DATE: December 19, 2019

TO: SJVUAPCD Governing Board

FROM: Samir Sheikh, Executive Director/APCO
Project Coordinator: Jonathan Klassen

RE: ITEM NUMBER 10: ADOPT PROPOSED RULE 4460 (PETROLEUM REFINERY FENCE-LINE AIR MONITORING) AND PROPOSED RULE 3200 (PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES)

RECOMMENDATIONS:

1. Adopt proposed Rule 4460 (Petroleum Refinery Fence-line Air Monitoring) and proposed Rule 3200 (Petroleum Refinery Community Air Monitoring Fees).

2. Authorize the Chair to sign the attached Resolutions.

BACKGROUND:

In October 2017, California State Legislature passed Assembly Bill 1647 (Muratsuchi, 2017), which establishes new state mandates for fence-line air monitoring at petroleum refineries and air monitoring in nearby communities, including new fees to recover the District’s costs associated with the new community air monitoring mandates. In response to these requirements, District staff have conducted an extensive level of research regarding air monitoring equipment and approaches, and have engaged in a robust outreach process in working with affected Valley petroleum refineries and other public stakeholders.

Petroleum refineries in the Valley have long been regulated by the District through numerous regulations aimed at reducing and monitoring emissions from the various operations located at these facilities. Unlike the large refineries located in the Bay Area, South Coast, and other parts of the state, Valley refineries are much smaller in scale, and do not include the wide range of refining processes located in these other regions.
In response to the requirements of AB 1647, the District is proposing two new regulations that satisfy the new state mandates while taking into account the unique characteristics of Valley petroleum refineries. District Rule 4460 (Petroleum Refinery Fence-line Air Monitoring) would require subject petroleum refinery owners and operators to install, operate, and maintain fence-line air monitoring systems and make data collected by these systems publicly available. District Rule 3200 (Petroleum Refinery Community Air Monitoring Fees) would require subject petroleum refinery owners and operators to pay an initial fee to recover the District’s cost to purchase and implement refinery-related community air monitoring systems, and pay an annual operations and maintenance fee to recover the District’s community monitoring system maintenance and associated staff time.

DISCUSSION:

Petroleum refineries produce gasoline, kerosene, distillate fuel oils, residual fuel oils, and lubricants, through fractionation or straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking or other processes. Crude oil consists of a complex mixture of hydrocarbon compounds with smaller amounts of impurities, including sulfur, nitrogen, organic acids, metals and other compounds. The composition of crude oil varies from oilfield to oilfield, and may range from a “heavy crude,” a black “treacle” consistency oil, to a pale yellow, low viscosity liquid. Processing of crude oil at petroleum refineries can result in potential emissions of criteria pollutants, toxic air contaminants and other air pollutants.

In recent years, due to several incidents at large refineries in other parts of the state, concerns over emissions from refineries and the potential for community exposure to air contaminants has increased. For example, the explosion at the former Exxon-Mobil Refinery in Torrance in 2015, as well as other refinery incidents in the Bay Area, have added to a heightened level of community concern. In response to these events in the Bay Area and South Coast, state-level safety precautions related to refinery operations have increased.

On October 8, 2017, the California State Legislature and Governor Jerry Brown passed five Assembly bills, known as the “California Refinery Jobs and Safety Action Plan,” intended to improve public safety at all California refineries. As a part of this legislative package, Assembly Bill (AB) 1647 (Muratsuchi, 2017) requires that: 1) air districts design, develop, install, operate, and maintain a refinery-related community air monitoring system; 2) owners and operators of petroleum refineries develop, install, operate, and maintain a fence-line monitoring system in accordance with air district guidance; 3) air districts and owners and operators of petroleum refineries collect real-time data from the refinery-related community air monitoring system and the fence-line monitoring system and provide this data to the public as quickly as possible in a publicly accessible format; and 4) owners and operators of petroleum refineries be responsible
for the costs associated with implementing a refinery-related community air monitoring system.

**Valley Petroleum Refineries**

As a result of the requirements of AB 1647, District staff have been conducting research and outreach to local industries to better understand the unique characteristics of San Joaquin Valley petroleum refineries (listed in Table 1, below), as compared to refineries located in other areas of California. Cited processing capacities and operational status are from the 2019 California Energy Commission ‘California Oil Refinery History’ report.

**Table 1: San Joaquin Valley Petroleum Refining Operations**

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Location</th>
<th>Processing Capacity (barrels/day)</th>
<th>Status of Refining (2019 CEC Report)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alon Bakersfield Refining (Delek US)</td>
<td>Rosedale Highway, Bakersfield, CA</td>
<td>66,000</td>
<td>Non-Refining</td>
</tr>
<tr>
<td>San Joaquin Refining Company</td>
<td>Shell Street, Bakersfield, CA</td>
<td>15,000</td>
<td>Operational</td>
</tr>
<tr>
<td>Kern Oil &amp; Refining Co.</td>
<td>Panama Lane, Bakersfield, CA</td>
<td>26,000</td>
<td>Operational</td>
</tr>
<tr>
<td>Tricor Refining, LLC</td>
<td>Manor Street, Bakersfield, CA</td>
<td>12,500</td>
<td>Non-Refining</td>
</tr>
</tbody>
</table>

Valley petroleum refineries are currently subject to multiple District rules, shown to be the most stringent rules feasible for implementation. Refineries are also subject to a variety of performance standards under local, state, and federal regulations to reduce emissions of air pollutants (Table 2). Through these requirements, Valley petroleum refineries are required to test for emissions from combustion equipment, continuously monitor for leaks, provide ongoing reporting to the District, and undergo regular District inspections to ensure compliance with all applicable rules. Through compliance with these rules and standards, emissions from Valley petroleum refineries have been reduced significantly over time (Figure 1).

**Table 2: District Rules and New Source Performance Standards Applicable to Petroleum Refineries**

<table>
<thead>
<tr>
<th>District Rules Affecting Valley Petroleum Refineries</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Rule 2201 – New and Modified Stationary Source Review Rule</td>
</tr>
<tr>
<td>• Rule 4101 – Visible Emissions</td>
</tr>
<tr>
<td>• Rule 4012 – Nuisance</td>
</tr>
<tr>
<td>• Rule 4311 – Flares</td>
</tr>
</tbody>
</table>
### District Rules Affecting Valley Petroleum Refineries

- Rules 4305, 4306, 4307, 4320, 4351 – Boilers, Steam Generators, and Process Heaters
- Rule 4453 – Refinery Vacuum Producing Devices or Systems
- Rule 4454 – Refinery Process Unit Turnaround
- Rule 4455 – Components at Refineries, Gas Liquids Processing Facilities, and Chemical Plants
- Rule 4623 – Storage of Organic Liquids
- Rule 4624 – Transfer of Organic Liquid
- Rule 4651 – Soil Decontamination Operations
- Rules 4701, 4702 – Internal Combustion Engines
- Rule 4703 – Stationary Gas Turbines

### New Source Performance Standards

- Subparts J and Ja Standards of Performance for Petroleum Refineries
- Subparts K, Ka, Kb Volatile Organic Liquid Storage Vessels
- Subpart XX Bulk Gasoline Terminals
- Subpart GGG and GGGa Equipment Leaks of VOC at Petroleum refiner\ies
- Subpart QQQ VOC Emissions from Refinery Wastewater Systems

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**Figure 1: Valley Petroleum Refinery Emissions Trend**

![Graph showing emissions trend](image)

Petroleum refining activity in the Valley represents just 2% of the total refining activity in California. As compared to petroleum refineries located in southern California or in the Bay Area, which may have processing capacities of over 350,000 barrels of crude oil per day, the largest operating petroleum refinery in the Valley has the capacity to process 26,000 barrels per day (bpd) (as illustrated in the table and figures below). Due
to this much smaller scale of operation, emissions from Valley petroleum refineries are also significantly lower than large refineries in other regions. Some local facilities only partially refine crude oil prior to shipping the product to the Bay Area for further processing, meaning that emissions from these facilities are also less per barrel produced compared to the larger petroleum refining complexes in the northern and southern portions of the state.

In addition, the petroleum refineries in the Valley also focus much of their efforts in refining, blending, or storing a variety of specialized products such as biofuels, asphalt products, drilling fluids, fuel additives, hydraulic fluids, and lubricants that produce significantly less emissions than the larger and more complex crude oil refining processes in other parts of the state. Many of these processes are not actually refining operations and do not produce the types of refinery emissions that may be of concern. Additionally, significant portions of Valley refining processes involve less complex operations, such as asphalt production. These differences are important considerations to take into account in crafting the District’s approach with respect to the implementation of AB 1647 requirements in the Valley.

Figure 2: Relative Sizes of CA Petroleum Refinery Throughputs by Air Basin
Table 2: California Oil Refinery Locations and Crude Oil Processing Capacities (Currently Refining)

<table>
<thead>
<tr>
<th>Refinery Name</th>
<th>Barrels Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marathon Petroleum Corp., Carson Refinery*</td>
<td>363,000</td>
</tr>
<tr>
<td>Chevron U.S.A. Inc., El Segundo Refinery</td>
<td>269,000</td>
</tr>
<tr>
<td>Chevron U.S.A. Inc., Richmond Refinery</td>
<td>245,271</td>
</tr>
<tr>
<td>Marathon Petroleum Corp., Golden Eagle Martinez Refinery</td>
<td>161,500</td>
</tr>
<tr>
<td>PBF Energy, Torrance Refinery</td>
<td>160,000</td>
</tr>
<tr>
<td>Shell Oil Products US, Martinez Refinery</td>
<td>156,400</td>
</tr>
<tr>
<td>Valero Energy, Benicia Refinery</td>
<td>145,000</td>
</tr>
<tr>
<td>Phillips 66, Wilmington Refinery</td>
<td>139,000</td>
</tr>
<tr>
<td>Phillips 66, Rodeo San Francisco Refinery**</td>
<td>120,200</td>
</tr>
<tr>
<td>Valero Energy, Wilmington Refinery</td>
<td>85,000</td>
</tr>
<tr>
<td>Kern Oil &amp; Refining Company, Bakersfield Refinery</td>
<td>26,000</td>
</tr>
<tr>
<td>San Joaquin Refining Company Inc., Bakersfield Refinery</td>
<td>15,000</td>
</tr>
<tr>
<td>Greka Energy, Santa Maria Refinery</td>
<td>9,500</td>
</tr>
<tr>
<td>Lunday Thagard, South Gate Refinery</td>
<td>8,500</td>
</tr>
<tr>
<td>Valero Wilmington Asphalt Refinery</td>
<td>6,300</td>
</tr>
<tr>
<td><strong>Total California Crude Oil Processing Capacity</strong></td>
<td>1,909,671</td>
</tr>
</tbody>
</table>

*Marathon Carson and Wilmington began reporting as one entity as of 2019
**Phillips 66 Rodeo and Santa Maria began reporting as one entity as of 2017
Source: California Energy Commission. Data as of January 1, 2019

Figure 3: Total Crude Oil Refining Capacity by Air District
Potential Refinery Air Monitoring Systems

In addition to analyzing the emissions profiles of refineries located in the Valley, District staff also researched available technologies for monitoring pollutants released from petroleum refining processes, and potential costs of conducting petroleum refinery-related air monitoring. This research has included discussions with Valley refineries, South Coast AQMD, Bay Area AQMD, San Luis Obispo County APCD, and Santa Barbara County APCD, and air monitoring technology vendors. There are two main types of technologies available for monitoring refinery-related emissions: open path and point monitoring.

- **Open path air monitoring systems** utilize lasers and reflectors to measure levels of a variety of gaseous compounds along industrial facility fence-lines, and can be designed to detect the origination point of increased pollution concentration levels. These systems range in cost, depending on the number of units needed to adequately cover a fence-line, with an average cost of $500,000 for one laser unit and two reflector units (to cover two fence-lines). An open path system capable of monitoring the entire perimeter of a facility ranges in cost, from $2,000,000 to over $4,000,000 depending on the size of the facility and the pollutants to be monitored.

- **Point air monitoring systems** are installed in a stationary location and measure concentrations of criteria pollutants, toxics, and particulate matter, depending on the configuration selected for the system, at a single location. This equipment varies significantly in cost, depending on the number of pollutants that can be measured by the platform. Costs range from $100,000 for a point monitor that can measure for select pollutants of concern, up to $750,000 for a platform capable of providing fully speciated emissions data.

Rule Making Efforts in Other Air Districts

Both the South Coast Air Quality Management District (SCAQMD) and Bay Area Air Quality Management District (BAAQMD) require that petroleum refineries implement a full suite of fence-line monitoring equipment, including both open path laser monitoring technology and point monitors along facility perimeters. Pollutants to be considered in fence-line air monitoring plans, and equipment proposed by refinery operations to comply with SCAQMD and BAAQMD requirements are listed in the tables below.
Table 3: Pollutants to be Monitored at Major Petroleum Refinery Fence-lines in Other Air Districts

<table>
<thead>
<tr>
<th></th>
<th>SCAQMD Rule 1180</th>
<th>BAAQMD Rule 12, Regulation 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollutants to be</td>
<td>Refineries required to monitor for: SO$_2$, NO$_x$, total VOC’s, formic acid,</td>
<td>Refineries required to monitor for: BTEX Compounds and hydrogen sulfide with open path monitoring system</td>
</tr>
<tr>
<td>monitored by</td>
<td>formaldehyde, acetaldehyde, acrolein, 1,3-butadiene, styrene, BTEX compounds</td>
<td>SO$_2$, alkanes, other organic compound indicators, 1,3-butadiene, and ammonia to be considered in air monitoring plan, rational to be provided by refinery for not monitoring for these pollutants.</td>
</tr>
<tr>
<td>petroleum</td>
<td>(benzene, toluene, ethylbenzene, xylenes), hydrogen sulfide, carbonyl sulfide,</td>
<td>Surrogates may be monitored as proxies for required pollutants.</td>
</tr>
<tr>
<td>refinery</td>
<td>ammonia, black carbon, hydrogen cyanide, and hydrogen fluoride.</td>
<td>Justification may be provided for not monitoring for specified pollutants.</td>
</tr>
<tr>
<td>fence-line</td>
<td>Surrogates may be monitored as proxies for required pollutants.</td>
<td>Justification may be provided for not monitoring for specified pollutants.</td>
</tr>
<tr>
<td>monitoring systems in</td>
<td>Justification may be provided for not monitoring for specified pollutants.</td>
<td></td>
</tr>
<tr>
<td>other air</td>
<td></td>
<td></td>
</tr>
<tr>
<td>districts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Equipment Utilized for Fence-line Air Monitoring at Major Petroleum Refineries

<table>
<thead>
<tr>
<th></th>
<th>SCAQMD Rule 1180</th>
<th>BAAQMD Rule 12, Regulation 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technologies proposed</td>
<td>• Open-path UV DOAS</td>
<td>• Open-path UV DOAS</td>
</tr>
<tr>
<td>for air quality</td>
<td>• Open-path TDL</td>
<td>• Open-path TDL</td>
</tr>
<tr>
<td>monitoring in</td>
<td>• Open-path FTIR</td>
<td>• Open-path FTIR</td>
</tr>
<tr>
<td>submitted fence-line</td>
<td>• GC-PID (Photoionization Detector)</td>
<td>• Point monitor for diesel PM and H$_2$S</td>
</tr>
<tr>
<td>air monitoring plans</td>
<td>• Extractive FTIR</td>
<td>• Aethalometer (black carbon)</td>
</tr>
<tr>
<td></td>
<td>• Organic Gas Detectors (point sampling)</td>
<td>• TDLAS</td>
</tr>
<tr>
<td></td>
<td>• TDLAS (monostatic Tunable Diode Laser Absorption Spectroscopy)</td>
<td>• UV Fluorescence Hydrogen Sulfide monitors</td>
</tr>
</tbody>
</table>

The equipment required to comply with regulations in SCAQMD and BAAQMD (Table 4) is estimated to cost refinery operations a minimum of $2,000,000, and up to $4,200,000, depending on the number of air monitors needed to adequately cover the facility perimeter. The direct cost to refinery operations to implement fence-line air monitoring systems is in addition to community air monitoring fees charged by both air districts,
with initial community monitoring capital cost-recovery fees ranging from approximately $200,000 to $1,000,000 per refinery (scaled based on the processing capacity of the facility). Both air districts also charge an ongoing annual maintenance fee that ranges from approximately $200,000 to $900,000 per facility.

Notably, SCAQMD exempts petroleum refinery operations that have a capacity to process 40,000 bpd or less, due to the reduced emissions originating from smaller facilities and the burdensome cost of compliance with rule requirements for operations with smaller revenues. Additionally, there are no petroleum refineries in the Bay Area with a processing capacity under 80,000 bpd. In contrast, the largest operating petroleum refinery in the San Joaquin Valley has a processing capacity of 26,000 bpd. The operating refineries located in the Valley are independently owned and operated, unlike refineries in other parts of the state that may be owned by large corporations with many refinery operations located throughout the world. This results in local Valley petroleum refining operations having less of an ability to absorb costs associated with air monitoring systems, and the smaller scale of local refineries results in less revenue available to offset monitoring costs.

In developing proposed Rules 4460 and 3200, District staff conducted a thorough analysis of regulatory requirements and air monitoring guidance in other air districts. District staff have worked to develop regulations that both address the mandates of AB 1647 legislation by requiring air quality monitoring for key pollutants of concern, as well as working to ensure that regulatory requirements are not overly burdensome for already heavily regulated Valley facilities.

**Rules 4460 and 3200 Developed through Open and Robust Public Process**

To ensure that input regarding possible refinery-related air monitoring requirements was received from affected entities in the Valley, District staff launched a public process to obtain feedback from petroleum refinery operators, residents, community-based organizations, business owners, environmental justice advocates, and other stakeholders. Multiple working group meetings were held with industry representatives, and public comment was sought at two well-attended evening workshops held in Bakersfield, CA. Comments were received from petroleum refinery operators and staff, residents living near petroleum refineries, state legislature representatives, and environmental advocates.

Considering the nature of the petroleum refineries in the Valley, including their relatively lower production capacity and emissions levels, the fact they are small locally owned operations, and that a large focus of their operations is on producing specialty petroleum products, District staff have developed the following proposed rules for Board consideration. Proposed Rule 4460 (Petroleum Refinery Fence-line Air Monitoring) and Rule 3200 (Petroleum Refinery Community Air Monitoring) utilize a tiered approach to accommodate the unique characteristics of local Valley refining operations, while still fulfilling the AB 1647 mandates and providing air monitoring to protect and inform
nearby communities. The District has discussed the proposed regulations with the California Air Resources Board, who have indicated that the proposed regulations are consistent with the AB 1647 mandates.

**Proposed District Rule 4460 (Petroleum Refinery Fence-line Air Monitoring)**

Proposed Rule 4460 applies to operating petroleum refineries that are permitted and regulated by the District. The proposed rule requires petroleum refineries to collect real-time data of refinery air pollutant emissions at or adjacent to a petroleum refinery, and to make the data publicly accessible as quickly as possible. The proposed rule will require the submittal and approval of a fence-line air monitoring plan (plan) for a specified list of air pollutants.

The plan must provide detailed information about the fence-line air monitoring system, including:

- Siting,
- Instrument choices,
- Wind data collection,
- Maintenance procedures,
- Measures in case of air monitoring equipment failures,
- Quality assurance and auditing, and
- Data reporting methods.

Further, the proposed rule sets forth requirements for the plan review process, notifications, and recordkeeping. The plan review process includes a public review period of no less than thirty days prior to approval by the District.

The California Environmental Protection Agency and the Office of Environmental Health Hazard Assessment (OEHHA) collaborated with the California Air Resources Board and the Interagency Refinery Task Force to highlight chemicals emitted from refineries and their health effects in order to assist air agencies in developing plans for fence-line monitoring in California. OEHHA published the report in March 2019, and identified 188 specific chemicals that are emitted from California refineries. Of the 188 chemicals identified, 18 were found as the top candidates for air monitoring by OEHHA. This was based on the pollutant toxicity, average levels of emissions, and involvement in multiple refinery processes and incidences from refineries statewide. District staff referred to the recommendations made in this report in developing the proposed requirements of Rule 4460.

Proposed Rule 4460 would require that refinery operations with the capacity to process greater than or equal to 40,000 bpd implement a comprehensive fence-line air monitoring system capable of monitoring the top pollutants recommended for air monitoring by OEHHA. Taking into consideration the smaller production capacity and emissions profile associated with less complex refining processes at Valley petroleum refineries as compared to refineries in the South Coast and Bay Area regions, District
SJVUAPCD Governing Board
ITEM NUMBER 10: ADOPT PROPOSED RULE 4460 (PETROLEUM REFINERY FENCE-LINE AIR MONITORING) AND PROPOSED RULE 3200 (PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES)
December 19, 2019

staff have recommended a tiered approach, where facilities with the capacity to process under 40,000 bpd are required to implement real-time fence-line air monitoring of pollutants most representative of emissions from these refineries, including BTEX compounds, sulfur dioxide, and hydrogen sulfide. As included in the BAAQMD’s evaluation and refinery air monitoring regulation, these pollutants also serve as appropriate surrogates for other potential pollutants from refineries. Table 5 below outlines the air pollutants and monitoring equipment to be considered in the fence-line air monitoring plan for each facility tier. The estimated cost of compliance with proposed Rule 4460 requirements for petroleum refineries currently operating in the Valley is approximately $200,000 for initial capital costs for the fence-line air monitoring system design and installation, plus approximately $70,000 annually for system maintenance, data management, and associated labor costs.

Table 5: Equipment and Air Pollutants to be Considered in Fence-line Air Monitoring Plan

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Equipment for Fence-line Air Monitoring System</th>
<th>Pollutants to be Considered in Monitoring Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>Point monitoring or open path system</td>
<td>Sulfur dioxide, hydrogen sulfide, BTEX compounds (benzene, toluene, ethylbenzene and xylene)</td>
</tr>
<tr>
<td>40,000 or greater</td>
<td>Open path system and point monitoring as needed</td>
<td>Sulfur dioxide, nitrogen oxides, total VOCs, BTEX compounds (benzene, toluene, ethylbenzene and xylene), formaldehyde, acetaldehyde, acrolein, 1,3 butadiene, styrene, hydrogen sulfide, carbonyl sulfide, ammonia, hydrogen cyanide, hydrogen fluoride, black carbon</td>
</tr>
</tbody>
</table>

Proposed Rule 3200 (Petroleum Refinery Community Air Monitoring Fees)

As required by the provisions of the Health and Safety Code §42705.6, a refinery-related community air monitoring system will be implemented by the District. Rules 4460 and 3200 do not require petroleum refineries to conduct refinery-related community air monitoring, however, Rule 3200 does set forth requirements for petroleum refineries to be responsible for the costs associated with the District implementing a refinery-related community air monitoring system. Consistent with Health and Safety Code §42705.6, proposed Rule 3200 requires petroleum refineries to pay a fee to recover the District costs of developing and maintaining refinery-related
community air monitoring systems to measure and record air pollutant concentrations in the ambient air at or near sensitive receptor locations.

Rule 3200 establishes a fee schedule, to be paid by petroleum refinery owners and operators, for the cost of designing, developing, purchasing, installing, operating and maintaining refinery-related community air monitoring systems. Once operating, these community air monitoring systems will provide air quality information to the public regarding the levels of criteria air pollutants and refinery-related toxic air contaminants in communities located near petroleum refineries. In developing the fees included in Proposed Rule 3200, the District conducted an evaluation of projected costs associated with the initial capital expenditures as well as ongoing operational and maintenance costs, as detailed in the attached staff report.

Table 6 below outlines the cost to be paid by each applicable petroleum refinery facility for the initial installation of the community air monitoring system. Table 7 identifies annual costs to be paid by applicable petroleum refinery facilities for ongoing maintenance and operational costs. Fees charged to petroleum refinery operators are reflective of projected costs of equipment, site costs, and staff labor hours required to install, operate, and maintain community air monitoring systems required by AB 1647. As required by AB 1647, fees may be reduced by the District in the event that a community air monitor is used for purposes other than refinery-related emissions monitoring.

### Table 6: Community Air Monitoring System Installation Fees

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Community Air Monitoring Installation Fee Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>$173,595</td>
</tr>
<tr>
<td>Greater than or equal to 40,000</td>
<td>$715,000</td>
</tr>
</tbody>
</table>

### Table 7: Community Air Monitoring Annual Operating and Maintenance Fees

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Annual Operating and Maintenance Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>$70,729</td>
</tr>
<tr>
<td>Greater than or equal to 40,000</td>
<td>$223,549</td>
</tr>
</tbody>
</table>

### Rule Development Public Process

As discussed above, the District hosted a public workshop on October 3, 2019 to obtain feedback about potential petroleum refinery air monitoring requirements to satisfy AB 1647. A second public workshop was held on November 5, 2019, to present, discuss,
and receive feedback on rule concepts proposed today. In accordance with CH&SC Section 40725, proposed Rule 4460 and proposed Rule 3200 were publicly noticed and made available for public review on November 19, 2019. The rules were also discussed at the December 3, 2019, public meeting of the District’s Citizens Advisory Committee. The public was also invited to provide comments during public commenting periods and at today’s public hearing for the proposed adoption of these rules.

The comments received throughout this public process have been integral to the development of this rule, and have been incorporated as appropriate into the proposed rule and final draft staff report. A summary of significant comments and District responses is available in Appendix A of the final draft staff report.

Some of the key issues raised during the development of these proposed rules are summarized below:

**COMMENT:** San Joaquin Refinery (SJR) proposes that the District develop and implement the South Coast Air Quality Management (SCAQMD) District Rule 1180, but exempt refineries under 20,000 barrels/day instead of the SCAQMD rule exemption of 40,000 barrels/day. SJR proposes that this limit be applied to fence-line monitoring only, so that all operating refineries are still subject to community monitoring. SJR is also concerned about the significant cost of fence-line monitoring.

**RESPONSE:** In implementing the statutory requirements of AB 1647, the District is requiring that both fence-line and community air quality monitoring be conducted at or near all operating petroleum refinery operations in the Valley. However, District staff considered the unique characteristics of Valley refineries, including the smaller size (and smaller scale of emissions) of petroleum refineries operating in the Valley, as compared to facilities in the South Coast AQMD or Bay Area AQMD. Due to these considerations, District staff have crafted a tiered system, whereby pollutants of key concern to nearby communities will be required to be monitored at facility fence-lines, rather than requiring that a larger spectrum of pollutants be measured, as will be required at larger facilities. This will result in lower costs to refinery owners and operators of these smaller facilities, while still ensuring that monitoring data is collected at facility fence-lines, as required by the legislation. In addition, through the fence-line air monitoring plan submittal and review process, an affected petroleum refinery facility will have the opportunity to submit justification to the District on why specific pollutants should not be measured based on facility emissions, health risk levels, etc.

**COMMENT:** In preparing Rule 4460, we urge agency staff to ensure refinery fence-line and related community air monitoring systems track and report a broad range of air pollutants emitted by petroleum refineries. The District should not allow unlawful exemptions for refineries processing crude oil below a particular
threshold or those with limited operations at this time as well as provide adequate time for public review and input on draft fence-line and community air monitoring plans prior to approval of final plans. In addition, the District should avoid foreclosing the use of available technologies, including open-path technologies, to allow fence-line and community air monitoring plans to assess a broad range of options. (Central California Environmental Justice Network, Center on Race, Poverty & the Environment, Association of Irritated Residents, Central Valley Air Quality (CVAQ), Central California Asthma Collaborative, Earthjustice)

RESPONSE: Unlike regulations in South Coast and other regions, District staff are not including any throughput-based exemptions in proposed Rules 4460 and 3200. The proposed rules will require small refineries with a capacity to process less than 40,000 barrels per day of crude oil to monitor for a range of pollutants, including BTEX compounds at both fence-lines and in nearby communities. The single refinery in the Valley with a capacity to process more than 40,000 barrels per day of crude oil will be required to monitor a wider spectrum of pollutants, should they ever resume refining operations, with enforceable requirements included in Proposed Rules 4460 and 3200. Plans for fence-line monitoring at facility boundaries will be available for public review at least thirty days prior to approval by the Executive Officer/APCO. District staff are not proposing to foreclose the use of available technologies; refinery owners and operators will propose the type(s) of equipment for use in the fence-line monitoring system as a part of the submitted plan.

Supporting Regulatory Analyses

Economic Analysis
Proposed Rules 4460 and 3200 do not directly reduce emissions from petroleum refineries. Indirect emissions benefits may be realized due to the potential for early detection of leaks and quick action to control such fugitive emissions.

Pursuant to California Health and Safety Code (CH&SC) Section 40728.5(a), the District is required to conduct a socioeconomic analysis of proposed rules or rule amendments that will significantly affect air quality or emissions limitations prior to rule adoption. The proposed rules have neither effect, and therefore a socioeconomic analysis is not required for this rule adoption project.

Rule Consistency Analysis
The District prepared a rule consistency analysis that compares the elements of the proposed Rules 4460 and 3200 with the corresponding elements of other District rules and federal regulations and guidelines that apply to the same type of equipment or source category. The proposed amendments and proposed new rule will not conflict
with other District rules, or federal rules, regulations, or policies covering analogous stationary sources. Refer to the final draft staff report for this analysis.

Environmental Impacts
The proposed Rules 4460 and 3200 would create petroleum refinery fence-line air monitoring requirements and set a fee schedule to cover the District’s costs of installing and operating community air monitoring near petroleum refineries. As noted in the staff report, this project will not have any adverse significant impacts and is exempt from CEQA. Pursuant to Section 15062 of the CEQA Guidelines, the District will file a Notice of Exemption upon your Board approval of Rules 4460 and 3200.

FISCAL IMPACT:

Through the fees collected under the proposed Rule 3200, the District expects to have the sufficient resources to purchase and operate the equipment needed for community air monitoring activities. The fees under Rule 3200 will also allow the District to expand staffing resources to conduct the newly required activities for petroleum refinery community air monitoring, and as needed, will return to your Board with a request to add positions to the position control list.

Attachments:
Attachment A: Resolution for Adoption of Rule 4460 (5 pages)
Attachment B: Resolution for Adoption of Rule 3200 (5 pages)
Attachment C: Rule 4460 (6 pages)
Attachment D: Rule 3200 (4 pages)
Attachment E: Final Draft Staff Report with Appendices for Adoption of Rules 4460 and 3200 (44 pages)
ADOPT PROPOSED RULE 4460 (PETROLEUM REFINERY FENCE-LINE AIR MONITORING) AND PROPOSED RULE 3200 (PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES)

Attachment A:

Resolution for Proposed Rule 4460 (5 PAGES)
BEFORE THE GOVERNING BOARD OF THE  
SAN JOAQUIN VALLEY UNIFIED  
AIR POLLUTION CONTROL DISTRICT  

IN THE MATTER OF: PROPOSED RULE  
4460 (PETROLEUM REFINERY FENCE-LINE AIR MONITORING)  

RESOLUTION NO. ______________  

WHEREAS, the San Joaquin Valley Unified Air Pollution Control District (District) is a duly constituted unified air pollution control district, as provided in California Health and Safety Code (CH&SC) Sections (§) 40150 et seq. and 40600 et seq.; and  

WHEREAS, said District is authorized by CH&SC §40702 to make and enforce all necessary and proper orders, rules, and regulations to accomplish the purpose of Division 26 of the CH&SC; and  

WHEREAS, pursuant to federal Clean Air Act (CAA) §107, the San Joaquin Valley Air Basin (Valley) is designated as nonattainment for the national health-based air quality standards for ozone and particulate matter 2.5 microns and smaller (PM2.5); and  

WHEREAS, Assembly Bill 1647 (Muratsuchi, 2017), codified at CH&SC §42705.6, requires that: (1) air districts design, develop, install, operate, and maintain a refinery-related community air monitoring system; 2) owners and operators of petroleum refineries develop, install, operate, and maintain a fence-line monitoring system; 3) air districts and owners and operators of petroleum refineries collect real-time data from the refinery-related community air monitoring system and the fence-line monitoring system and provide this data to the public as quickly as possible in a publicly accessible format; and 4) owners and operators of petroleum refineries be responsible for the costs associated with implementing a refinery-related community air monitoring system; and  

WHEREAS, proposed Rule 4460 (Petroleum Refinery Fence-line Air Monitoring) would require owners and operators of operating petroleum refineries in the San Joaquin Valley to install, operate, and maintain fence-line air quality monitoring systems for pollutants specified in said rule; and
WHEREAS, the District Governing Board, in adopting this regulation, references the following statutes which the District hereby implements, interprets or makes specific: the provisions of the Health and Safety Code Section 42705.6 (Refinery-Related Monitoring); and

WHEREAS, proposed Rule 4460 (Petroleum Refinery Fence-line Air Monitoring) will not be submitted for inclusion in the State Implementation Plan; and

WHEREAS, a public hearing for the adoption of proposed Rule 4460 (Petroleum Refinery Fence-line Air Monitoring) was duly noticed for public hearing on December 19, 2019, in accordance with CH&SC §40725 and §40727.2.

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:


2. The Governing Board hereby finds, based on the evidence and information presented at the hearing upon which its decision is based, all notices required to be given by law have been duly given in accordance with CH&SC §40725, and the Governing Board has allowed public testimony in accordance with CH&SC §40726.

3. In connection with said rulemaking, the Governing Board makes the following findings as required by CH&SC §40727:
   a. NECESSITY. The Governing Board finds, based on the staff report, public testimony, and the record for this rulemaking proceeding, that a need exists for said rule. Said rule is necessary to meet the requirements of CH&SC §42705.6.
   b. AUTHORITY. The Governing Board finds that it has the legal authority for said rulemaking under CH&SC §40000 and 40001.
   c. CLARITY. The Governing Board finds that said rule is written or displayed so that the meaning can be easily understood by those persons or industries directly affected by said rule.
d. **CONSISTENCY.** The Governing Board finds that said rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

e. **NONDUPLICATION.** The Governing Board finds that said rule does not impose the same requirements as any existing state or federal regulation.

f. **REFERENCE.** The Governing Board finds that said rulemaking implements federal CAA §172(c)(1) and CH&SC §40920.

4. The Governing Board hereby finds that the requirements of CH&SC §40728.5 and 40920.6 have been satisfied to the greatest extent possible, and that the Governing Board has actively considered and made a good faith effort to minimize any adverse socioeconomic impacts associated with the proposed rulemaking.

5. The Governing Board finds that, because this rulemaking will have no possible significant adverse effect on the environment, the proposed actions do not constitute a project under the provisions of the California Environmental Quality Act of 1970 (CEQA). Furthermore, the proposed actions are exempt from CEQA per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061 (b)(3)). Therefore pursuant to Section 15062 of the CEQA guidelines, Staff will file a Notice of Exemption upon Governing Board approval of proposed Rule 4460.

6. The Executive Director/Air Pollution Control Officer is directed to file a Notice of Exemption with the County Clerks of each of the counties in the District.

7. The Executive Director/Air Pollution Control Officer is directed to file with all appropriate agencies certified copies of this resolution and the rule adopted herein and is directed to maintain a record of this rulemaking proceeding in accordance with CH&SC §40728.

8. The Governing Board authorizes the Executive Director/Air Pollution Control Officer to include in subsequent documentation any technical corrections, clarifications,
or additions that may be needed, provided such changes do not alter the substantive requirements of the approved rule.
THE FOREGOING was passed and adopted by the following vote of the
Governing Board of the San Joaquin Valley Unified Air Pollution Control District this 19th
day of December 2019, to wit:

AYES:

NOES:

ABSENT:

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL DISTRICT

By _________________________________
Ernest Buddy Mendes
Governing Board Chair

ATTEST:
Deputy Clerk of the Governing Board
By _____________________
Michelle Franco
ADOPT PROPOSED RULE 4460 (PETROLEUM REFINERY FENCE-LINE AIR MONITORING) AND PROPOSED RULE 3200 (PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES)

Attachment B:

Resolution for Proposed Rule 3200
(5 PAGES)
BEFORE THE GOVERNING BOARD OF THE
SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL DISTRICT

IN THE MATTER OF: PROPOSED RULE 3200 (PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES)

WHEREAS, the San Joaquin Valley Unified Air Pollution Control District (District) is a duly constituted unified air pollution control district, as provided in California Health and Safety Code (CH&SC) Sections (§) 40150 et seq. and 40600 et seq.; and

WHEREAS, said District is authorized by CH&SC §40702 to make and enforce all necessary and proper orders, rules, and regulations to accomplish the purpose of Division 26 of the CH&SC; and

WHEREAS, pursuant to federal Clean Air Act (CAA) §107, the San Joaquin Valley Air Basin (Valley) is designated as nonattainment for the national health-based air quality standards for ozone and particulate matter 2.5 microns and smaller (PM2.5); and

WHEREAS, Assembly Bill 1647 (Muratsuchi, 2017), codified at CH&SC §42705.6, requires that: (1) air districts design, develop, install, operate, and maintain a refinery-related community air monitoring system; 2) owners and operators of petroleum refineries develop, install, operate, and maintain a fence-line monitoring system; 3) air districts and owners and operators of petroleum refineries collect real-time data from the refinery-related community air monitoring system and the fence-line monitoring system and provide this data to the public as quickly as possible in a publicly accessible format; and 4) owners and operators of petroleum refineries be responsible for the costs associated with implementing a refinery-related community air monitoring system; and

WHEREAS, proposed Rule 3200 (Petroleum Refinery Community Air Monitoring Fees) would require that owners and operators of operating petroleum refineries in the San Joaquin Valley pay fees to recover the District’s costs for the installation and operation
WHEREAS, the District Governing Board, in adopting this regulation, references the following statues which the District hereby implements, interprets or makes specific: the provisions of the Health and Safety Code Section 42705.6 (Refinery-Related Monitoring); and

WHEREAS, proposed Rule 3200 (Petroleum Refinery Community Air Monitoring Fees) will not be submitted for inclusion in the State Implementation Plan; and

WHEREAS, a public hearing for the adoption of proposed Rule 3200 (Petroleum Refinery Community Air Monitoring Fees) was duly noticed for public hearing on December 19, 2019, in accordance with CH&SC §40725 and §40727.2.

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:


2. The Governing Board hereby finds, based on the evidence and information presented at the hearing upon which its decision is based, all notices required to be given by law have been duly given in accordance with CH&SC §40725, and the Governing Board has allowed public testimony in accordance with CH&SC §40726.

3. In connection with said rulemaking, the Governing Board makes the following findings as required by CH&SC §40727:

   a. NECESSITY. The Governing Board finds, based on the staff report, public testimony, and the record for this rulemaking proceeding, that a need exists for said rule. Said rule is necessary to meet the requirements of CH&SC §42705.6.

   b. AUTHORITY. The Governing Board finds that it has the legal authority for said rulemaking under CH&SC §40000 and 40001.

   c. CLARITY. The Governing Board finds that said rule is written or displayed
so that the meaning can be easily understood by those persons or industries directly affected by said rule.

d. CONSISTENCY. The Governing Board finds that said rule is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

e. NONDUPLICATION. The Governing Board finds that said rule does not impose the same requirements as any existing state or federal regulation.

f. REFERENCE. The Governing Board finds that said rulemaking implements federal CAA §172(c)(1) and CH&SC §40920.

4. The Governing Board hereby finds that the requirements of CH&SC §40728.5 and 40920.6 have been satisfied to the greatest extent possible, and that the Governing Board has actively considered and made a good faith effort to minimize any adverse socioeconomic impacts associated with the proposed rulemaking.

5. The Governing Board finds that, because this rulemaking will have no possible significant adverse effect on the environment, the proposed actions do not constitute a project under the provisions of the California Environmental Quality Act of 1970 (CEQA). Furthermore, the proposed actions are exempt from CEQA per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061 (b)(3)). Therefore pursuant to Section 15062 of the CEQA guidelines, Staff will file a Notice of Exemption upon Governing Board approval of proposed Rule 3200.

6. The Executive Director/Air Pollution Control Officer is directed to file a Notice of Exemption with the County Clerks of each of the counties in the District.

7. The Executive Director/Air Pollution Control Officer is directed to file with all appropriate agencies certified copies of this resolution and the rule adopted herein and is directed to maintain a record of this rulemaking proceeding in accordance with CH&SC §40728.
8. The Governing Board authorizes the Executive Director/Air Pollution Control Officer to include in subsequent documentation any technical corrections, clarifications, or additions that may be needed, provided such changes do not alter the substantive requirements of the approved rule.
THE FOREGOING was passed and adopted by the following vote of the Governing Board of the San Joaquin Valley Unified Air Pollution Control District this 19th day of December 2019, to wit:

AYES:

NOES:

ABSENT:

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

By _________________________________
Ernest Buddy Mendes
Governing Board Chair

ATTEST:
Deputy Clerk of the Governing Board

By _____________________
Michelle Franco
ADOPT PROPOSED RULE 4460 (PETROLEUM REFINERY FENCE-LINE AIR MONITORING) AND PROPOSED RULE 3200 (PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES)

Attachment C:

Proposed Rule 4460
(6 PAGES)
RULE 4460   PETROLEUM REFINERY FENCE-LINE AIR MONITORING (Adopted [rule adoption date])

1.0  Purpose

The purpose of this rule is to require real-time fence-line air monitoring systems that provide air quality information to the public regarding concentrations of various air pollutants, which could include criteria air pollutants and toxic air contaminants, at or near property boundaries of petroleum refineries.

2.0  Applicability

This rule applies to petroleum refineries.

3.0  Definitions

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

3.2  District: as defined in Rule 1020 (Definitions).

3.3  Fence-line Air Monitoring System: a combination of equipment that measures and records air pollutant concentrations at or near the property boundary of a petroleum refinery.

3.4  Petroleum Refinery, or Refinery: a facility that processes petroleum as described in the Standard Industrial Classification Code under 2911 (Petroleum Refining).

3.5  Real-Time: the actual or near actual time during which pollutant levels are measured.

4.0  Exemptions

Refineries not currently engaged in refining crude oil shall be exempted from the requirements of this rule, except for Section 7.3. Not later than thirty (30) calendar days after adoption of this rule, the owner or operator of a refinery not currently engaged in refining crude oil shall submit to the District for APCO review and approval a declaration that the facility is not refining crude oil.

5.0  Requirements

Petroleum refineries shall install, operate, and maintain a fence-line air monitoring system and shall make available to the public in real-time the data collected in
accordance with the District approved fence-line air monitoring plan as required in Section 6.0.

6.0 Fence-line Air Monitoring Plan

6.1 No later than July 1, 2020, the owner or operator of a petroleum refinery shall submit to the APCO a written fence-line air monitoring plan for establishing and operating a real-time fence-line air monitoring system.

6.2 The fence-line air monitoring plan shall provide the following detailed information:

6.2.1 Equipment to be used to continuously monitor, record, and report air pollutant concentrations for the pollutants specified in Table 1 – Equipment and Air Pollutants to be Considered in Air Monitoring Plan in real-time, at or near the property boundary of the petroleum refinery;

6.2.2 Siting and equipment specifications;

6.2.3 Equipment to be used to measure and continuously record wind speed and wind direction data within the boundaries of the petroleum refinery;

6.2.4 Procedures for air monitoring equipment maintenance and failures must be addressed in the plan, including:

6.2.4.1 Routine maintenance requirements and timelines for performing required periodic maintenance on the fence-line air monitoring equipment;

6.2.4.2 Length of time that fence-line air monitoring equipment will not be operating during routine maintenance activities; and

6.2.4.3 Temporary air monitoring measures that will be implemented in the event of an equipment failure or during routine maintenance activities and used until the fence-line air monitoring system is restored to normal operating conditions.

6.2.5 Procedures for implementing quality assurance by a qualified independent party, including quality control and audits of the fence-line air monitoring systems;

6.2.6 Procedures for implementing the fence-line air monitoring plan, including, information pertaining to the installation, operation,
maintenance, and quality assurance, for the fence-line air monitoring system;

6.2.7 Methods and timeframe for dissemination of data collected by the equipment specified in Subsections 6.2.1 and 6.2.3 to the public, local response agencies, and the District.

6.3 The fence-line air monitoring plan required by Section 6.1 shall address real-time air monitoring for pollutants released due to petroleum refinery-related processes, and should reference the most recent Office of Environmental Health Hazard Assessment refinery-related monitoring guidance. Pollutants to be considered in the fence-line air monitoring plan shall include pollutants specified in Table 1. Should owner or operator of a petroleum refinery propose to not monitor one or more of the specified pollutants in Table 1, sufficient justification shall be included in the proposed fence-line air monitoring plan.

Table 1: Equipment and Air Pollutants to be Considered in Fence-line Air Monitoring Plan

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Equipment for Fence-line Air Monitoring System</th>
<th>Pollutants to be Considered in Monitoring Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>Point monitoring or open path system</td>
<td>Sulfur dioxide, hydrogen sulfide, BTEX compounds (benzene, toluene, ethylbenzene and xylene)</td>
</tr>
<tr>
<td>40,000 or greater</td>
<td>Open path system and point monitoring as needed</td>
<td>Sulfur dioxide, nitrogen oxides, total VOCs, BTEX compounds (benzene, toluene, ethylbenzene and xylene), formaldehyde, acetaldehyde, acrolein, 1,3 butadiene, styrene, hydrogen sulfide, carbonyl sulfide, ammonia, hydrogen cyanide, hydrogen fluoride, black carbon</td>
</tr>
</tbody>
</table>

6.4 The owner or operator of a petroleum refinery shall submit an updated fence-line air monitoring plan to the APCO as follows:

6.4.1 Ten (10) calendar days after the date of any unplanned facility, equipment, process or administrative modification that could result in changes to an approved fence-line air monitoring plan.
6.4.2 Forty-five (45) calendar days before the date of implementation of any planned facility, equipment, process or administrative modification that could result in changes to an approved fence-line air monitoring plan.

6.4.3 Sixty (60) calendar days after the date of receiving information that an approved fence-line air monitoring plan does not adequately measure one or more pollutant(s) identified in Table 1 that are emitted from the petroleum refinery.

6.4.4 Failure to comply with the requirements of Subsections 6.4.1 through 6.4.3 shall result in revocation of an approved fence-line air monitoring plan. Thirty (30) calendar days after revocation of an approved fence-line air monitoring plan, the owner or operator of a petroleum refinery shall submit a new fence-line air monitoring plan to the APCO pursuant to Sections 6.2 and 6.3. The updated fence-line air monitoring plan shall not be subject to the implementation schedule in Section 7.0. An updated implementation schedule subject to approval by the APCO shall be included in the new fence-line air monitoring plan but in no case shall implementation exceed 180 calendar days.

6.5 The owner or operator of a petroleum refinery may include the use of emerging technologies in a fence-line air monitoring plan that is compliant with the requirements of this rule.

7.0 Fence-line Air Monitoring Implementation Timeline Requirements

7.1 The owner or operator of an existing petroleum refinery shall complete installation and begin operation of a real-time fence-line air monitoring system within 365 calendar days of District approval of proposed monitoring plans.

7.2 The owner or operator of a refinery with the capacity to process less than 40,000 barrels per day that subsequently increases processing capacity to greater than or equal to 40,000 barrels per day must submit an amended fence-line air monitoring plan in accordance with Section 6.0 at least six (6) months prior to increasing processing capacity. The owner or operator of the facility must complete installation and begin operation of a real-time fence-line air monitoring system in accordance with the approved fence-line air monitoring plan prior to increasing petroleum processing activities.

7.3 The owner or operator of a refinery not currently engaged in refining crude oil must submit a proposed fence-line air monitoring plan at least six (6) months prior to planned recommencement of refining operations. The owner or operator of the facility must complete installation and begin operation of a real-time fence-line air monitoring system in accordance with the approved fence-
line air monitoring plan prior to recommencement of petroleum refining activities.

7.4 Refinery facilities that cease to engage in refining crude oil shall notify the District in writing at least thirty (30) calendar days prior to ceasing petroleum refinery operations if fence-line air monitoring is also to be suspended or terminated.

8.0 Refinery Fence-line Air Monitoring Plan Review Process

8.1 The APCO shall notify the owner or operator in writing whether the fence-line air monitoring plan is approved or disapproved. Determination of approval status for the fence-line air monitoring plan shall be based on, at a minimum, submittal of information that satisfies the criteria in Section 6.0.

8.1.1 If disapproved, the owner or operator shall revise and resubmit the fence-line and air monitoring plan within thirty (30) calendar days after notification of disapproval of the plan. The resubmitted plan shall include any information necessary to address deficiencies identified in the disapproval letter.

8.1.2 The APCO shall either approve the revised and resubmitted fence-line air monitoring plan or modify the plan and approve it as modified.

8.2 A fence-line air monitoring plan that is submitted pursuant to the requirements of Section 6.0 shall be made available, by the APCO, for public review no less than thirty (30) calendar days prior to approval.

9.0 Reporting

Owners or operators subject to Section 5.0 shall submit a written report for each calendar quarter to the District. The quarterly report shall include the time and date of each period during which the fence-line air monitoring system was inoperative and the nature of system repairs and adjustments. The report is due by the 30th calendar day following the end of the calendar quarter.

10.0 Recordkeeping

The owner or operator of a petroleum refinery shall maintain onsite records of all information, required under this rule for at least five (5) years and shall make the information readily available to the District upon request.
ADOPT PROPOSED RULE 4460 (PETROLEUM REFINERY FENCE-LINE AIR MONITORING) AND PROPOSED RULE 3200 (PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES)

Attachment D:

Proposed Rule 3200
(4 PAGES)
RULE 3200  PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES
(Adopted [rule adoption date])

1.0  Purpose

The purpose of this rule is to recover the District’s costs of developing and maintaining a refinery-related community air monitoring system, as required by California Health and Safety Code §42705.6.

2.0  Applicability

This rule applies to petroleum refineries.

3.0  Definitions

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

3.2  District: as defined in Rule 1020 (Definitions).

3.3  Community Air Monitoring System: a combination of equipment that measures and records air pollutant concentrations in communities near a petroleum refinery.

3.4  Operating: Actively refining crude oil.

3.5  Petroleum Refinery, or Refinery: a facility that processes petroleum as described in the Standard Industrial Classification Code under 2911 (Petroleum Refining).

4.0  Exemptions

Refineries not currently engaged in refining crude oil shall be exempted from the requirements of this rule, except for Section 7.1. Not later than thirty (30) calendar days after adoption of this rule, the owner or operator of a refinery not currently engaged in refining crude oil shall submit to the District for APCO review and approval a declaration that the facility is not refining crude oil.

5.0  Equipment and Installation Fees

5.1  Pursuant to California Health and Safety Code §42705.6, the owner or operator of an operating petroleum refinery shall pay the District for costs associated with implementation of a refinery-related community air monitoring system, as defined in Table 1.
Table 1: Community Air Monitoring System Installation Fees

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Community Air Monitoring Installation Fee Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>$173,595</td>
</tr>
<tr>
<td>Greater than or equal to 40,000</td>
<td>$715,000</td>
</tr>
</tbody>
</table>

This fee may be reduced in the event that an existing air monitoring site, which is not directly related to petroleum refinery community air monitoring, is used to measure air pollutants for petroleum refinery community air monitoring purposes.

5.2 No later than July 1, 2020, the owner or operator of an operating petroleum refinery shall pay the community air monitoring installation fee, as specified in Table 1.

6.0 Annual Operating and Maintenance Fees

6.1 Pursuant to California Health and Safety Code §42705.6, the owner or operator of a petroleum refinery operating in the San Joaquin Valley shall pay an annual operating and maintenance fee, as defined in Table 2, to the District beginning in 2021.

Table 2: Community Air Monitoring Annual Operating and Maintenance Fees

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Annual Operating and Maintenance Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>$70,729</td>
</tr>
<tr>
<td>Greater than or equal to 40,000</td>
<td>$223,549</td>
</tr>
</tbody>
</table>

6.2 The annual operating and maintenance fees will be included in the annual operating permit invoice and payment shall be submitted to the District in accordance with the timelines for the annual operating permit renewal fee in District Rule 3010.

7.0 Refinery Facilities Not Refining Crude Oil

7.1 The owner or operator of a refinery not currently engaged in refining crude oil must submit payment of the community air monitoring installation fee, as specified in Table 1, at least six (6) months prior to planned resumption of petroleum refining operations.
7.2 Refinery facilities that cease to engage in refining crude oil shall notify the District in writing at least thirty (30) calendar days prior to ceasing petroleum refinery operations.

8.0 Increases in Petroleum Refinery Capacity

The owner or operator of a petroleum refinery with the capacity to process less than 40,000 barrels per day that subsequently increases processing capacity to greater than or equal to 40,000 barrels per day must notify the District in writing of planned increase in capacity at least six (6) months before a planned increase in capacity. No later than thirty (30) calendar days after an increase in facility capacity, the owner or operator must pay the applicable community air monitoring system installation fee specified in Table 1, less the amount already paid for refineries with operating capacities less than 40,000 barrels per day. The petroleum refinery will also pay the increased annual operation and maintenance fee for petroleum refineries with capacity greater than or equal to 40,000 barrels per day, as specified in Table 2, beginning the year following the capacity increase.

9.0 Late Fees

Fees not paid by the invoice due date shall be subject to late fees in accordance with Section 11.0 of District Rule 3010.
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ADOPT PROPOSED RULE 4460 (PETROLEUM REFINERY FENCE-LINE AIR MONITORING) AND PROPOSED RULE 3200 (PETROLEUM REFINERY COMMUNITY AIR MONITORING FEES)

Attachment E:

Final Draft Staff Report with Appendices for Adoption of Rules 4460 and 3200
(44 PAGES)
I. SUMMARY

In recent years, due to several incidents at large refineries in other parts of the state, concerns over emissions from refineries and the potential for community exposure to air contaminants has increased. For example, the explosion at the former Exxon-Mobil Refinery in Torrance in 2015, as well as other refinery incidents in the Bay Area, have added to a heightened level of community concern. In response to these events in the Bay Area and South Coast, state-level safety precautions related to refinery operations have increased.

On October 8, 2017, the California State Legislature and Governor Jerry Brown passed Assembly Bill (AB) 16471. As a part of the California Health and Safety Code §42705.6, this legislation requires the following: (1) by January 1, 2020, the District shall design, develop, install, operate, and maintain a refinery-related community air monitoring system; 2) by January 1, 2020, petroleum refinery owners and operators must develop, install, operate, and maintain a fence-line monitoring system, per guidance developed by the District; 3) the District and petroleum refinery owners and operators shall collect real-time data from the refinery-related community air monitoring system and the fence-line monitoring system and the data shall be provided to the public as quickly

1 (Muratsuchi, 2017)
as possible in a publicly accessible format; and 4) petroleum refinery owner and operators shall be responsible for the costs associated with implementing a refinery-related community air monitoring system.

Through extensive research and a robust public outreach process, District staff have developed proposed Rules 4460 (Petroleum Refinery Fence-line Air Monitoring) and 3200 (Petroleum Refinery Community Air Monitoring Fees) that take into account the unique characteristics of locally-owned Valley petroleum refining operations, while still requiring publicly-accessible monitoring data to be collected at refinery fence-lines and in nearby communities. In accordance with requirements of AB 1647, proposed Rule 4460 requires that petroleum refinery owners and operators install, operate, and maintain fence-line air monitoring systems and make data collected by these systems publicly available. Proposed Rule 3200 requires that owners and operators of petroleum refineries operating in the Valley pay an initial fee to support the implementation of refinery-related community air monitoring by the District, and also requires the payment of an annual operations and maintenance fee to support community air monitoring system maintenance and associated District staff time.

II. BACKGROUND

A. Requirements of State Legislation for Petroleum Refinery Air Monitoring

In August, 2012, the Chevron Refinery in Richmond, California experienced a major fire that raised serious concerns among elected officials, regulators, and the public about refinery maintenance, internal safety practices and emergency preparedness in the vicinity of California’s oil refineries and other large petrochemical facilities. The Richmond incident, and others that have occurred since 2012, led to intensified community concern in three main areas: 1) lack of sufficient safety controls to prevent accidental releases at refineries and other industrial facilities, 2) inadequate emergency response monitoring systems to effectively inform and protect communities in the event of an accident, and 3) insufficient government oversight to ensure effective emergency preparedness and response to unplanned air contaminant releases.

In response to these concerns, the Governor created the Interagency Refinery Task Force (IRTF) in 2013 with the goal of better coordinating refinery safety and compliance efforts, and improving preparedness for future incidents. The IRTF includes representatives from various state and local agencies including the California Air Resources Board (CARB), the District, and three other air districts with refineries in their jurisdictions (Bay Area Air Quality Management District (BAAQMD), South Coast Air Quality Management District (SCAQMD), and San Luis Obispo County Air Pollution Control District). In support of IRTF goals, CARB and the California Air Pollution Control Officers Association agreed to jointly assess existing emergency air monitoring capabilities and to identify potential improvements to refinery air monitoring systems.
Several reports and guidance documents have been published as a result of this coordination.

In response to an explosion at a refinery in Torrance, CA in 2015, Assemblymember Al Muratsuchi developed the “California Refinery Jobs and Safety Action Plan,” which includes the following Assembly Bills:

- **AB 1646** requires the development of effective community alert systems to notify nearby residents, hospitals, and other community centers in the event of a refinery-related emergency. The community alert systems will utilize, as appropriate, the Emergency Alert System, text messaging, phone calls, social media communications, and audible alarms. This law requires local first responder agencies to operate the systems, and requires refineries to pay for system development, installation, operation, and maintenance.
- **AB 1647** requires air quality management districts and petroleum refineries to collect real-time data from fence-line and community air monitors, and to provide that data as quickly as possible in a publicly accessible format. Local air districts are required to operate community air monitors, and require the refineries to pay for their development, installation, operation, and maintenance.
- **AB 1649** requires CalEPA to work with specified federal, state, and local agencies to improve public and worker safety through enhanced oversight of refineries and to strengthen emergency preparedness in anticipation of any future refinery emergencies as a continuation of the IRTF discussed above.

Codified at California Health and Safety Code §42705.6, AB 1647 outlines specific requirements for monitoring pollutants released from petroleum refineries, both at/near facility boundaries and in nearby communities. This legislation requires the following: (1) by January 1, 2020, the District shall design, develop, install, operate, and maintain a refinery-related community air monitoring system; 2) by January 1, 2020, petroleum refinery owners and operators must develop, install, operate, and maintain a fence-line monitoring system, per guidance developed by the District; 3) the District and petroleum refinery owners and operators shall collect real-time data from the refinery-related community air monitoring system and the fence-line monitoring system and the data shall be provided to the public as quickly as possible in a publicly accessible format; and 4) petroleum refinery owner and operators shall be responsible for the costs associated with implementing a refinery-related community air monitoring system.

Proposed District Rules 4460 and 3200 have been developed through a public process to implement the requirements of AB 1647 in the Valley.
B. Petroleum Refining Operations in the San Joaquin Valley

Petroleum refineries in the Valley consist of Kern Oil & Refining Co., San Joaquin Refining Company, Alon USA Bakersfield Refining (Delek US), and Tricor Refining, LLC (Table 1). Of these four refinery facilities, only two are currently operational.

Table 1: San Joaquin Valley Petroleum Refining Operations

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Location</th>
<th>Processing Capacity (barrels/day)</th>
<th>Status of Refining (2019 CEC Report)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alon Bakersfield Refining (Delek US)</td>
<td>Rosedale Highway, Bakersfield, CA</td>
<td>66,000</td>
<td>Non-Refining</td>
</tr>
<tr>
<td>San Joaquin Refining Company</td>
<td>Shell Street, Bakersfield, CA</td>
<td>15,000</td>
<td>Operational</td>
</tr>
<tr>
<td>Kern Oil &amp; Refining Co.</td>
<td>Panama Lane, Bakersfield, CA</td>
<td>26,000</td>
<td>Operational</td>
</tr>
<tr>
<td>Tricor Refining, LLC</td>
<td>Manor Street, Bakersfield, CA</td>
<td>12,500</td>
<td>Non-Refining</td>
</tr>
</tbody>
</table>

Valley petroleum refineries are currently subject to multiple District rules, shown to be the most stringent rules feasible for implementation. Refineries are also subject to a variety of performance standards under local, state, and federal regulations to reduce emissions of air pollutants (Table 2). Through these requirements, Valley petroleum refineries are required to test for emissions from combustion equipment, continuously monitor for leaks, provide ongoing reporting to the District, and undergo regular District inspections to ensure compliance with all applicable rules. Through compliance with these rules and standards, emissions from Valley petroleum refineries have been reduced significantly over time (Figure 1).

Table 2: District Rules and New Source Performance Standards Applicable to Petroleum Refineries

<table>
<thead>
<tr>
<th>District Rules Affecting Valley Petroleum Refineries</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Rule 2201 – New and Modified Stationary Source Review Rule</td>
</tr>
<tr>
<td>• Rule 4101 – Visible Emissions</td>
</tr>
<tr>
<td>• Rule 4012 – Nuisance</td>
</tr>
<tr>
<td>• Rule 4311 – Flares</td>
</tr>
<tr>
<td>• Rules 4305, 4306, 4307, 4320, 4351 – Boilers, Steam Generators, and Process Heaters</td>
</tr>
<tr>
<td>• Rule 4453 – Refinery Vacuum Producing Devices or Systems</td>
</tr>
<tr>
<td>• Rule 4454 – Refinery Process Unit Turnaround</td>
</tr>
<tr>
<td>• Rule 4455 – Components at Refineries, Gas Liquids Processing Facilities, and</td>
</tr>
</tbody>
</table>
Petroleum refining activity in the Valley represents just 2% of the total refining activity in California. As compared to petroleum refineries located in southern California or in the Bay Area, which may have processing capacities of over 350,000 barrels of crude oil per day, the largest operating petroleum refinery in the Valley has the capacity to process 26,000 barrels per day (bpd) (as illustrated in the table and figure below). Due to this much smaller scale of operation, emissions from Valley petroleum refineries are
also significantly lower than large refineries in other regions. Some local facilities only partially refine crude oil prior to shipping the product to the Bay Area for further processing, meaning that emissions from these facilities are also less per barrel produced compared to the larger petroleum refining complexes in the northern and southern portions of the state.

In addition, the petroleum refineries in the Valley also focus much of their efforts in refining, blending, or storing a variety of specialized products such as biofuels, asphalt products, drilling fluids, fuel additives, hydraulic fluids, and lubricants that produce significantly less emissions than the larger and more complex crude oil refining processes in other parts of the state. Many of these processes are not actually refining operations and do not produce the types of refinery emissions that may be of concern. Additionally, significant portions of Valley refining processes involve less complex operations, such as asphalt production. These differences are important considerations to take into account in crafting the District’s approach with respect to the implementation of AB 1647 requirements in the Valley.

Table 3: California Oil Refinery Locations and Crude Oil Processing Capacities (Currently Refining)

<table>
<thead>
<tr>
<th>Refinery Name</th>
<th>Barrels Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marathon Petroleum Corp., Carson Refinery*</td>
<td>363,000</td>
</tr>
<tr>
<td>Chevron U.S.A. Inc., El Segundo Refinery</td>
<td>269,000</td>
</tr>
<tr>
<td>Chevron U.S.A. Inc., Richmond Refinery</td>
<td>245,271</td>
</tr>
<tr>
<td>Marathon Petroleum Corp., Golden Eagle Martinez Refinery</td>
<td>161,500</td>
</tr>
<tr>
<td>PBF Energy, Torrance Refinery</td>
<td>160,000</td>
</tr>
<tr>
<td>Shell Oil Products US, Martinez Refinery</td>
<td>156,400</td>
</tr>
<tr>
<td>Valero Energy, Benicia Refinery</td>
<td>145,000</td>
</tr>
<tr>
<td>Phillips 66, Wilmington Refinery</td>
<td>139,000</td>
</tr>
<tr>
<td>Phillips 66, Rodeo San Francisco Refinery**</td>
<td>120,200</td>
</tr>
<tr>
<td>Valero Energy, Wilmington Refinery</td>
<td>85,000</td>
</tr>
<tr>
<td>Kern Oil &amp; Refining Company, Bakersfield Refinery</td>
<td>26,000</td>
</tr>
<tr>
<td>San Joaquin Refining Company Inc., Bakersfield Refinery</td>
<td>15,000</td>
</tr>
<tr>
<td>Greka Energy, Santa Maria Refinery</td>
<td>9,500</td>
</tr>
<tr>
<td>Lunday Thagard, South Gate Refinery</td>
<td>8,500</td>
</tr>
<tr>
<td>Valero Wilmington Asphalt Refinery</td>
<td>6,300</td>
</tr>
<tr>
<td><strong>Total California Crude Oil Processing Capacity</strong></td>
<td>1,909,671</td>
</tr>
</tbody>
</table>

*Marathon Carson and Wilmington began reporting as one entity as of 2019
**Phillips 66 Rodeo and Santa Maria began reporting as one entity as of 2017

Source: California Energy Commission. Data as of January 1, 2019
C. Industry Process Description

Petroleum refineries process crude oil into a variety of products, including liquefied petroleum gas, gasoline, kerosene, aviation fuel, diesel fuel, fuel oils, lubricating oils, and feedstocks for the petrochemical industry. Petroleum refining generally begins with the delivery of crude for storage at the refinery, followed by petroleum handling and refining operations, and ending with storage and transfer of the refined products. The refining industry can employ a variety of processes, which can depend on the composition of the crude oil feedstock and the petroleum products being produced. In Chapter 5 of AP-42, U.S. EPA provides a list of petroleum refining process categories (i.e., separation processes, petroleum conversion processes, petroleum treating processes, feedstock and process handling, and auxiliary facilities) along with other associated operations that are specific to the petroleum industry, and associated emission factors.

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Crude oil consists of a mixture of hydrocarbon compounds including paraffinic, naphthenic, and aromatic hydrocarbons with small amounts of impurities, including sulfur, nitrogen, oxygen, and metals. The primary pollutants emitted from petroleum refining are volatile organic compounds arising from leakage, venting, and evaporation of the raw materials and finished products. Sulfur oxides, hydrogen sulfide, particulate matter, and several toxic species can also be generated from operations specific to this industry. Most of the petroleum refinery related air emissions are associated with catalytic or thermal cracking units, catalytic reformer units, sulfur recovery plants, storage vessels, fluid coking units, wastewater streams, cooling towers, equipment leaks, blowdown systems, vacuum distillation units, steam boilers, process furnaces, process heaters, compressor engines, barge or ship loading, and gasoline loading.

D. Potential Pollutants Emitted from Petroleum Refining Operations

The California Environmental Protection Agency and the Office of Environmental Health Hazard Assessment (OEHHA) collaborated with CARB and the IRTF to highlight chemicals emitted from refineries and their health effects in order to assist air agencies in developing plans for fence-line monitoring in California. OEHHA published the report in March 2019, and identified 188 specific chemicals that are emitted from California refineries. Of the 188 chemicals identified, 18 were found as the top candidates for air monitoring and are listed in the table below. This was based on their toxicity, average levels of emissions, and involvement in multiple refinery processes and incidences from refineries statewide.

<table>
<thead>
<tr>
<th>Acetaldehyde</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia</td>
</tr>
<tr>
<td>Benzene</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
</tr>
<tr>
<td>Cadmium</td>
</tr>
<tr>
<td>Diethanolamine</td>
</tr>
<tr>
<td>Formaldehyde</td>
</tr>
<tr>
<td>Hydrogen Fluoride</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
</tr>
<tr>
<td>Manganese</td>
</tr>
<tr>
<td>Naphthalene</td>
</tr>
<tr>
<td>Nickel</td>
</tr>
<tr>
<td>Nitrogen Oxide</td>
</tr>
<tr>
<td>Polycyclic Aromatic Hydrocarbons (PAH)</td>
</tr>
<tr>
<td>Particulate Matter (PM)</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
</tr>
<tr>
<td>Toluene</td>
</tr>
</tbody>
</table>
However, each refinery is specialized for its individual refining process and some listed pollutants may not be present at a particular facility. The following describes in further detail some of the potential pollutants that may be emitted from petroleum refineries.

**BTEX Compounds (Benzene, Toluene, Ethylbenzene, and Xylenes)**

BTEX is a specified subset of aromatic hydrocarbons compounds containing benzene, toluene, ethylbenzene and xylene. These chemicals appear naturally in crude oil and can be associated with emissions from refineries as they are released partly due to incomplete combustion of natural gas as well as emissions from petroleum and storage and transfer. In addition, other combustion sources such as wood burning and fossil fuel combustion also contribute to BTEX emissions. The negative health effects associated with BTEX exposure include neurological impairment and cancer.

**Hydrogen Sulfide**

Hydrogen sulfide (H2S) is a colorless gas characterized by its foul odor of rotten eggs and can be smelled at low concentrations. It is poisonous, corrosive, and flammable, and exposure at high concentrations can cause irritation, unconsciousness, and death. Hydrogen sulfide is often produced from the breakdown of organic matter in the absence of oxygen gas, such as in swamps, sewers, and in the crude oil extraction / refining process.

**Nitrogen Oxides**

Nitrogen oxides (NOx) are chemical compounds formed by the combination of nitrogen and oxygen. NO2 is a greenhouse gas that is largely produced by high temperature combustions of hydrocarbons in the presence of nitrogen and oxygen. There is scientific evidence that correlates NOx exposure and negative respiratory effects. Measuring NOx formation near refineries for elevated concentrations would help identify the input of these facilities into the surrounding area.

**Poly Aromatic Hydrocarbons**

Poly Aromatic Hydrocarbons (PAH) are large hydrocarbons that are comprised of multiple aromatic ring (rings with delocalized electrons). These compounds are found in both nature as well as a product of industrial processes and can be produced by the thermal breakdown of organic material. In addition, processes of fossil fuel extraction and combustion also contribute to the ambient PAH concentrations. The largest health effects of PAHs stems from long term exposure. A more detailed list of possible PAHs and their health effects is provided by OEHHA.
Aldehydes

Aldehydes are compounds characterized by the inclusion of a carbon with a double bonded oxygen and single bond hydrogen associated with it. Due to the wide array of aldehydes, their properties are typically based on the remainder of the molecule and can range from being water soluble to volatile. Formaldehyde and acetaldehyde are two of the most common aldehydes produced in industry. Formaldehyde is a colorless volatile compound and can cause irritation to the eyes, skin, and respiratory pathways. Chronic exposure to formaldehyde can have lasting negative health effects. Formaldehyde is produced in various portions of industrial processes. Acetaldehyde can be used in either the liquid or gaseous form depending on the process. Exposure to acetaldehyde can cause irritation to the eyes, skin, and respiratory pathways and prolonged exposure can have lasting health effects. Acetaldehyde is produced by facilities that burn fossil fuels, wood, trash, as well as gas extraction facilities, refineries, and paper mills. A more detailed list of possible aldehydes and their health effects is provided by OEHHA.

Volatile Organic Compounds

Volatile Organic Compounds (VOCs) are carbon chained compounds that vaporize in ambient conditions. Among these compounds include but are not limited to, BTEX, 1,3-butadiene, PAH, aldehydes, naphthalene, and diethanolamine. These compounds are typically emitted from products such as paints, inks, organic solvents, petroleum products as well as vehicle use. The health effects of these compounds vary but, long term exposure can have lasting adverse health effects. A more detailed list of possible VOCs and their health effects is provided by OEHHA.

Particulate Matter

Sources of particulate matter (PM) can be natural or anthropogenic. Particulate matter has shown to have a direct impact that adversely affects human health. Combustion sources as well as motor vehicles and earth moving operations contribute to elevated PM concentrations. There are existing regulations that address the ambient concentrations of particulate matter with aerodynamic diameters less than 10 μm (PM10) and less than 2.5 μm (PM2.5). The majority of PM produced by combustion falls in the PM2.5 size designation.

Ammonia

While the main sources of ammonia are natural, primarily from the decay of organic matter, petroleum refineries can also emit ammonia, particularly from catalyst regenerator vent releases. Ammonia gas is colorless, pungent-smelling, and corrosive. Exposure to high concentrations may induce adverse health impacts.
Sulfur Dioxide

Sulfur Dioxide (SO2) is a colorless gas, with a pungent odor akin to a struck match. Inhalation of SO2 can produce adverse health effects, and difficulty breathing. Sulfur dioxide is produced largely by fossil fuel combustion.

E. Air Monitoring Technologies

There are two main types of technologies available for monitoring petroleum refinery emissions, open path and point air monitoring systems. Open path air monitoring systems utilize lasers and reflectors to measure levels of a variety of gaseous compounds along industrial facility fence-lines, and can be configured to detect the origination point of increased pollution concentration levels. These systems range in cost, depending on the number of units needed to adequately cover a fence-line, with a robust system equipment and installation cost as high as $2 million to $4.2 million. Point air monitors are installed in a stationary location and measure concentrations of criteria pollutants, toxics, and particulate matter, depending on the configuration selected for the system, at a single location. This equipment also ranges significantly in cost depending on the number of pollutants that can be measured by the platform, with potential costs up to $750,000 for a comprehensive system that is capable of providing fully speciated emissions data. Costs for air monitoring equipment is discussed in further detail later in this report.

Open Path Systems

Open path systems use a light signal, projected along a straight unobstructed path, to continuously detect and measure concentrations of chemical compounds along the distance covered by the light signal in real-time. The light source emits light towards a detector either at the opposite end of the light path (bi-static configuration) or co-located with the light source (mono-static configuration) if the light is reflected back by a reflector, providing path-averaged concentrations of multiple pollutants, simultaneously. Some of the optical technologies used in these systems include the following:

- **Ultra Violet Differential Optical Absorption Spectroscopy**: Ultra Violet Differential Optical Absorption Spectroscopy (UV-DOAS) system utilizes a high powered UV light to measure the absorption spectra as opposed to a signal produced by a single wavelength. By doing so, this separates the absorption data of multiple target analytes. By using a software as well as a predetermined subset of known gases, the Open-Path UV DOAS is able to quantify multiple target gases.

- **Tunable Diode Laser Absorption Spectroscopy**: Tunable Diode Laser Absorption Spectroscopy (TDLAS) utilizes a laser tuned to be within a strict frequency range. This range is typically exclusive to the target gas in question.
The laser is then tuned to match the desired frequency of the target gas, primarily Hydrogen Sulfide (H2S). From this the absorption of at a particular wavelength, the concentration of the target gas at that wavelength can be determined.

- **Fourier Transform Infrared**: Fourier Transform Infrared (FTIR) system utilizes a beam of infrared light to measure the absorption spectra of the infrared spectrum. Infrared light is emitted from the light source, which is then directed at retroreflectors or another unit, the returning light is received by a detector. The change in intensity, frequency, and wavelength is then used to calculate the concentration of various target gases in the atmosphere. With this sampling method it is possible to measure a total alkane concentration.

## Point Monitors

Point monitors extract ambient air at a specific location and performs the measurement within the system. They are the primary instrument types used in EPA approved methodologies for measuring air pollutants. These type of monitors use a variety of technologies, including the following:

- **Gas Monitoring**: In addition to the open path options for monitors, there are also single point monitors that can measure a range of target gases by utilizing methods such as chemiluminescence, UV – fluorescence, and gas chromatography. These instruments and their methods are widely used throughout multiple regulatory air monitoring networks and are accepted by both the EPA and CARB for the measurement of gases such as NO2, H2S, and SO2.

- **Particulate Matter**: There are point monitors for particulate matter as well, which employ methods such as beta attenuation, light scattering/absorption, and tapered element oscillating microbalance. These instruments range from hourly to minute averages and cover a range of PM types including PM1.0, PM2.5, PM10, and speciated particulate matter. The previously mentioned instruments and methods are in use throughout regulatory air monitoring networks and are accepted by EPA and CARB for the criteria pollutants.

- **Total VOC Monitoring**: Photoionization Detector (PID) takes Volatile Organic Compounds (VOCs) and charges the compounds with a large amount of high energy photons which energizes the sample compounds. The energized compounds then pass by the photoionization detector which subjects the positively charged compounds to a magnetic field and forces them to a collector electrode to determine the concentration of total VOCs. Flame Ionization Detector (FID) is similar to the PID but utilizes a flame, typically fueled by hydrogen, to ionize the sample before the signal is read by the detector to determine the concentration of total VOCs.
GC-MS: Gas chromatography with mass spectrometry utilizes a GC with a mass spectrometer as a secondary detector. The sample will pass through a GC with a PID or FID as the primary detector, which will separate the sample based on retention time. The sample then passes to the mass spectrometer which will ionize and separate the sample by its mass to charge ratio. The advantage of this technique is the utilization of multiple separation methods for analysis which can supplement instances in which certain compounds will output similar spectra using GC, despite being vastly different chemically.

F. Rulemaking Efforts in Other Air Districts

BAAQMD adopted Regulation 12 Rule 15 (Petroleum Refining Emissions Tracking) on April 20, 2016, to track air emissions and crude oil composition characteristics from Petroleum Refineries and Support Facilities over time and to establish air monitoring systems to provide air quality data along refinery boundaries. Per BAAQMD Regulation 12, Rule 15 and the associated BAAQMD Air Monitoring Guidelines for Petroleum Refineries guidance document, refinery operators must measure benzene, toluene, ethyl benzene, and xylenes (BTEX) and hydrogen sulfide concentrations at refinery fence-lines with open path technology capable of measuring in the parts per billion range, regardless of path length. Open path measurement of sulfur dioxide, alkanes, or other organic compound indicators, 1,3-butadiene, and ammonia concentrations are to be considered in each facility’s submitted Air Monitoring Plan, and rationale is to be provided for not monitoring for specified pollutants. The use of surrogates to measure concentrations of a more easily speciated compound as a proxy for monitoring for one of the suggested pollutants is allowed. BAAQMD amended Rule 12 Regulation 15 on December 19, 2018 to address public concerns about the refinery operators being responsible for siting and operating community air monitors. BAAQMD is now responsible for siting and operating the monitors. The community air monitors are funded through a broad-based major source fee (BAAQMD Regulation 3, Schedule X).

SCAQMD adopted Rule 1180 (Refinery Fenceline and Community Air Monitoring) on December 1, 2017 to require real-time fence-line air monitoring systems and to establish a fee schedule to fund refinery-related community air monitoring systems that provide air quality information to the public about levels of various criteria air pollutants, volatile organic compounds, metals and other compounds, at or near the property boundaries of petroleum refineries and in nearby communities. SCAQMD Rule 1180 requires that fence-line air monitoring systems measure for SO2, NOx, total VOC’s, formaldehyde, acetaldehyde, acrolein, 1,3-butadiene, styrene, BTEX compounds (benzene, toluene, ethylbenzene, xylenes), hydrogen sulfide, carbonyl sulfide, ammonia, black carbon, hydrogen cyanide, and hydrogen fluoride, although subject operators may provide justification for not monitoring for one or more pollutants. The SCAQMD “Refinery Fenceline Air Monitoring Plan Guidelines” provide further information about required elements of the plans and data quality control. It should be noted that SCAQMD exempts petroleum refinery operations that have a capacity to
process 40,000 bpd or less, due to the reduced emissions originating from smaller facilities, and the burdensome cost of compliance with rule requirements for operations with smaller revenues.

Both SCAQMD and BAAQMD require that petroleum refineries implement a full suite of fence-line monitoring equipment, including both “open path” laser monitoring technology and point monitors along facility perimeters (Table 5).

**Table 5: Equipment Utilized for Fence-line Air Monitoring at Major Petroleum Refineries**

<table>
<thead>
<tr>
<th>Technologies proposed for air quality monitoring in submitted fence-line air monitoring plans</th>
<th>SCAQMD Rule 1180</th>
<th>BAAQMD Rule 12, Regulation 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Open-path UV DOAS</td>
<td>- Open-path UV DOAS</td>
<td></td>
</tr>
<tr>
<td>- Open-path TDL</td>
<td>- Open-path TDL</td>
<td></td>
</tr>
<tr>
<td>- Open-path FTIR</td>
<td>- Open-path FTIR</td>
<td></td>
</tr>
<tr>
<td>- GC-PID (Photoionization Detector)</td>
<td>- Point monitor for diesel PM and H2S</td>
<td></td>
</tr>
<tr>
<td>- Extractive FTIR</td>
<td>- Aethalometer (black carbon)</td>
<td></td>
</tr>
<tr>
<td>- Organic Gas Detectors (point sampling)</td>
<td>- TDLAS</td>
<td></td>
</tr>
<tr>
<td>- TDLAS (monostatic Tunable Diode Laser Absorption Spectroscopy)</td>
<td>- UV Fluorescence Hydrogen Sulfide monitors</td>
<td></td>
</tr>
</tbody>
</table>

The equipment required to comply with regulations in SCAQMD and BAAQMD is estimated to cost refinery operations a minimum of $2,000,000, and up to $4,200,000, depending on the number of air monitors needed to adequately cover the facility perimeter. The direct cost to refinery operations to implement fence-line air monitoring systems is in addition to community air monitoring fees charged by both air districts, with initial community monitoring capital cost-recovery fees ranging from approximately $200,000 to $1,000,000 per refinery (scaled based on the processing capacity of the facility). Both air districts also charge an ongoing annual maintenance fee that ranges from approximately $200,000 to $900,000 per facility.

In developing proposed Rules 4460 and 3200, District staff conducted a thorough analysis of regulatory requirements and air monitoring guidance in other air districts. District staff have worked to develop regulations that both address the intent of AB 1647 legislation by requiring air quality monitoring for key pollutants of concern to protect local communities, as well as working to ensure that regulatory requirements are not overly burdensome for already heavily regulated Valley facilities.
III. DISCUSSION OF PROPOSED RULES 4460 AND 3200

A. Proposed Rule 4460 (Petroleum Refinery Fence-line Air Monitoring)

Proposed Rule 4460 does not directly regulate air pollutant emissions from petroleum refineries, however, implementation of the proposed rule will provide valuable information to petroleum refineries, nearby communities, and District staff about the potential presence of air contaminants, including some toxics, resulting from petroleum refinery operations.

The proposed rule will require the submittal and approval of a fence-line air monitoring plan (plan) for a specified list of air pollutants. The plan must provide detailed information about the fence-line air monitoring system, including siting, instrument choices, wind data collection, maintenance procedures, measures in case of failures, quality assurance and auditing, and data reporting methods. Further, the proposed rule will set-forth requirements for the plan review process, notifications, and recordkeeping. The plan review process includes a public review period of no less than thirty days prior to approval by the District. In order to provide clarity for petroleum refineries and consistency in submitted air monitoring plans, the District will provide written guidance to affected Valley petroleum refineries on the required elements of the air monitoring plans to be submitted.

Based on the nature of the petroleum refineries in the Valley, including their relatively lower production capacity and emissions levels, the fact they are small locally owned operations, and their focus on producing specialty petroleum products, the proposed rule utilizes a tiered approach to require different levels of air monitoring, depending on the size of the permitted facility. This is to take into account lower levels of pollutants that are emitted from small refining facilities, as well as the decreased ability of small, locally-owned refining operations to recover the potentially high costs of comprehensive fence-line air monitoring systems.

Purpose/Applicability (Section 1.0/Section 2.0)

The purpose of this rule, which applies to petroleum refineries in the Valley, is to require real-time fence-line air monitoring systems that provide air quality information to the public regarding concentrations of various air pollutants, which could include criteria air
pollutants and toxic air contaminants, at or near property boundaries of petroleum refineries.

**Definitions (Section 3.0)**

This section defines terms used within the rule provisions. Section 3.4 provides a definition of Petroleum Refinery, or Refinery, which is specified as follows:

*Petroleum Refinery, or Refinery: a facility that processes petroleum as described in the Standard Industrial Classification Code under 2911 (Petroleum Refining).*

The definition of the Standard Industrial Classification Code 2911 (Petroleum Refining) is given as follows:

*Establishments primarily engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, and lubricants, through fractionation or straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking or other processes. Establishments of this industry also produce aliphatic and aromatic chemicals as by-products.*

Based on these definitions provided, all four (4) of the Valley's petroleum refineries would fall under SIC 2911, however, as Alon USA and Tricor Refining, LLC are not actively conducting petroleum refining, they would not be subject to the provisions of Rule 4460, except for Section 7.3 of the rule, as described below.

**Exemptions (Section 4.0)**

Refineries not currently engaged in refining crude oil shall be exempted from the requirements of this rule, except for Section 7.3 of proposed Rule 4460, which states:

*The owner operator of a refinery not currently engaged in refining crude oil must submit a proposed fence-line air monitoring plan at least six (6) months prior to planned recommencement of refining operations. The owner or operator of the facility must complete installation and begin operation of a real-time fence-line air monitoring system in accordance with the approved fence-line air monitoring plan prior to recommencement of petroleum refining activities.*

Not later than thirty (30) calendar days after adoption of this rule, the owner or operator of a refinery not currently engaged in refining crude oil shall submit to the District for APCO review and approval a declaration that the facility is not refining crude oil.

For those petroleum refineries that are subject to Rule 4460, but are determined to be exempt due to not actively refining crude oil, the District will take actions to ensure that the facility does not recommence crude oil refining without the District being notified beforehand. This will be managed through specific conditions being placed on District-
issued facility permits, as well as conducting annual inspections of the facilities to confirm that refining activities are not occurring. Rule 4460 provisions include details of how a petroleum refinery not currently refining should notify the District when planning to recommence refining activities.

Requirements (Section 5.0)

This section specifies petroleum refinery requirements in which the refinery shall install, operate, and maintain a fence-line air monitoring system and shall make available to the public in real-time the data collected in accordance with the District approved fence-line air monitoring plan as required in the fence-line air monitoring plan section 6.0.

Fence-line Air Monitoring Plan (Section 6.0)

Section 6.0 requires that no later than July 1, 2020, the owner or operator of a petroleum refinery shall submit to the APCO a written fence-line air monitoring plan for establishing and operating a real-time fence-line air monitoring system.

District staff recognize the need for flexibility when designing an air monitoring plan. Each plan will be evaluated on a case-by-case basis, and shall be tailored to each facility’s characteristics, including size, emissions, and location. An approvable fence-line air monitoring plan should provide detailed information about the installation, operation and maintenance of the fence-line air monitoring system. The proposed fence-line monitoring system should be capable of measuring routine emissions from refineries, as well as unplanned releases from refinery equipment and other sources of refinery-related emissions.

Developing an air monitoring plan requires three important steps:

1. Identification of emissions sources and affected communities
2. Developing a fence-line air monitoring system that can provide real-time information about certain air pollutant levels, and
3. Effectively communicating this information to the public and other interested parties.

The fence-line air monitoring plan shall provide detailed information about equipment to be used to continuously monitor, record, and report air pollutant concentrations for the pollutants specified in Rule 4460, Table 1 – Equipment and Air Pollutants to be Considered in Fence-line Air Monitoring Plan (shown below) in real-time, at or near the property boundary of the petroleum refinery.

The proposed rule requires the fence-line air monitoring plan to provide the following information:

- equipment to be used for fence-line monitoring;
- siting and equipment specifications;
wind measurements;
- procedures for air monitoring equipment maintenance and failures;
- procedures for implementing quality assurance by a qualified independent party, including quality control and audits of the air monitoring systems;
- procedures for implementation, including installation, operation, maintenance, quality assurance, for the fence-line air monitoring system; and
- methods for continuous dissemination of data collected by the equipment to the public, local response agencies, and the District.

The proposed rule requires the fence-line air monitoring plan to address real-time air monitoring for pollutants released due to petroleum refinery-related processes, and should reference the most recent Office of Environmental Health Hazard Assessment refinery-related monitoring guidance. Pollutants to be considered in the fence-line air monitoring plan shall include pollutants specified in Rule 4460 Table 1. Should the owner or operator of a petroleum refinery propose to not monitor one or more of the specified pollutants in Rule 4460 Table 1, a justification for this proposal must be included in the proposed air monitoring plan.

### Table 6: Rule 4460 Table 1 – Equipment and Air Pollutants to be Considered in Fence-line Air Monitoring Plan

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Equipment for Fence-line Air Monitoring System</th>
<th>Pollutants to be Considered in Monitoring Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>Point monitoring or open path system</td>
<td>Sulfur dioxide, hydrogen sulfide, BTEX compounds (benzene, toluene, ethylbenzene and xylene)</td>
</tr>
<tr>
<td>40,000 or greater</td>
<td>Open path system and point monitoring as needed</td>
<td>Sulfur dioxide, nitrogen oxides, total VOCs, BTEX compounds (benzene, toluene, ethylbenzene and xylene), formaldehyde, acetaldehyde, acrolein, 1,3 butadiene, styrene, hydrogen sulfide, carbonyl sulfide, ammonia, hydrogen cyanide, hydrogen fluoride, black carbon</td>
</tr>
</tbody>
</table>

The owner or operator of a petroleum refinery shall submit an updated fence-line air monitoring plan to the APCO as follows:
• Ten (10) calendar days after the date of any unplanned facility, equipment, process or administrative modification that could result in changes to an approved fence-line air monitoring plan.

• Forty-five (45) calendar days before the date of implementation of any planned facility, equipment, process or administrative modification that could result in changes to an approved fence-line air monitoring plan.

• Sixty (60) calendar days after the date of receiving information that an approved fence-line air monitoring plan does not adequately measure one or more pollutant(s) identified in Table 1 that are emitted from the petroleum refinery.

Failure to comply with these requirements outlined above in Subsections 6.4.1 through 6.4.3 shall result in revocation of an approved fence-line air monitoring plan. Thirty days after revocation of an approved fence-line air monitoring plan, the owner or operator of a petroleum refinery shall submit a new fence-line air monitoring plan to the APCO pursuant to Sections 6.2 and 6.3. The updated fence-line air monitoring plan shall not be subject to the implementation schedule in Section 7.0. An updated implementation schedule subject to approval by the APCO shall be included in the new fence-line air monitoring plan but in no case shall implementation exceed 180 calendar days.

The proposed rule allows for the owner or operator of a petroleum refinery to include the use of emerging technologies in a fence-line air monitoring plan that is compliant with the requirements of this rule.

**Fence-line Air Monitoring Implementation Timeline Requirements (Section 7.0):**

The owner or operator of an existing petroleum refinery shall complete the installation and begin the operation of a real-time fence-line air monitoring system within 365 days of District’s approval of a proposed monitoring plan.

The owner or operator of a refinery with the capacity to process less than 40,000 barrels per day that subsequently increases processing capacity to greater than or equal to 40,000 barrels per day must submit an amended fence-line air monitoring plan in accordance with Section 6.0 at least six (6) months prior to increasing processing capacity. The owner or operator of the facility must complete installation and begin operation of a real-time fence-line air monitoring system in accordance with the approved fence-line air monitoring plan prior to increasing petroleum processing activities.

The owner or operator of a refinery not currently engaged in refining crude oil must submit a proposed fence-line air monitoring plan at least six (6) months prior to planned
recommencement of refining operations. The owner or operator of the facility must complete installation and begin operation of a real-time fence-line air monitoring system in accordance with the approved fence-line air monitoring plan prior to recommencement of petroleum refining activities.

Refinery facilities that cease to engage in refining crude oil shall notify the District in writing at least thirty (30) calendar days prior to ceasing petroleum refinery operations if fence-line air monitoring shall also be suspended or terminated.

**Refinery Fence-line Air Monitoring Plan Review Process (Section 8.0):**

The APCO shall notify the owner or operator in writing whether the fence-line air monitoring plan is approved or disapproved. Determination of approval status for the fence-line air monitoring plan shall be based on, at a minimum, submittal of information that satisfies the criteria in Section 6.0.

If disapproved, the owner or operator shall revise and resubmit the fence-line and air monitoring plan within thirty (30) calendar days after notification of disapproval of the plan. The resubmitted plan shall include any information necessary to address deficiencies identified in the disapproval letter.

The APCO will either approve the revised and resubmitted fence-line air monitoring plan or modify the plan and approve it as modified.

A fence-line air monitoring plan that is submitted pursuant to the requirements of Section 6.0 shall be made available, by the APCO, for public review no less than thirty (30) days prior to approval.

**Reporting - Section 9.0**

Owners or operators subject to Section 5.0 (Requirements) shall submit a written report for each calendar quarter to the District. The quarterly report shall include the time and date of each period during which the fence-line air monitoring system was inoperative and the nature of system repairs and adjustments. The report is due by the 30th calendar day following the end of the calendar quarter.

**Recordkeeping - Section 10.0**

The owner or operator of a petroleum refinery shall maintain onsite records of all information, required under this rule for at least five (5) years and shall make the information readily available to the District upon request.
B. Proposed Rule 3200 (Petroleum Refinery Community Air Monitoring Fees)

As required by the provisions of the Health and Safety Code §42705.6, a refinery-related community air monitoring system will be implemented by the District. Consistent with Health and Safety Code §42705.6, Rules 4460 and 3200 do not require petroleum refineries to conduct refinery-related community air monitoring, however, Rule 3200 does set forth requirements for petroleum refineries to be responsible for the costs associated with the District implementing a petroleum refinery community air monitoring system.

District staff compiled a cost analysis of the estimated cost to implement a refinery-related community air monitoring system. The cost analysis included the costs for the installation (e.g., site preparation costs, capital equipment costs) and operation and maintenance costs of a community air monitoring system. These costs were developed based on District staff’s prior and ongoing monitoring projects in the Valley. The monitoring equipment cost was estimated based on the commercially-available, state-of-the-art monitoring equipment capable of monitoring the pollutant levels continuously and in real-time. These costs represent the dollar amounts needed to recover the estimated costs for an average refinery-related community air monitoring system for one community monitoring system. Based on the pollutant air monitoring requirements for the production capacities defined in Rule 4460, the following table provides an estimate of the equipment costs to establish a community air monitoring system. As discussed, additional costs such as site preparation, electrical infrastructure, development of a platform for display of collected real-time data, and other related work would be also be paid by the petroleum refinery to cover the entire costs of the initial system installation.

Table 7: Equipment Cost Analysis for Initial Installation of Refinery-Related Community Air Monitoring System

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Item Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Housing</td>
<td>$29,367</td>
</tr>
<tr>
<td>Pole Mount Kit</td>
<td>$900</td>
</tr>
<tr>
<td>Housing for Sample Filter</td>
<td>$1,600</td>
</tr>
<tr>
<td>Heating Line for System</td>
<td>$1,500</td>
</tr>
<tr>
<td>Mini GC (BTEX)</td>
<td>$45,000</td>
</tr>
<tr>
<td>SO2/H2S Sensor/Span Check System</td>
<td>$18,200</td>
</tr>
<tr>
<td>Met Station</td>
<td>$5,000</td>
</tr>
<tr>
<td>Expansion Modules</td>
<td>$2,900</td>
</tr>
<tr>
<td>Pull Behind Trailer for System</td>
<td>$10,000</td>
</tr>
</tbody>
</table>
### Refinery Community Air Monitoring Costs (Less than 40,000 bpd)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Item Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$114,467</strong></td>
</tr>
<tr>
<td><strong>Tax (7.975%)</strong></td>
<td><strong>$9,128</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$123,595</strong></td>
</tr>
</tbody>
</table>

### Refinery Community Air Monitoring Costs (40,000 bpd or Greater)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Item Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Monitoring Station Shelter</td>
<td>$50,000</td>
</tr>
<tr>
<td>NOx Analyzer</td>
<td>$20,000</td>
</tr>
<tr>
<td>SOx/H2S Analyzer</td>
<td>$25,000</td>
</tr>
<tr>
<td>Total VOC Analyzer</td>
<td>$30,000</td>
</tr>
<tr>
<td>VOC Canister System</td>
<td>$30,000</td>
</tr>
<tr>
<td>Auto-GC</td>
<td>$200,000</td>
</tr>
<tr>
<td>PM2.5 Analyzer</td>
<td>$25,000</td>
</tr>
<tr>
<td>PM10 Analyzer</td>
<td>$25,000</td>
</tr>
<tr>
<td>BC Analyzer</td>
<td>$25,000</td>
</tr>
<tr>
<td>HCN Analyzer</td>
<td>$25,000</td>
</tr>
<tr>
<td>CO Analyzer</td>
<td>$15,000</td>
</tr>
<tr>
<td>Speciated Metals Analyzer</td>
<td>$135,000</td>
</tr>
<tr>
<td>Met Station</td>
<td>$5,000</td>
</tr>
<tr>
<td>Data logging system</td>
<td>$5,883</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$615,883</strong></td>
</tr>
<tr>
<td><strong>Tax (7.975%)</strong></td>
<td><strong>$49,117</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$665,000</strong></td>
</tr>
</tbody>
</table>

Table 8: Total Installation Cost of Refinery-Related Community Air Monitoring System

<table>
<thead>
<tr>
<th>Item</th>
<th>Petroleum Refinery Capacity (barrels per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Monitoring Equipment Costs</strong></td>
<td><strong>Less than 40,000</strong></td>
</tr>
<tr>
<td></td>
<td><strong>$123,595</strong></td>
</tr>
</tbody>
</table>
District staff evaluated various metrics to ensure that the costs for a refinery-related community air monitoring system would be shared in a reasonably equitable manner based on the burdens imposed and benefits received by the refineries, and costs are limited to the amounts necessary for compliance with Health and Safety Code §42705.6.

Upon review of the various metrics developed to cover the cost of a refinery-related community air monitoring system and considering important factors, (e.g., the cost of air monitoring equipment, equipment siting, data logging systems and labor) and with substantial stakeholder input, District staff determined that the fee schedules included in Rule 3200 would meet the aforementioned objectives for the cost of implementing a refinery-related community air monitoring system. Therefore, Rule 3200 requires the payment of an installation fee, as well as annual operating and maintenance fees that will be recovered pursuant to California Health and Safety Code §42705.6. Fees may be reduced by the District in the event that a community air monitor is used for purposes other than refinery-related emissions monitoring. The following table details the District’s anticipated annual costs to operate a community air monitoring system.

Table 9: Cost Analysis for Annual Operation of Refinery-Related Community Air Monitoring System

<table>
<thead>
<tr>
<th>Item</th>
<th>Petroleum Refinery Capacity (barrels per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 40,000</td>
</tr>
<tr>
<td>Community System 5-Year Annualized Replacement Cost (including inflation)</td>
<td>$25,780</td>
</tr>
<tr>
<td>Staff Maintenance Cost</td>
<td>$29,949</td>
</tr>
<tr>
<td>Lease, Utilities, Property Maintenance</td>
<td>$5,000</td>
</tr>
<tr>
<td>System Maintenance Materials (gases, filters, calibration)</td>
<td>$5,000</td>
</tr>
<tr>
<td>Data Website Maintenance</td>
<td>$5,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$70,729</strong></td>
</tr>
</tbody>
</table>
The following paragraphs discuss the intended purpose of each section of Rule 3200.

**Purpose and Applicability (Section 1.0/Section 2.0)**

The purpose of Rule 3200 is to recover the District’s costs of developing and maintaining a refinery-related community air monitoring system, as required by California Health and Safety code §42705.6. Rule 3200 applies to operating petroleum refineries located in the San Joaquin Valley.

**Definitions (Section 3.0)**

This section defines terms used within the rule provisions.

**Exemptions (Section 4.0)**

Refineries not currently engaged in refining crude oil shall be exempted from the requirements of this rule, except for section 7.1 of proposed Rule 3200 that states:

*The owner or operator of a refinery not currently engaged in refining crude oil must submit payment of the community air monitoring installation fee, as specified in Table 1, at least six (6) months prior to planned resumption of petroleum refining operations.*

Not later than thirty (30) calendar days after adoption of this rule, the owner or operator of a refinery not currently engaged in refining crude oil shall submit to the District for APCO review and approval a declaration that the facility is not refining crude oil.

Refinery facilities that cease to engage in refining crude oil shall notify the District in writing at least thirty calendar days prior to ceasing petroleum refining operations.

**Equipment and Installation Fees (Section 5.0)**

Pursuant to California Health and Safety Code §42705.6, the owner or operator of an operating petroleum refinery shall pay the District for costs associated with implementation of a refinery-related community air monitoring system, as outlined in Table 1 of Rule 3200.

**Table 10: Rule 3200 Table 1 – Community Air Monitoring System Installation Fees**

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Community Air Monitoring Installation Fee Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>$173,595</td>
</tr>
<tr>
<td>Greater than or equal to 40,000</td>
<td>$715,000</td>
</tr>
</tbody>
</table>
This fee may be reduced by the District in the event that an existing air monitoring site is used to measure air pollutants not directly related to refinery air monitoring, or if an existing site, already established as a part of the District’s air monitoring network, is utilized for petroleum refinery community air monitoring purposes.

No later than July 1, 2020, the owner or operator of an operating petroleum refinery shall pay the community air monitoring installation fee, as specified in the table in Section 5.1 of Rule 3200.

**Annual Operating and Maintenance Fees (Section 6.0)**

Pursuant to California Health and Safety Code §42705.6, the owner or operator of a petroleum refinery operating in the San Joaquin Valley shall pay an annual operating and maintenance fee to the District beginning in 2021, as outlined in Table 2 in Rule 3200.

**Table 11: Rule 3200 Table 2 – Community Air Monitoring Annual Operating and Maintenance Fees**

<table>
<thead>
<tr>
<th>Petroleum Refinery Capacity (barrels per day)</th>
<th>Annual Operating and Maintenance Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 40,000</td>
<td>$70,729</td>
</tr>
<tr>
<td>Greater than or equal to 40,000</td>
<td>$223,549</td>
</tr>
</tbody>
</table>

The annual operating and maintenance fees will be included in the annual operating permit invoice and payment shall be submitted to the District in accordance with the timelines for the annual operating permit renewal fee in District Rule 3010.

**Refinery Facilities Not Refining Crude Oil (Section 7.0)**

The purpose of this section is to address existing petroleum refineries with dormant crude oil refining operations at the time of this rulemaking. The owner or operator of a refinery not currently engaged in refining crude oil must submit payment of the community air monitoring installation fee, as specified in Table 1, at least six (6) months prior to planned resumption of petroleum refining operations.

Refinery facilities that cease to engage in refining crude oil shall notify the District in writing at least thirty (30) calendar days prior to ceasing petroleum refinery operations.

**Increases in Petroleum Refinery Capacity (Section 8.0)**

The purpose of this section is to address procedures should a currently operating Valley petroleum refinery increase the permitted capacity to operate in a given year to a
process capacity greater than the 40,000 barrels per day threshold established in Rule 3200 fee tables.

The owner or operator of a petroleum refinery with the capacity to process less than 40,000 barrels per day that subsequently increases processing capacity to greater than or equal to 40,000 barrels per day must notify the District in writing of planned increase in capacity at least six (6) months before a planned increase in capacity. No later than thirty calendar days after an increase in facility capacity, the owner or operator must pay the applicable community air monitoring system installation fee specified in Table 1, less the amount already paid for refineries with operating capacities less than 40,000 barrels per day. The petroleum refinery will also pay the increased annual operation and maintenance fee for petroleum refineries with capacity greater than or equal to 40,000 barrels per day, as specified in Table 2 in Rule 3200, beginning the year following the capacity increase.

**Late Fees (Section 9.0)**

Fees not paid by the invoice due date shall be subject to late fees in accordance with Section 11.0 of District Rule 3010.

V. ANALYSES

A. Emission Reduction Analysis

Proposed Rules 4460 and 3200 do not directly reduce emissions from petroleum refineries. Indirect emissions benefits may be realized due to the potential for early detection of leaks and quick action to control such fugitive emissions.

B. Economic Analysis

Proposed Rules 4460 and 3200 do not directly reduce emissions from petroleum refineries. Indirect emissions benefits may be realized due to the potential for early detection of leaks and quick action to control such fugitive emissions.

Pursuant to California Health and Safety Code (CH&SC) Section 40728.5(a), the District is required to conduct a socioeconomic analysis of proposed rules or rule amendments that will significantly affect air quality or emissions limitations prior to rule adoption. The proposed rules have neither effect, and therefore a socioeconomic analysis is not required for this rule adoption project.

C. Rule Consistency Analysis

Pursuant to CH&SC §40727.2, prior to adopting, amending, or repealing a rule or regulation, the District is required to perform a written analysis that identifies and
compares the air pollution control elements of the rule or regulation with corresponding elements of existing or proposed District and EPA rules, regulations, and guidelines that apply to the same source category. The elements analyzed are emission standards, monitoring and testing requirements, and recordkeeping and reporting requirements. Based on the following analysis, District staff found that proposed Rule 4460 and Rule 3200 do not conflict with any District or federal rules, regulations, or policies covering similar stationary sources.

**District Rules**
There is no other District prohibitory rule or regulation tailored specifically for petroleum refinery fence-line and community air monitoring. The requirements of other District rules affecting petroleum refineries are not in conflict with, nor are they inconsistent with, the requirements of Proposed Rule 4460.

Pursuant to CH&SC Section 40727.2 (g) a rule consistency analysis of Rule 3200 is not required. Rule 3200 does not strengthen emission limits or impose more stringent monitoring, reporting, or recordkeeping requirements.

**Federal Rules, Regulations, and Policies**
Based on the following analysis, District staff found that Rule 4460 would not conflict with any federal rules, regulations, or policies covering similar stationary sources.

In December 2015, U.S. EPA promulgated a final national rulemaking in 40 CFR Part 63.658 for fence-line monitoring of benzene at petroleum refining process units and related emission points that are a major source as defined by section 112(a) of the Clean Air Act and that emit or have equipment containing or contacting one or more of the hazardous air pollutants identified in Table 1 of 40 CFR 63.658. 40 CFR § 63.658 is not applicable to the three petroleum refineries operating under District permit, as this MACT standard (Subpart CC, aka “Refinery MACT 1”) only affects major sources of HAP emissions. The refineries permitted by the District are area sources of HAP emissions. The Valley refineries are each limited by permit condition to facility-wide emissions of less than 10 tons per year of any single hazardous air pollutant, and less than 25 tons per year of any combination of hazardous air pollutants. As this regulation does not apply to Valley refineries subject to Rule 4460 and Rule 3200, there is no conflict between the proposed rules and the federal regulation.

There are no applicable Control Technique Guidelines (CTG), Alternative Control Techniques (ACT), New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), Best Available Control Technology (BACT), or Maximum Achievable Control Technology (MACT) guidelines for Petroleum Refineries that require real-time fence-line or community air monitoring.

EPA Policy on Recordkeeping: EPA has a policy that mandates stationary sources keep and maintain records for at least five years. Proposed District Rule 4460 is consistent with EPA recordkeeping policy.
D. Environmental Impact Analysis

District Rule 4460 includes requiring real-time fence-line air monitoring systems that provide air quality information to the public regarding levels of various air pollutants, which could include criteria air pollutants, volatile organic compounds, metals, and other compounds, at or near property boundaries of petroleum refineries. Additionally, District Rule 3200 is to recover the District’s costs of developing and maintaining a refinery-related community air monitoring system. Based on the District’s investigation, substantial evidence supports the District’s conclusion that the rules will not cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment, and as such is not a “project” as that term is defined under the California Environmental Quality Act (CEQA) Guidelines § 15378. In addition, substantial evidence supports the District’s conclusion that if assuming the rules are a “project” under CEQA, it will not have any significant adverse effects on the environment.

District Rule 4460 and Rule 3200 are an action taken by a regulatory agency, the San Joaquin Valley Air Pollution Control District, as authorized by state law to assure the maintenance, restoration, enhancement, or protection of air quality in the San Joaquin Valley where the regulatory process involves procedures for protection of air quality.

California Environmental Quality Act (CEQA) Guidelines §15308 (Actions by Regulatory Agencies for Protection of the Environment), provides a categorical exemption for “actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment. Construction activities and relaxation of standards allowing environmental degradation are not included in this exemption.” No construction activities or relaxation of standards are included in this project. Therefore, the rule amendment project is exempt from CEQA.

In addition, according to Section 15061 (b)(3) of the CEQA Guidelines, a project is exempt from CEQA if, “(t)he activity is covered by the common sense exemption that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.” As such, for this additional reason, the District finds that the rule amendment project is exempt from CEQA.
VI. RULE DEVELOPMENT PROCESS

A. Public Workshops for Rules 4460 and 3200

Throughout 2019, the District held workgroup meetings with representatives of Valley petroleum refineries to discuss the legislature requirements of AB 1647 and receive feedback on an approach for developing District rules to satisfy these legislative requirements. The District held the first public workshop to present draft recommendations and receive public comments on October 3, 2019, followed by a second workshop on November 5, 2019 with public comment period ending at 5:00 PM on November 12, 2019. All significant comments received have been reviewed and incorporated into the final draft staff report as appropriate. A summary of comments received and District responses is included as Appendix A.

B. Public Hearing for Rules 4460 and 3200

In accordance with CH&SC Section (§) 40725, the proposed Rules 4460 and 3200 and the final draft staff report were publicly noticed and made available prior to the December 19, 2019 Governing Board public hearing to consider adoption of the proposed rule. A public comment period was provided from November 19, 2019, through December 3, 2019. The public was also invited to provide comments to District Governing Board members during the public hearing.
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APPENDIX A

Summary of Significant Comments and Responses And Comment Letters Received

December 19, 2019
The District held a public workshop to present, discuss, and receive comments on draft Rule 4460 and draft Rule 3200 on November 5, 2019. Summaries of significant comments received during the public comment period are summarized below. Please see the end of this appendix for copies of comment letters received.

Written comments were received during the public comment period from the following:
Earthjustice, Central California Environmental Justice Network, Center on Race, Poverty & the Environment, Association of Irritated Residents, Central Valley Air Quality (CVAQ), Central California Asthma Collaborative (Earthjustice, et al.)
San Joaquin Refinery, Jeff Beecher (SJR-Beecher)

1. COMMENT: San Joaquin Refinery (SJR) proposes that the District develop and implement the South Coast Air Quality Management (SCAQMD) District Rule 1180, but exempt refineries under 20,000 barrels/day instead of the SCAQMD rule exemption of 40,000 barrels/day. SJR proposes that this limit be applied to fence-line monitoring only, so that all operating refineries are still subject to community monitoring. SJR is also concerned about the significant cost of fence-line monitoring. (SJR-Beecher)

RESPONSE: In implementing the statutory requirements of AB 1647, the District is requiring that both fence-line and community air quality monitoring be conducted at or near all operating petroleum refinery operations in the Valley. However, District staff considered the unique characteristics of Valley refineries, including the smaller size (and smaller scale of emissions) of petroleum refineries operating in the Valley, as compared to facilities in the South Coast AQMD or Bay Area AQMD. Due to these considerations, District staff have crafted a tiered system, whereby pollutants of key concern to nearby communities will be required to be monitored at facility fence-lines, rather than requiring that a larger spectrum of pollutants be measured, as will be required at larger facilities. This will result in lower costs to refinery owners and operators of these smaller facilities, while still ensuring that monitoring data is collected at facility fence-lines, as required by the legislation. In addition, through the fence-line air monitoring plan submittal and review process, an affected petroleum refinery facility will have the opportunity to submit justification to the District on why specific pollutants should not be measured based on facility emissions, health risk levels, etc.
2. **COMMENT:** In preparing Rule 4460, we urge agency staff to ensure refinery fence-line and related community air monitoring systems track and report a broad range of air pollutants emitted by petroleum refineries. The District should not allow unlawful exemptions for refineries processing crude oil below a particular threshold or those with limited operations at this time as well as provide adequate time for public review and input on draft fence-line and community air monitoring plans prior to approval of final plans. In addition, the District should avoid foreclosing the use of available technologies, including open-path technologies, to allow fence-line and community air monitoring plans to assess a broad range of options. (Earthjustice, et al.)

**RESPONSE:** Unlike regulations in South Coast and other regions, District staff are not including any throughput-based exemptions in proposed Rules 4460 and 3200. The proposed rules will require small refineries with a capacity to process less than 40,000 barrels per day of crude oil to monitor for a range of pollutants, including BTEX compounds at both fence-lines and in nearby communities. The single refinery in the Valley with a capacity to process more than 40,000 barrels per day of crude oil will be required to monitor a wider spectrum of pollutants, should they ever resume refining operations, with enforceable requirements included in Proposed Rules 4460 and 3200. Plans for fence-line monitoring at facility boundaries will be available for public review at least thirty days prior to approval by the Executive Officer/APCO. District staff are not proposing to foreclose the use of available technologies; refinery owners and operators will propose the type(s) of equipment for use in the fence-line monitoring system as a part of the submitted plan.
November 13, 2019

To: San Joaquin Valley Unified APCD

Re: Fenceline Monitoring Rulemaking

San Joaquin Refining (SJR) proposes that SJVAPCD continue to follow the SCAQMD lead as has been occurring already, but exempt refineries under 20,000 barrels/day instead of the SCAQMD rule’s 40,000 barrels/day. SJR proposes that this limit be applied to fenceline monitoring only, so that all operating refineries are still subject to community monitoring.

SJR does not pose a threat to the surrounding community like other refineries may. SJR is not in a community selected under AB617. That alone identifies the facility as less of an impact compared to others. SJR has zero gasoline production. SJR produces a small amount of diesel amounting to 11% of our products. In fact, about 50% of our products are various types of asphalt. Gasoline itself is a flammable substance while diesel is not, so we don’t have large tanks of flammable substances like other refineries. At any given time, there is far more gasoline in the vehicles on our property than we have stored in the one small approximately 100-gallon tank for our on-site needs. SJR also has far less pollutants that are associated with gasoline production, such as benzene, toluene, ethylbenzene and xylene.

OEHHA lists the following equipment that was found to be associated with refinery incidents: ammonia recovery unit, boiler, cogeneration unit, coker, cooling unit, crude unit, diesel unit, FCCU, flares, gas compressor, heater/furnace, hydrogen plant, hydrotreater, jet fuel unit, oxidizer, sonic meter system, storage tank, sulfur recovery unit, vacuum distillation unit, vapor recovery unit. SJR does not have six of them: ammonia recovery unit, cogenration unit, coker, FCCU, jet fuel unit, and sonic meter system. Additionally, SJR does not have the following that are commonly found at other refineries: heater SCR (ammonia) systems, liquefied gas storage, alkylation unit, visbreaking unit, and hydrocracker. The added complexity of these units is not required since SJR is primarily engaged in the production of asphalt and specialty oils. SJR therefore does not have the same potential to affect receptors outside the facility boundaries that other refineries may.

SJR’s AB-2588 prioritization score is low enough that a Health Risk Assessment is not even required. Why then, should the facility be required to continuously monitor emissions at its boundary if it has already been determined unnecessary to monitor emissions to receptors adjacent to the facility? It shouldn’t be. This is a one-size-fits-all regulation that doesn’t fit San Joaquin Refining.

SJR appreciates the District’s effort to recognize that SJR is not like other refineries in the state. However, this was primarily done by comparing refinery daily throughput capacity. Since we’re looking at a regulation that deals with emissions, it’s appropriate to compare emissions from SJR with other refineries. As an example of how SJR compares to others, OEHHA provided the following data for the ten highest routine chemical emissions by California Refineries from 2010:

<table>
<thead>
<tr>
<th>All Refineries (tons)</th>
<th>SJR (RY2017 tons)</th>
<th>SJR Percentage of total</th>
</tr>
</thead>
</table>

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The OEHHA data was converted to tons and then compared to the latest publicly available SJR data set. By the California Energy Commission’s count, there are 15 refineries in California. This means that the average responsibility of each refinery for each constituent is 6.7%. SJR is clearly emitting far less than others.

The South Coast AQMD looked at a number of pollutants and their origins when developing their monitoring rule. The following is a discussion of how some of those pollutants relate to SJR. SJR has very low levels of SO2 as shown above. This is partially because SJR does not have a FCC, which SCAQMD identified as a major source of SO2. Gas and diesel vehicles are the primary source of NOx. Diesel vehicles were identified as a major source of black carbon as well. SCAQMD concluded that aromatic hydrocarbons can result from incomplete combustion of natural gas and also that “elevated levels of BTEX compounds are expected in vicinity of major roadways.” Internal combustion engines also produce the following chemicals (along with numerous others): CO, VOC, formaldehyde, PM, dioxins, dibenzofurans, PAHs, metal compounds, acetaldehyde, MEK, naphthalene, benzopyrene, fluoranthene, and styrene. State Highway 99 forms the eastern boundary of the SJR facility and Standard Street runs through the facility. For those reasons, SJR objects to all of these pollutants being monitored at the facility until a method of measurement that excludes vehicle emissions can be demonstrated. SCAQMD stated that monitoring H2S would be useful for identifying leaks and to address community odor concerns. SJR already has continuous H2S monitors in place and the most recent odor complaint SJR has on file is from over eleven years ago. Clearly odor complaints are not a large issue for the facility. Hydrogen fluoride was identified as being from alkylation units, which SJR does not have. Again, this adds emphasis to the idea that SJR is not like other refineries.

SJR appreciates that the District wants to assess refinery emissions and therefore cannot include an exemption for facilities with a daily throughput of 40,000 barrels or less. However, the extraordinary cost relative to the SJR facility size and the size of other refineries is extremely high. SJR asserts that emissions can be further characterized by community monitoring alone. There is only so much regulatory burden that a facility of our size can accept and still remain viable. We know there have been closures of other refineries around the state for this reason and ask that SJR not be next. SJR asks that the District be mindful of the fact that fenceline monitoring does not reduce emissions when deciding the fate of the facility. SJR does not object to community monitoring and SJR has no objection to continuous fenceline monitoring. The only objection from SJR is to the cost of fenceline monitoring. SJR estimates the first year cost of the fenceline and community monitoring regulation to be over $2,500,000 at a minimum. This number could balloon markedly depending on how many monitors the District will require. SJR is obviously not able to absorb this cost as well as even the smallest refinery subject to the same requirements in the SCAQMD, which is over three times the size of SJR in terms of throughput capacity. This would place SJR at yet another competitive disadvantage.
Please reconsider requiring SJR to conduct this fenceline monitoring and recognize that the mission of these regulations can be effectively carried out with community monitoring alone.

Thank you.

Sincerely,

San Joaquin Refining Co., Inc.

[Signature]

Jeffrey T. Beecher
Environmental Manager
November 4, 2019

VIA: ELECTRONIC MAIL ONLY (ariana.hooks@valleyair.org)

San Joaquin Valley APCD
Attn: Ariana Hooks
1990 E. Gettysburg Ave
Fresno, California 93726

Re: Proposed Rule 4460 (Petroleum Refinery Fenceline and Community Air Monitoring)

Dear Ms. Hooks,

The undersigned organizations submit this comment letter concerning the San Joaquin Valley Air Pollution Control District’s (“Valley Air”) proposed Rule 4460 to comply with Health and Safety Code section 42705.6. Approved by Governor Brown on October 8, 2017, section 42705.6 requires that by January 1, 2020, all petroleum refineries design, install, operate, and maintain real-time fenceline air monitoring systems.\(^1\) Additionally, under section 42705.6, air districts must develop guidance materials and design, install, operate, and maintain real-time refinery-related community air monitoring systems near sensitive receptors around refineries by the statutory deadline.\(^2\)

Valley Air received nearly two years to finalize Rule 4460 and related guidance materials. Instead, the agency delayed or postponed compliance. For instance, in the February 5, 2019 rule forecast, staff noted that Valley Air would “hold a Scoping Meeting in early 2019 to receive public input on the development” of Rule 4460.\(^3\) That meeting did not occur and there is no indication staff made progress on this rulemaking since that date. Now three months before the January 1 compliance deadline, the agency is scrambling to finalize Rule 4460 and guidance materials, with the goal of issuing the proposed rule by November 19 for Governing Board approval by December 19.\(^4\) Importantly, this timeline does not account for the subsequent preparation, review, and approval of both fenceline and community air monitoring plans after Valley Air finalizes this rule and guidance materials.

The agency’s hurried approach and last-minute efforts to comply with section 42705.6 have the potential to undermine its commitment “to an open and transparent public participation process” in rulemaking and “meaningful participation of individuals and communities in the decision-making process.”\(^5\) Valley Air’s failure to prioritize this rulemaking cannot result in truncated public participation and input on both the rule development and subsequent draft monitoring plans.

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5. San Joaquin Valley Air Pollution Control Dist., Environmental Justice Strategy 2, 8 (May 7, 2015).
In preparing Rule 4460, we urge agency staff to consider the following concerns to satisfy the requirements and purpose of section 42705.6 and avoid producing a deficient rule:

- refinery fenceline and related community air monitoring systems should track and report a broad range of air pollutants emitted by petroleum refineries;
- no unlawful exemptions for petroleum refineries processing crude oil below a particular threshold or those with limited operations at this time;
- provide adequate time for public review and input on draft fenceline and community air monitoring plans and response to comments prior to approval of final plans; and
- avoid foreclosing the use of available technologies, including open-path technologies, to allow fenceline and community air monitoring plans to assess a broad range of options.

As you know, communities living near petroleum refineries in Kern County rank among the most environmentally overburdened in the State—once again, in 2018, the area received an “F” for air quality from the American Lung Association, with Bakersfield ranked among the most polluted cities in the United States. Indeed, petroleum refineries in the Central Valley are major sources contributing to and worsening air pollution in the region. In addition, these refineries are inherently dangerous operations that routinely experience flaring events, fires, and explosions. The significant air emissions from these refineries and hazardous operating conditions threaten the health and safety of surrounding communities every day.

Section 42705.6 targets these public health and safety concerns. Refinery fenceline and related community air monitoring systems will provide real-time information to regulators and surrounding communities alerting them when pollution from these refineries becomes hazardous, allowing residents to take proper precautions and regulators to initiate corrective action. Furthermore, these monitoring systems will assist in identifying sources of pollution and support in identifying appropriate control measures to reduce air emissions. Finally, these systems will increase transparency into the amount and type of air emissions crossing the fenceline and entering communities from routine and non-routine refinery operations.

In implementing section 42705.6, Valley Air should strive to advance its mission to “improve the health and quality of life” for families throughout the Central Valley. This requires that the agency prepare and adopt a strong rule and guidance materials to ensure the collection of reliable real-time emissions data and public access to this information.

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7 American Lung Ass’n, State of the Air, California: Kern (last visited Oct. 25, 2019); American Lung Ass’n, Most Polluted Cities (last visited Oct. 25, 2019).
9 See, e.g., Crews contain fire at Kern Oil & Refining Company, 23ABC News Bakersfield (Jan. 18, 2018); Erin Waldner, Man injured in blast at local refinery dies, Bakersfield Californian (Feb. 10, 2006); Erin Waldner, Refinery flare-up being blamed on power outage, Bakersfield Californian (Feb. 10, 2006); and Explosion rocks Alon refinery in northwest Bakersfield, Bakersfield Now (Nov. 9, 2011).
10 San Joaquin Valley Air Pollution Control Dist., The Air District’s Mission (last visited Oct. 25, 2019).
1. Refinery fenceline and related community air monitoring systems should collect and report real-time data on a wide range of air pollutants routinely emitted by petroleum refineries.

   Rule 4460 should mandate that refinery fenceline and community air monitoring systems track and report on a broad range of pollutants of interest. Moreover, for pollutants that Rule 4460 may not require refineries to monitor, the proposed rule should still obligate refineries to make publicly available all air pollution data that certain monitoring technologies may incidentally detect and measure.11

   As you know, petroleum refineries emit an array of criteria pollutants and toxic air contaminants during routine operations and incidences.12 Based on the Office of Health Hazard Assessment’s (“OEHHA”) review of air emissions from refineries, “the top candidates for air monitoring, based on their toxicity, average levels of emissions from refineries statewide, and involvement in multiple refinery processes and incidences” are acetaldehyde, ammonia, benzene, 1,3-butadiene, cadmium, diethanolamine, formaldehyde, hydrogen fluoride, hydrogen sulfide, manganese, naphthalene, nickel, nitrogen oxide (NOx), polycyclic aromatic hydrocarbons, particulate matter (PM), sulfur dioxide, sulfuric acid, and toluene.13 In addition, OEHHA identified the top ten toxic air contaminants emitted by refineries (beginning with the highest): ammonia, formaldehyde, methanol, sulfuric acid, hydrogen sulfide, toluene, xylene, benzene, hexane, and hydrogen chloride.14

   These air emissions have serious human health consequences. For example, several of these pollutants are listed as Proposition 65 chemicals known to the State to cause cancer, birth defects, or reproductive harm, including acetaldehyde, benzene, 1,3-butadiene, cadmium, ethylbenzene, and toluene.15 In addition, other pollutants such as PM and NOx, an ozone precursor, can have significant negative health impacts (e.g., reduced lung function, asthma, irregular heartbeat, and premature death).16

   In the Central Valley, petroleum refineries release large amounts of these air pollutants. According to air emissions data reported under the federal Toxics Release Inventory program and California’s Emission Inventory Development and Reporting System, in 2017, Kern Oil & Refining Co. released 49.5 tons of PM, 60 tons of NOx, and 26,329 pounds of toxic air contaminants, including benzene (404 pounds), toluene (1,876 pounds), xylene (2,621 pounds), and naphthalene (907 pounds).17 Alon released 7.7 tons of PM, 6.7 tons of NOx, and 1,572 pounds of toxic air contaminants, including

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13 Id. at vi.
14 Id. at v.
15 Office of Envtl. Health Hazard Assessment, Chemicals Known to the State to Cause Cancer or Reproductive Toxicity (Sept. 13, 2019).
Refineries processing crude oil below a particular amount or those with limited operations would not be exempt from operating fenceline and funding related community air monitoring systems.\footnote{18} During Valley Air’s October 3, 2019, public workshop, staff proposed a temporary exemption from Rule 4460’s requirements “for any facilities currently not refining petroleum products.”\footnote{22} Instead, the agency would “require the implementation of air monitoring upon resumption of refining operations.”\footnote{23} In effect, the exemption would apply to the Alon refinery, which staff described as “non-operating.”\footnote{24} This proposal, however, is problematic for several important reasons, including because it would constitute an unlawful exemption from the requirements of section 42705.6.

First, as noted above, air emissions inventories from 2017 indicate that Alon has not ceased all operations—it suggests that at least some processes are occurring at the refinery.\footnote{25} Second, it appears the refinery continues to hold valid operating permits, requiring it to comply with all legal requirements that apply to other petroleum refineries in the State.\footnote{26} Third, providing an operating status exemption would unnecessarily postpone the planning and installation of fenceline air-monitoring systems, resulting in delayed protections for communities near this refinery when (not if) full refining operations restart. Finally, under this proposed rule approach, the refinery would not only avoid designing, installing, and operating fenceline monitoring systems, but would also neglect covering costs related to the agency’s

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\textsuperscript{20} Johan Mellqvist, \textit{Emission Measurements of VOCs, NO2 and SO2 from the Refineries in the South Coast Air Basin Using Solar Occultation Flux and Other Optical Remote Sensing Methods} (Apr. 11, 2017).

\textsuperscript{21} Id. at 4.

\textsuperscript{22} San Joaquin Valley Air Pollution Control Dist., \textit{Public Workshop for District Rule 4460 (Petroleum Refinery Fenceline and Community Monitoring} 21 (Oct. 3, 2019).

\textsuperscript{23} Id.

\textsuperscript{24} Id. at 9.


\textsuperscript{26} U.S. Envtl. Protection Agency, \textit{Alon Bakersfield Refining} (last visited Oct. 25, 2019).
development, installation, and operation of required community monitoring systems around sensitive receptors near the refinery.

Similarly, any exemption based on crude oil throughput capacity would be unlawful. Section 42705.6 does not provide any exemptions for refineries processing crude oil below a particular threshold. The oil lobby’s failed effort to pass Assembly Bill (AB) 1299 during the last legislative session, which would have created an exemption under section 42705.6, confirms this legal reality. Under AB 1299, refineries processing less than 55,000 barrels of crude per day and with populations under 3,000 within a one-mile radius would have received an exemption from fenceline and community air-monitoring requirements. Further, in response to AB 1299, Assemblymember Al Muratsuchi, section 42705.6’s author, confirmed that the intent of this law “was to cover all communities surrounding refineries.”

As expressed in the California Air Pollution Control Officers Association’s opposition letter to AB 1299, detecting and measuring emissions from refineries is “critical to assisting in estimating associated pollutant exposures, health risks, and in determining trends in air pollutant levels over time.” Moreover, creating an exemption would “result in lesser public health protections for disadvantaged and low-income communities, many of which are less densely populated.” Given the potential legal implications, in addition to public health and safety consequences, Valley Air must refrain from creating exemptions from section 42705.6’s requirements under Rule 4460.

3. Valley Air must ensure that community members receive adequate time to review and comment on proposed fenceline and community air monitoring plans, and provide response to comments.

Section 42705.6 demands public participation. For instance, Valley Air must develop guidance materials for the design, installation, operation, and maintenance of these monitoring systems, including the “siting of air quality monitors” and “technological capabilities.” In creating this guidance, the agency must “incorporate input from affected parties,” which includes communities near refineries.

Additionally, public access to information is a key aspect of section 42705.6. Under the law, the data collected by fenceline and community air monitoring systems must reach the public “as quickly as possible” and be “publicly accessible” to residents. To meet these requirements, Valley Air must allow for public review and input on the proposed monitoring plans to assist in identifying the best approach to disseminate information, including the adequacy of other plan elements.

Consequently, Valley Air must allow for public review and input throughout the development of this rule and guidance materials. Additionally, the proposed rule should provide the public with sufficient time to review and comment on the draft monitoring plans, and for agency staff to respond to community concerns before approving these plans. This approach will help ensure these monitoring plans satisfy section 42705.6’s information disclosure and related goals, and increase public confidence in the reliability of data collected and distributed by these monitoring systems.

28 Id.
30 California Air Pollution Control Officers Association, Re: AB 1299 (Salas) – Petroleum Refineries: Air Monitoring Systems – Oppose (Sept. 11, 2019).
31 Id.
32 Cal. Health & Saf. Code § 42705.6(b), (c), (e).
33 Cal. Health & Saf. Code § 42705.6(e).
34 Cal. Health & Saf. Code § 42705.6(d).
4. Rulemaking must not foreclose the use of available technologies, including open-path technologies, to allow fenceline and community air monitoring plans to assess options.

Refinery fenceline and community air monitoring systems are required to (a) “collect real-time data,” and (b) provide this data “to the public as quickly as possible in a publicly accessible format” (e.g., user-friendly websites that utilize data archives and visualization tools, and explain data).\(^35\) Section 42705.6, however, does not specify particular monitoring technologies. Instead, air districts must develop guidance that “shall take into account technological capabilities” to assist in the design of fenceline and related community air monitoring systems to collect and report real-time emissions data.\(^36\)

As a result, Valley Air cannot foreclose the use of particular technologies under Rule 4460. Rather, the agency must develop guidance detailing the range of monitoring technologies, and use this guidance in approving refinery-specific monitoring plans and preparing related community air monitoring systems. As noted in guidance developed by the South Coast Air Quality Management District, “[m]ultiple technologies may need to be employed to ensure adequate compound identification.”\(^37\) Accordingly, limiting fenceline-monitoring technology to point source monitors may result in “missing surface emissions hotspots or emissions plumes” and would omit “spatial and temporal data necessary to obtain a complete picture of emissions from large area sources.”\(^38\)

Thus, Valley Air cannot arbitrarily predetermine the monitoring technology that refineries should incorporate to meet section 42705.6’s requirements.

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Valley Air received sufficient time to implement this rulemaking and achieve timely compliance with section 42705.6. The agency’s last-minute efforts cannot result in limited public participation and input throughout the rule development and implementation process, nor the rushed approval of monitoring system plans. Valley Air must prioritize public health and safety in developing Rule 4460 and related guidance materials, and subsequently approve monitoring systems that capture reliable real-time emissions data and further transparency and public access to information.

Respectfully submitted,

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\(^{36}\) Cal. Health & Saf. Code § 42705.6(e).


\(^{38}\) Id.
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