proposed models, methods, procedures, and assumptions that will be used for each step of the HRA process.</p> | <p>proposed in Regulation 12-16.</p> |
| <p>12-15-212</p> | <p>Monthly Crude Slate Report: A summary of crude and other pre-processed feedstock volumes and properties processed by refinery crude unit(s) or other process unit(s) each calendar month, reported annually for the calendar year.</p> | <p>Clarity: As identified in the attachment to WSPA’s March 27, 2015 comment letter, the District has not defined “pre-processed feedstock” and it is unclear what is meant by this term.</p> |
| <p>12-15-214</p> | <p>Petroleum Refinery: An establishment that is located on one or more contiguous or adjacent properties that processes crude oil to produce more usable products such as gasoline, diesel fuel, aviation fuel, lubricating oils, asphalt or petrochemical feedstocks. Petroleum refinery processes include separation processes (e.g., atmospheric or vacuum distillation, and light ends recovery), petroleum conversion processes (e.g., cracking, reforming, alkylation, polymerization, isomerization, coking, and visbreaking) petroleum treating processes (e.g., hydrodesulfurization, hydrotreating, chemical sweetening, acid gas removal, and deasphalting), feedstock and product handling (e.g., storage, blending, loading, and unloading), auxiliary facilities (e.g., boilers, waste water treatment, hydrogen production, sulfur recovery plant, cooling towers, blowdown systems, compressor engines, and</p> | <p>Clarity: As identified in the attachment to WSPA’s March 27, 2015 comment letter, the reference to “auxiliary facilities” is unclear. While the District has identified types of equipment that could potentially be “auxiliary facilities”, there is no delineation of what determines whether those types of equipment are auxiliary facilities, or not. For example, the District appears to have rejected WSPA’s March 27, 2015 suggestion that at a minimum, “auxiliary facilities” be defined to include those that are “under common control” and “that are not directly involved with the refining of crude oil but whose functions are part of the refinery operations”.</p> <p>Consistency: The currently proposed definition of “petroleum refinery” is inconsistent with various US EPA, ARB, and District regulations.</p> |

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| | power plants), and support facilities (e.g., hydrogen plants, sulfuric acid plants, and electrical generation). | |
| 12-15-215 | <p><u>Petroleum Refinery Emissions Profile (PREP):</u> An emissions inventory for the Petroleum Refinery Emissions Profile (PREP) period that is used as a reference with which to compare emissions inventories for later periods of time (on-going annual emissions inventories) in order to determine changes in emissions that have occurred from a petroleum refinery. A PREP shall be the average emission rate, expressed in units of tons or pounds per year, based on actual emissions that occurred during the PREP period, except that a PREP shall not include emissions that exceeded regulatory or permitted limits in place at the time the emissions occurred, or emissions from accidental air releases. The PREP shall not include emissions eliminated before 12/31/2015 by a permanent change such as emissions controls or closure.</p> | <p><u>Necessity:</u> The District has not identified the necessity for a PREP, given that the entire structure of its air permitting program is based on the recognition that facilities require operating flexibility and therefore permits are issued based on their Potential To Emit, not their actual emissions. It has also not justified the last sentence of this definition, which was not present in the various drafts of this regulation that have been issued but was added in the October 2015 proposal.</p> <p><u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter (and previous verbal comments), this definition does not clearly identify how the PREP is defined when there are changes in emissions inventory methodologies that cannot be applied to past data (e.g., due to lack of input information)</p> <p><u>Consistency:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, the PREP exclusion of accidental air releases is not consistent with the current definition of “emissions inventory” (which includes them).</p> |
| 12-15-216 | <p><u>Petroleum Refinery Emissions Profile Period:</u> A period of 12 consecutive months, from January 2010 through December 2015, which is selected by a refinery owner/operator for establishing a PREP for a particular criteria pollutant, toxic air contaminant, or greenhouse gas. A different consecutive 12-month period may be used for each criteria pollutant, toxic air contaminant, or greenhouse gas.</p> | <p><u>Consistency:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, this period is inconsistent with the “baseline” emissions period identified in US EPA PSD air permitting regulations. When developing its PSD regulations, EPA selected a 10-year period to select emissions baselines from, based on a study of business cycles and the “conclusion...that 10 years of data is</p> |

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| | | reasonable to capture an entire industry cycle. Comments from various industries support a conclusion that a 10-year look back period is a fair and representative time frame for encompassing a source’s normal business cycle.” [67 FR 80200, December 31, 2002] EPA has determined a 10 year period provides adequate span of business cycles. |
| 12-15-217 | <p>Petroleum Refinery
 Owner/Operator: Any person who owns, operates, or exercises operational control over the majority of operations at a petroleum refinery. The refinery owner/operator is responsible for compliance with this rule for the entirety of the petroleum refinery, including any refinery processes, auxiliary facilities or support facilities that may be separately owned or operated. Any person who owns, operates, or exercises operational control over a support facility must provide the Owner/Operator with information sufficient to allow the owner/operator to comply with this rule, and must make that information available to the APCO upon request.</p> | <p>Clarity: As identified in the attachment to WSPA’s March 27, 2015 comment letter, it is unclear which facilities are considered “owners of portions of a refinery that are less than the majority of the operations”.</p> <p>Consistency: As identified in the attachment to WSPA’s March 27, 2015 comment letter, the proposed definition sets boundaries (refinery responsible for all ancillary facilities regardless of ownership/control) that are inconsistent with the definition of a Petroleum Refinery, which is determined by common operational control. Facilities under different ownership (e.g., embedded third party hydrogen plants) should be responsible for their own reporting.</p> |
| 12-15-221 | <p>Toxic Air Contaminant (TAC): An air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a present or potential hazard to human health. For the purposes of this rule, TACs consist of the substances listed in the most recent health risk assessment guidelines adopted by OEHHA.</p> | <p>Consistency: As identified in the attachment to WSPA’s March 27, 2015 comment letter, this definition is inconsistent with the District’s definition of TAC in Regulation 2-5. These definitions should be aligned.</p> |
| 12-15-401 | <p>On-going Annual Petroleum Refinery Emissions Inventory and Monthly Crude Slate Reports: A refinery owner/operator shall obtain</p> | <p>Necessity: The District has not made a finding of necessity for requiring crude slate reports.</p> |

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| | <p>and maintain APCO approval of an On-going Annual Petroleum Refinery Emissions Inventory and Monthly Crude Slate Report. Timely submittal as described in the next sentence shall constitute compliance with this requirement unless and until there is a determination of disapproval by the APCO pursuant to Section 12- 15-404. On or before September 1, 2016, and every subsequent September 1, a refinery owner/operator shall submit to the APCO an On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report covering the previous calendar year period in an APCO-approved format. This report shall include, at a minimum, the following:</p> | <p><u>Consistency:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, requiring submittal of GHG inventories before September 1 is inconsistent with the fact that the GHG inventory that is subject to mandatory third-party verification under ARB’s Mandatory Reporting Program is not required to be verified prior to that date.</p> <p><u>Non-duplication:</u> The requirement for a GHG emissions inventory is largely duplicative of both US EPA and California ARB requirements; the requirement for a TAC emissions inventory is largely duplicative of California AB2588 requirements. Preparation of these inventories is duplicative of the District calculating their own inventories in accordance with Regulation 3, Schedule M.</p> |
| <p>12-15-401.3</p> | <p>A detailed listing of the annual emissions of each criteria pollutant, TAC, and GHG emitted from each source at the petroleum refinery, and a complete description of the methodology used for monitoring and determining these emissions, any changes made, and including documentation of the basis for any assumptions used. Any methodologies that are unchanged from a previously submitted On-going Annual Petroleum Refinery Emissions Inventory and Monthly Crude Slate Report under this section may instead be noted as such. Emissions resulting from accidental releases and flaring events addressed in Regulation 12, Rules 11 and 12 shall be identified, included and quantified as such, along with the date(s) and time(s) that the release occurred.</p> | <p><u>Consistency:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, (a) reporting GHG emissions “from each source” is inconsistent with the AB32 GHG reporting requirements (for example, under AB32, most combustion sources are reported in aggregate via measurement at the refinery fuel gas mix drums) and (b) the reference to emissions from accidental air releases and flaring is inconsistent with the exclusion of accidental air releases from the PREP.</p> <p><u>Other:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, the requirement to report emissions “from each source” also frustrates trade secret protection of activity data for sources which do not have CEMs. Given that the emission factors to be used will be mandated by</p> |

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| | | <p>BAAQMD and readily available to the public, source activity information can be easily back-calculated from publicly available emissions and emission factors. Therefore, emission inventories must be reported to the public on an aggregated basis.</p> |
| <p>12-15-401.4</p> | <p>As an alternative to 401.3 for GHG, annual emissions for GHG may be reported based on the most recent California Air Resources Board (CARB) Regulation for the Mandatory Reporting of Greenhouse Gas Emissions methodology, this report to the APCO must provide emissions information for each GHG source at the refinery. If emissions increase by more the 5 percent from the PREP, the owner/operator must submit with that year’s Emissions Inventory and Monthly Crude Slate Report an analysis of the cause of the GHG emissions increase, including the individual sources involved, and the actions taken to meet the emissions reductions requirements of the CARB regulation. The analysis shall also include documentation for any assumptions used.</p> | <p><u>Necessity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, there is no necessity for requiring analysis of year-to-year variability.</p> <p><u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, it is unclear what is meant by “the emissions reductions requirements of the CARB regulation”, given that the most recent CARB Regulation for the Mandatory Reporting of Greenhouse Gas Emissions methodology does not have any emissions reductions requirements.</p> <p><u>Consistency:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, reporting GHG emissions “from each source” is inconsistent with the AB32 GHG reporting requirements (for example, under AB32, most combustion sources are reported in aggregate via measurement at the refinery fuel gas mix drums).</p> <p><u>Non-duplication:</u> The requirement to analyze year-to-year variations in GHG is duplicative of the ARB Mandatory Reporting Rule’s requirement to report increases and decrease in facility GHG emissions, and the reasons for those changes [17 CCR 95104(f)].</p> <p>Other: As identified in the attachment to</p> |

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| | | <p>WSPA’s March 27, 2015 comment letter, the requirement to report emissions “from each source” also frustrates trade secret protection of activity data for sources which do not have CEMs. Given that the emission factors to be used will be mandated by BAAQMD and readily available to the public, source activity information can be easily back-calculated from publicly available emissions and emission factors. Therefore, emission inventories must be reported to the public on an aggregated basis.</p> |
| <p>12-15-401.5</p> | <p>Beginning with the On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report for the calendar year 2016 (due on or before September 1, 2017), and for every subsequent calendar year On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report, a table that shows, on a refinery-wide basis for each applicable air pollutant, the change in emissions that occurred between the PREP established under Sections 12-15-402 or 403 and the calendar year period for which the On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report was prepared under this section. Emission changes do not need to be shown for any newly listed TACs that have been included in an On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report but that have not been included in a PREP due to insufficient information.</p> | <p><u>Consistency:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, requiring submittal of GHG inventories before September 1 is inconsistent with the fact that the GHG inventory that is subject to mandatory third-party verification under ARB’s Mandatory Reporting Program is not required to be verified prior to that date.</p> |
| <p>12-15-401.6</p> | <p>The Monthly Crude Slate Report shall include summaries of the petroleum refinery’s crude and other pre-processed feedstock inputs for each calendar month, reported for the</p> | <p><u>Necessity:</u> The District explicitly removed the word “slate” after “crude” between the September 2015 draft version of this proposed rule and the currently proposed rule.</p> |

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| | <p>calendar year period covered by the On-going Annual Petroleum Refinery Emission Inventory, and include the following:</p> <p>6.1 Total volume (million barrels) processed by crude unit(s) and other pre- processed feedstocks that are processed at other process unit(s), and</p> | <p><u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, (a) the District’s proposed definition of “crude slate” includes two different things—crudes transported to the refinery, and blends that are fed to crude units—and the availability and confidentiality of information is dependent on which thing is being referred to; and (b) the District has not clearly defined what things are covered by the term “pre-processed feedstock”. The District also does not identify whether it is acceptable for the requested information to be based on crude assay information or not (if not, the District has not fully disclosed the impacts and costs of the rule). Some of the requested information is available from crude assays but some is not; some may be available from pre-processed feedstock product transfer documentation, but some is not. With the exception of the BTEX information (which Section 6.7 identifies only needs to be provided “to the extent such information is available”), the District has not clearly identified what needs to be done in situations of unavailable information.</p> |
| | <p>6.2 Averaged API gravity (degrees), and</p> | <p><u>Non-duplication:</u> As identified in WSPA’s March 27, 2015 comment letter, for crude blends, this requirement is duplicative of US DOE Energy Information Administration EIA-810 reporting requirements, with the exception that the confidentiality is less protected by the District.</p> |
| | <p>6.3 Averaged sulfur content (percentage by weight), and</p> | <p><u>Non-duplication:</u> As identified in WSPA’s March 27, 2015 comment letter, for crude blends, this requirement is duplicative of US DOE Energy Information Administration EIA-810 reporting requirements, with the</p> |

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| | | exception that the confidentiality is less protected by the District. |
| | 6.4 Averaged nitrogen content (parts per million by weight), and | <u>Necessity:</u> As identified in WSPA’s March 27, 2015 comment letter, this information is not pertinent to air emissions. |
| | 6.5 Averaged vapor pressure, (psi), and | <u>Necessity:</u> This requirement was first added in the September 2015 draft version of this rule. District has not evaluated the necessity for this information. |
| | 6.6 Averaged Total Reduced Sulfur (H ₂ S and mercaptan content, parts per million by weight), and | <u>Necessity:</u> This requirement was first added in the September 2015 draft version of this rule. District has not evaluated the necessity for this information. |
| | 6.7 Averaged BTEX (benzene, toluene, ethylbenzene, and xylene) contents (percentage by volume) to the extent such information is available, and | <u>Necessity:</u> This requirement was first added in the September 2015 draft version of this rule. District has not evaluated the necessity for this information. |
| | 6.8 Averaged total acid number (milligrams of potassium hydroxide per gram), and | <u>Necessity:</u> As identified in WSPA’s March 27, 2015 comment letter, this information is not pertinent to air emissions. |
| | 6.9 Averaged metals content for nickel and vanadium (parts per million by weight). | <u>Necessity:</u> This requirement was first added in the September 2015 draft version of this rule. District has not evaluated the necessity for this information. |
| 12-15-402 | <u>Petroleum Refinery Emissions Profile Report:</u> A refinery owner/operator shall obtain and maintain APCO approval of a PREP report. Timely submittal as described in the next sentence shall constitute compliance with this requirement unless and until there is a determination of disapproval by the APCO pursuant to Section 12-15-404. On or before September 1, 2016, a refinery owner/operator shall submit to the APCO a PREP report in an APCO- | <u>Consistency:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, reporting GHG emissions “from each source” is inconsistent with the AB32 GHG reporting requirements (for example, under AB32, most combustion sources are reported in aggregate via measurement at the refinery fuel gas mix drums).

<u>Other:</u> As identified in the attachment to WSPA’s March 27, 2015 comment |

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| | <p>approved format. This report shall include, at a minimum, the following:</p> <p>402.3 A detailed listing of the emission rate of each criteria pollutant, TAC, and GHG that was emitted from each source at the petroleum refinery during the PREP period, expressed in units of tons or pounds per year for criteria pollutant and TAC emissions and in units of metric tons per year for GHG emissions, and a complete description of the methodology used for monitoring and determining these emissions, any changes made, and including documentation of the basis for any assumptions used and the exclusion of any emissions that do not meet the definition of PREP in Section 12-15- 215.</p> | <p>letter, the requirement to report emissions “from each source” also frustrates trade secret protection of activity data for sources which do not have CEMs. Given that the emission factors to be used will be mandated by BAAQMD and readily available to the public, source activity information can be easily back-calculated from publicly available emissions and emission factors. Therefore, emission inventories must be reported to the public on an aggregated basis.</p> |
| <p>12-15-403</p> | <p><u>Revision of Petroleum Refinery Emissions Profile Report:</u> Any improvements in emissions inventory methodologies that are used to expand or refine On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Reports submitted under Section 12-15-401 shall also be used to expand or refine future submissions of the PREP as provided below, to the extent that such improved methodologies are also applicable to the sources included in the PREP. In such instances, a revised PREP report shall be submitted to the APCO no later than by the date the applicable On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report is due. The revised PREP report shall, at a minimum, identify the date of the revision, contain the information described in Sections 12-15-402.1 to 402.4, and clearly identify, describe, and justify the changes in the</p> | <p><u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter (and previous verbal comments): (a) this section does not clearly identify how the PREP is to be revised when there are changes in emissions inventory methodologies that cannot be applied to past data (e.g., due to lack of input information); (b) it is unclear what constitutes an “improvement in inventory methodology” (for example, if a thermocouple is added to a source which changes the way a temperature correction is executed, is this expected to be reported?)</p> <p><u>Consistency:</u> The fact that there are no provisions for address the issue of how emissions offsets obtained for permitting purposes are handled in the PREP and inventory and no allowance for new units that go through the District’s permitting process is inconsistent with the District’s preconstruction air</p> |

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| | <p>PREP that have been made. Revised PREP reports should be expanded to include emissions of newly listed TACs that have been included in an On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report required by Reg. 12-15-401.5, unless insufficient information exists to make such revisions. Changes in emissions related to the addition or removal of a source or to a change to permitted source emissions, as documented in a District Permit to Operate, shall be reflected in a revised PREP report by the next practical date that the On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report is due.</p> | <p>permitting process.</p> |
| <p>12-15-404</p> | <p><u>Review and Approval of On-going Annual Petroleum Refinery Emissions Inventory and Monthly Crude Slate Reports and Petroleum Refinery Emissions Profile Reports:</u>
 The procedure for determining whether an On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report submitted under Section 12-15-401, or a PREP report submitted under Section 12-15-402 or 403, meet the applicable requirements of this rule is as follows:</p> <p><u>404.1 Preliminary Review:</u> Within 45 days of receipt of the report, the APCO will complete a preliminary review of the report to identify any deficiencies that need to be corrected. If the APCO determines that the submitted report is deficient, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination and the required corrective action.</p> | <p><u>Clarity:</u> There are no criteria identified for what is or isn't a "deficiency."</p> |
| | <p><u>404.3 Public Comment:</u> The Annual</p> | <p><u>Other:</u> As identified in the attachment</p> |

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| | <p>Petroleum Refinery Emissions Inventory Report and Petroleum Refinery Emissions Profile Reports, including any revisions made to correct deficiencies will be made available for public review for 45 days (with the exception of information designated confidential). The APCO will consider any written comments received during this period prior to approving or disapproving the final reports. The public versions of these reports will not include detailed calculation methodologies for individual sources, but a short methodological description will be provided. In addition, the public versions of these reports will provide aggregated, rather than source-specific emissions information for GHG.</p> | <p>to WSPA’s March 27, 2015 comment letter, the public should be allowed to comment on the methodologies that the District is requiring, but the application of these methods to Confidential Business Information (CBI) is not reviewable.</p> |
| | <p>404.4 Final Action: Within 45 days of the close of the public comment period under Section 12-15-404.3 (if applicable), the APCO will approve the report if the APCO determines that the report meets the requirements of Sections 12-15-401, 402, or 403, and Section 12-15-601, and shall provide written notification to the refinery owner/operator. This period may be extended if necessary as determined by the APCO. If the APCO determines that the report does not meet the requirements of Sections 12-15-401, 402, 403, and Section 12-15-601, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the report within 45 days. If the APCO determines that the refinery owner/operator failed to correct any</p> | <p>Clarity: As identified in the attachment to WSPA’s March 27, 2015 comment letter, it is not clear as to whether the Refinery Owner/Operator is in violation if the BAAQMD unilaterally makes correction to a PREP or ongoing EI, or disapproves an HRA modeling protocol or HRA. It is also not clear what the consequence is if a report is disapproved.</p> <p>Nonduplication: As identified in the attachment to WSPA’s March 27, 2015 comment letter, if the inventory is not approved by the time that the District needs to conduct its Regulation 3 invoicing, the District will need to make a duplicative effort to quantify emissions.</p> |

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| | <p>deficiency identified in the notification, the APCO will determine that the refinery owner/operator has failed to meet the requirements of Sections 12-15-401, 402, or 403, and Section 12-15-601, and will disapprove the report, or the APCO may make the necessary corrections and approve the report with a designation that the report was approved with Air District revisions.</p> | |
| 12-15-405 | <p><u>Submittal of Health Risk Assessment Modeling Protocol and Health Risk Assessment:</u> A refinery owner/operator shall obtain and maintain APCO approval of a HRA Modeling Protocol and HRA and, if required pursuant to 12-16-401, an Updated HRA Modeling Protocol and HRA. Timely submittal of a protocol and assessment as described in this section shall constitute compliance with this requirement unless and until the APCO makes a disapproval determination pursuant to Section 12-15-406.4 or 406.8.</p> | <p><u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, it is not clear how approval would be “maintained”.</p> <p><u>Other:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, references to Regulation 12 Rule 16 should be eliminated from Regulation 12 Rule 15 and moved to Regulation 12 Rule 16. Regulation 12 Rule 16 has not yet been promulgated.</p> |
| | <p><u>405.1 Timely Submittal of HRA Modeling Protocol:</u> Timely submittal of an HRA Modeling Protocol means that the refinery owner/operator shall submit to the APCO an HRA Modeling Protocol for the petroleum refinery no later than March 1, 2017. This protocol shall be based on emissions inventory data collected for the 2015 calendar year. The 2015 calendar year inventory may incorporate improved emission estimation calculations. It may also be modified to reflect emission reductions that have been achieved prior to the submittal of the HRA.</p> | <p><u>Clarity:</u> Given the approval process for emissions inventories identified in 12-15-404, the inventory may not be approved prior to this deadline for the Protocol. It is unclear how the Protocol—which is required to include the inventory data—can be submitted by the proposed deadline in this circumstance.</p> |
| | <p><u>405.2 Timely Submittal of HRA:</u></p> | <p><u>Other:</u> As identified in the attachment</p> |

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| | Timely submittal of an HRA means that the refinery owner/operator shall submit to the APCO an HRA that is completed in accordance with the final APCO-approved HRA Modeling Protocol by no later than 90 days after receipt of APCO approval of the HRA Modeling Protocol. | to WSPA’s March 27, 2015 comment letter, a typical HRA takes about 6 months to complete. |
| | <u>405.3 Timely Submittal of Modeling Protocol for Updated HRA:</u> Timely submittal of an Modeling Protocol for an Updated HRA required pursuant to 12-16-401 means that the refinery owner/operator shall submit to the APCO an HRA Modeling Protocol for the petroleum refinery no later than 60 days after APCO approval of an On-Going Annual Emissions Inventory Report that, pursuant to 12-16-401, triggers the requirement to obtain and maintain approval of an Updated HRA. | <u>Other:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, references to Regulation 12 Rule 16 should be eliminated from Regulation 12 Rule 15 and moved to Regulation 12 Rule 16. Regulation 12 Rule 16 has not yet been promulgated. |
| | <u>405.4 Timely Submittal of an Updated HRA:</u> Timely submittal of an Updated HRA required pursuant to 12-16-401 means that the refinery owner/operator shall submit to the APCO an HRA that is completed in accordance with the final APCO-approved HRA Modeling Protocol by no later than 90 days after receiving notification from the APCO that an Updated HRA is required pursuant to Regulation 12-16-401. | <u>Other:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, references to Regulation 12 Rule 16 should be eliminated from Regulation 12 Rule 15 and moved to Regulation 12 Rule 16. Regulation 12 Rule 16 has not yet been promulgated. |
| 12-15-406 | <u>Review and Approval of Health Risk Assessment Modeling Protocols and Health Risk Assessments:</u> The procedure for determining whether a Health Risk Assessment (HRA) Modeling Protocol and Health Risk Assessment submitted under Section | <u>Other:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, the public should be allowed to comment on the methodologies that the District is requiring, but the application of these methods to Confidential Business Information (CBI) is not |

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| | <p>12-15-405 meet the applicable requirements of this rule is as follows:</p> <p><u>406.3 Public Comment on HRA Modeling Protocol:</u> The HRA Modeling Protocol, including any revisions made to correct deficiencies, will be made available for public review for 45 days (with the exception of information designated confidential). The APCO will consider any written comments received during this period prior to approving or disapproving the final HRA Modeling Protocol.</p> | <p>reviewable.</p> |
| | <p><u>406.4 Final Action on Modeling Protocol:</u> Within 45 days of the close of the public comment period under Section 12-15-406.3, the APCO will approve the HRA Modeling Protocol if the APCO determines that the HRA Modeling Protocol meets the requirements of Section 12-15-405, and shall provide written notification to the refinery owner/operator. This period may be extended if necessary as determined by the APCO. If the APCO determines that the HRA does not meet the requirement of Sections 12-15-405, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination. Upon receipt of such notification, the refinery owner/operator shall correct the identified deficiencies and resubmit the HRA Modeling Protocol within 45 days. If the APCO determines that the refinery owner/operator failed to correct any deficiency identified in the notification, the APCO will determine that the refinery owner/operator has failed to meet the requirement of Sections 12-15-405, and will disapprove the HRA Modeling</p> | <p><u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, it is not clear why regulatory language is being proposed to disapprove a protocol. Doesn’t a protocol eventually have to be approved? Why not just fix the protocol?</p> |

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| | Protocol. | |
| | <p>406.7 Public Comment on HRA:
The HRA, including any revisions made to correct deficiencies, will be made available for public review for 45 days (with the exception of information designated confidential). The APCO will consider any written comments received during this period prior to approving or disapproving the final HRA.</p> | <p>Other: As identified in the attachment to WSPA’s March 27, 2015 comment letter, the public should be allowed to comment on the methodologies that the District is requiring, but the application of these methods to Confidential Business Information (CBI) is not reviewable.</p> |
| | <p>406.9 Public Inspection: Within 15 days of the approval of an HRA under Section 12-15- 406.8, the APCO shall post the approved HRA on the District’s website, and shall notify any member of the public who submitted comments under Section 12-15- 406.3, or who otherwise requested such notification of this action in writing. In making information available for public inspection, the confidentiality of trade secrets, as designated by the refinery owner/operator, shall be handled in accordance with Section 6254.7 of the Government Code.</p> | <p>Clarity: As identified in the attachment to WSPA’s March 27, 2015 comment letter, it is unclear why the District would post a disapproved HRA. It would be more useful to have a process for correction of flawed HRAs.</p> |
| 12-15-407 | <p>Air Monitoring Plans: A refinery owner/operator shall obtain and maintain APCO approval of a plan for establishing and operating a fence-line monitoring system and community air monitoring system. Timely submittal as described in the next sentence shall constitute compliance with this requirement unless and until there is a determination of disapproval by the APCO pursuant to Section 408. On or before December 31, 2016, the refinery owner/operator shall submit to the APCO a plan for establishing and operating a fence-line monitoring system to aid in determining specified pollutants that cross the refinery fence-</p> | <p>Authority: As identified in WSPA’s March 27, 2015 comment letter, WSPA does not agree with the proposed requirement that refinery owner/operators be required to install or operate the community air monitoring systems.</p> <p>Clarity: As identified in the attachment to WSPA’s March 27, 2015 comment letter, the proposed language is unclear with regard to (a) whether refineries with existing monitoring systems are still required to submit plans (as District staff have verbally assured those refineries) or not. It is also unclear, given that the District’s Monitoring</p> |

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| | <p>line(s) in real-time and a community air monitoring system to aid in assessing air quality impacts in communities near refineries. The plan shall include detailed information describing the equipment to be used to monitor, record, and report air pollutant levels, the siting, operation, and maintenance of this equipment, and procedures for implementing data quality assurance and quality control. Within one year of approval by the District Board of Directors of updated air monitoring guidelines published by the APCO under Section 12-15-410, the refinery/operator shall submit to the APCO an updated air monitoring plan. The siting of community air monitors shall be addressed in an Air Monitoring Plan Siting Addendum that may be submitted subsequent to the required time for submittal of the Air Monitoring Plan, provided the community air monitoring system is installed and operated in a timely manner as provided in 12-15-501</p> | <p>Guidelines have not yet been finalized (the August 2015 version is still marked as “DRAFT”) and there is no deadline to finalize them, what exactly the proposed rule is incorporating by reference. The draft August 2015 Monitoring Guidelines lack clarity with regard to what exactly is approvable and what isn’t. For example, it is unclear how to comply with the requirement on page 14 of those Guidelines that “ areas that have been identified by HRAs or emission studies to have expected high concentrations of compounds of interest should also be considered and adequately addressed in the Air Monitoring Plan”—i.e., how “high” is a “high concentration”, how many areas must be considered, and what is an approvable and unapprovable way to “consider” them? It is also not clear how to comply with that requirement when the Monitoring Plan is due before the HRA Protocol is.</p> |
| <p>12-15-408</p> | <p><u>Review and Approval of Air Monitoring Plans:</u> The procedure for determining whether an air monitoring plan submitted under Section 12-15-407 meets the applicable requirements of this rule is as follows:</p> | <p><u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, the reference to “applicable requirements of this rule” and 12-15-407 is unclear with regard to the extent of fence-line monitoring that is being required</p> |
| | <p><u>408.1 Preliminary Review:</u> Within 45 days of receipt of the air monitoring plan, the APCO will complete a preliminary review of the plan to identify any deficiencies that need to be corrected. If the APCO determines that the submitted plan is deficient, the APCO will notify the refinery owner/operator in writing. The notification will specify the basis for this determination and the required</p> | <p><u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, the 12-15-408 reference to “applicable requirements of this rule” does not clearly identify the extent of fence-line monitoring that is being required, it is not clear what constitutes a “deficiency”.</p> |

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| | corrective action. | |
| | 408.3 Public Comment: The plan, including any revisions made to correct deficiencies, will be made available for public review within 45 days (with the exception of information designated confidential). The APCO will consider any written comments received during this period prior to approving or disapproving the final plan. | Other: As identified in the attachment to WSPA’s March 27, 2015 comment letter, the public should be allowed to comment on the methodologies that the District is requiring, but the application of these methods to Confidential Business Information (CBI) is not reviewable. |
| | 408.6 Siting of Community Monitors: If the APCO determines that sites proposed for community monitors in the Air Monitoring Plan Siting Addendum are inappropriate, the APCO shall notify the refinery owner/operator of any deficiencies. Within 30 days of receiving this notice, the refinery owner/operator shall correct siting deficiencies and resubmit the Siting Addendum. If the proposed sites continue to be inappropriate, the APCO shall disapprove the Air Monitoring Plan. | Authority: As identified in WSPA’s March 27, 2015 comment letter, WSPA does not agree with the proposed requirement that refinery owner/operators be required to install or operate the community air monitoring systems. |
| | 408.7 Separate Approvals for Fence-Line and Community Monitoring Possible: The APCO may approve both the fence-line monitoring and community air monitoring system elements of the Air Monitoring Plan, or may approve only the element that is determined to be adequate while disapproving the remainder. A refinery owner/operator shall implement the approved elements of an Air Monitoring Plan. | Authority: As identified in WSPA’s March 27, 2015 comment letter, WSPA does not agree with the proposed requirement that refinery owner/operators be required to install or operate the community air monitoring systems. |
| 12-15-409 | Emissions Inventory Guidelines: The APCO shall publish, and periodically update, emissions inventory guidelines for petroleum refineries that describe the emission factors/estimation methodologies that refinery | Authority and Clarity: As identified in the attachment to WSPA’s March 27, 2015 comment letter, California law generally prohibits incorporation by reference of documents or regulations that don’t exist at the time of rule |

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| | <p>owner/operators apply for each source category when producing emissions inventories required under this rule. Methods included in these guidelines may include, but are not limited to, continuous monitoring to measure emissions, applying the results of emissions source tests to known activity levels, combining published emission factors with known activity levels, material balances, or empirical formulae. The District will use these guidelines as criteria for review of refinery emissions inventory submittals</p> | <p>adoption, and when the District does finalize its Guidelines, given the proposed regulatory language, they need to cover all of the source types for which the District is requiring emissions to be quantified, and be considered part of this Regulation, and any subsequent revisions must undergo formal BAAQMD rulemaking procedures and be approved by the Board, and associated notice shall be provided to the refineries to allow for comments to be heard by the Board in advance of approval. The District has been referring to its draft September 2013 review of the May 2011 version of US EPA’s “Emission Estimation Protocol for Petroleum Refineries” as its “Emissions Inventory Guidelines”, but (1) a final version has not been released, (2) US EPA has since revised of their Protocol that the District is referencing, (3) the Guidelines are incomplete and do not include several categories-- including, importantly, the “air releases from cargo carriers (e.g., ships and trains), excluding motor vehicles” that are specified in 12-15-207, (4) the Guidelines lack clarity (such that a plain reading of them results in discrepancies of an order of magnitude or more from the District’s interpretations), and (5) the District’s September 2013 review identifies as its first “overriding principle” that “The EEPPR and staff’s corresponding recommendations are guidelines only, and do not necessarily dictate the emission calculation method in all possible cases. There are many variables at refineries that may warrant specific approaches not included in these recommendations.” This statement is inconsistent with the proposed regulatory language identifying that the</p> |
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| | | <p>Guidelines be the “criteria for review”. Finally, as identified in the attachment to WSPA’s March 27, 2015 comment letter, there is no deadline for the APCO to develop the initial emissions inventory guidelines, nor is there any requirement that the guidelines be reasonable, any requirement that comments be solicited on the guidelines, or any appeals process to contest the guidelines. Given that refineries need time to implement new Guidelines, for a given year in which emissions are being reported, the version of the Guidelines that apply will be those that were effective on January 1 of the prior year.</p> <p><u>Consistency:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, District staff have already identified an intent to depart from statewide guidelines for fugitive emissions that were agreed to and developed by ARB, CAPCOA (including BAAQMD), and industry, and which have been used in the District for over a decade.</p> <p><u>Nonduplication:</u> As identified in Attachment B to WSPA’s comment letter, there are many other emissions inventory guidelines that already exist. As identified in the attachment to WSPA’s March 27, 2015 comment letter, the District’s guidelines need to be consistent with methods required by other mandatory reporting rules and there should be a compelling reason for any deviations from those methods.</p> |
| <p>12-15-410</p> | <p><u>Air Monitoring Guidelines:</u> The APCO shall publish air monitoring guidelines for petroleum refineries that describe the factors that the District will apply in reviewing community air</p> | <p><u>Authority:</u> As identified in WSPA’s March 27, 2015 comment letter, WSPA does not agree with the proposed requirement that refinery owner/operators be required to install or</p> |

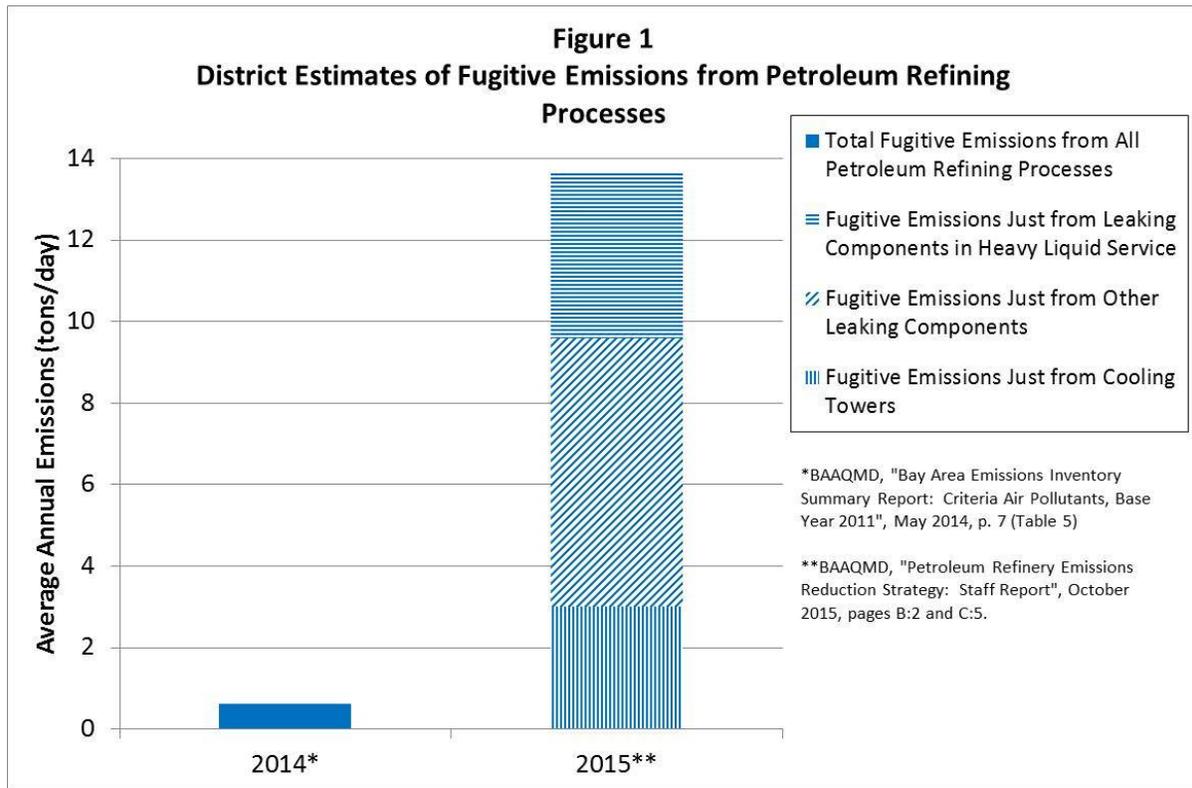
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| | <p>monitoring systems and fence-line monitoring systems required under this rule. These guidelines may include, but are not limited to, specifications for pollutant coverage, siting, instrumentation, operation, maintenance, quality assurance, quality control, and data reporting. The guidelines shall be reviewed by the APCO within five years of initial issuance in consideration of advances in air monitoring technology, updated information regarding the health effects of air pollutants, and review of data collected by existing fence-line and community air monitoring systems established under this rule.</p> | <p>operate the community air monitoring systems.</p> <p>Clarity: As identified in the attachment to WSPA’s March 27, 2015 comment letter, there is no deadline for the APCO to develop the initial or updated air monitoring guidelines, nor does the rule specify the extent of these guidelines or the extent to which the APCO can choose to change them. There is nothing in these regulations that prevents changes from requiring entire replacements of capital equipment, re-siting of monitors or addition of new sites, specification of sites that aren’t feasible or accessible, etc.</p> |
| <p>12-15-411</p> | <p><u>Designation of Confidential Information:</u> When submitting an Ongoing Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report, PREP report, air monitoring plan, or other documents or records required by this rule, the refinery owner/operator shall designate as confidential any information claimed to be exempt from public disclosure under the California Public Records Act, Government Code Section 6250 et seq. If a document is submitted that contains information designated confidential in accordance with this section, the owner/operator shall provide a justification for this designation and shall submit a separate copy of the document with the information designated confidential redacted.</p> | <p><u>Other:</u> As identified in WSPA’s March 27, 2015 comment letter, WSPA this language is not sufficient to protect Confidential Business Information (CBI). The Public Records Act only protects trade secrets, not information that is necessary to ensure that antitrust obligations are fulfilled.</p> |
| <p>12-15-501</p> | <p><u>Community Air Monitoring System:</u> Within two years of the approval of an air monitoring plan under Section 12-15-408.4, the refinery owner/operator will ensure that a community air monitoring system is installed, and is</p> | <p><u>Authority:</u> As identified in WSPA’s March 27, 2015 comment letter, WSPA does not agree with the proposed requirement that refinery owner/operators be required to install or operate the community air monitoring</p> |

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| | operated and maintained in accordance with the approved air monitoring plan. Community air monitoring system data shall also be reported as specified in the approved plan. | systems. |
| 12-15-502 | <u>Fence-line Monitoring System:</u>
Within one year of the approval of an air monitoring plan under Section 12-15-408.4, the refinery owner/operator will ensure that a fence-line monitoring system is installed, and is operated in accordance with the approved air monitoring plan. Fence-line monitoring system data shall also be reported as specified in the approved plan. | <u>Other:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, WSPA is concerned about the feasibility of having a system fully installed and operational within one year of the approval of the monitoring plan. |
| 12-15-503 | <u>Recordkeeping:</u> The refinery owner/operator shall maintain records of all monitoring information, source test results, material and fuel throughputs, and other information used to establish emissions inventories required under this rule. The refinery owner/operator shall also maintain records of the quantity and characteristics of crude oil that is processed through the crude unit(s), and other pre-processed feedstocks that are processed at other process unit(s). Characteristics for crude oil and other pre-processed feedstocks shall include the properties listed in Section 12-15-401.7. Such records shall be maintained for a period of five years after the submittal of a required On-going Annual Petroleum Refinery Emission Inventory and Monthly Crude Slate Report or PREP report, and shall be made available to the APCO upon request. | <u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, (a) the District’s proposed definition of “crude slate” includes two different things—crudes transported to the refinery, and blends that are fed to crude units—and the availability and confidentiality of information is dependent on which thing is being referred to; and (b) the District has not clearly defined what things are covered by the term “pre-processed feedstock”. |
| 12-15-601 | <u>Emissions Inventory Procedures:</u>
Each emissions inventory required under this rule shall be prepared | <u>Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter (and previous verbal comments): |

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| | <p>following the District’s Emission Inventory Guidelines for Petroleum Refineries established under Section 12-15-409.</p> | <p>(a) it is not clear how to address the situation where the District develops new Guidelines that require the use of information that was not collected prior to issuance of the revised Guidelines; and (b) when Guidelines are revised, given that refineries need time to collect the necessary input data and prepare new calculation tools, it is unclear what procedures they need to use during that time.</p> |
| <p>12-15-603</p> | <p><u>Air Monitoring Procedures:</u> Each air monitoring plan required under this rule shall be prepared following the District’s Air Monitoring Guidelines for Petroleum Refineries established under Section 12-15-410.</p> | <p><u>Authority and Clarity:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, California law generally prohibits incorporation by reference of documents or regulations that don’t exist at the time of rule adoption. The District issued Air Monitoring Guidelines that are stamped as “DRAFT” and dated August 2015, but a final version has not yet been released, and the draft guidelines do not clearly identify what exactly the District is proposing to require.</p> <p><u>Other:</u> As identified in the attachment to WSPA’s March 27, 2015 comment letter, given the climate in the Bay Area and the inherent technological limitations, it is not feasible to implement open-path Fenceline technology without periodic interference from rain, fog and high humidity. Due to the nature of open-path fenceline monitoring instrumentation, rain and fog will cause interference with proper operation of the equipment, as heavy moisture in the air interferes with the spectral data. The Guidance should provide an allowance for this interference during meteorological conditions such as rain, fog, and high humidity instead of requiring that they effectively provide information during</p> |

| | | |
|--|--|--|
| | | <p>all meteorological conditions. This is identified in Section 3.2 of the draft BAAQMD Air Monitoring guidelines dated August 2015: i.e., “Any interferences caused by meteorological or process issues associated with the chosen location must be addressed. For example, an explanation should be included if a chosen measurement area is likely to be affected by fog or process steam. In addition, the Air Monitoring Plan should include how the open path monitoring will effectively provide relevant information for all nearby downwind communities during expected meteorological conditions.”</p> |
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Figures, 1, 2, and 3
(see below)



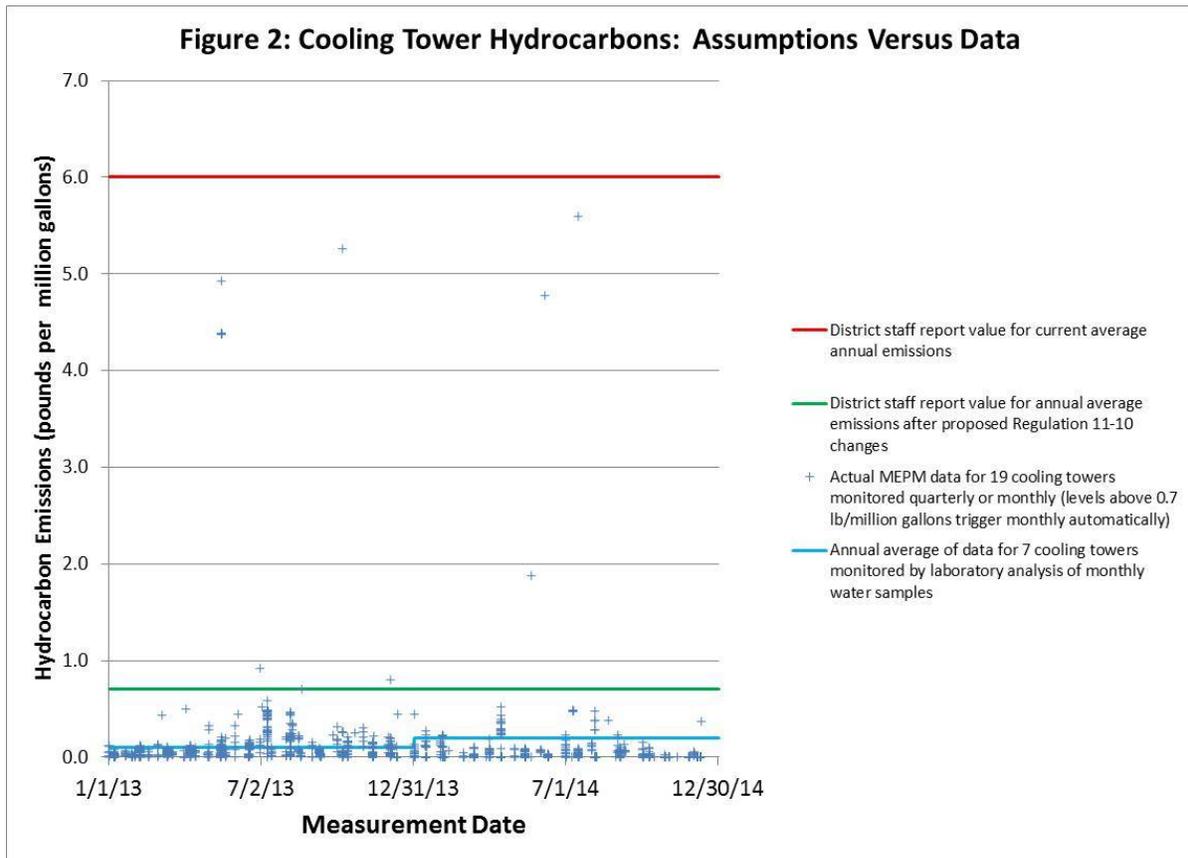
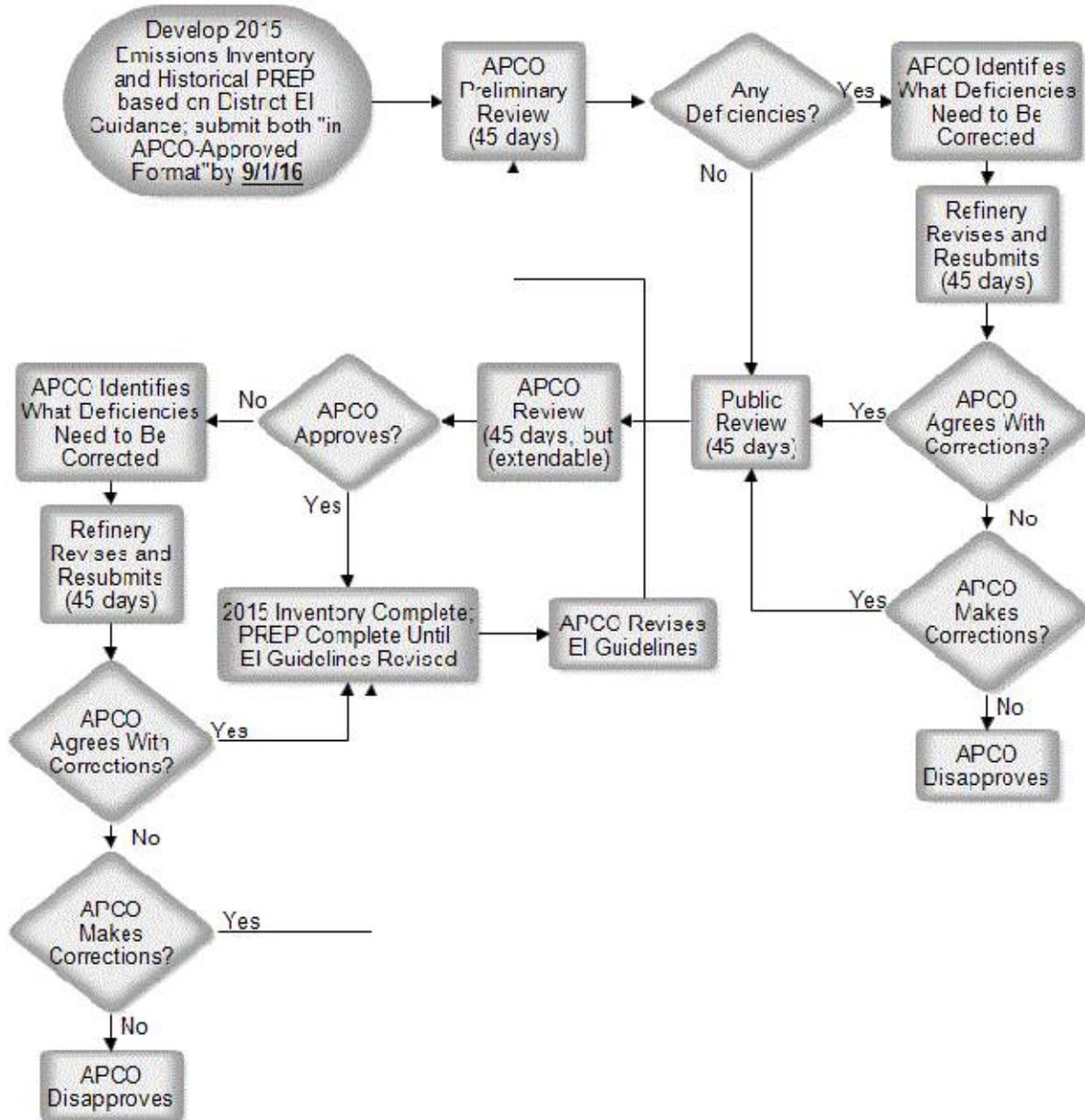


Figure 3. Emissions Inventory Review Process.



Attachment C

WSPA Comments on BAAQMD Draft Environmental Impact Report

Regulation 12-15: Petroleum Refining Emissions Tracking Regulation 12-16: Petroleum Refining Emissions Limits and Risk Thresholds

Regulation 12-15: Petroleum Refining Emissions Tracking
Regulation 12-16: Petroleum Refining Emissions Limits and Risk Thresholds

This attachment to the submittal by the Western States Petroleum Association includes comments on the Draft Environmental Impact Report (DEIR) for Regulations 12-15 and 12-16 and attached focus technical data comments which are located in Attachment C-1. Attachment D includes comments on the IS/ND for the other four Refinery Emissions Reduction Regulations (RERR), as well as comments on the Socioeconomic Analysis conducted for proposed Regulations 12-15 and 12-16. WSPA incorporates the comments in Attachments A, B, D and E into these Attachment C comments.

A separate analysis of District's Socioeconomic Analysis Analyses for the four RERR was not conducted because the comments on the Socioeconomic Analysis conducted for proposed Regulations 12-15 and 12-16 (located in Attachment E) are largely applicable to both documents (which were prepared by the same contractor). Note that the comments on the Socioeconomic Analysis are comments on how the analysis was conducted, and do not include more detailed cost that is included in Attachment B.

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT

A. Clarity and Need for Project

Comment 1. The BAAQMD appears to be proposing regulations in anticipation of data that is to be developed. Where, for example is there any data that documents clearly and unambiguously the relationship between crude oil processed and emissions from process units? To date, no data has been presented in peer-reviewed journals that support the as-yet unfounded assertion that changes in crude oil are associated with increases in emissions. BAAQMD needs to identify any such information that supports this assertion.

Comment 2. Attributing emissions from mobile sources including on-road, rail and marine emissions to refineries is unfounded. Hence any CEQA analysis that purports to link refinery emissions to environmental impacts is equally unfounded. This would apply irrespective of whether the emissions were GHG, NO_x, SO_x or CO. BAAQMD has not identified such a link and needs to explain the reasoning for such an assertion and provide substantive data.

B. Clarity of Project Description

Comment 3. What is the nexus between these proposed rules and the reason statement in the EIR (Page 1-1 third paragraph) that “ The development of these rules was included as *Action Item 4 in the Air District’s Work Plan for Action Items Related to Accidental Releases from Industrial Facilities*, which was approved by the Air District’s Board of Directors on October 17, 2012.”? These rules are not directed toward accidental releases as their primary purpose.

Comment 4. In fact, with respect to objectives, the need is even less clear because many of the objectives for the rules are to “Determine” [sic] specific information. The items the District wants to determine seem better suited for the funding of studies to, perhaps gather data or measure emissions, rather than regulating an industry for an unknown. What studies has the District pursued or based the proposed rules upon?

Comment 5. BAAQMD proposes that , “Refineries would be required to develop and implement an Emission Reduction Plan (ERP) that would ensure compliance with the NAAQS for SO₂ and PM_{2.5} unless they could demonstrate compliance by air quality modeling at the maximum potential to emit levels for all sources or by air monitoring. If compliance with the NAAQS cannot be demonstrated through modeling or monitoring, the refinery operators would be required to submit an ERP. The ERPs would be required to demonstrate refinery emission reductions needed to comply with the NAAQS and would only be required when refineries could not demonstration compliance with the NAAQS...Regulation 12-16 would also determine maximum emission limits for SO₂ and PM_{2.5} for all permitted sources at each refinery based on the maximum potential to emit from all sources. These limits would be used to establish a cumulative maximum emissions limits for all refinery operations.

The BAAQMD is well aware that NAAQS are ambient standards, and are NOT individually enforceable against any specific source. How can an analysis under CEQA be conducted for what is clearly a requirement that is not consistent with state or federal law? What is the purpose of this? This comment is applicable to other source categories that the District would no-doubt address in the future. However, until that action is taken to look at all sources, this regulatory proposal is not founded under applicable statutes and hence its analysis under CEQA hardly seems possible.

NAAQS are ambient air quality measured in an area, not a point source emission. BAAQMD is requiring the refineries, through proposed regulation 12-16, to prove that their facility can comply with the cumulative air quality standards in the area.

Furthermore, the need for such action is more confusing since BAAQMD has demonstrated compliance with the NAAQS and the District has never been designated as a nonattainment area for SO₂. As for PM_{2.5}, the District’s own analysis concluded that it is largely a problem of pollutant transport from areas outside the District. The BAAQMD needs to address why the Regulations are necessary in light of this information.

Comment 6. WSPA does not agree that there is a need to demonstrate that refineries can comply with the NAAQS and develop and implement an ERP. The District manages NAAQS throughout the District not at a specific source of emissions. Furthermore, what other sources is BAAQMD directing by similar rules to demonstrate compliance with the NAAQS and to develop and implement ERPs?

C. Alternatives Analysis

Comment 7. The objectives of the proposed Regulation 12, Rules 15 and 16 are summarized below.

- Accurately and consistently characterize emissions of all pollutants (criteria, toxic, and greenhouse gases) from refinery-related emissions sources in an ongoing basis to determine if there is room for improvement;
- Determine if significant changes to the crude slate (such as the refining of heavier and/or more sour crude oil) result in increased emissions of air pollutants.
- Ensure refineries comply with the ambient air quality standards for SO₂ and PM_{2.5};
- Determine the energy efficiency of the refineries;
- Determine the level of toxic exposure and risk refineries pose to the residents of nearby communities;
- Ensure refinery toxic emissions do not pose an unacceptable health risk to the residents of their nearby communities; and
- Provide information to the public on refinery emissions, any significant crude slate changes, and health risk impacts.

BAAQMD needs to identify which single objective is not met by Alternative 2 and why they assert that single absence is so substantive as to not make Alternative 2 the proposed project. Why isn't Alternative 2 satisfactory at this time? i.e., implementation of solely the monitoring provisions under 12-15? Note that WSPA does not agree that the proposed Rules are warranted or comply with the law, and makes this comment to demonstrate the inaccuracies of the analysis performed. BAAQMD also fails to identify a reasonable range of alternatives.

D. Project Scope

Comment 8. The BAAQMD (Pg 2-5 discussion of Regulation 12 Rule 15) states its regulatory approach for the Rule includes—"Report on-going annual emissions inventories of all regulated air pollutants based on consistent upgraded methods, including emissions from cargo carriers;..."

BAAQMD correctly states that it has jurisdiction over air emissions from stationary sources. However, BAAQMD attempts to incorrectly increase its jurisdictional reach by including within an emissions inventory for a stationary source emissions from unrelated mobile sources such as rail and marine traffic. This action is unreasonable, unfounded by regulation and is, at a minimum, misleading.

Comment 9. Apparently, the District shares some understanding of their over-reach by stating, “However, there are instances in which the Air District desires to understand emissions from these mobile sources, such as when ships and trains are unloading or loading products at the refinery, and thus emissions from these operations are included in the requirements of the rule. This concept is addressed in the definition of “emissions inventory” in Section 12-15-207”.

This justification has no merit. The argument advanced by the District ignores the fact that this section of (12-15-207) actually calls for “...all air releases from cargo carriers (e.g., ships and trains), excluding motor vehicles, that load or unload materials at a petroleum refinery including emissions from *such carriers while operation within the District or within California Coastal Waters...*”[emphasis added].

Paragraph 2.4.2.1.3 does not properly reflect the extent of BAAQMD’s unlawful stretch of authority by trying to capture and regulate emissions from ships and trains any time they are operating with the District or Coastal Waters with work related to a refinery. BAAQMD does not have such jurisdiction and it is not the refineries responsibility to account and mitigate for these mobile source emissions.

Furthermore, refineries do not control the mobile sources (rail, ship) or the equipment they utilize and an increase in their emissions cannot be included with emissions from the refinery or to trigger emission reduction requirements for the refineries. BAAQMD needs to make it clear to the public and the decision-maker that it has no authority over mobile sources and that this proposed Rule will not grant such authority and therefore, fails to meet its objectives.

E. Energy Audit

Comment 10. BAAQMD is proposing (Pg. 2-12 2.4.2.1.10) an energy audit that would penalize refineries that choose to pursue the cap and trade GHG program.

BAAQMD’s proposal would thwart the success of the program in California by stating in the EIR: “If there are areas of energy management that can be significantly improved, and especially if the refineries opt to purchase GHG allowances rather than implement best practices in energy management, the Energy Audit would allow Air District staff to determine whether a targeted rule-making should be pursued to achieve actual GHG emission reductions at Bay Area refineries in order to ensure the achievement of GHG emissions reduction goals.”

This action is in direct conflict with AB 32 and the state wide plan to handle GHG. As BAAQMD states on pages 3-36 and 3-37 of the draft EIR:

“In October 2011, CARB approved the cap-and-trade regulation, marking a significant milestone toward reducing California’s greenhouse gas emissions under its AB 32 law.... On October 20, 2011, CARB adopted the final cap-and-trade regulation. The program started on January 1,

2012, with an enforceable compliance obligation beginning with the 2013 GHG emissions. The regulation includes an enforceable GHG cap that will decline over time. All refineries affected by Regulation 12-15 and 12-16 are regulated under CARB's cap-and-trade program. CARB distributed allowances, which are tradable permits, equal to the emissions allowed under the cap. On May 24, 2012, CARB considered proposed amendments to the California GHG emissions cap-and-trade program and market-based compliance mechanisms to add security to the market system and help staff implement the cap-and-trade program."

Although BAAQMD acknowledges the state law, significant milestone and security of the market system, they take action to penalize entities that pursue this approach and is in complete conflict with the State-Wide AB 32 plans and goals. If the refineries pursue the cap and trade system they are in compliance with the law and working toward state wide GHG reductions. The targeted-rule making removes the incentive to participate in cap and trade which undermines the security of this market based system and therefore, is contradictory to current state plans. CEQA requires that projects comply with statewide and regional plans and such penalizing, targeted rule-making conflicts. BAAQMD needs to comply with state-wide plans and explain how the targeted-rule making for refineries that pursue Cap and Trade is in compliance with AB 32 plans and goals.

F. Cumulative Impacts

Comment 11. Cumulative impacts of monitoring stations and the other proposed rules (9-14, 6-5, 8-18, and 11-10) should be addressed as part of the BAAQMD's plan. 38. Pg. 3-30 para 3.2.6

This section attempts to identify what should be considered in a cumulative analysis and then fails to discuss pending and identified future regulations that the District plans to implement.

The section states: "With regard to related projects or projects with related environmental impacts, because the proposed project consists of promulgating two regulations, Regulation 12-15 (Tracking Rule) and Regulation 12-16 (Emission Risk Limits Rule), related projects would consist of other past, present, and probable future BAAQMD rules and regulations, as well as 2010 Clean Air Plan control measures. Therefore, cumulative air quality impacts will be considered in light of other BAAQMD rules and regulations and Clean Air Plan control measures."

The District identifies other pending proposed rules at the link identified below and at the same link, clearly states that it will be proposing specific targeted rules in mid-2016 and yet neither of these are part of the cumulative discussion analysis here. This approach is clearly flawed – if the intent is to look at the potential for cumulative impact - then it should be done at the outset – not after some initial step has been taken. BAAQMD needs to perform the proper whole project analysis.

Website: <http://www.baaqmd.gov/rules-and-compliance/rule-development/rules-under-development>

G. Piece-Mealing/Segmentation

Comment 12. The Air District is developing a suite of regulations to reduce emissions of criteria pollutants from Bay Area refineries by 20 percent (or as much as feasible) by 2020. The first phase of these regulations will be considered by the Board in December 2015... In mid-2016, the second phase of the strategy will further reduce:

- SO₂ from FCC units and other refinery sources
- PM_{2.5} emissions from FCC units
- Nitrogen oxide NOX emissions from turbines

Moreover, the BAAQMD states it will be propose additional rules within the next six months.

All rules should be evaluated for their environmental benefit and impacts considering the whole of the action. The analysis should cover the legal and statutory requirements including need, clarity, authority and non-duplication as well as those requirements under CEQA relating to environmental resource impacts, including cumulative impacts. BAAQMD's decision to conduct the analysis seriatum seems a blatant attempt to subvert the CEQA process by dividing project components into separate pieces in an attempt to fall below the level of significance.

H. Assumptions and Technical Accuracy

Comment 13. On page 1-1 in the second paragraph of the Introduction section it states:

“Additionally, the five Bay Area refineries rank among the top ten facilities in the District for risk-weighted emissions of toxic air contaminants (TAC). Bay Area refineries are also some of the largest individual sources of NOX and SO₂ in the region.”

BAAQMD is not correct in its assessment of the issues identified in the proposed rules and is not addressing the risk-weighted emissions of TAC adequately by focusing only on five sources. Additionally, as an example of how the focus is incorrect and myopic, see the discussion of the treatment of ammonia emissions as a precursor of PM_{2.5}, BAAQMD imposes new Reg 6-5 simply to minimize ammonia emissions from refineries, even though no refinery is a major source of ammonia emissions; but then doesn't even include source categories that ARE major sources of ammonia emissions in any of its regulatory targets to reduce PM emissions. BAAQMD needs to explain why it is not focusing upon the other five sources of risk-weighted emissions of TAC identified on page 1-1 and also why they don't include source categories that are major sources of ammonia emissions in any of its regulatory targets to reduce PM emissions.

Comment 14. Also same page and paragraph:

“While historically, refinery emissions have tended to decrease overall over time; there are occasions when some emissions have increased despite the regulatory environment under which they operate. Some of the factors that can result in increased refinery emissions include higher production rates to meet increased demand or compensate for loss of production in other regions, upset conditions and accidents, and changes in crude oil or product slates.”

The BAAQMD claim blurs the distinction between periodic changes in actual emissions, that can vary day to day or week to week, and the overall cap in emissions that all refineries are operating under. This can lead to a mis-characterization of the need for or extent of the project under CEQA as well as call into question the resource commitment for controls that would result from the proposed rules. BAAQMD needs to explain how it solves this mis-characterization issue as it relates to the resource commitment.

I. Need to quantify environmental analysis

Comment 15. Pg. 1-8 para 1.2.2.1.2 Environmental Impacts. Although this section proposes to explain while Regulation 12-15 was not analyzed in this document, this section does not adequately explain it at all. On page 1-8 in the cited paragraph, BAAQMD states:

“Regulation 12-15 includes establishing requirements to enhance tracking of refinery emissions and crude composition, as well as requiring updating HRAs. CEQA recognizes that regulatory requirements consisting of data collection or information gathering do not typically generate environmental impacts. Regulation 12-15 has been thoroughly evaluated and it has been concluded that, with one exception as explained in Subsection 3.2.3.1, it has no potential to generate any other potentially significant adverse environmental impacts and, therefore, will not be evaluated further in the remaining environmental impact discussions.

How can there be a conclusion that there is “no potential to generate any other potentially significant adverse environmental impacts” without complete study of the issue? For example, this conclusion does not address the fact that Regulation 12-15 actually requires the installation and operation of a Community Air Monitoring System (Section 12-15-501) and a Fence-line Monitoring System (12-15-502). The Regulation does not discuss potential construction impacts or cumulative impacts from these actions such as noise, air emissions, visual aesthetics or the cumulative impacts from such issues. BAAQMD needs to address these issues and explain their determination.

Comment 16. Section 1.2.2.1.4 Cumulative Air Quality

“...Based on the evaluation of air pollution control technologies that would most likely be used to reduce SO₂, PM_{2.5}, and TAC emissions from affected refineries if required pursuant to Regulation 12-16, direct or indirect operational air quality impacts from the proposed project were concluded to be minor and less than significant and, therefore are not expected to generate significant adverse cumulative operational impacts. Because operational TAC emissions do not exceed the applicable cancer and non-cancer health risk significance thresholds, they are not considered to be cumulatively considerable and, therefore are not expected to generate significant adverse cumulative cancer and non-cancer health risk impacts.”

Was this assessment solely as described above? Was there any quantitative analysis? How was this determination reached in a quantitative sense?

Comment 17. Project could affect GHG Emissions

The BAAQMD (Page 1-11 section 1.2.2.2.2) acknowledges that some of the pollution control devices such as Wet Gas Scrubbers would emit GHGs and that CARBs rule does not allow for a net increase of GHGs and the refineries installing WGSs would have to offset possibly through cap and trade for example. This section then states: “Thus, the GHG operational emissions due to implementation of Rule 12-15 and 12-16 are considered less than significant.” However, earlier in the document in paragraph 1.2.2.1.2, BAAQMD states that Regulation 12-15 was not fully evaluated in this document.

How was the GHG determination made for Regulation 12-15 and the implementation of the required systems if it was not fully evaluated?

Comment 18. Possible Secondary impacts (See Pg 1-8 and 1-9 para 1.2.2.1.2)

In discussing some the pollution control technologies impacts, BAAQMD acknowledges that there is a potential to generate secondary or indirect air quality impacts and concludes that regarding Regulation 12-16, that these impacts are not expected to exceed the significance thresholds and therefore mitigation measures are not required. However, the discussion in para 1.2.2.1.4 on cumulative effects of the secondary or indirect air quality impacts when combined with other sources does not say why the impacts are minor and less than significant nor does it tell the reader where to find this analysis in the document.

We cite specifically:

“The net effect of implementing the proposed project, Regulation 12-16 in particular, is expected to be reductions in SO₂, PM_{2.5}, and TAC emissions. However, some control technologies have the potential to generate secondary or indirect air quality impacts as part of the control process. The analysis of potential operational air quality impacts from

air pollution control equipment indicates that no significant adverse air quality impacts...Based on the evaluation of those air pollution control technologies that would most likely be the used to reduce SO₂, PM_{2.5}, and TAC emissions from affected refineries if required pursuant to Regulation 12-16, direct or indirect operational air quality impacts from the proposed project are not expected to exceed the applicable operational air quality significance thresholds. Therefore, mitigation measures to reduce operational air quality impacts are not required.”

How was this conclusion determined and documented?

J. Commitment of Resources

Comment 19. The BAAQMD (Pg 2-1 section 2.1) states: “Tracking this information would enable the Air District to use emissions inventory data, crude oil information, and air monitoring data to identify any potential relationship between crude oil quality and emissions of air pollutants. In addition, the draft Tracking Rule would require each refinery to prepare an updated Health Risk Assessment (HRA) using the latest assessment methodology and health effects data to provide additional information regarding health impacts from the emissions of toxic air pollutants at refineries.”

BAAQMD does not identify the purpose of this information i.e. the environmental harm it needs to reduce or correct. BAAQMD is establishing regulations to determine if there is an issue rather than performing substantive studies to identify the issue and then proposing appropriate regulations to address the need. The purpose and need for this project is inadequate and not clearly defined or articulated. BAAQMD needs to identify the source of information it relies upon that identifies the direct environmental harm these proposed rules will address.

Comment 20. The BAAQMD (Pg. 2-2 para. 2-2) notes that the objective of the proposed new rules is for the District to gather additional emissions inventory and crude slate information from refineries; increase air monitoring activities at refinery fence lines and in nearby communities; require HRAs be performed using the latest assessment methodology and health effects data to provide additional information regarding health impacts from the emissions of toxic air pollutants at refineries; and demonstrate that the refineries can comply with the NAAQS for SO₂ and PM_{2.5} when operating at maximum permitted levels. The collection of energy efficiency information would allow comparisons on a refinery-by-refinery basis and aid in the potential identification of possible increases in efficiency of equipment and processes.

Much of the objectives are redundant to currently existing regulatory programs at both the state and local level. From risk assessment, management, and communication required by AB 2588 and the GHG emission reductions as well as energy assessments done by the Air Resources Board (ARB), the duplication and waste of resources associated with yet another series of programs with no environmental benefit needs to be evaluated. BAAQMD needs to clearly identify the differences between the objectives and current existing regulatory programs relating to these emissions.

Comment 21. BAAQMD states that processing crude oil from new sources may result in increased emissions. As a result, the draft Tracking Rule would require that each refinery report its “crude slate” as defined in Section 12-15-206 containing information regarding sulfur and nitrogen content, API gravity, total acid number, and other properties as described in section 12-15-401.7.

This section states that there may not be an increase in emissions and yet, BAAQMD is still requiring this Rule and actions; including the use of community monitoring devices that may create cumulative emission and noise issues and may have visual impacts. Furthermore, this crude slate information may be considered confidential.

This same section also states “By gathering this information about crude oil and other pre-processed feedstocks fed into the refinery processes, the Air District intends to analyze the relationship between the crude slate, processing intensity and resulting emissions.”

How does the Air District intend to analyze the relationship between the crude slate, processing intensity and resulting emissions? What procedures, modeling or methodologies are in place to perform the analysis? BAAQMD does not explain how they will do the analysis so we are unable to specifically address this issue. However, in order to balance the economic feasibility of making emission adjustment at the refineries and the cost of data collection, BAAQMD should release its proposed analysis methodologies and allow for public comment and review. Finally, since BAQAQMD admits that there might not be an increase in emissions, they need to clearly articulate the substantive reasoning for the proposed rules and the legal authority.

K. Administrative Procedures.

Comment 22. The BAAQMD (Pg. 2-6 para 2.4.2.1.1) requires submittal of information that is competitively sensitive and could be trade secret.

BAAQMD addresses trade secret issues that are invoked due to the proposed rule and states that the owner/operator may designate under the rule information it deems confidential and must justify such action. However, this statement does not go far enough. BAAQMD must recognize that information, such as providing source-by-source emission information which would allow back-calculation of the throughput or equipment configuration. The District should reconsider their proposal and suggest methods to de-identify and/or aggregate the information so that competitively sensitive information is not revealed.

L. Duplication of Effort – AB 2588 and Non-Criteria pollutants

Comment 23. BAAQMD is proposing rules (See for example Pg 3.1.2.4) that do not have a substantive purpose and need.

The District has rules in place, along with the federal laws, that are providing the District with the data necessary to perform their primary tasks. The District lists such rules in this section and therefore, this is yet another example of the faulty purpose and need and objectives of the proposed regulation. For example, the District states that:

The major elements of the District's air toxics program are outlined below.

- Preconstruction review of new and modified sources for potential health impacts, and the requirement for new/modified sources with TAC emissions that exceed a specified threshold to use BACT.
- The Air Toxics Hot Spots Program, designed to identify industrial and commercial facilities that may result in locally elevated ambient concentrations of TACs, to report significant emissions to the affected public, and to reduce unacceptable health risks.
- Control measures designed to reduce emissions from source categories of TACs, including rules originating from the state Toxic Air Contaminant Act and the federal Clean Air Act.
- The TAC emissions inventory, a database that contains information concerning routine and predictable emissions of TACs from permitted stationary sources.
- Ambient monitoring of TAC concentrations at a number of sites throughout the Bay Area.

Furthermore, additional inventory listings are not necessary. As the District states in paragraph 3.2.1.4.1 Air Toxics Emission Inventory, it already maintains inventory lists and also utilizes inventories maintained by CARB.

The BAAQMD maintains a database that contains information concerning emissions of TACs from permitted stationary sources in the Bay Area. This inventory, and a similar inventory for mobile and area sources compiled by CARB, is used to plan strategies to reduce public exposure to TACs. The detailed emissions inventory is reported in the BAAQMD, Toxic Air Contaminant Control Program, 2010 Annual Report (BAAQMD, 2015). The 2010 emissions inventory continues to show decreasing emissions of many TACs in the Bay Area.

The numerous regulations and programs listed in paragraphs 3.2.2.3 (Accidental Release Regulation) clearly demonstrate that the refineries are already heavily regulated, in fact the draft EIR states that this section contains a "partial list" of regulations and programs. Yet, the draft rules state they are being formulated and imposed as part of the accidental release program, which as this section shows has federal and state requirements already. What additional substantive benefit is brought by the proposed rules that are not already covered by the existing regulations and programs identified in the partial list in paragraph 3.2.2.3?

Comment 24. Petroleum refineries are also subject to regulatory programs that are intended to prevent accidental releases of substances. The primary programs of this type are based on requirements in the 1990 Clean Air Act amendments as follows: (1) the Process Safety Management (PSM) program, which focuses on protecting workers, and which is administered by the U.S. Occupational Safety & Health Administration (OSHA), and (2) the Accidental Release Prevention program (commonly referred to as the Risk Management Program, or RMP), which focuses on protecting the public and the environment, and which is administered by U.S. EPA. Bay Area refineries are subject to Cal/OSHA’s PSM program, which is very similar to the federal OSHA program, but with certain more stringent State provisions. Bay Area refineries are subject to the California Accidental Release Prevention (CalARP) Program, which is very similar to U.S. EPA’s RMP program, but with certain more stringent State provisions. In addition, Contra Costa County and the City of Richmond have both adopted an Industrial Safety Ordinance (ISO). These ISO’s are very similar to CalARP requirements, but with certain more stringent local provisions. Accidental release prevention programs in California are implemented and enforced by local Administering Agencies,…”

What documented benefits are brought by the proposed rules when considering the District’s existing full program, and existing state and federal laws as opposed to just the partial list identified?

M. BAAQMD Attempt to Impose New Emission Limits

Comment 25. BAAQMD discusses (Pg 3-19 para 3.2.3.2) previous District attempts to establish emission thresholds and the fact that the case is pending before the California Supreme Court. The District states that project proponents may use CEQA Guideline thresholds or the District’s proposed thresholds voluntarily because “ the proposed new Regulation 12, Rules 15 and 16 would implement requirements which more closely resemble air quality plans, than specific projects.”

This characterization is incorrect because the proposed rules are targeting a specific industry. The regulations are not inclusive of similar emitters and therefore, do not resemble air quality plans. The District already has ambient air data along with several inventories of data. These Regulations are not necessary as they do not substantively satisfy the objectives. BAAQMD needs to explain why targeting only the refineries with these proposed rules actually “resemble” air quality plans for the entire district.

Attachment C-1

Detailed Technical Data Comments

Regulation 12-15: Petroleum Refining Emissions Tracking
Regulation 12-16: Petroleum Refining Emissions Limits and Risk Thresholds

These comments are incorporated into Attachment C, WSPA's comments on Proposed Regulation 12 Rules 15 and 16.

Page 1-2 identifies the EIR as an "informational document"; therefore the information that is providing needs to be accurate.

Comment 1. As identified in Section 2.3, "The ultimate goal of the District's rules and regulations is to attain and maintain compliance with the state and federal ambient air quality standards" and this action specifically targets emissions of particulate matter (PM). Therefore it is important that the Environmental Setting describing the attainment of PM standards (Section 1.2.2.1.1.) and the health effects associated with those standards be accurate. Page 1-2 of the DEIR does not mention the status of the District with respect to federal ambient air quality standards for particulate matter (PM), and needs to. The EIR should identify that BAAQMD is still formally designated as "attainment/unclassified" with respect to both the PM₁₀ NAAQS and the latest (2012) NAAQS for annual PM_{2.5} (as shown in 40 CFR 81.305), and the data in Table 3.2-2 of the EIR support that. The EIR also needs to identify that in 2013, EPA determined that BAAQMD attained the NAAQS for 24-hour PM_{2.5} (as identified in 40 CFR 52.247(a)). Also, since what is more important than the designation is the actual data, the EIR should also identify that the PM_{2.5} data in Table 3.2-2 of the DEIR also indicate attainment with those standards.⁷³

Comment 2. Also in the Environmental Setting, the DEIR text states that "The District is not considered to be in attainment with the...State...PM_{2.5} standards". However, given that the State PM_{2.5} standard is the same as the NAAQS for annual PM_{2.5} (12 µg/m³), and

⁷³ Table 3.2-2 does indicate that that some monitors showed 1-2 days with concentrations over the 24-hour standard, but attainment with the 24-hour NAAQS is based on the 98th percentile 24-hour concentration, not the maximum 24-hour concentration [40 CFR 50.18(c)] and 1-2 days represents less than 2% of the days in the year.

EPA determined that the Bay Area attained the NAAQS, and the data in Table 3.2-2 also show attainment of that standard, the EIR needs to identify these facts and the current DEIR text needs to be modified accordingly.

Comment 3. Data in Table 3.2-2 of the DEIR show some exceedances of the CAAQS standard of 50 µg/m³ for 24-hour PM₁₀, at Bethel Island and San Jose, but neither of these locations is near the refineries that are proposed to be regulated by this action. The EIR needs to be revised to clearly identify the air quality in the vicinity of the refineries affected by this project, given that CEQA regulations require that the EIR’s Environmental Setting “include a description of the physical environmental conditions in the vicinity of the project...from both a local and regional perspective” [§15125(a)].

Comment 4. The state’s 24-hour PM₁₀ standard is the only air quality standard for PM that is not met by all monitors in the Bay Area, and the EIR should identify the health effects associated with meeting or not meeting that standard. Table 3-1 of the DEIR currently identifies that the “most relevant effects” of PM₁₀ are “(a) Excess deaths from short-term exposures and exacerbations of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children”. This information needs to be corrected. The state’s 24-hour PM₁₀ standard is from the 1980s (when US EPA also had an identical 24-hour PM₁₀ NAAQS), and in 2006, US EPA revoked the Federal standard of 50 µg/m³ for 24-hour PM₁₀ because “The long-term exposure studies of mortality and morbidity...continue to suggest that, at current ambient levels in the US, fine particles [PM_{2.5}] are associated with health effects and coarse particles [including PM₁₀ particles that are not small enough to be categorized as PM_{2.5}] are not. The EPA believes that the PM_{2.5} standards...address the major risk suggested in the PM₁₀ studies cited by commenters. To the extent that additional concerns may exist with regard to long-term exposures to coarse particles that have not been fully identified by scientific research, the Staff Paper notes that the short-term [PM₁₀] standard...which is generally controlling, has and will continue, as a practical matter, to limit such long-term exposures.”⁷⁴ The DEIR is unclear whether the health effects of PM₁₀ are an area of controversy (i.e., whether California and/or BAAQMD believe differently than US EPA, in which case this should be identified in Section 1.1.5 of the EIR) or whether the CAAQS simply have not been revised to reflect the new evidence, but the EIR needs to be revised to include this information because the information is part of the Environmental Setting and pertinent to the proposed action.

⁷⁴ US EPA, Final Rule for National Ambient Air Quality Standards for Particulate Matter, 71 FR 61144 *et seq.*, p. 61198.

Comment 5. CEQA Guidelines [§15125(a)] require that the Environmental Setting include a description of both the “local and regional perspective”. Therefore the EIR should include the fact that in a 2009 study, the District identified that “24-hour PM_{2.5} exceedances could have occurred in the Bay Area without any Bay Area anthropogenic emissions”⁷⁵—meaning that even if emissions from all stationary sources and vehicles in the Bay Area were zero, the PM_{2.5} standard could be exceeded due to air pollutant transport from other areas.

Comment 6. The EIR needs to be revised to clarify what is being referred to as “The federal 8-hour ozone standard”, given that the standard that was in place at the time the DEIR was written was 75 ppb and the standard that was promulgated in late October (but has not yet been implemented) is 70 ppb. Also, the EIR’s Environmental Setting needs to be modified to identify what actual monitoring data show relative to the standards, not just the formal area designation, because BAAQMD often does not propose to redesignate areas as attainment even years after the data show that they have attained the standard (see for example Comment #1 regarding PM_{2.5} attainment). Both the 75 and 70 ppb ozone standards require that attainment determinations be based on a 3-year average of 4th highest daily maximum concentrations; however, the information provided in Table 3.2-2 is not complete enough for the reader to determine whether the Bay Area data show attainment of the NAAQS or not. The 2014 data shown in the table indicate that the 4th highest daily maximum ozone concentration that year was below the standard everywhere except Livermore (which is nowhere near the refineries being regulated by the proposed action), since the number of days that the 8-hour standard was exceeded was three or less everywhere else; however, three years’ worth of data are needed to determine whether or not the data attain the standard. The EIR needs to be revised to include these data.

Comment 7. CEQA Guidelines [§15125(d)] require that the Environmental Setting portion of the EIR “discuss any inconsistencies between the proposed project and applicable...plans...[which] include, but are not limited to, the applicable air quality attainment or maintenance plan or State Implementation Plan”. This analysis is missing and the EIR needs to be revised to include the analysis. That analysis needs to include the fact that California has State Implementation Plans for various pollutants and the District has developed a 2010 Clean Air Plan in accordance with Health & Safety Code Division 26 Chapter 10, and the fact that the proposed measures are not among the 18

⁷⁵ BAAQMD, “Fine Particulate Matter Data Analysis and Modeling in the Bay Area”, October 2009, pp. E-4 and E-5.

stationary source PM control measures identified in that Plan. The analysis also needs to mention that all indications are that the currently proposed action is interfering with development of the 2015 Clean Air Plan: while the District held a public workshop in February 2014 to begin the process of updating the Clean Air Plan and the District's website still identifies that "More public workshops are anticipated in May or June 2015 on draft control measure strategies",⁷⁶ the Clean Air Plan has not been mentioned in any of the meeting notes of the District's Executive Committee meetings, Board meetings, or Stationary Source Committee meetings for the last year.

Comment 8. Section 1.1.5 (p. 1-3) of the DEIR mischaracterizes the "areas of controversy"; the EIR needs to correct this. With regard to the refiners' issues, all it states is that "The refinery operators have challenged the assertion that changes in crude oil are associated with increases in emissions and question the necessity for the regulations." That is an inaccurate characterization of WSPA's issues and the EIR needs to revise that text. WSPA submitted several comments to the District on September 2, 2014,⁷⁷ December 18, 2014,⁷⁸ March 27, 2015⁷⁹ and June 19, 2015⁸⁰ and identified to District staff in meetings at the District's offices on September 3, 2015 and October 5, 2015. The EIR text regarding the refiners' issues should reflect these comments. In addition, as mentioned in Comment 4 above, there may be controversy with regard to the effect of PM₁₀ on human

⁷⁶ <http://www.baaqmd.gov/plans-and-climate/air-quality-plans/plans-under-development>, last accessed November 19, 2015.

⁷⁷ WSPA, "WSPA Comments on BAAQMD's Draft "Refinery Emissions Inventory Guidelines: An Assessment of EPA Document Emission Estimation Protocol for Petroleum Refineries (Version 2.1.1, May 2011)", September 2013", handed out at meeting on September 2, 2014.

⁷⁸ G. Bjerke (WSPA), letter to E. Stevenson (BAAQMD), "RE: Comments on Draft BAAQMD Air Monitoring Guidelines for Petroleum Refineries", December 18, 2014, including the enclosed Attachment A by Gavin Hoch and Shari Beth Libicki (Environ) "RE: Comments on Draft BAAQMD Air Monitoring Guidelines for Petroleum Refineries", December 18, 2014.

⁷⁹ G. Bjerke (WSPA), letter to E. Stevenson (BAAQMD) "RE: WSPA Comments on Draft Proposed Regulation 12-15", March 27, 2015, including the enclosed "WSPA Recommended Language Revisions and Comments on Proposed Reg. 12-15 – March 27, 2015"; D.R. Farabee (Pillsbury), letter to E. Stevenson (BAAQMD), "RE: Comments on February 2015 Workshop Draft of Proposed Regulation 12-16 – Petroleum Refining Emissions Analysis, Thresholds and Mitigation; D.R. Farabee (Pillsbury), letter to E. Stevenson (BAAQMD) "Re: Comments on February 2015 Initial Study/Notice of Preparation for Proposed Rules 12-15 and 12-16", March 27, 2015.

⁸⁰ G. Bjerke (WSPA), letter to G. Nudd (BAAQMD) "WSPA Comments on BAAQMD's Petroleum Refinery Emissions Reduction Strategy: Initial Report and Concept Papers", June 19, 2015.

health, in which case that text should be included in the EIR's "areas of controversy" section.

Comment 9. In at least two places, Section 1.2.2.1.2 (p. 1-8) refers to localized impacts having to comply with the NAAQS. That is somewhat misleading; the EIR needs to be revised to reflect the fact that for the annual PM_{2.5} NAAQS, EPA has specifically identified that the standard only applies to regional area-wide air quality, not local impacts; i.e., 40 CFR 58.11 states that "PM_{2.5} measurement data from all eligible monitors that are representative of **area-wide** air quality are comparable to the annual PM_{2.5} NAAQS...[but]... PM_{2.5} measurement data from monitors that are not representative of area-wide air quality but rather of relatively unique micro-scale, or localized hot spot, or unique middle-scale impact sites are **not** eligible for comparison to the annual PM_{2.5} NAAQS." [emphasis added]

Comment 10. On page 1-11 there is a statement about the state AB 32 program stating that "Should WGSs [wet gas scrubbers] be installed, GHG offsets would be required. As such, the GHG emissions associated with the WGSs would be required to be offset, so that there would be no net increase in GHG emissions from the refineries." This is incorrect and the EIR needs to correct this factual error. AB 32 requires that there be no statewide increase in GHG emissions from covered facilities, but this does not mean that there can be "no net increase in GHG emissions from the refineries". Facilities do need to have enough allowances to cover their emissions, and there are GHG emissions associated with the energy needed to power a WGS, but AB 32 does not necessarily require that these emissions need to be "offset".

Comment 11. On page 2-5 there is text stating that "Criteria pollutants are emissions for which Ambient Air Quality Standards (AAQS) have been set and include: (1) carbon monoxide (CO); (2) nitrogen dioxide (NO₂) and oxides of nitrogen (NO_x); (3) particulate matter (PM) in two size ranges -- diameter of 10 micrometers or less (PM₁₀); and diameter of 2.5 micrometers or less (PM_{2.5}); (4) volatile organic compounds (VOC); and (5) sulfur dioxide (SO₂)."
It is incorrect to state that there are AAQS for NO_x or VOC and the EIR needs to be revised to correct this error. Those pollutants are precursors of ozone (for which there are AAQS that should be identified).

Comment 12. Section 3.2.1.1 (p. 3-4) states that "air quality standards have been established by California and the federal government for the following criteria air pollutants: ozone, volatile organic compounds (VOC), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), PM₁₀ and PM_{2.5}."
As stated above, that is inaccurate and the EIR

needs to be corrected accordingly. There are no air quality standards for VOC – but there are for ozone.

Comment 13. Page 3-4 identifies the extent to which the Bay Area attains or does not attain Federal and California Ambient Air Quality Standards (AAQS), but omits mention of the status with regard to Federal AAQS for PM. The EIR needs to be revised to correct this omission. Specifically it should identify that BAAQMD is still formally designated as “attainment/unclassified” with respect to both the PM₁₀ NAAQS and the latest (2012) NAAQS for annual PM_{2.5} [40 CFR 81.305], and the data in Table 3.2-2 of the DEIR support that. The DEIR should also identify that in 2013, EPA determined that BAAQMD attained the NAAQS for 24-hour PM_{2.5} as well [40 CFR 52.247(a)], and the data in Table 3.2-2 of the DEIR support that as well.⁸¹

Comment 14. The DEIR text at the bottom of page 3-4 states that “The District is not considered to be in attainment with the...State...PM_{2.5} standards”; however, the EIR needs to identify that the State PM_{2.5} standard is the same as the NAAQS for annual PM_{2.5} (12 µg/m³), EPA determined that the Bay Area attained this standard, and the data in Table 3.2-2 also show attainment of that standard.

Comment 15. Data in Table 3.2-2 of the DEIR show some exceedances of the CAAQS standard of 50 µg/m³ for 24-hour PM₁₀, at Bethel Island and San Jose (neither of which are near the refineries that are proposed to be regulated by this action), but this standard is from the 1980s and the health impacts of not attaining it are questionable. Specifically, in 2006, US EPA revoked the Federal standard of 50 µg/m³ for 24-hour PM₁₀ because “The long-term exposure studies of mortality and morbidity...continue to suggest that, at current ambient levels in the US, fine particles [PM_{2.5}] are associated with health effects and coarse particles [including PM₁₀ particles that are not small enough to be categorized as PM_{2.5}] are not. The EPA believes that the PM_{2.5} standards...address the major risk suggested in the PM₁₀ studies cited by commenters. To the extent that additional concerns may exist with regard to long-term exposures to coarse particles that have not been fully identified by scientific research, the Staff Paper notes that the short-term [PM₁₀] standard...which is generally controlling, has and will continue, as a practical matter, to

⁸¹ Table 3.2-2 does indicate that that some monitors showed 1-2 days with concentrations over the 24-hour standard, but attainment with the 24-hour NAAQS is based on the 98th percentile 24-hour concentration, not the maximum 24-hour concentration [40 CFR 50.18(c)] and 1-2 days represents less than 2% of the days in the year.

limit such long-term exposures.”⁸² This is important and relevant context and the EIR needs to be revised to reflect it.

Comment 16. The bottom of page 3-4 states that “The District is not considered to be in attainment with the ozone standards”. However, the information presented in Table 3.2-2 is insufficient for the public to determine whether the monitors meet the AAQS for ozone, because attainment is based on the 3-year average of the annual fourth-highest daily maximum (per 40 CFR 50.15(b)). The EIR should include a table that provides data to enable the public to see whether or not the monitors attain the standard.

Comment 17. Table 3.2-1 on p. 3-5 needs to be updated to reflect the new Federal ozone NAAQS of 0.070 ppm in the EIR.

Comment 18. Table 3.2-1 on p. 3-5 incorrectly identifies the Federal standard for annual PM_{2.5} as 15 µg/m³. The EIR needs to correct this mistake. As shown in 40 CFR 60.18, the Federal standard for annual PM_{2.5} is 12 µg/m³, the same as the California standard.

Comment 19. Table 3.2-1 on p. 3-5 identifies “most relevant effects” for PM₁₀ that are not consistent with what EPA published in the Federal Register regarding PM₁₀; i.e., that “The long-term exposure studies of mortality and morbidity...continue to suggest that, at current ambient levels in the US, fine particles are associated with health effects and coarse particles are not. The EPA believes that the PM_{2.5} standards...address the major risk suggested in the PM₁₀ studies cited by commenters. To the extent that additional concerns may exist with regard to long-term exposures to coarse particles that have not been fully identified by scientific research, the Staff Paper notes that the short-term standard for coarse particles, which is generally controlling, has and will continue, as a practical matter, to limit such long-term exposures.”⁸³ This needs to be corrected accordingly.

Comment 20. Table 3.2-2 on p. 3-6 needs to be amended in the EIR to include data that allow the public to assess whether the ambient air quality data reflect attainment with air quality standards, as described above.

⁸² US EPA, Final Rule for National Ambient Air Quality Standards for Particulate Matter, 71 FR 61144 *et seq.*, p. 61198.

⁸³ US EPA, Final Rule for National Ambient Air Quality Standards for Particulate Matter, 71 FR 61144 *et seq.*, p. 61198.

Comment 21. Table 3.2-2 on p. 3-6 shows incorrect units for the PM₁₀ and PM_{2.5} data. The EIR needs to correct this.

Comment 22. The column headers for Table 3.2-2 on p. 3-6 are unclear. For example, it is assumed that “Max 8-hr” is the maximum 8-hour average concentration and “Nat 8-Hr Days” is the number of days that 8-hour concentrations exceeded the NAAQS level, but that is not clearly explained. The EIR needs to explain this clearly.

Comment 23. The DEIR does not clarify whether the data in Table 3.2-2 on p. 3-6 are raw data or quality-assured data, whether any “exceptional events” (as defined in the NAAQS regulations) are included or excluded, which if any of the PM_{2.5} monitors don’t reflect “area-wide” air quality (and therefore shouldn’t be compared to the annual PM_{2.5} NAAQS, as described above), etc. This information needs to be presented in order for the public to better understand the existing environmental conditions relative to applicable standards.

Comment 24. The data in Table 3.2-3 of the DEIR can be misleading since several of the standards changed during the course of 2005-2014. A layperson reading this table will assume that these are days over the standards identified in Table 3.2-2, but several of those standards changed over the last ten years. When tabulating “Days over Standards”, the DEIR needs to clearly identify which standards it is referring to for the various years in order to not be misleading.

Comment 25. Section 3.2.1.2 of the DEIR refers to health effects of the various criteria air pollutants, but it does not identify the levels at which those effects occur. The EIR should clearly state when it is referring to health effects associated with concentrations above the ambient air quality standards, and when it is referring to health effects associated with concentrations below the ambient air quality standard (in which case there is controversy regarding the extent to which standards meet the legal requirement that they protect public health with an adequate margin of safety, that should be identified in Section 1.1.5).

Comment 26. Page 3-8 of the DEIR states that “Plants are sensitive to ozone at concentrations well below the health-based standards and ozone is responsible for significant crop damage.” In addition to the primary NAAQS that protect public health, EPA is required to set secondary NAAQS that “protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in

the ambient air”. If the EIR is indicating that EPA’s standard does not meet the standard of protecting the public welfare, this needs to be clearly identified (and the controversy with regard to this and this should be identified in Section 1.1.5); if not, the this needs to be clarified.

Comment 27. Page 3-8 of the DEIR identifies CO concentrations that appear to be an order of magnitude low; the EIR should correct this and/or provide citations for these values.

Comment 28. Page 3-9 identifies health impacts of PM₁₀ being identical to PM_{2.5}. This is inconsistent with EPA’s conclusion that was cited previously in this comment letter (see Comment 4, Comment 15, and Comment 19) and the EIR needs to correct this information.

Comment 29. The DEIR’s Environmental Setting (Section 3.2.1) is deficient for TACs because it only provide numerical concentrations of TACs (Table 3.2-4), rather than any context associated with the Hazard Index (HI) or lifetime cancer risk. This is particularly relevant since the proposed action targets the regulation of TACs with respect to these metrics. It also fails to provide the context afforded by the District’s own CARE study of TACs. The EIR needs to provide that context.

Comment 30. The DEIR’s Existing Regulatory Setting (Section 3.2.2) identifies a requirement of “95 percent control of VOC emissions from pressure relief devices” – this requirement does not apply to every refinery’s pressure relief devices. The EIR needs to clarify this or strike the sentence.

Comment 31. Page 3-14 of the DEIR has a statement that “All Bay Area refineries have ‘grandfathered’ emission sources that were not subject to NSR but are generally regulated by equipment specific Air District regulations.” The EIR needs to correct this to say “...equipment specific Air District regulations and applicable Federal regulations (e.g., MACT)”.

Comment 32. Section 3.2.2.2.3 of the DEIR states that “An Air Toxics Hot Spots Act HRA estimates the health impacts from a site due to stationary source emissions”. That is not accurate; it does not “estimate health impacts” in the sense of providing a “best estimate”

of those impacts. OEHHA's Guidance Manual for Preparation of HRAs⁸⁴ notes that on the contrary, "...there is a great deal of uncertainty associated with the process of risk assessment....The assumptions used in these guidelines are designed to err on the side of health protection in order to avoid underestimation of risk to the public....**Risk estimates generated by an HRA should not be interpreted as the expected rates of disease in the exposed population but rather as estimate of potential for disease**, based on current knowledge and a number of assumptions...." (pp. 1-5 through 1-6, emphasis added). That is, the HRA **overestimates** the health impacts from a site due to stationary source emissions, by design. The EIR needs to correct the current misleading language.

Comment 33. Section 3.2.2.2.3 of the DEIR also provides no context regarding the HRA Guidelines that were adopted in March 2015. ARB and CAPCOA have estimated that the increase is a factor of 1.5 to 3 for inhalation-only assessments, but acknowledged that there are additional increases associated with the use of newer dispersion models and when multipathway assessments are required.⁸⁵ In 2014 District staff identified that the new Guidelines increase the modeled risk by a factor of 2 to 5.⁸⁶ The EIR needs to provide this context.

Comment 34. The DEIR's discussion of Air Quality "Thresholds of Significance" (Section 3.2.3, starting on p. 3-18) contains contradictory and confusing language that does not seem to make sense. Section 3.2.3.1 states that "the 2011 CEQA Guidelines will be used for construction emissions". However, Section 3.2.3.2 states that "in view of the trial court's order which remains in place pending final resolution of the case, the Air District is no longer recommending that the [2011] Thresholds be used", then states that the significance threshold for the current EIR 'could be' the significance thresholds developed in 1999, then states that "the revised 2011 CEQA Guidelines could also be used", then states that the proposed rules more closely resemble air quality plans for which "the significance threshold is zero", then states that "Therefore, in order to provide a conservative air quality analysis, the thresholds recommended in the revised 2011 CEQA Guidelines (BAAQMD, 2011) will be used in the current air quality impacts analysis". (It is unclear how the 2011 CEQA Guidelines can be "conservative" relative

⁸⁴ OEHHA, "[Air Toxics Hot Spots Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments](http://oehha.ca.gov/air/hot_spots/hotspots2015.html)", February 2015. Available from http://oehha.ca.gov/air/hot_spots/hotspots2015.html.

⁸⁵ ARB/CAPCOA, "[Risk Management Guidance for Stationary Sources of Air Toxics](http://www.arb.ca.gov/toxics/rma/rmgssat.pdf)", July 23, 2015 (available from <http://www.arb.ca.gov/toxics/rma/rmgssat.pdf>), pp. 1-2.

⁸⁶ D. Chong (BAAQMD), "Health Risk Assessment (HRA) Guideline Revisions", presentation at BAAQMD Board of Directors meeting, November 17, 2014.

to a zero significance threshold.) The EIR needs to clarify what constitutes a significant effect, as this is a key focal point of CEQA and subsequent conclusions about what is “significant” or not.

Comment 35. The Environmental Setting for GHGs (p. 3-32) should contain information regarding existing conditions (i.e., concentrations of GHGs in the air).

Comment 36. Table 3.3.1 of the DEIR (on page 3-33) does not identify the units of the GHG emissions inventory. The EIR needs to revise this in order to be informative. For example, if the inventory is in CO₂ equivalents, then the Global Warming Potentials (GWPs) should be identified.

Comment 37. Table 3.3.2 of the DEIR (page 3-34) identifies the units as Million Metric Tons of CO₂-Equivalent, but does not clarify what GWPs were used. The EIR needs to identify what GWPs were used to calculate CO₂ Equivalents, given that GWPs have changed over time.

Comment 38. Table 3.3.2 of the DEIR (on page 3-34) identifies GHG emissions from Bay Area refineries that are not consistent with 3rd-party verified data that was reported to ARB for those years and which are publicly available from <http://www.arb.ca.gov/cc/reporting/ghg-rep/reported-data/ghg-reports.htm>. Given that the proposed action is relevant to GHG emissions from Bay Area refineries—i.e., proposed Rule 12-15 requires reporting of GHG emissions and explanations for small differences each year—the EIR needs to revise the table to reflect the accurate data. The same table also shows an increasing trend in GHG emissions from Bay Area refineries from 2009 through 2015, which is the opposite of the ARB data. The EIR needs to explain this discrepancy and the basis for the District’s projections also needs to be identified. Per CEQA Guidelines [§15144], “While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can”.

Comment 39. Section 3.3.2.1 of the DEIR, which discusses Federal GHG regulations, mentions only the stationary source reporting program. This is a grossly inadequate depiction of the Federal GHG program. The DEIR mentions nothing about the Renewable Fuel Standard (RFS), the new Existing Source Performance Standards (ESPS) for electricity generation, more stringent fuel economy standards for vehicles, proposed regulations for oil and gas activities, building efficiency standards, Maximum Achievable Control Technology (MACT) requirements for energy assessments of fuel-burning

equipment, etc. Accordingly, the EIR needs to identify these and any other relevant Federal GHG-related regulations when providing the summary.

Comment 40. Section 3.3.3 of the DEIR discusses GHG thresholds of significance. The first sentence does not make grammatical sense but seems to indicate that the District's 2011 thresholds are being used. This seems to be contrary to the statement in Section 3.2.3.2 that "in view of the trial court's order which remains in place pending final resolution of the case, the Air District is no longer recommending that the [2011] Thresholds be used". Also, the second paragraph of that section identifies that the 2011 CEQA Guidelines are more conservative than significance thresholds of zero, which is unclear and seems incorrect. The EIR needs to clearly explain these issues, as thresholds of significance are a key component of CEQA.

Comment 41. The alternatives analysis in Section 4.5 concludes that "As shown in Table 4-1, Alternative 1 would reduce all of the potentially significant impacts to less than significant. However, Alternative 1 would not achieve any of the proposed project objectives. Alternative 2 would also reduce all of the potentially significant impacts and would achieve six of the eight project objectives. Since Alternative 2 would eliminate all of the potentially significant impacts and achieve most of the project objectives, it would be considered the environmentally superior alternative. The proposed project would be considered the preferred alternative as it would achieve all of the objectives and potentially result in reduced overall emissions in the Air Basin, providing an improvement in air quality not provided by the other project alternatives." That is misleading, given that it has not been shown that Alternative 2 will necessarily provide an improvement in air quality; while it will require an extensive amount of effort in analyses, if the analyses confirm that the air quality standards are attained and that there is no need for additional risk reduction, there are zero benefits associated with Alternative 2. (By choosing Alternative 2, the District can first evaluate whether there are (or are likely) to be any benefits associated with it.) The EIR needs to correct the misleading statements described here.

Comment 42. CEQA Guidelines [§15187(c)] require that in the case of an agency's adoption of a rule, "the environmental analysis shall include at least the following: (1) an analysis of reasonably foreseeable environmental impacts of the methods of compliance; (2) an analysis of reasonably foreseeable feasible mitigation measures relating to those impacts; and (3) an analysis of reasonably foreseeable alternative means of compliance with the rule or regulation, which would avoid or eliminate the identified impacts". The proposed rules indicate an intent to regulate emissions from marine vessels, which can be an

important source of TACs; the DEIR has not conducted any analysis of what the reasonably foreseeable methods of compliance would be, or the impacts of those. The EIR needs to identify what the reasonably foreseeable methods of compliance are.

Attachment D

Comments on Initial Study/Negative Declaration (IS/ND) for the Bay Area Air Quality Management District BAAQMD Petroleum Refinery Emissions Reduction Strategy

Regulation 6-5: FCCU
 Regulation 8-18: Equipment Leaks
 Regulation 11-10: Cooling Towers

This attachment to the submittal by the Western States Petroleum Association includes comments on the Negative Declaration for the other four Refinery Emissions Reduction Regulations (RERR), Rules 9-14, 6-5, 8-18, and 11-10. This attachment also includes Attachment D-1, comments on the technical data presented in the IS/ND. WSPA incorporates the comments in Attachments A, B, C and E into these Attachment D comments.

A. Purpose and Need/objectives are misstated and misleading

Comment 1. The objectives and need are built upon faulty reasoning and information. For example, on page 2-2 of the document, BAAQMD states: *The Bay Area and neighboring regions are not in attainment of State and federal particulate matter standards and further reductions in PM emissions are needed.* However, BAAQMD is formally designated as “attainment/unclassified” with respect to both PM₁₀ NAAQS and the latest [2012] NAAQS for annual PM_{2.5}, and the state PM_{2.5} standard is the same as the NAAQS for annual PM_{2.5}. In 2013, EPA determined that BAAQMD attained the NAAQS for the 24-hour PM_{2.5} as well. There are some exceedances of the CAAQS 24-hour PM₁₀ standard at Bethel Island and San Jose (neither of which are near the refineries that are proposed to be regulated by this action) as shown in Table 3-2. BAAQMD should clarify its statement regarding the Bay Area within BAAQMD’s jurisdiction, not being in attainment for State and federal particulate matter standards.

Comment 2. Objectives listed include reducing SO₂ and PM emissions, both of which either in attainment or designated “attainment/unclassified”. BAAQMD needs to explain the need for these objectives.

B. CEQA Analysis is Incomplete Because of Segmentation/ Piece-mealing

Comment 3. Under CEQA, a “project” subject to environmental review must be the “whole of an action.” (CEQA Guidelines Section 15378(a).) BAAQMD improperly segmented the review of the Emissions Reduction Strategy. Although BAAQMD states that the four proposed rules are being reviewed in this document as a package and are not dependent, BAAQMD then uses the same language for the setting as listed in the EIR for Regulation 12 Rules 15 and 16. *“The 2011 Bay Area Emissions Inventory for stationary sources indicates that refineries are the largest individual stationary source of reactive organic gases (ROG) emissions and are the predominant source of SO₂ emissions. Additionally, the five Bay Area refineries rank among the*

top ten facilities in the Bay Area for risk-weighted emissions of TACs based on an evaluation of emissions from stationary sources in 2012, and using risk factors for cancer and chronic hazard index.” The discussion of SO₂ emissions and risk-weighted factors as issues the District is concerned in both documents, coupled with the language in paragraph 2.1 that “*The District proposes to reduce refinery emissions by amending several District rules affecting petroleum refineries and developing additional rules focusing on specific refinery processes*”, are clear evidence that these four rules should have been analyzed within the EIR for Regulation 12 Rules 15 and 16.

Additionally, this demonstrates that a cumulative impacts analysis should have been done for all of these rules together and analyzed in the EIR. Especially since the rules only apply to the five identified refineries and a complete analysis of the proposed and foreseeable rules that may impact them should be completed so that the refineries can properly review and comment on the entire Reduction Strategy.

BAAQMD prepared an Initial Study/Negative Declaration (dated October 2015) for their Petroleum Refinery Emissions Reduction Strategy which included Rules 9-14, 6-5, 8-18, and 11-10, but did not include Rules 12-15 or 12-16. The Emissions Reduction Strategy should be a cumulative review of all rules be considered and those reasonable foreseeable. BAAQMD needs to explain why this was not a cumulative review. Therefore, the October 2015 Initial Study/Negative Declaration unlawfully segments the review.

Comment 4. Although not analyzed in the EIR, a review of the discussion of the treatment of ammonia emissions as a precursor of PM_{2.5} in proposed Regulation 6-5 shows the necessity to review these rules together. BAAQMD imposes new Reg 6-5 simply to minimize ammonia emissions from refineries, even though no refinery is a major source of ammonia emissions; but then doesn’t even include source categories that ARE major sources of ammonia emissions in any of its regulatory targets to reduce PM emissions. BAAQMD needs to analyze these six rules together in an EIR to identify, assess and mitigate for environmental impacts.

Comment 5. Table 2.5-1 depicts the BAAQMD estimated emission reductions for the regulatory actions associated with the proposed new and amended rules. Table 2.4-2 shows the District has identified significant opportunities for SO₂ and TOG reductions. BAAQMD should have combined these “significant opportunities” cumulatively with Rules 12-15 and 12-16 and the other foreseeable regulations. This also applies to paragraph 2.5.2 TACs. BAAQMD needs to do the cumulative.

Comment 6. Flawed Analysis

WSPA identifies and incorporates Attachment D-1 as comments on the inaccuracies in the IS/ND analysis which must be corrected to properly inform the public and the Lead Agency decision-maker. Providing the correct information will also assist the public to assess the need to

submit comments and give the decision-maker information necessary to make a truly informed decision.

Attachment D-1
Technical Data Comments on Initial Study/Negative Declaration on

Regulation 6-5: FCCU
Regulation 8-18: Equipment Leaks
Regulation 11-10: Cooling Towers

WSPA identifies and incorporates Attachment D-1 to Attachment D as comments on the inaccuracies in the IS/ND analysis which must be corrected to properly inform the public and the Lead Agency decision-maker. Providing the correct information will also assist the public to assess the need to submit comments.

Comment 1. Page 2-2 states that “the Bay Area and neighboring regions are not in attainment of State and federal particulate matter standards”. That is inaccurate. BAAQMD is formally designated as “attainment/unclassified” with respect to both the PM₁₀ NAAQS and the latest (2012) NAAQS for annual PM_{2.5} [40 CFR 81.305], and the State PM_{2.5} standard is the same as the NAAQS for annual PM_{2.5} (12 µg/m³). In 2013, EPA determined that BAAQMD attained the NAAQS for 24-hour PM_{2.5} as well [40 CFR 52.247(a)]. The data in Table 3-2 of the IS/ND are consistent with attaining all of these standards. Data in Table 3-2 do show some exceedances of the CAAQS 24-hour PM₁₀ standard of 50 µg/m³ for, at Bethel Island and San Jose (neither of which are near the refineries that are proposed to be regulated by this action), but this standard is from the 1980s and the health impacts of not attaining it are questionable; i.e., in 2006, US EPA revoked the Federal 24-hour PM₁₀ standard of 50 µg/m³ because “The long-term exposure studies of mortality and morbidity...continue to suggest that, at current ambient levels in the US, fine particles [PM_{2.5}] are associated with health effects and coarse particles [including PM₁₀ particles that are not small enough to be categorized as PM_{2.5}] are not. The EPA believes that the PM_{2.5} standards...address the major risk suggested in the PM₁₀ studies cited by commenters. To the extent that additional concerns may exist with regard to long-term exposures to coarse particles that have not been fully identified by scientific research, the Staff Paper notes that the short-term [PM₁₀] standard...which is generally controlling, has and will continue, as a practical matter, to limit such long-term exposures.”⁸⁷

Comment 2. The text on page 2-4 identifies that Ambient Air Quality Standards have been set for NO_x and VOC. That is incorrect; AAQS have been set for ozone, for which NO_x and VOC are precursors.

⁸⁷ US EPA, Final Rule for National Ambient Air Quality Standards for Particulate Matter, 71 FR 61144 *et seq.*, p. 61198.

Comment 3. With respect to Rule 8-18, text at the bottom of page 2-7 identifies that facilities that “store, transport and use volatile organic liquids lose some organic material as fugitive emissions wherever there is a connection between two pieces of equipment”. Not all connections leak, and they certainly do not leak all the time. It would be more accurate to state that they “...*can* lose some organic material...”

Comment 4. With respect to Rule 8-18, Section 2.4.3.1 states that the Air District’s 2013 emissions inventory identifies that fugitive emissions from equipment in heavy liquid service at the refineries are estimated at 1,476 tons per year (excluding methane). WSPA has identified repeatedly that this is an absurdly high number, and that the District’s insistence on using emission factors based primarily on data collected for components in gaseous or light liquid service is grossly inaccurate.⁸⁸ In 2014, at the request of District staff, WSPA members submitted their own monitoring data for thousands of components in heavy liquid service which supported our claim.

Comment 5. Page 3-5 does not identify process shutdown as a reasonably foreseeable method of complying with Rules 8-18 and 11-10. It is reasonably foreseeable for 8-18 because the District is proposing a “hard” limit on the percentage of various components that are infeasible to repair within 7 days, and WSPA members believe that available data indicate that it is quite possible to exceed those limits. This comment has been made previously to the District and ignored, so it appears that the District intends for process shutdown to be a reasonably foreseeable consequence. Process shutdown is reasonably foreseeable for 11-10 because the District is proposing a “hard” limit of 21 days for a permanent fix, without any consideration of feasibility; members are aware of instances where it has not been possible to do this. Emissions associated with process shutdown (and restart) can be substantial, and these emissions therefore need to be quantified and evaluated for significance.

Comment 6. Page 3-13 states that “The California standards are more stringent than the federal standards.” As shown in Table 3-1, this is not always the case (e.g., for 1-hour NO₂ and 1-hour SO₂, the Federal standard is set at a lower level, and Federal standards include standards for 24-hour PM_{2.5}, and 3-month average lead that the State standards do not).

Comment 7. Page 3-14 refers to Table 3-1. Table 3-1 incorrectly identifies the NAAQS for annual PM_{2.5} as 15 µg/m³ (the NAAQS was changed to 12 µg/m³ in 2012), and the ozone NAAQS has also recently been updated. For PM₁₀, the explanation of health effects in the rightmost column is inconsistent with the fact that in 2006, US EPA revoked the Federal 24-hour PM₁₀ standard of 50 µg/m³ because “The long-term exposure studies of mortality and morbidity...continue to suggest that, at current ambient levels in the US, fine particles [PM_{2.5}] are

⁸⁸ Meetings held at BAAQMD on September 3, 2014; September 11, 2014; March 9, 2015.

associated with health effects and coarse particles [including PM₁₀ particles that are not small enough to be categorized as PM_{2.5}] are not. The EPA believes that the PM_{2.5} standards...address the major risk suggested in the PM₁₀ studies cited by commenters. To the extent that additional concerns may exist with regard to long-term exposures to coarse particles that have not been fully identified by scientific research, the Staff Paper notes that the short-term [PM₁₀] standard...which is generally controlling, has and will continue, as a practical matter, to limit such long-term exposures.”⁸⁹

Comment 8. Page 3-14 also mentions that the 2014 air quality data presented in Table 3-2 indicate that the air quality at all monitoring stations were below state and federal standards for CO, NO₂, and SO₂, but neglect to mention that they were also below state and federal standards for annual PM_{2.5} and federal standards for annual PM₁₀. The last paragraph on page 3-14 also identifies that “The Air District is not considered to be in attainment with the...State PM₁₀ and State and Federal PM_{2.5} standards.” That is inaccurate. BAAQMD is formally designated as “attainment/unclassified” with respect to both the PM₁₀ NAAQS and the latest (2012) NAAQS for annual PM_{2.5} [40 CFR 81.305], and the State PM_{2.5} standard is the same as the NAAQS for annual PM_{2.5} (12 µg/m³). In 2013, EPA determined that BAAQMD attained the NAAQS for 24-hour PM_{2.5} as well [40 CFR 52.247(a)]. The data in Table 3-2 of the IS/ND are consistent with attaining all of these standards.

Comment 9. Table 3-2 shows incorrect units for the PM₁₀ and PM_{2.5} data.

Comment 10. The column headers for Table 3-2 on p. 3-6 are unclear. For example, it is assumed that “Max 8-hr” is the maximum 8-hour average concentration and “Nat 8-Hr Days” is the number of days that 8-hour concentrations exceeded the NAAQS level, but that is not clearly explained.

Comment 11. The IS/ND does not clarify whether the data in Table 3-2 are raw data or quality-assured data, whether any “exceptional events” (as defined in the NAAQS regulations) are included or excluded, which if any of the PM_{2.5} monitors don’t reflect “area-wide” air quality (and therefore shouldn’t be compared to the annual PM_{2.5} NAAQS, as described in Federal regulations), etc.

Comment 12. The data in Table 3-3 can be misleading since several of the standards changed during the course of 2005-2014. A layperson reading this table will assume that these are days over the standards identified in Table 3-1, but several of those standards changed over the last

⁸⁹ US EPA, Final Rule for National Ambient Air Quality Standards for Particulate Matter, 71 FR 61144 *et seq.*, p. 61198.

ten years. When tabulating “Days over Standards”, the IS/ND should clearly identify which standards it is referring to for the various years.

Comment 13. Page 3-20 of the IS/ND implies that Federal MACT standard promulgation still has not been completed when it states that “Promulgation of those standards has been rescheduled....” EPA announced this spring that all Federal MACT standards were promulgated.⁹⁰

Comment 14. Page 3-21 of the IS/ND states that “the proposed projects are not expected to conflict with or obstruct implementation of the applicable air quality plan”. What District staff have stated previously is that these rules are obstructing their development of the 2015 Clean Air Plan.

Comment 15. Table 3-5 identifies that some refineries have many tons per year of condensable PM emissions and others have none. While the footnote does identify that this is based on a small number of source tests, it is an inaccurate depiction of what is likely to be the case, and should be flagged as “speculation” per CEQA guidance at §15145.

Comment 16. Table 3-8 identifies GHG emissions from Bay Area refineries that are not consistent with 3rd-party verified data that was reported to ARB for those years and which are publicly available from <http://www.arb.ca.gov/cc/reporting/ghg-rep/reported-data/ghg-reports.htm>. Given that the proposed action is relevant to GHG emissions from Bay Area refineries—i.e., proposed Rule 12-15 requires reporting of GHG emissions and explanations for small differences each year—the table should reflect the accurate data. The same table also shows an increasing trend in GHG emissions from Bay Area refineries from 2009 through 2015, which is the opposite of the ARB data. This discrepancy needs to be explained and the basis for the District’s projections also needs to be identified. Per CEQA Guidelines [§15144], “While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can”.

Comment 17. Page 3-38, which discusses Federal GHG regulations, mentions only the stationary source reporting program. This is a grossly inadequate depiction of the Federal GHG program. The DEIR mentions nothing about the Renewable Fuel Standard (RFS), the new ESPS for electricity generation, GHG permitting requirements, more stringent fuel economy standards for vehicles, proposed regulations for oil and gas activities, building efficiency standards, etc.

Comment 18. Page 3-39 is dismissive of District requirements that increase CO₂ emissions because the cap-and-trade program caps those emissions. That is not always true (see comment on Appendix A below), and even when it is, our understanding of the District’s GHG

⁹⁰ See <http://www3.epa.gov/ttn/atw/112c6/112c6WrapupNoticefinal.pdf>.

significance thresholds is that they have applied only to changes in local emissions, not changes in statewide emissions (or, with the Quebec linkage, combined statewide-and-Quebec-wide emissions). This needs to be more clearly identified. Page 3-40 states that “in general, strategies that promote clean technologies also reduce greenhouse gas emissions”; we also disagree with that statement. Many—we believe most—pollution control technologies require energy usage and have associated GHG emissions. Tuning an internal combustion engine to produce minimal NO_x is different from tuning it to produce minimal GHG, meaning that minimizing one of these comes at the expense of the other.

Comment 19. With respect to Rule 9-14, in Appendix A, the oxidation-reduction equation for GHG emissions from SO₂ scrubbing is not balanced (two hydrogen atoms on the left side and four on the right). This equations to be balance so that CO₂ emissions are calculated correctly. In addition, CO₂ emissions associated with coke calciner SO₂ scrubbing sorbent are not captured by the GHG reporting rule⁹¹ and therefore are not captured by the Cap-and-Trade rule, and therefore the District should not be assuming a credit associated with their capture.

Comment 20. There is substantial evidence that the CO₂ emissions increase associated with Rule 9-14 may cause a significant effect on the environment, which means that an EIR must be prepared instead of a negative declaration. The District’s calculations show 1090 MT CO₂e/yr (just under the significance threshold of 1100 MT CO₂e/yr) but there are three key problems with the analysis.

- a. The first is that the District bases the CO₂ emissions from the SO₂ scrubbing on green coke generation rates of 399,000-400,000 tons/yr, but this is “based on BAAQMD analysis of recent historical data” and in recent years the generation rate has been as high as 425,000 tons/year (and the allowable air district permitted limit for green coke is quite a bit higher). There is therefore substantial evidence that the generation rate has been and can be higher than what the District is assuming, and the analysis should be based on a green coke generation rate that is at least as high as 425,000 tons/year.
- b. A second issue is that the District appears to be assuming too low a carbon rate for the scrubbing (footnote 3 identifies 3,893 additional tons of sodium

⁹¹ See 40 CFR 98.253(g)(2) Equation Y-13, which is a mass balance equation based on the carbon content of the green coke and petroleum coke and excludes consideration of CO₂ generated by the bicarbonate sorbent. In fact, any increased dust collection (associated with more Na₂SO₃) will cause the regulatory calculation of CO₂ emissions to decrease rather than increase.

bicarbonate, and this may be based on the stoichiometric equation identified in the District's analysis). The equation is incorrect because it is not balanced (and should be corrected accordingly) but it does identify the correct proportions of bicarbonate, SO₂, and CO₂. That being said, the actual quantity of sorbent that needs to be injected in order to maximize the amount of SO₂ control needs to exceed the stoichiometric level by a fair amount. Phillips 66 has identified that based on current experience it is expected that the sodium bicarbonate injection rate will need to be increased by at least 4,200 tons/yr. Therefore the CO₂ associated with the delivery trips needs to be increased accordingly.

- c. The most important issue is that the District identifies (erroneously) that CO₂ emissions associated with coke calciner SO₂ scrubbing sorbent are required to be "offset" by the state's Cap-and-Trade rule and there do not count towards the significance threshold. There is a problem with this claim that needs to be corrected. The CO₂ emissions from scrubbing sorbent are not captured by the GHG reporting rule, which means that they are not captured by the Cap-and-Trade rule (which is based on inventories developed using the GHG reporting rule). Specifically, the reporting rule requires the use of 40 CFR 98.253(g)(2) Equation Y-13, which is a mass balance equation based on the carbon content of the green coke and petroleum coke and excludes consideration of CO₂ generated by the bicarbonate sorbent. It therefore is not accurate to assert that there will be any "offset" of these emissions, as the District's analysis claims.

Attachment E
Memo/Comments on Socioeconomic Report

Regulation 12-15: Petroleum Refining Emissions Tracking
Regulation 12-16: Petroleum Refining Emissions Limits and Risk Thresholds

WSPA submits the following as our comments on BAAQMD Socio-Economic Analysis of Proposed Regulation 12, Rule 15: Petroleum Refining Emissions Tracking and Regulation 12, Rule 16: Petroleum Refining Emissions Limits and Risk Thresholds. This analysis was prepared by Nicolas Rockler, Ph.D. of Kavet, Rockler and Associates, LLP.

These rules are subject to California Health and Safety Code Section 40728.5 regarding the proscribed content of the socio-economic impact analysis that accompanies the rulemaking process.

In the first section of this comment letter, we evaluate the degree to which the prepared by Applied Development Economics (ADE) report complies with the six topics to be covered as listed in Section 40728.5. In many respects, the ADE report fails to provide the required information. In the second section, we discuss the application of the “10 percent rule” apparently adopted by the California Air Resources Board (ARB) following from a paper by Berck (1995).⁹² We find the application of a single rule (from the three possible forms of analysis suggested by Berck in the same paper) is inadequately performed by ADE.

REQUIRED SUBJECTS FOR SOCIO-ECONOMIC IMPACT ANALYSIS

Section 40728.5 of the California Health and Safety Act offers six meanings for “socioeconomic impact”. We list these below in abbreviated form:

1. The type of industries or businesses affect by the rule or regulation.
2. The impact of the rule/regulation on employment and the regional economy if adopted.
3. The probable costs to industry or business, including small business of the rule/regulation.
4. Availability and cost-effectiveness of alternatives to the rule/regulation.
5. The emissions reduction potential of the rule/regulation.
6. The necessity of the regulation/rule to attain state and federal ambient air standards.

Below, we discuss the content of the ADE report with regard to each of the defining elements that together comprise socio-economic impact.

⁹² Berck, Peter. 1995. “Development of a Methodology to Assess the Economic Impact Required by SD513/AB969.” Final Report to the California Air Resources Board, Contract No. 93-314. August, 1995.

Affected Industry

It is sufficiently clear in the ADE report that petroleum refineries are the primary industry affected by the two proposed rules. However, this ignores two industry groups also affected by the rules: The first group consists of all the cargo carriers, for which refineries will become responsible for reporting the “on-going annual emissions inventories of all regulated air pollutants based on upgraded methods...” If by cargo carriers, it is meant that firms bringing unrefined petroleum products to the refineries and moving refined products from refineries to intermediate and final users, this represents an extraordinary number of transportation providers. Taken together, the number of vessels, railcars, and trucks reaches many thousands very quickly. At a minimum, some discussion of the implications of this rule for assembling emissions inventories is necessary and some estimate of the potential cost for controlling health risk contributions from these affected industries needs to be provided. ARB already collects data on maritime vessels, but for the other carrier types, availability of inventory data is not discussed at all. These costs, plus others, have the potential to become very large. See our discussion of “Range of Probable Costs”, below.

A second group of industries not discussed by ADE are the whole group of intermediate petroleum product users affected by potential price changes resulting from the two rules. Intermediate users are industries that require refined petroleum products in their production processes, which can include fuel combustion for heating purposes, transportation, and power generation. It is not widely understood by the general public that intermediate users consume nearly three-quarters of the total value of refinery output.

We would have expected ADE to point to this group of intermediate petroleum users as a key group of affected industries. They did state (P.7, para. 3) that they used the IMPLAN model in their analysis. This model would have readily identified the larger intermediate petroleum users among those indirectly affected by changes in petroleum output. In fact, the ADE report offers no model-based estimates of impact of any kind. Note that the IMPLAN model is incapable of estimating the market effects of production cost changes to the regional economy through any market-based behavior, having a static input-output framework. Therefore, the statement in the report that ADE “also analyzed whether costs could be passed to household in the region” could not have been done with the one model they said they used. To prepare an estimate of market related price changes, analysts often turn to computable general equilibrium models or hybrid models such as the one developed by Regional Economic Models, Inc. (the “REMI” model). In so doing, responses to price changes can be estimated in a form such as change in employment levels by industry or change in value added by industry in response to new rules.

Regional Employment

Apart from providing an estimated compliance employment impact of an additional one-half of a full-time equivalent employee at each refinery to prepare and deliver annual refinery emissions reports, the ADE socio-economic impact report provides no other employment impact estimates. On the employment-gain side of the ledger, this would normally include employment derived by the

capital expenditure for emissions control equipment. This is estimated by ADE to be slightly more than \$30 million for the five major Bay Area refineries, and more than \$600,000 per year for equipping and operating air quality monitoring stations at the refineries and community monitoring stations. WSPA's own estimates show differing amounts, based on independent estimates. As regards employment losses, no cost-related employment loss figures are provided, but are certainly expected in the directly- and indirectly-affected industries.

Range of Probable Costs

Implementation costs, to the degree they are known, are given in the analysis for refineries. However, there are two sets of costs that are not included in the analysis and which should be considered. First, the cost of assembling the annual emissions inventory for all regulated air pollutants. Second, the potential costs of the health risk assessments for the cargo carriers and others mentioned above under the "Affected Industries" discussion. Such costs could be extraordinarily large if thousands of cargo carriers form the basis for an inventory and if refiners become responsible for costs of assessments from these mobile sources. If these costs are included, the it becomes far less likely that a "no significant impact" finding could be maintained.

We are concerned that no cost estimates were offered because "it is not clear that this provision will ever be used." It would be beneficial to users of the ADE report to be given a sense of the probability that subsequent HRAs will be needed. It is not known if resubmission frequency data are available in response to BAAQMD or ARB rulemaking and compliance cases, but if none are available, even that would be useful to know, as well.

Alternatives-Availability and Cost Effectiveness

No alternative approaches to the two rules are offered in any form at either the refinery or community levels. No alternative technologies are discussed in relation to the mandate for diesel filters on stationary engines, nor regarding the wet scrubbers mandated at four of the refineries, nor the hydro treatment to be employed at the fifth refinery.

Emission Reduction Potential

No discussion of emission reduction potential is given in the socio-economic report apart from the 85% reduction in particulate emissions of stationary diesel engines. The effectiveness of the mandated scrubbers and other control technologies is not discussed. It is entirely unclear by way of a quantitative measure, the degree to which any of the actions under the proposed two rules will result in improved air quality.

Necessity of the Proposed Rules to Attain State and Federal Ambient Air Quality Standards

There is no discussion of the necessity of the proposed rules to attain air quality standards. Obviously, the necessity is implied throughout the ADE report but a discussion of the current

attainment status, the effect of the proposed rules, and the resulting outcome would appear to be needed.

FINDING OF NO SIGNIFICANT IMPACT

The finding of no significant impact related to the proposed rules discussed in Section 5 of the report and shown in Table 7 (row 16) is based on an incomplete and inadequate demonstration of the so-called “10 percent rule” (i.e., a rule of thumb) derived from Berck’s proposed method to assess economic impact. From the standpoint of providing a workable methodology, Berck actually identifies and describes three tests and one modeling recommendation that can be applied for impact analysis without claiming that one was uniquely suited to ARB applications. The three tests are listed and described here:

1. Cost Analysis: A determination of the costs imposed of the regulation with regard to capital, research, development, and ongoing costs should be performed in order to answer questions related to:
 - a. Effect on California industry and competitiveness.
 - b. Effect on the selling price of the goods in question.
 - c. How the action affect the quantity of labor and material used in production?
 - d. If prices will change as a result, is there a likely response of buyers with respect to substitutes.
 - e. Is the product sold by competitive industries and how will this affect prices?
 - f. What is the market for this good? Who are major buyers? Does it affect production of goods shipped out-of-state?

The answer to many of these questions offer a subjective evaluation that can be considered with respect to the proposed rules. It is certainly possible to conclude that an action has a significant impact on the regional economy, but this ought to be weighed against anticipated improvement in environmental quality and regional attractiveness. The latter is not to be ignored, according to Berck.

2. Estimated Effect on Productivity: Using either total factor or labor productivity for the regulated industry, the estimated effect of the proposed rules on productivity should be estimated. If regional productivity is initially above that for the nation as a whole, but is reduced to below that of the U.S., a significant impact may be said to exist. There may be alternative measures of productivity that can be applied. Among them, output per worker or value-added per worker can be used. The critical point to be evaluated is whether reductions in productivity are large enough to affect regional and national competitiveness.

3. Effect on Business Indicators (the “10 percent” rule): A change in the rate of return to capital as the result of environmental regulation can alter the competitive conditions of California producers. Using a change in the return-on-equity (ROE, itself the ratio of profit to value of assets), if a sizeable change in ROE is found, this can be evidence of a deteriorated competitive condition. Once again, a change relative to the comparable U.S figure for industry-specific return-on-equity is a strong indicator of a significant impact. We note that Berck did not recommend the 10 percent threshold. What he said was “The Air Resources Board’s (ARB) use of a 10 percent change in the ROE as a threshold for a finding of no significant impact, adverse impact on either competitiveness or jobs seems reasonable or even conservative.”
4. Use of a Computable General Equilibrium Model: While not a statistical test, a computable general equilibrium (CGE) model allows the user to estimate market-related impact associated with changing the cost structure in an industry. This is but one of many applications for the model which brings together factor markets (i.e., labor and capital) for each industry and their product markets. Economists use such a model to observe changes from a point of initial equilibrium (i.e., before a change in emissions rules in all markets), to a new equilibrium after rule changes are applied. The result are changes in the observed prices and quantities of output, and change in the price and quantities of labor and capital.⁹³

We do not think that the application of Berck’s business indicator measure of significance is well-applied in the case of petroleum refinery emissions regulations. Again, Berck did not reduce his test for significance to a single point-measure. He noted that significance includes relative competitive performance among regions and the U.S. as a whole using measures such as ROE, productivity, and cost analysis, and always in comparison to others. If, for example, new rules affect all producers in an industry in all regions and they are fully able to pass-along all cost increases, then no significant impact could be said to exist. If, however, new rules represent an additional cost to only some producers, and there exists sufficient elasticity in the market such that competitive pressures force the high cost producers to absorb the cost increase, a significant impact may occur, depending on how important the product is to intermediate or final users in the region and in export markets.

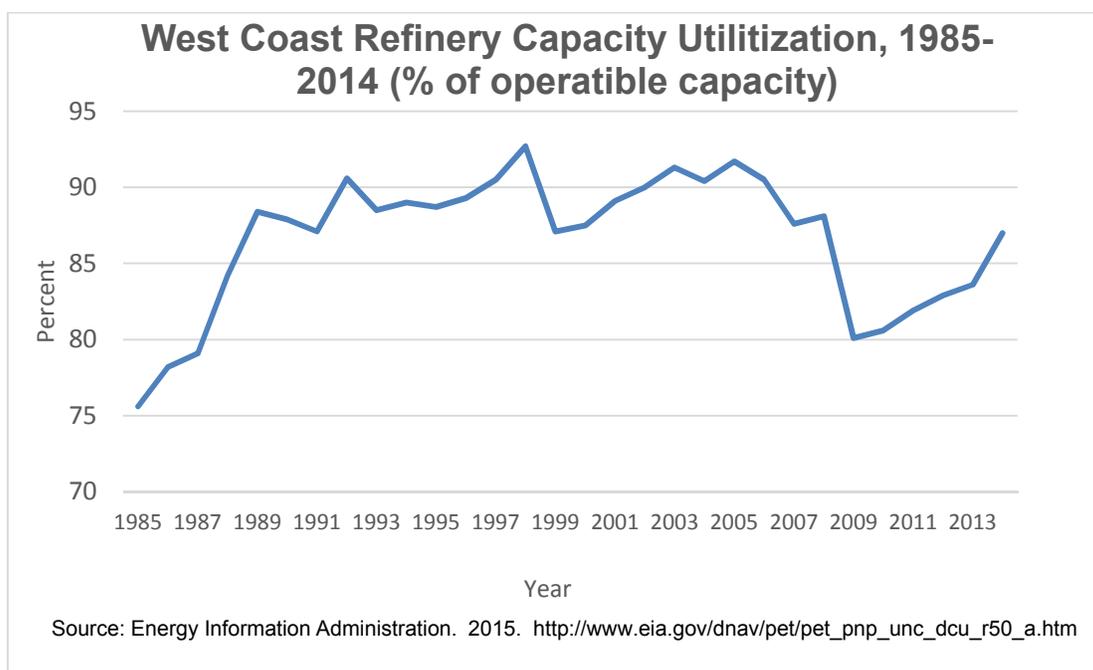
More specifically, we contend that the ADE analysis is flawed by poor data choice, both as to how the profit figure is estimated, and the period of time over which the estimate is made. ADE appears to use a fixed profit rate (6.8%, based the figures shown in Table 7), to estimate the amount of profits for each of the five refineries in the region. This figure is applied to a synthetic revenue number, based on rated refinery capacity and a fixed utilization rate. The value of output, similarly, is pegged to \$120/barrel for crude oil and prices for three refined products that are derived from that crude oil price. There is no variation shown to exist between refineries in terms of utilization rate, product-mix, or profit rate. The resulting profit value that ADE calculated serves as the basis for

⁹³ The IMPLAN input-output model we noted earlier, is a special-case CGE model in which prices are held fixed and quantities change in response to rule changes. When we know that prices will change, however, the fixed-price restriction too limiting for useful analysis. The model still has its uses and is often used as the basis for modeling interindustry effects when building a CGE model.

gauging significance of impact. Whether the estimated profits bear any resemblance to actual profits is unknown and entirely untested, yet the entire significance test depends the initial profitability figure. It would be useful to know how those profit estimates compare with the firm-level profit data given annual reports for each of the five companies that own the refineries. (Recognizing that each firm owns many refineries and that each is likely to have a unique profit rate.)

Furthermore, the data are estimated a single point in time, despite the fact that we know refinery utilization and profitably have a strong cycle. We have shown the recent history of refinery utilization in Figure 1 below. Whereas ADE selected a fixed rate, consistent with formulating a point estimate of profitability (87 percent), it is evident that West Coast refineries have a history of volatile utilization. If we had selected to use only data since the trough of the last recession, we would cut four percentage points of the utilization rate, cutting the ADE profitability estimate significantly and bringing the rule-change value much closer to significance.

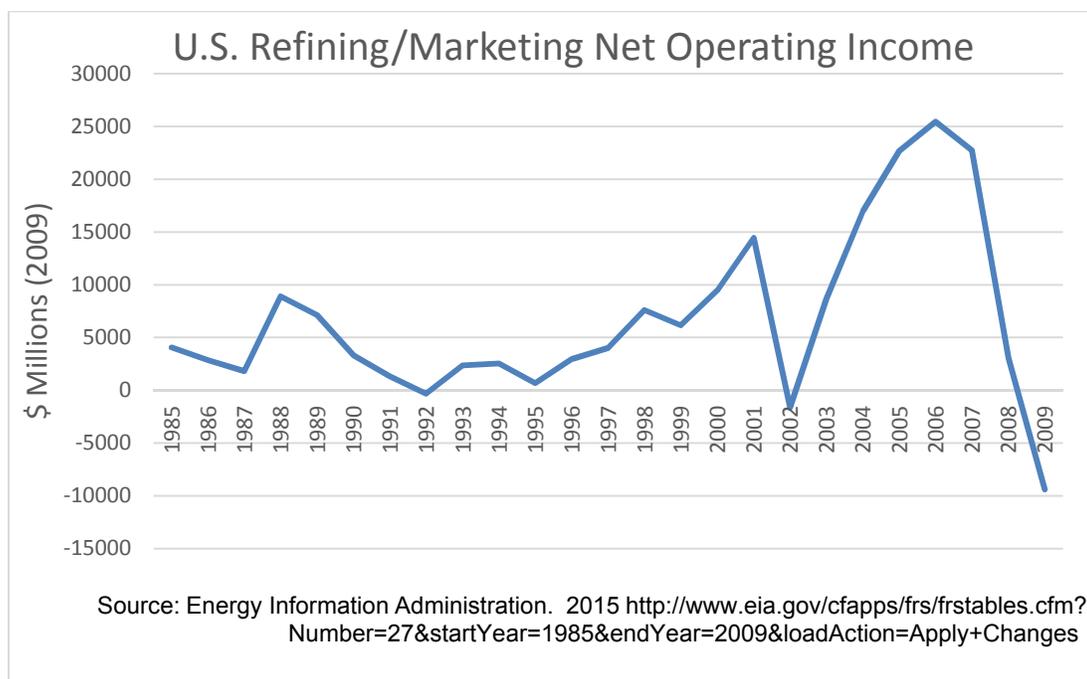
Figure 1



As shown in Figure 2, below, profitability as estimated by the U.S. Department of Energy, Energy Information Administration, is highly volatile, with the most recent years shown (up to 2009) being negative. Clearly, the significance test for impact should be made using data that are cyclically neutral so that we can establish the long-run profitability first, and then determine how proposed regulations affect that, not a single point in time estimate.⁹⁴

⁹⁴ The deficiency of a single point test becomes apparent by understanding how to make any rulemaking appear to be insignificant. One need simply to divide the rule into several pieces,

Figure 2



SUMMARY

In reviewing the ADE socio-economic impact assessment of BAAQMD proposed regulations 12, rules 15 and 16, we find that ADE neglected to report on the impact with respect to alternative options, emissions reduction potential, and the degree to which the proposed regulation/rules help the region attain State and federal emissions standards. Further, ADE’s coverage of affected industries, regional employment impact and range of probable costs appears to be incomplete. Affected industries, particularly intermediate users with a relatively strong petroleum demand, are completely ignored in the analysis despite a claim that the IMPLAN regional economic model was used. Properly used, such a model readily helps to quantify sizeable impact among intermediate petroleum product users.

The finding of no significant impact associated with the proposed regulation and rules is insufficiently supported with the application of the so-called “10 percent rule” attributed to Berck. The data used for the calculations appear to misrepresent long-run profit conditions for refineries. The profit estimates are derived by application of fixed-rate components (e.g., utilization rates, crude oil prices and finished product prices), and after application of assumed fixed profit rates for all five Bay

each with an identifiable cost. When compared to the base profit figure, so long as it is below the 10 percent threshold, a finding of no significant impact will result.

Area refineries uniformly. No sources for the underlying data are provided. With some additional effort, these assumptions could be tested and long-run data could be applied to develop representative estimates of return-on-equity changes associated with the proposed actions. If these estimates were accompanied by the other Berck tests for significant economic impact, we would more likely be persuaded as to the significance findings. As it now stands, the data used for the only significance test that ADE applied was entirely synthetic. We do not believe the analysis as presented is sufficiently robust to draw the conclusion of “no significant impact.”

more frequent repair, it neglects to mention the costs for installing and implementing these online analyzers for all the cooling towers in a refinery; the costs and timeline for procurement and implementation are quite significant.

5. *Leak Minimization and Repair.* Citation 11-10-305.1 requires that a leak be minimized with three days and repaired within 14 days. This is a very aggressive schedule and would be a major impact on environmental and operations staff, because leak identification usually takes time, as each cooling tower services numerous heat exchangers. Tracing back to each heat exchanger to find the leak is time-consuming and cannot always be completed within three days of detection of a leak, especially one that is as small as would generate a concentration in water as low as 84 ppbw. This requirement would require round-the-clock staffing just to detect leaks and minimize them within three days of detection. The requirement to repair within 14 days also precludes the possibility of placing a unit on the delay of repair list. The agency should provide more realistic requirements and allow for the placement of equipment on the DOR list.
6. *Documentation to APCO:* Citations 11-10-305 requires notification to the Air Pollution Control Officer (APCO) within 5 days of detection of a leak whenever such leak cannot be minimized within three days or repaired within 14 days. The timeline for notification should be some time after the 14th day after a leak is detected, as refineries will, in good faith, attempt to repair a leak as soon as possible, but those resources should not be tied up with trying to provide the APCO all the required documentation, such as process flow diagrams and piping and instrumentation diagrams for all equipment and processes that are serviced by the cooling tower where the leak was detected, a root cause analysis (which is often impossible to completed until an investigation has been conducted involving multiple departments), an explanation of why the leak cannot be repaired within 14 days, and correspondence from vendors/contractors for why the equipment or resources are not available. This ridiculous paperwork exercise serves no other purpose than to punish a refinery for having a leak and to create opportunities for an agency to issue violation notices. To trigger such an amount of work, there should be a longer time period for making the determination and providing the documentation, and there should be a much higher threshold than the action level of 84 ppbw.

Rule 9-9 (Stationary Gas Turbines)

1. *Agency's Work:* The Air District should consult historical studies, share its assumptions, and show its calculations in determination of costs and selection of the target concentration limit.
2. *Cross-Purposes:* The concept paper states that the goal of this regulation is "to achieve technically feasible and cost-effective NO_x emission reductions from certain stationary gas turbines in the Bay Area." The agency lists only four refinery gas turbines, three of which belong to Valero. The concept paper proposes to require the reduction of NO_x emissions to 9 ppm levels, which would require the installation of selective catalytic reduction (SCR). This technology uses ammonia to react with NO_x in the presence of a fixed catalyst at high temperatures. While this technology

Mr. Gregg Nudd, BAAQMD
June 19, 2015
Page 11

can reduce NOx, SCR can cause ammonia slip of 3-10 ppm, thereby producing the unintended consequence of increasing PM2.5 emissions.

3. *Time for Evaluation:* While Valero has requested technical assistance internally to determine the feasibility and cost to install three SCR systems on the turbines, there is not enough time to provide relevant information by the comment period deadline. Valero would like to *reserve the right to further comment* on this concept paper in person and through correspondence so that the agency can make the most appropriate recommendations that are technically feasible and cost effective. Otherwise, this would be another instance of the agency rushing through rulemaking without discussing with industry the critical technical issues, such as siting an SCR.

Valero is committed to working with the BAAQMD to meet its goals and objectives in revising regulations concerning refinery emissions in ways that are reasonable, scientifically sound, technically feasible, and cost effective. We look forward to further dialogue on this issue. Please contact me at 707-745-7534 or chris.howe@valero.com should you have any questions.

Sincerely,



Christopher W. Howe, Director
Health, Safety, Environment & Government
Affairs

CWH/tac

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