

**SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT**

**FINAL DRAFT STAFF REPORT**

**Proposed Amendments to Rule 4401 (Steam-Enhanced Crude Oil Production Wells)**

**Proposed Amendments to Rule 4409 (Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities)**

**Proposed Amendments to Rule 4455 (Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants)**

**Proposed Amendments to Rule 4623 (Storage of Organic Liquids)**

**Proposed Amendments to Rule 4624 (Transfer of Organic Liquid)**

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## I. SUMMARY

The San Joaquin Valley Unified Air Pollution Control District (District) is committed to protecting public health for all residents in the San Joaquin Valley (Valley) through efforts to meet health-based state and federal ambient air quality standards with efficient, effective, and entrepreneurial air quality management strategies. In response to the latest federal mandates and to improve quality of life for Valley residents, the District has developed and implemented multiple generations of rules on various sources of air pollution. Valley businesses are currently subject to the most stringent air quality regulations in the nation. Since 1992, the District has adopted over 650 rules to implement an aggressive on-going control strategy to reduce emissions in the Valley, resulting in air quality benefits throughout the Valley. Similarly, the California Air Resources Board (CARB) has adopted increasingly stringent regulations for mobile sources. Together, these efforts represent the nation's toughest suite of air pollution emissions controls and have greatly contributed to reduced ozone and particulate matter concentrations across the Valley.

The proposed amendments to District Rules 4401 (Steam-Enhanced Crude Oil Production Wells), 4409 (Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities), 4455 (Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants), 4623 (Storage of Organic Liquids), and 4624 (Transfer of Organic Liquids) are primarily driven to address requirements to implement Best Available Retrofit Control Technology (BARCT) pursuant to Assembly Bill 617 (AB 617). However, during the initial rule amendment process, EPA published a Technical Support Document (TSD) identifying deficiencies in CARB's state regulation, California's Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities<sup>1</sup> also known as the California Oil and Gas Regulation (COGR). In addition to the deficiencies outlined in COGR, EPA's TSD also outlined deficiencies in multiple air district's rules including District Rules 4401, and 4623, which the District is fully addressing in this proposal. Finally, the District also made commitments in the District's *2022 Plan for the 2015 8-Hour Ozone Standard (2022 Ozone Plan)* to amend the proposed rules. The proposed rule amendments address BARCT, EPA CTG, including establishing more stringent leak detection and repair (LDAR) requirements for volatile organic compound (VOC) emissions from various types of components associated with the production of oil and gas and associated control equipment. Additionally, in order to provide better service to stakeholders and affected industry, the proposed rule amendments simplify and clarify existing rule standards and language.

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<sup>1</sup> California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 13: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities, October 2018, <https://ww2.arb.ca.gov/sites/default/files/2020-03/2017%20Final%20Reg%20Orders%20GHG%20Emission%20Standards.pdf>

**A. Reasons for Rule Development**

Under Assembly Bill 617 (AB 617)<sup>2</sup>, air districts in nonattainment areas are required to adopt an expedited schedule to implement the most current Best Available Retrofit Control Technology (BARCT) limits on industrial sources that are subject to the State Cap-and-Trade program. Existing stationary sources in nonattainment areas such as the Valley have been subject to BARCT requirements since the 1980s. However, some nonattainment areas with market-based criteria pollutant reduction programs were not required to apply BARCT to facilities complying with those market-based programs. Although AB 617 legislation does not specifically define BARCT, California Health and Safety Code (CH&SC) Section 40406<sup>3</sup> defines BARCT as follows:

*“BARCT is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.”*

AB 617 further recognizes that “existing law authorizes a district to establish its own best available control technology requirement based upon the consideration of specified factors.”

As part of the BARCT Rule Evaluation, the District identified more stringent LDAR leak thresholds, repair times, and frequency of inspection in other district, state, and federal regulations. Therefore, the District conducted a broader rule making effort, including a comprehensive technical analysis, in-depth review of local, state, and federal regulations, cost-effectiveness analysis, and a robust public process.

While the District has required the implementation of stringent LDAR programs that have resulted in significant reductions in VOC emissions, the District began this rule development process beginning in 2020 to explore opportunities to enhance the stringency of the rules and ensure the continued implementation of BARCT by determining the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts of the source categories subject to District LDAR Rules.

In addition, the U.S. Environmental Protection Agency (EPA) established Reasonably Available Control Technology (RACT) requirements for the oil and natural gas industry subject to the agency’s 2016 Control Techniques Guidelines (CTG) for the Oil and Gas

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<sup>2</sup> AB 617, Garcia, C., Chapter 136, Statutes of 2017. Retrieved from [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201720180AB617](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB617)

<sup>3</sup> Health and Safety Code, Division 26, Part 3, Chapter 5.5, Article 1, Retrieved from [https://leginfo.legislature.ca.gov/faces/codes\\_displaySection.xhtml?lawCode=HSC&sectionNum=40406](https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=40406).

Industry.<sup>4</sup> To address the 2016 CTG, CARB adopted COGR<sup>1</sup>, which establishes methane emission standards for crude oil and natural gas sources. COGR defaults to local air district rules for some categories of emission sources.

On September 30, 2022, EPA finalized in the Federal Register a limited approval, limited disapproval of COGR<sup>5</sup>. The Technical Support Document (TSD)<sup>6</sup> from this action references the 2016 CTG as containing EPA's RACT recommendations for reducing VOC emissions from special equipment and processes used in the oil and natural gas industry. As part of this action, EPA cited deficiencies in COGR and a number of local California air district rules (the District, South Coast AQMD, Sacramento Metropolitan AQMD, Ventura County APCD, Yolo-Solano APVD, and Feather River AQMD). For the District, EPA identified Rules 4401 and 4623 as deficient in meeting RACT requirements as outlined in the 2016 CTG. As such, this rulemaking action also addresses the deficiencies identified by EPA.

Based on a comprehensive technical analysis, in-depth review of local, state, and federal regulations, and a robust public process, the District is proposing several amendments to Rules 4401, 4409, 4455, 4623, and 4624, which will reduce VOC emissions in the Valley. The proposed rule amendments will address BARCT requirements pursuant to AB 617, address RACT requirements pursuant to EPA's 2016 CTG, and satisfy commitments in the *2022 Ozone Plan*.

## **B. Health Benefits of Proposed Amendments**

The proposed amendments reduce VOC emissions, a contributor in the formation of ozone, from oil and natural gas sources as well as petroleum refining. Exposure to ozone has been linked to a variety of health issues, including chest pain, coughing, throat irritation, congestion, reduced lung function, and inflammation of the lining of the lungs. Repeated exposure to elevated concentrations of ozone may also permanently scar lung tissue. People with asthma, children, older adults, people active outdoors, and outdoor workers are at higher risk from exposure to high levels of ozone, and studies have linked rising hospital admissions and emergency room visits to higher ozone levels. The District has worked with CARB and EPA to reduce ground level ozone concentrations through the implementation of comprehensive emission reduction regulations while also incentivizing the implementation of low emission technology through a variety of grant programs. Further reducing NOx and VOC emissions, the

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<sup>4</sup> Control Techniques Guidelines for the Oil and Natural Gas Industry, October 20, 2016  
<https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-industry/2016-control-techniques-guidelines-oil-and>

<sup>5</sup> EPA. *Limited Approval, Limited Disapproval, of California Air Plan Revisions; California Air Resources Board, Final Rule*. (30 September, 2022) Retrieved from: <https://www.govinfo.gov/content/pkg/FR-2022-09-30/pdf/2022-20870.pdf>

<sup>6</sup> EPA. *Technical Support Document for EPA's Rulemaking for the California State Implementation Plan*. April 2022. Retrieved from: <https://www.regulations.gov/document/EPA-R09-OAR-2022-0416-0002>

primary precursors to ozone formation, contributes to additional and significant public health and economic benefits in the San Joaquin Valley.

**C. Rule Development Process**

As part of the rule development process, the District conducted public workshops to present and discuss potential amendments to the District’s LDAR Rules (Rules 4401, 4409, 4455, 4623, and 4624). The District shared information about public meetings with members of the public, source operators, consultants, vendors and manufacturers of control technologies, trade associations, and AB 617 community steering committee members. The District conducted public meetings/workshops in July 2020, December 2020, April 2021, October 2021, March 2022, October 2022, and April 2023. The District provided updates throughout the rule development process and BARCT evaluation to stakeholders.

At the rule development public workshops, the District presented the objectives of the proposed rulemaking project. The District published draft rules for public review on March 10, 2022, and April 17, 2023, to provide opportunity for public comment on draft amendments. Throughout the rule development process, District staff solicited information from affected source operators, consultants, and trade associations on the feasibility and compliance costs to assist the District in developing amendments to the LDAR Rules. The District incorporated comments received from the public, affected sources, and interested parties during the public outreach and workshop process into the rule amendments as appropriate.

Pursuant to state law, the District is required to perform a socioeconomic impact analysis prior to adoption, amendment, or repeal of a rule that has significant air quality benefits or that will strengthen emission limitations. As part of the District’s socioeconomic analysis process, the District hired a socioeconomic consultant to prepare a socioeconomic impact report. The results of the socioeconomic analysis are included in Appendix D.

The proposed rule amendments were published for 30-day public review and comment on May 16, 2023 prior to the public hearing to consider the adoption of the proposed amendments by the District Governing Board. The public hearing is scheduled on June 15, 2023.

**II. DISCUSSION**

**A. Current Rules**

Over the years, the District has adopted numerous generations of rules and rule amendments for components found within the oil and gas sector, including petroleum

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refineries. The adoption and amendments of these rules has significantly reduced VOC emissions from this source category.

The summaries below provide additional information on the current version of each rule.

## **Rule 4401 – Steam-Enhanced Crude Oil Production Well Vents**

The District adopted Rule 4401 on April 11, 1991. The District subsequently amended Rule 4401 five times, with the most recent amendments occurring in June 2011. EPA finalized approval of the 2011 amendments to Rule 4401 on November 16, 2011 and deemed this Rule as being as stringent as established RACT requirements.<sup>7</sup> EPA further confirmed this RACT determination when they finalized a partial approval/partial disapproval of the *2009 RACT SIP* on January 10, 2012.<sup>8</sup>

Rule 4401 applies to all steam-enhanced crude oil production wells and any associated VOC collection and control systems. The purpose of this Rule is to limit VOC emissions from these sources, particularly from casing vents. VOC emissions can also occur from components serving both open and closed casing systems.

## **Rule 4409 – Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities**

The District adopted Rule 4409 on April 20, 2005. EPA finalized approval of the 2005 adoption of Rule 4409 on March 23, 2006, and deemed this Rule at least as stringent as established RACT requirements.<sup>5</sup> EPA further confirmed this RACT determination when they finalized a partial approval/partial disapproval of the *2009 RACT SIP* on January 10, 2012.<sup>6</sup>

Rule 4409 applies to components containing or contacting VOC streams at light crude oil production facilities, natural gas production facilities, and natural gas processing facilities. The purpose of this Rule is to limit VOC emissions from components at these facilities, including, but not limited to, valves, fittings, threaded connections, pumps, compressors, pressure relief devices, pipes, polished rod stuffing boxes, flanges, process drains, sealing mechanisms, hatches, sight-glasses, meters, or seal fluid systems in VOC service.

VOC emissions can occur from oil and gas flowing through the various components containing or contacting VOC streams. Rule 4409 contains a schedule that specifies

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<sup>7</sup> EPA. *Revisions to the California State Implementation Plan, San Joaquin Valley Unified Air Pollution Control District; Final Rule*. 76 Fed. Reg. 221, pp. 70886 – 70887. (2011, November 16). (to be codified at 40 CFR Part 52). Retrieved from <http://www.gpo.gov/fdsys/pkg/FR-2011-11-16/pdf/2011-29466.pdf>

<sup>8</sup> EPA. *Partial Approval and Partial Disapproval of Air Quality Implementation Plans; California; San Joaquin Valley; Reasonably Available Control Technology for Ozone; Final Rule*. 77 Fed. Reg. 6, pp 1417 – 1427. (2012, January 10). (to be codified at 40 CFR Part 52). Retrieved from <http://www.gpo.gov/fdsys/pkg/FR-2012-01-10/pdf/2012-139.pdf>

the number of allowable component leaks based on the number and type of components inspected.

### **Rule 4455 – Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants**

The District adopted Rule 4455 on April 20, 2005. EPA finalized approval of the 2005 adoption of Rule 4455 on March 23, 2006, and deemed this Rule at least as stringent as established RACT requirements.<sup>9</sup> EPA further confirmed this RACT determination when they finalized a partial approval/partial disapproval of the *2009 RACT SIP* on January 10, 2012, and again deemed this Rule at least as stringent as established RACT requirements.<sup>10</sup>

Rule 4455 applies to components containing or contacting VOC streams at petroleum refineries, gas liquid processing facilities, and chemical facilities. The purpose of this Rule is to limit VOC emissions from components at these facilities, including, but not limited to, any valve, fitting, threaded connection, pump, compressor, pressure relief device, pipe, flange, process drain, sealing mechanism, hatch, sight-glass, meter or seal fluid system in VOC service.

VOC emissions can occur from oil and gas flowing through the various components containing or contacting VOC streams.

### **Rule 4623 – Storage of Organic Liquids**

The District adopted Rule 4623 on April 11, 1991. The District subsequently amended Rule 4623 four times, with the most recent amendments occurring in May of 2005. EPA finalized approval of the 2005 amendments to Rule 4623 on September 13, 2005, and deemed this Rule at least as stringent as established RACT requirements.<sup>11</sup> EPA further confirmed this RACT determination when they finalized of the approval of the *2014 RACT SIP* on August 17, 2018.<sup>12</sup>

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<sup>9</sup> EPA. *Revisions to the California State Implementation Plan, San Joaquin Valley Unified Air Pollution Control District; Final Rule*. 71 Fed. Reg. 56, pp. 14652 – 14654. (2006, March 23). (to be codified at 40 CFR Part 52). Retrieved from <http://www.gpo.gov/fdsys/pkg/FR-2006-03-23/pdf/06-2814.pdf>

<sup>10</sup> EPA. *Partial Approval and Partial Disapproval of Air Quality Implementation Plans; California; San Joaquin Valley; Reasonably Available Control Technology for Ozone; Final Rule*. 77 Fed. Reg. 6, pp 1417 – 1427. (2012, January 10). (to be codified at 40 CFR Part 52). Retrieved from <http://www.gpo.gov/fdsys/pkg/FR-2012-01-10/pdf/2012-139.pdf>

<sup>11</sup> EPA. *Revisions to the California State Implementation Plan, San Joaquin Valley Unified Air Pollution Control District; Final Rule*. 70 Fed. Reg. 176, pp. 53936 – 53938. (2005, September 13). (to be codified at 40 CFR Part 52). Retrieved from <https://www.govinfo.gov/content/pkg/FR-2005-09-13/pdf/05-18019.pdf>

<sup>12</sup> EPA. *Air Plan Approval; California; San Joaquin Valley Unified Air Pollution Control District; Reasonably Available Control Technology Demonstration; Final Rule*. 83 Fed. Reg. 160, pp 41006 – 41009. (2018, August 17). (to be codified at 40 CFR Part 52). Retrieved from <https://www.govinfo.gov/content/pkg/FR-2018-08-17/pdf/2018-17714.pdf>



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Rule 4623 applies to tanks that store organic liquids and have a capacity of at least 1,100 gallons. The tank size and true vapor pressure (TVP) of the stored organic liquid determines the tank VOC control requirements.

VOC emissions from the storage of organic liquids occur due to evaporative loss of liquid resulting from changes in liquid level during both the filling and emptying process (working loss). Additional VOC emissions occur when there are changes in storage temperature due to fluctuations in ambient temperature or when heating the tanks prior to shipping (standing or breathing loss). Rule 4623 reduces VOC emissions by requiring proper maintenance of tanks, use of Pressure Vacuum Relief Valves and/or vapor control systems for various tanks.

## **Rule 4624 – Transfer of Organic Liquid**

The District adopted Rule 4624 on April 11, 1991. The District subsequently amended Rule 4624 four times, with the most recent amendments occurring in December of 2007. EPA finalized approval of the 2007 amendments to Rule 4624 on October 15, 2009, and deemed this Rule at least as stringent as established RACT requirements.<sup>13</sup> EPA further confirmed this RACT determination when they finalized approval of the 2014 RACT SIP on August 17, 2018.<sup>14</sup>

Rule 4624 applies to organic liquid transfer facilities. The purpose of this Rule is to limit VOC emissions associated with the transfer of organic liquids from both loading and unloading racks with stationary organic liquid pumps.

Facilities transferring 20,000 gallons or more per day of organic liquid must comply with a VOC emission limit of 0.08 lb per 1,000 gallons, use bottom loading tanker trailers, and route VOC vapors to a vapor collection and control system, a fixed roof container, a floating roof container, a pressure vessel, or other closed VOC emission control system. Facilities transferring less than 20,000 gallons but more than 4,000 gallons per day of organic liquid must capture at least 95 percent of VOC vapors displaced during loading, use bottom loading, and route VOC vapors to a vapor collection and control system, a fixed roof container, a floating roof container, a pressure vessel, or other closed VOC emission control system.

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<sup>13</sup> EPA. *Revisions to the California State Implementation Plan, San Joaquin Valley Unified Air Pollution Control District; Final Rule*. 74 Fed. Reg. 198, pp. 52894 – 52895. (2009, October 15). (to be codified at 40 CFR Part 52). Retrieved from <https://www.govinfo.gov/content/pkg/FR-2009-10-15/pdf/E9-24687.pdf>

<sup>14</sup> EPA. *Air Plan Approval; California; San Joaquin Valley Unified Air Pollution Control District; Reasonably Available Control Technology Demonstration; Final Rule*. 83 Fed. Reg. 160, pp 41006 – 41009. (2018, August 17). (to be codified at 40 CFR Part 52). Retrieved from <https://www.govinfo.gov/content/pkg/FR-2018-08-17/pdf/2018-17714.pdf>

**B. Amendments for BARCT and RACT**

**Analysis and Proposed Amendments to Address BARCT**

Based on the District's recent AB 617 BARCT analysis, the District evaluated potential amendments to the leak detection and repair requirements for District Rules 4401, 4409, 4455, 4623, and 4624. As part of this analysis, the District reviewed leak thresholds and repair timeframes from the following air district rules, and state and federal regulations and guidelines:

- Bay Area Air Quality Management District (BAAQMD)
- California Oil and Gas Regulation (COGR)
- EPA 2016 Control Technology Guideline for the Oil and Gas Industry (EPA-453/B-16-001)
- EPA New Source Performance Standards (NSPS)
- Santa Barbara County Air Pollution Control District (SBCAPCD)
- South Coast Air Quality Management District (SCAQMD)
- Ventura County Air Pollution Control District (VCAPCD)

The District completed an in-depth review of local, state, and federal regulations, and found that the current VOC control technology requirements in Rules 4401, 4623, and 4624 meet or exceed BARCT levels of control; therefore, the District is proposing no changes to the VOC control requirements within these rules. Rules 4409 and 4455 only include LDAR requirements; however, facilities subject to these rules may have equipment subject to the control requirements of other District Rules, such as District Rule 2201 (New and Modified Stationary Source Review), District Rule 4311 (Flares), Rule 4623, and Rule 4624.

**Analysis and Proposed Amendments to Address EPA 2016 CTG Deficiency**

On September 30, 2022 EPA finalized in the Federal Register a limited approval, limited disapproval of COGR<sup>5</sup>. The TSD from this action references the 2016 CTG as containing EPA's RACT recommendations for reducing VOC emissions from special equipment and processes used in the oil and natural gas industry. As part of this action, EPA cited deficiencies in COGR and local air district rules including District Rules 4401, and 4623. EPA's limited disapproval addressed the following deficiencies in District Rule 4401 and 4623:

1. Current rule (4401 and 4409) has a minor leak threshold of 1,000 ppmv, while CTG recommends 500 ppmv.
2. Current rule (4401) requires annual inspections while CTG recommends more frequent monitoring.
3. Current rules (4401 and 4409) exempt one-half inch and smaller stainless steel tube fittings used to supply natural gas to equipment or instrumentation from continuous monitoring, while the CTG does not provide for this exemption.

4. Unclear whether current rule (4623) requires vapor control systems for storage tanks with Potential to Emit (PTE) greater than 6 ton per year of VOC or actual emissions greater than or equal to 4 tons per year.

#### **Addressing EPA's TSD for Rule 4401**

For components at well sites, the 2016 CTG recommends conducting monthly inspections of valves and pumps using EPA Reference Method 21 at a 500 ppmv leak threshold until the components are leak free for two consecutive months, then inspections can transition to quarterly inspections at 500 ppmv. For all other components, inspections must be conducted semi-annually. The 2016 CTG suggests that monthly inspections at 500 ppmv achieve an emission reduction of 92 percent, while semi-annual inspection for all other components achieve an emission reduction of 74 percent. In 2018, CARB staff determined in their Staff Report<sup>15</sup> the overall emission reduction for monthly inspection of valves and semi-annual inspection of all other components achieves 80 percent reduction, using a weighted average of the monthly and annual inspection based on the distribution of valves and connectors included in the 2016 CTG's model natural gas processing plant.<sup>16</sup>

The District is proposing quarterly inspections using EPA Reference Method 21 at 500 ppmv for all components subject to Rule 4401. Emission reductions from EPA Reference Method 21 monitoring programs are estimated for a variety of monitoring frequencies and leak thresholds using the EPA Protocol for Equipment Leak Emission Estimates<sup>17</sup>, consistent with the 2016 CTG. Using this protocol, quarterly monitoring at a leak threshold of 500 ppmv achieves 89 percent emission reductions overall. By contrast, the 2016 CTG as noted achieves 80 percent reductions with its combination of monthly and semi-annual inspections at 500 ppmv as recommended for components located at well sites.

The District's proposal of quarterly inspection of all components at 500 ppmv provides greater emission reduction than the monthly monitoring of valves and pumps. Following the EPA protocol, increasing the frequency of monitoring to quarterly for all components results in greater emission reductions compared to increasing the monitoring frequency for certain components. Therefore, the District is proposing quarterly monitoring at 500 ppmv for all components.

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<sup>15</sup> CARB. *Staff Report: Proposed Submission of California's Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities Into the California State Implementation Plan*. (September 21, 2018). Retrieved from: [https://ww2.arb.ca.gov/sites/default/files/2020-04/O\\_G%20CTG%20-%20Staff%20Report.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-04/O_G%20CTG%20-%20Staff%20Report.pdf)

<sup>16</sup> EPA. *Control Technique Guidelines for the Oil and Natural Gas Industry*. (2016). Retrieved from: <https://www.epa.gov/sites/default/files/2016-10/documents/2016-ctg-oil-and-gas.pdf>

<sup>17</sup> EPA. *Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017)*. Research Triangle Park, NC: Office of Air Quality Planning and Standards. (1995). Retrieved from: <https://www3.epa.gov/ttnchie1/efdocs/equiplks.pdf>

**Addressing EPA’s TSD for Rule 4623**

Current District Rule 4623 requires vapor control systems based on size of tank and TVP of the stored liquid. EPA’s CTG requires a vapor control system based on if the PTE of storage tank equals or exceeds six (6) tons per year or if the actual VOC emissions exceed four (4) tons per year. The District believes that based on the current requirements of Rule 4623, all tanks that have a PTE greater than 6 tons per year or actual emissions greater than 4 tons per year more than likely already have installed vapor control systems. However, to ensure that there is no deficiency in meeting the CTG requirements, the District is proposing to add the following language to District Rule in the applicability and tank requirements sections:

Section 2.0 Applicability

*This rule applies to any tank with a capacity of 1,100 gallons or greater in which any organic liquid is placed, held, or stored, and any tank used in crude oil or natural gas production operations with a potential to emit six (6) tons of VOC or greater per year.*

Section 5.0 Requirements

*If a tank has the Potential to Emit greater than or equal to six (6) tons per year of VOC and actual emissions are greater than or equal to four (4) tons per year using a generally accepted model or calculation methodology, operator must install a vapor control system meeting the specifications described in Sections 5.3, 5.4, 5.5 or 5.6.*

**Addressing EPA’s Comments for Rule 4409**

Although not initially cited in the TSD, EPA provided comments to the District during the rulemaking stating that the CTG is more stringent for equipment at natural gas processing facilities. The 2016 CTG recommends conducting monthly inspections of valves and pumps using EPA Reference Method 21 at a 500 ppmv leak threshold until the components are leak free for two consecutive months, then inspections can transition to quarterly inspections at 500 ppmv. For all other components at natural gas processing plant, inspections must be conducted annually. The 2016 CTG states that monthly inspections at 500 ppmv achieve an emission reduction of 92 percent, while annual inspection for all other components achieve an emission reduction of 68 percent.<sup>18</sup> In 2018, CARB staff determined that the overall emission reduction for monthly inspection of valves and annual inspections of all other components achieves 74 percent, using a weighted average of the monthly and annual inspection based on

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<sup>18</sup> EPA. *Control Technique Guidelines for the Oil and Natural Gas Industry*. (2016). Retrieved from: <https://www.epa.gov/sites/default/files/2016-10/documents/2016-ctg-oil-and-gas.pdf>

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the distribution of valves and connectors included in the 2016 CTG's model natural gas processing plant.<sup>19</sup>

The District is proposing quarterly inspections using EPA Reference Method 21 at 500 ppmv for all components subject to Rules 4409. Emission reductions from EPA Reference Method 21 monitoring programs are estimated for a variety of monitoring frequencies and leak thresholds using the EPA Protocol for Equipment Leak Emission Estimates<sup>20</sup>, consistent with the 2016 CTG. Using this protocol, quarterly monitoring at a leak threshold of 500 ppmv achieves 89 percent emission reductions overall. By contrast, the 2016 CTG as noted achieves 74 percent reductions with its combination of monthly and annual inspections at 500 ppmv as recommended for components located at natural gas processing facilities.

The District's proposal of quarterly inspection of all components at 500 ppmv outweighs the impact of monthly monitoring of valves and pumps. Using the EPA protocol, increasing the frequency of monitoring to quarterly for all components at 500 ppmv results in higher emission reductions than increasing the monitoring frequency for certain components. Therefore, the District is proposing quarterly monitoring at 500 ppmv for all components.

EPA also commented in their final ruling, published in the Federal Register<sup>4</sup>, on the potential deficiency for heavy crude oil with an API gravity of less than 20. The disapproval outlines the lack of analysis provided to EPA that demonstrate controls are not cost effective, or that emissions are minimal, which would satisfy RACT requirements. CARB has conducted an analysis and submitted to EPA demonstrating that no deficiency exists in their 2023 Initial Statement of Reasoning.<sup>21</sup> The analysis included the approximate cost to eliminate their heavy oil exemption. In the analysis, CARB projects an increased cost of \$26,023,588 per year. The emission reductions are projected at 299.8 metric tons per year of methane, which is equivalent to 0.148 tons of VOC per day.<sup>22</sup> CARB's analysis found that the emissions from heavy oil components is insignificant on a statewide basis, and the majority of the components in heavy oil

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<sup>19</sup> EPA. *Control Technique Guidelines for the Oil and Natural Gas Industry*. (2016). Retrieved from: <https://www.epa.gov/sites/default/files/2016-10/documents/2016-ctg-oil-and-gas.pdf>

<sup>20</sup> EPA. *Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017)*. Research Triangle Park, NC: Office of Air Quality Planning and Standards. (1995). Retrieved from: <https://www3.epa.gov/ttnchie1/efdocs/equiplks.pdf>

<sup>21</sup> California Air Resources Board. Public Hearing to Consider the Proposed Amendments to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. Retrieved from: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2023/oilgas2023/isr.pdf>

<sup>22</sup> California Air Resources Board. Appendix B: Economic Analysis for Proposed Amendments to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. Retrieved from: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2023/oilgas2023/israppb.pdf>

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service are found in the District's jurisdiction. Therefore, the emissions from heavy oil components in the Valley are insignificant, and no further action is needed.

## **C. Proposed Amendments to Rules 4401, 4409, 4455, 4623, and 4624**

The following sections detail the proposed amendments to rule language and requirements. For further information on how proposed limits were determined, see the District's Cost Analysis in Appendix C. Additionally, in an effort to simplify rule language and clarify existing requirements, the District is removing expired language in the rules. See the proposed rules for exact language.

### **Proposed Amendments to Rule 4401**

In determining potential amendments to Rule 4401, the District considered the following rules and regulations:

- South Coast Air Quality Management District Rule (SCAQMD) 1148.1
- South Coast Air Quality Management District Rule (SCAQMD) 1173
- Ventura County Air Pollution Control District (VCAPCD) Rule 74.10
- Santa Barbara County Air Pollution Control District (SBCAPCD) Rule 331
- California Oil and Gas Regulation (COGR)
- EPA 2016 Control Technology Guideline for the Oil and Gas Industry (EPA-453/B-16-001)
- EPA New Source Performance Standard (NSPS) Subpart OOOO
- EPA NSPS Subpart OOOOa

Table 1 provides a comparison of the District's requirements to other local, State, and Federal regulations including the District's proposed leak standards.

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**Table 1 – Comparison of District Rule 4401 to Similar Rules and Regulations**

Rule 4401 – Steam-Enhanced Crude Oil Production Wells							
Current Leak Standard	VCAPCD Rule 74.10	SBCAPCD Rule 331	SCAQMD Rule 1173	SCAQMD Rule 1148.1	CARB COGR	EPA NSPS Subpart OOOO and OOOOa	EPA 2016 CTG for the Oil and Gas Industry (EPA-453/B-16-001)
<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 400 ppmv (PRDs)</li> <li>• Minor: 2,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 1,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 1,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• 100 ppmv (pump in heavy liquid service)</li> <li>• 200 ppmv (PRDs)</li> <li>• 500 ppmv in light crude service</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Major: 10,000 ppmv</li> <li>• Minor: +3 drops min.</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• 100 ppmv (any component in heavy liquid service)</li> <li>• 500 ppmv (any component in light liquid service)</li> </ul>	<ul style="list-style-type: none"> <li>• Limit: 1,000 ppmv</li> </ul>	<ul style="list-style-type: none"> <li>• Leak Limit: 500 ppmv</li> <li>• Leak Limit: 2,000 ppmv for pumps in light crude service</li> <li>• Leak Limit: 10,000 ppmv for pumps in heavy crude service</li> </ul>	<ul style="list-style-type: none"> <li>• Leak Limit: 500 ppmv (valves, compressors, PRDs)</li> <li>• Leak Limit: 2,000 ppmv (pumps)</li> </ul>

Based on the above comparison, the District evaluated lowering the LDAR threshold minor leak gas category from 2,000 ppmv to three specific thresholds including 1,000 ppmv, 500 ppmv, and 100 ppmv. Based on the District’s analysis and cost-effectiveness analysis shown in Appendix C, the District is proposing a 500 ppmv LDAR threshold, which meets or exceeds BARCT. The District is also proposing to increase the frequency of LDAR inspections required by an operator from annual to quarterly for all components.

Reducing the leak threshold to 500 ppmv also meets RACT recommendations established in the 2016 CTG. For equipment leaks, the 2016 CTG requires monthly inspections of valves and semi-annual inspections of connectors using EPA Reference Method 21 at 500 ppmv leak threshold. As discussed earlier, quarterly inspections of all components at 500 ppmv achieves more emissions reductions than the recommended 2016 CTG requirements.

**Section 1.0 – Purpose**

No changes proposed at this time.

**Section 2.0 – Applicability**

No changes proposed at this time.

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## Section 3.0 – Definitions

The District is proposing amendments to definitions to meet BARCT requirements, and comply with RACT deficiencies cited for Rule 4401 from the 2016 CTG. The District is proposing a revised minor leak definition to reflect the proposed LDAR threshold. The leak threshold is defined in Table 1 of the current rule as 2,000 ppmv for minor gas leaks. The District is establishing a lower LDAR threshold of 500 ppmv for minor gas leaks.

- 3.20 *Leak*: Updates to Table 1 contain new language to indicate that Table 1 is effective until June 30, 2024. The requirements of new Table 2 go into effect after June 30, 2024. Table 2 contains a new minor leak definition for components other than Pressure Relief Devices (PRD). Components other than PRD's will be at 500 ppmv.

Table 1 – Gas Leak in ppmv as Methane until June 30, 2024		
Type of Component	Major Gas Leak	Minor Gas Leak
1. PRDs	Greater than 10,000	400 to 10,000
2. Components other than PRDs	Greater than 10,000	2,000 to 10,000

Table 2 – Gas Leak in ppmv as Methane after June 30, 2024		
Type of Component	Major Gas Leak	Minor Gas Leak
1. PRDs	Greater than 10,000 to 49,999	400 to 10,000
2. Components other than PRDs	Greater than 10,000 to 49,999	500 to 10,000

- 3.22 *Major Component*: Update to definition for consistency and clarity. The change to the definition is as follows:

*Major Component*: a pump five (5) brake horsepower or larger, any compressor, or any pressure relief ~~valve~~ device four (4) inches in diameter or larger.

- 3.23 *Open-ended Line or Valve*: The District updated the definition of Open-ended Line for consistency across all the applicable rules as follows:

*Open-ended Line or Valve*: a line or valve, except for pressure relief device and process drains, having one side of the line or valve seat in contact with the process fluid and one side open to the atmosphere, either directly or through an open piping.



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- 3.25 *Optical Gas Imaging (OGI)*: The District added a definition to include OGI to Rule 4401. The new definition reads as follows:  
  
*Optical Gas Imaging (OGI): an instrument that makes emissions visible that may otherwise be invisible to the naked eye.*
- 3.28 *Pressure Relief Device (PRD)*: The District updated the definition of Pressure Relief Devices (PRD) to encompass the definition of a Pressure Relief Valve. This provides consistency across other District LDAR rules. The new language prompts the removal of existing definition 3.28, Pressure Relief Valve (PRV).
- 3.30 *Process System*: Update to the definition to account for the new regulating agency California Geologic Energy Management Division (CalGEM).
- 3.35 *Rig-up Operation*: The District added a new definition for “Rig-up Operation”. Rig-up operations require special equipment that some facilities must contract from third parties. The circumstances and provisions are now included in Section 5.5.8 of Rule 4401 to account for Rig-up operations.

## **Section 4.0 – Exemptions**

The District is proposing to remove exemption 4.6.4 from Rule 4401. Rule 4401 Section 4.6.4 exempts half inch or less stainless steel tube fittings from LDAR inspections, and leak requirements after their initial inspection. The removal of this exemption meets RACT recommendations as the exemption of these components is not found in the 2016 CTG. These components will now be subject to the leak standard, and inspection frequency of proposed Rule 4401.

The District is proposing to remove exemption 4.7 from Rule 4401. Rule 4401 Section 4.7 exempts components exclusively handling gas/vapor or liquid with a VOC content of 10 percent by weight or less from LDAR inspections. These components are already required to conduct LDAR inspections under COGR and with this exemption removed, these components will now be subject to Rule 4401.

## **Section 5.0 – Requirements**

The District is proposing to increase the frequency of LDAR inspections from annual to quarterly. The District evaluated requirements in analogous rules, including VCAPCD Rule 74.10, SBCAPCD Rule 325, and COGR, which contain quarterly inspection requirements. Increasing the frequency of inspections will make Rule 4401 as stringent as other comparable rules and regulations.

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- 5.2.2.4 Modification to the number of allowable leaks table commencing after June 30, 2024. The District determined that on average, a well has 32 components. To comply with the 2016 CTG recommendations of allowable leaks without a violation, the District is reducing the number of allowable leaks to zero if five wells or less are inspected. Additional language was added to highlight that all leaks are still subject to the leak repair timeframes. The current table 3 and the new table 4 is shown below:

<b>Table 3 – Number of Allowable Leaks until June 30, 2024</b>	
Number of Steam-Enhanced Crude Oil Production Wells Connected to a VOC Collection and Control System	Number of Allowable Leaks
1 to 25	3
26 to 50	6
51 to 100	8
101 to 250	10
251 to 500	15
More than 500	One (1) for each 20 wells tested with a minimum of 50 wells tested.

\*Leaks counted toward the allowable leaks in Table 3 are still subject to component repair requirements of section 5.5.

<b>Table 4 – Number of Allowable Leaks after June 30, 2024</b>	
Number of Steam-Enhanced Crude Oil Production Wells Connected to a VOC Collection and Control System	Number of Allowable Leaks
1 to 5	0
6 to 25	3
26 to 50	6
51 to 100	8
101 to 250	10
251 to 500	15
More than 500	One (1) for each 20 wells tested with a minimum of 50 wells tested.

\*Leaks counted toward the allowable leaks in Table 4 are still subject to component repair requirements of section 5.5.

- 5.4 Updates in this section and new subsection phase out Section 5.4.1 after June 30, 2024, and replaces it with new Section 5.4.2. The action establishes quarterly inspections required for all components subject to Rule 4401 after June 30, 2024.

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- 5.5.4 New Table 6 takes effect after June 30, 2024. The new table reduces the repair period for gas leaks greater than 50,000 ppmv, and major liquid leaks. Current Table 5 and new Table 6 are shown below:

<b>Table 5 – Repair Period until June 30, 2024</b>	
Type of Leak	Repair Period in Calendar Days
Gas Leaks	
Minor Gas Leak	14
Major Gas Leak less than or equal to 50,000 ppmv	5
Gas Leak greater than 50,000 ppmv	2
Liquid Leaks	
Minor Liquid Leak	3
Major Liquid Leak	2

<b>Table 6 – Repair Period after June 30, 2024</b>	
Type of Leak	Repair Period in Calendar Days
Gas Leaks	
Minor Gas Leak	14
Major Gas Leak less than or equal to 50,000 ppmv	5
Gas Leak greater than 50,000 ppmv	1
Liquid Leaks	
Minor Liquid Leak	3
Major Liquid Leak	1

- 5.5.6 Update to this section to reference new repair periods in Table 6. The update of this section is as follows:

*The time of the initial leak detection shall be the start of the repair period specified in Table 5 or Table 6.*

- 5.5.8 New Section 5.5.8 allows up to 30-days for repair if a rig-up operation is required. The provision adds steps an operator must take to comply with the extended repair period requirement for rig-up operations. The reason

for the additional time for repair is due to the need for specialized equipment, which takes time to arrive, assemble, and install at the well site. This is prominent for well casing leaks that may require a third-party rig-up operation for repair; this is similar to the requirements in COGR. In order to be granted an extension, an operator must provide supporting information for the District to evaluate before an extension is ultimately approved. Detailed requirements are listed in Section 5.5.8 of proposed Rule 4401 and become effective after June 30, 2024.

**Section 6.0 – Administrative and Recordkeeping Requirements**

- 6.1.2 Update to identify California Geologic Energy Management Division (CalGEM) as the leading agency requiring facilities to maintain records of crude oil production.
- 6.2.1 Update to this section replaces the word “annually” with “each calendar year” to provide clarity on source testing frequency.
- 6.3.3.1 New Section 6.3.3.1 provides instruction on leaks identified while using OGI. The new section reads as follows:

*After June 30, 2024, all leaks detected with the use of an OGI instrument shall be measured using EPA Reference Method 21 within two (2) calendar days of initial OGI leak detection or within 14 calendar days of initial OGI leak detection of an inaccessible or unsafe to monitor component to determine compliance with the leak thresholds and repair timeframes specified in Table 6.*

- 6.6 Deleted previous dates in the Operator Management Plan section as they are no longer relevant.
- 6.7 Added new language to instruct an operator to submit Operator Management Plans annually indicating any or no changes to their existing plans. Updated section reads as follows:

*By January 30 of each year, an operator shall submit to the APCO for approval, in writing, an annual report indicating any or no changes to an existing Operator Management Plan.*

**Section 7.0 – Compliance Schedule**

- 7.2 Removed reference of Section 4.7, which has been deleted.

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## Proposed Amendments to Rule 4409

In determining potential amendments to Rule 4409, the District considered the following rules and regulations:

- Santa Barbara County Air Pollution Control District (SBCAPCD) Rule 331
- South Coast Air Quality Management District Rule (SCAQMD) 1148.1
- South Coast Air Quality Management District Rule (SCAQMD) 1173
- Ventura County Air Pollution Control District (VCAPCD) Rule 74.7
- California Oil and Gas Regulation (COGR)
- EPA 2016 Control Technology Guideline for the Oil and Gas Industry (EPA-453/B-16-001)
- EPA NSPS Subpart OOOO
- EPA NSPS Subpart OOOOa

Table 2 provides a comparison of the District’s requirements to other local, State, and Federal regulations to Rule 4409 including the District’s proposed leak standards.

**Table 2 – Comparison of District Rule 4409 to Similar Rules and Regulations**

Rule 4409 – Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities							
Current Leak Standard	VCAPCD Rule 74.10	SBCAPCD Rule 331	SCAQMD Rule 1173	SCAQMD Rule 1148.1	CARB COGR	EPA NSPS Subpart OOOO and OOOOa	EPA 2016 CTG for the Oil and Gas Industry (EPA-453/B-16-001)
<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 200 ppmv (PRDs)</li> <li>• Minor: 1,000 ppmv (liquid service)</li> <li>• Minor: 2,000 ppmv (gas service)</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 1,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 1,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• 100 ppmv (pump in heavy liquid service)</li> <li>• 200 ppmv (PRDs)</li> <li>• 500 ppmv in light crude service</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• 100 ppmv (any component in heavy liquid service)</li> <li>• 500 ppmv (any component in light liquid service)</li> </ul>	<ul style="list-style-type: none"> <li>• Limit: 1,000 ppmv</li> </ul>	<ul style="list-style-type: none"> <li>• Leak Limit: 500 ppmv</li> <li>• Leak Limit: 2,000 ppmv for pumps in light crude service</li> <li>• Leak Limit: 10,000 ppmv for pumps in heavy crude service</li> </ul>	<ul style="list-style-type: none"> <li>• Leak Limit: 500 ppmv (valves, compressors, PRDs)</li> <li>• Leak Limit 2,000 ppmv (pumps)</li> </ul>

Based on the above comparison, the District evaluated lowering the LDAR threshold to three specific thresholds including 1,000 ppmv, 500 ppmv, and 100 ppmv. Based on the District's analysis and cost-effectiveness analysis shown in Appendix C, the District is proposing a 500 ppmv LDAR threshold, which meets or exceeds BARCT requirements.

Reducing the leak threshold to 500 ppmv also meets RACT recommendations established in the 2016 CTG. For equipment leaks, the 2016 CTG requires monthly inspections of valves and pumps using EPA Reference Method 21 at 500 ppmv leak threshold. The 2016 CTG also recommends annual inspections of connectors using EPA Reference Method 21 at 500 ppmv leak threshold. As discussed earlier, quarterly inspections of all components at 500 ppmv achieves more emissions reductions than the recommended 2016 CTG requirements.

### ***Section 1.0 – Purpose***

Language updated for clarity.

### ***Section 2.0 – Applicability***

No changes proposed at this time.

### ***Section 3.0 – Definitions***

The District is proposing amendments to definitions to meet BARCT requirements, and provide clarity throughout other LDAR rules and meet RACT recommendations found in the 2016 CTG. The District is proposing a revised minor leak definition. The leak threshold is defined in Table 1 of the current rule as 2,000 ppmv for minor gas leaks. The District is establishing a lower LDAR threshold of 500 ppmv for minor gas leaks.

- 3.6 *Component*: The District removed Section 3.6.2 defining minor component from the component definition to have consistency across other District LDAR rules. A minor component is not used throughout the entire rule.
- 3.20 *Leak*: Updates to Table 1 contain new language to indicate that Table 1 is effective until June 30, 2024. The requirements of Table 2 go into effect after June 30, 2024. Table 2 contains a new minor leak definition for components other than Pressure Relief Devices (PRD). The minor leak definition in the rule is updated to reflect the lower proposed LDAR threshold. The leak threshold is defined in Table 1 of the current rule as 2,000 ppmv for minor gas leaks, and 1,000 ppmv for liquid leaks. The District is establishing a lower minor leak threshold of 500 ppmv for gas leaks, and liquid leaks.

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**Table 1 – Gas Leak Standards in ppmv as Methane until June 30, 2024**

Type of Component	Major Gas Leak	Minor Gas Leak	
		Components in Liquid Service	Components in Gas/Vapor Service
1. Valves	Greater than 10,000	1,000 to 10,000	2,000 to 10,000
2. Threaded Connections	Greater than 10,000	1,000 to 10,000	2,000 to 10,000
3. Flanges	Greater than 10,000	1,000 to 10,000	2,000 to 10,000
4. Pipes	Greater than 10,000	1,000 to 10,000	2,000 to 10,000
5. Pumps	Greater than 10,000	1,000 to 10,000	2,000 to 10,000
6. Compressors	Greater than 10,000	1,000 to 10,000	2,000 to 10,000
7. PRDs	Greater than 10,000	200 to 10,000	400 to 10,000
8. Polished Rod Stuffing Boxes	Greater than 10,000	1,000 to 10,000	1,000 to 10,000
9. Components not listed in 1 through 8 above	Greater than 10,000	1,000 to 10,000	2,000 to 10,000

**Table 2 – Gas Leak Standards in ppmv as Methane after June 30, 2024**

Type of Component	Major Gas Leak	Minor Gas Leak	
		Components in Liquid Service	Components in Gas/Vapor Service
1. Components other than PRDs	Greater than 10,000	500 to 10,000	500 to 10,000
2. PRDs	Greater than 10,000	200 to 10,000	400 to 10,000

- 3.27 *Open-ended Line or Valve*: The District updated the definition of Open-ended Line for consistency across all the applicable rules as follows:  
  
*Open-ended Line or Valve: a line or valve, except for pressure relief valves and process drains, having one side of the line or valve seat in contact with the process fluid and one side open to the atmosphere, either directly or through an open piping.*
  
- 3.28 *Optical Gas Imaging (OGI)*: The District added a definition to include OGI in Rule 4409. The new definition reads as follows:  
  
*Optical Gas Imaging (OGI): an instrument that makes emissions visible that may otherwise be invisible to the naked eye.*
  
- 3.30 *Pressure Relief Device (PRD)*: The District updated the definition of a Pressure Relief Device to encompass the definition of a Pressure Relief

Valve. This provides consistency across other District LDAR rules. The new definition reads as follows:

*Pressure Relief Device (PRD): a pressure relief valve, or a rupture disc, or an automatic pressure-relieving device associated with a process vessel or piping system that is activated by pressure upstream of the device and relieves to the atmosphere.*

- 3.36 *Rig-up Operation:* The District added a new definition for “Rig-up Operation”. Rig-up operations require special equipment that some facilities must contract from third parties. The circumstances and provisions are now included in Section 5.2.15 of Rule 4409 to account for Rig-up operations.
- 3.37 *Rupture Disk:* The District updated the definition to replace pressure relief valve with pressure relief device. The updated definition reads as follows:

*Rupture Disk: a rigid diaphragm held between flanges for the purpose of isolating organic compounds from the atmosphere or from a downstream pressure relief ~~valve~~ device. Most rupture disks are designed to fail at a certain pressure point.*

#### **Section 4.0 – Exemptions**

The District is proposing to remove Section 4.2.10 from Rule 4409. Rule 4409 Section 4.2.10 exempts half inch or less stainless steel tube fittings from LDAR inspections after their initial inspection. The removal of this exemption meets RACT recommendation as the exemption of these components are not found in the 2016 CTG. These components will now be subject to the leak standard, and inspection frequency of proposed Rule 4409.

#### **Section 5.0 – Requirements**

The District is proposing to increase the frequency of LDAR inspections from annual to quarterly. The District evaluated requirements in analogous rules, including VCAPCD Rule 74.10, SBCAPCD Rule 331, and COGR, which contain quarterly inspection requirements. As such, the District is proposing to increase the frequency of LDAR inspections from annual to quarterly. Increasing the frequency of inspections will make Rule 4409 as stringent as other comparable rules and regulations in California.

- 5.1.4 *Leak Standard:* The District is replacing the word “leaking” with “in violation” for clarity in subsection 5.1.4 to describe a violation under Rule 4409.



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- 5.1.4.4 *Allowable Leaks*: The District is replacing Table 3 with Table 4 after June 30, 2024. The addition of the new table will provide consistency with other District LDAR rules. The addition of Table 4 will provide consistency with the requirements under COGR and includes more stringent requirements by eliminating the distinction of component type. Previously, operators could have up to 14 leaks with less than 200 components inspected. The proposed amendments to Rule 4409 would allow only five (5) total components to leak regardless of component type. Additional language was added to highlight that all leaks are still subject to the leak repair timeframes. The tables read as follows:

**Table 3 – Maximum Allowable Number or Percent of Leaking Components  
Per Inspection Period until June 30, 2024**

Component	Maximum Number of Leaks for 200 or fewer Components Inspected*	Maximum Percent or Number of Leaks for more than 200 Components Inspected*
1. Valves	1	0.5% of number inspected
2. Threaded Connections	1	0.5% of number inspected
3. Flanges	1	0.5% of number inspected
4. Pumps	2	1.0% of number inspected
5. Compressors	1	1 leak
6. PRDs	1	1 leak
7. Polished Rod Stuffing Boxes	4	2.0% of number inspected
8. Other Components not listed in items 1, 2, 3, 4, 5, 6, 7, 9, and 10	1	1 leak
9. Pipes at Light Crude Oil Production Facilities or Gas Production Facilities	Maximum Number of Leaks for 200 or fewer production wells inspected	Maximum Number of Leaks for more than 200 production wells inspected
	2	1% of number inspected
10. Pipes at Natural Gas Processing Facilities	Maximum Number of Leaks	
	2	

\*The maximum number of leaks in Table 3 shall be rounded upwards to the nearest integer, where required. The maximum allowable percent of leaks is calculated from the total number of components of a given type inspected during the specified inspection period. Leaks counted toward the allowable leaks in Table 3 are still subject to maintenance requirements of section 5.3.

**Table 4 – Maximum Allowable Number or Percent of Leaking Components Per Inspection Period after June 30, 2024**

	Leak Threshold 200 or Less Components Inspected	More than 200 Components Inspected
500-9,999 ppmv	5	2% of total inspected
10,000-49,999 ppmv	2	1% of total inspected

\* The maximum number of leaks in Table 4 shall be rounded upwards to the nearest integer, where required. The maximum allowable percent of leaks is calculated from the total number of components of a given type inspected during the specified inspection period. Leaks counted toward the allowable leaks in Table 4 are still subject to maintenance requirements of section 5.3.

- 5.2.2 The District updated language in this section to provide clarity. The updated section reads as follows:
 

*For unmanned light crude oil production facilities, natural gas production facilities, or gas processing facilities, the operator shall audio-visually inspect for leaks of all accessible operating pumps, compressors, PRDs in service at least once per calendar week.*
  
- 5.2.8.2 Update to identify California Geologic Energy Management Division (CalGEM) as the leading agency requiring facilities to maintain records of annual pipe inspections.
  
- 5.2.9 *Annual Inspection:* The District will phase out Section 5.2.9. This will eliminate the possibility to revert to an annual leak inspection for components subject to Rule 4409. The District is requiring only quarterly inspection for all components subject to Rule 4409.
  
- 5.2.10 *Annual Inspection Violation:* The District will phase out Section 5.2.10. Section 5.2.10 is no longer relevant under proposed Rule 4409 with the phase out of Section 5.2.9. Proposed Rule 4409 will no longer allow annual inspection, and operators must inspect components subject to Rule 4409 quarterly at 500 ppmv.
  
- 5.2.11 *Notification to APCO of Annual Inspection:* The District will sunset Section 5.2.11, notification to APCO of annual inspection since this language is no longer relevant under proposed Rule 4409 with the phase out of section 5.2.9. Proposed rule 4409 will no longer allow annual inspection, and operators must inspect components subject to Rule 4409 quarterly.
  
- 5.2.15 New Section 5.2.15 added to allow up to 30-days for repair if a rig-up operation is required. The provision adds steps an operator must take to comply with the extended repair period requirement for rig-up operations. The reason for the additional time for repair is due to the need for

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specialized equipment, which takes time to arrive, assemble, and install at the well site. This is prominent for well casing leaks that may require a third-party rig-up operation for repair; this is similar to the requirements in COGR. In order to be granted an extension, an operator must provide supporting information for the district to evaluate before an extension is ultimately approved. Detailed requirements are listed in section 5.2.15 of proposed Rule 4409 and become effective after June 30, 2024.

- 5.3.5 Update to reference new repair period Table 6 in Rule 4409 after June 30, 2024. The BARCT analysis concluded more stringent repair periods for major gas leaks, and liquid leaks. New Table 6 is as follows:

**Table 5 – Repair Period until June 30, 2024**

Type of Leak	Repair Period in Calendar Days	Extended Repair Period in Calendar Days
<b>Gas Leaks</b>		
Minor Gas Leak	7	7
Major Gas Leak greater than 10,000 ppmv but equal to or less than 50,000 ppmv	3	2
Major Gas Leak greater than 50,000 ppmv	2	0
<b>Liquid Leaks</b>		
Minor Liquid Leak	3	0
Major Liquid Leak	2	0

**Table 6 – Repair Period after June 30, 2024**

Type of Leak	Repair Period in Calendar Days	Extended Repair Period in Calendar Days
<b>Gas Leaks</b>		
Minor Gas Leak	7	0
Major Gas Leak greater than 10,000 ppmv but equal to or less than 50,000 ppmv	3	2
Major Gas Leak greater than or equal to 50,000 ppmv	1	0
<b>Liquid Leaks</b>		
Minor Liquid Leak	1	0
Major Liquid Leak	1	0

**Section 6.0 – Administrative and Recordkeeping Requirements**

- 6.1.4 Added new language to instruct an operator to submit Operator Management Plans annually indicating any or no changes to their existing plans. Updated section reads as follows:

*By January 30 of each year, an operator shall submit to the APCO for approval, in writing, an annual report indicating any or no changes to an existing Operator Management Plan.*

- 6.3.2 New Section 6.3.2 provides instruction on leaks identified while using OGI. The new section reads as follows:

*After June 30, 2024, All leaks detected with the use of an OGI instrument shall be measured using EPA Reference Method 21 within two (2) calendar days of initial OGI leak detection or within 14 calendar days of initial OGI leak detection of an inaccessible or unsafe to monitor component to determine compliance with the leak thresholds and repair timeframes specified in Table 6.*

**Section 7.0 Compliance Schedule**

- 7.1 Section deleted to remove outdated language.
- 7.2 Section deleted to remove outdated language.

**Proposed Amendments to Rule 4455**

The District is proposing to lower the LDAR threshold for this Rule. In determining the LDAR thresholds evaluated, the District considered LDAR thresholds from the following agencies and associated rules, and regulations:

- Bay Area Air Quality Management District (BAAQMD) Regulation 8 Rule 18
- Santa Barbara County Air Pollution Control District (SBCAPCD) Rule 331
- South Coast Air Quality Management District (SCAQMD) Rule 1173
- Ventura County Air Pollution Control District (VCAPCD) Rule 74.7
- EPA NSPS Subpart OOOO
- EPA NSPS Subpart OOOOa

Table 3 provides a comparison of the District’s proposed requirements to other local, State, and Federal regulations to Rule 4455.

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**Table 3 – Comparison of District Rule 4455 to Similar Rules and Regulations**

Rule 4455 – Components at Petroleum Refineries, Gas Liquids Processing Facilities, and Chemical Plants					
Current Leak Standard	VCAPCD Rule 74.7	SBCAPCD Rule 331	BAAQMD Regulation 8 Rule 18	SCAQMD Rule 1173	EPA NSPS Subpart OOOO and OOOOa
<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 100 ppmv (PRDs in liquid service)</li> <li>• Minor: 200 ppmv (PRDs in gas service)</li> <li>• Minor: 200 ppmv (valves, threaded connections, and flanges in liquid service)</li> <li>• Minor: 400 ppmv (valves, threaded connections, and flanges in gas service)</li> <li>• Minor: 500 ppmv (pumps, compressors and other component types in liquid service)</li> <li>• Minor: 1,000 ppmv (pumps, compressors and other component types in gas service)</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 1,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 1,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• 100 ppmv (all other components except the ones with 500 ppmv)</li> <li>• 500 ppmv (pumps, compressors, PRDs)</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• 100 ppmv (pump in heavy liquid service)</li> <li>• 200 ppmv (PRDs)</li> <li>• 500 ppmv in light crude service</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> </ul>	<ul style="list-style-type: none"> <li>• Leak Limit: 500 ppmv</li> <li>• Leak Limit: 2,000 ppmv for pumps in light crude service</li> <li>• Leak Limit: 10,000 ppmv for pumps in heavy crude service</li> </ul>

Based on the above comparison, the District already includes stringent levels for most of the categories. However, the District evaluated lowering the LDAR threshold for “Minor leak for pumps, compressors and other component types in gas service” category from 1,000 ppmv to 500 ppmv and 100 ppmv. Based on the District’s analysis and cost-effectiveness analysis shown in Appendix C, the District is proposing a 500 ppmv LDAR threshold, which meets or exceeds BARCT requirements.

**Section 1.0 – Purpose**

Update to language for consistency and clarity. Update reads as follows:

*The purpose of this rule is to limit Volatile Organic Compound (VOC) emissions from leaking components at petroleum refineries, gas liquids processing facilities, and chemical plants.*

**Section 2.0 – Applicability**

No changes proposed at this time.

**Section 3.0 – Definitions**

The District is proposing amendments to definitions to meet BARCT requirements. The District is proposing a revised minor leak definition to reflect the proposed LDAR threshold. The leak threshold is defined in Table 1 of the current rule as 1,000 ppmv for select components. The District is establishing a lower LDAR threshold of 500 ppmv for minor gas leaks on components that are not already lower.

The District updated the definition of Open-ended Line for consistency across all the applicable rules as follows:

- 3.7.1 *Major Component:* Update to definition for consistency and clarity. The change to the definition is as follows:  
  
*Major Component: a pump five (5) brake horsepower or larger, any compressor, or any pressure relief ~~valve~~ device four (4) inches in diameter or larger.*
- 3.7.2 The District removed Section 3.7.2 defining minor component from the component definition to have consistency across other District LDAR rules. A minor component is not used throughout the entire rule.
- 3.22 *Leak:* Updates to Table 1 contain new language to indicate that Table 1 is effective until June 30, 2024. The requirements of Table 2 go into effect after June 30, 2024. Table 2 contains a new minor leak definition only for compressors, pumps, and other component types not listed in 1 through 5 as listed in Table 2. The minor leak definition in the Rule is updated to reflect the lower proposed LDAR thresholds.

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**Table 1 – Gas Leak Standard in ppmv as Methane until June 30, 2024**

Type of Component	Major Gas Leak	Minor Gas Leak	
		Components in Liquid Service	Components in Gas/Vapor Service
1. Valves	Greater than 10,000	200 to 10,000	400 to 10,000
2. Threaded connections	Greater than 10,000	200 to 10,000	400 to 10,000
3. Flanges	Greater than 10,000	200 to 10,000	400 to 10,000
3. Pumps	Greater than 10,000	500 to 10,000	1,000 to 10,000
4. Compressors	Greater than 10,000	500 to 10,000	1,000 to 10,000
5. PRD	Greater than 10,000	100 to 10,000	200 to 10,000
6. Other component types not listed in 1 through 5 above	Greater than 10,000	500 to 10,000	1,000 to 10,000

**Table 2 – Gas Leak Standard in ppmv as Methane after June 30, 2024**

Type of Component	Major Gas Leak	Minor Gas Leak	
		Components in Liquid Service	Components in Gas/Vapor Service
1. Valves	Greater than 10,000	200 to 10,000	400 to 10,000
2. Threaded connections	Greater than 10,000	200 to 10,000	400 to 10,000
3. Flanges	Greater than 10,000	200 to 10,000	400 to 10,000
3. Pumps	Greater than 10,000	500 to 10,000	500 to 10,000
4. Compressors	Greater than 10,000	500 to 10,000	500 to 10,000
5. PRD	Greater than 10,000	100 to 10,000	200 to 10,000
6. Other component types not listed in 1 through 5 above	Greater than 10,000	500 to 10,000	500 to 10,000

- 3.25 *Open-ended Line or Valve*: The District updated the definition of Open-ended Line for consistency across all the applicable rules as follows:

*Open-ended Line or Valve: a line or valve, except for pressure relief valves and process drains, having one side of the line or valve seat in contact with the process fluid and one side open to the atmosphere, either directly or through an open piping.*

- 3.26 *Optical Gas Imaging (OGI)*: The District added a definition to include OGI. The new definition reads as follows:

*Optical Gas Imaging (OGI): an instrument that makes emissions visible that may otherwise be invisible to the naked eye.*

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- 3.28 *Pressure Relief Device (PRD)*: The District updated the definition of Pressure Relief Devices (PRD) to encompass the definition of a Pressure Relief Valve. This provides consistency across other District LDAR rules. The new language prompts the removal of existing definition 3.28, Pressure Relief Valve (PRV).
  
- 3.31 *Process Pressure Relief Device*: Update to the definition to provide clarity. Updated section reads as follows:  
  
*Process Pressure Relief Device: a Pressure Relief Device (PRD) that is vented to the atmosphere and is located on a process equipment other than storage tanks, liquefied petroleum gas storage vessels, or pipelines used to transport materials.*
  
- 3.37 *Rupture Disk*: The District updated the definition to replace pressure relief valve with pressure relief device. The updated definition reads as follows:  
  
*Rupture Disk: a rigid diaphragm held between flanges for the purpose of isolating organic compounds from the atmosphere or from a downstream pressure relief ~~valve~~ device. Most rupture disks are designed to fail at a certain pressure point.*

## **Section 4.0 – Exemptions**

The District is proposing to remove exemption 4.2.8 from Rule 4455. Rule 4455 Section 4.2.8 exempts half inch or less stainless steel tube fittings from LDAR inspections after their initial inspection. The removal of this exemption will provide consistency across other District LDAR rules and provide stringency to Rule 4455.

## **Section 5.0 – Requirements**

Proposed amendments would phase out the ability for operators to apply for approval to change their inspection frequency from quarterly to annually for specific component types. Quarterly inspections ensure the implementation of required reductions for the District's various attainment plans.

- 5.1.4 *Leak Standard*: The District is replacing the word “leaking” with “in violation” for clarity in subsection 5.1.4 to describe a violation under Rule 4455.
  
- 5.1.4.4 *Allowable Leaks*: Additional language was added to highlight that all leaks are still subject to the leak repair timeframes as follows:  
  
*Leaks counted toward the allowable leaks in Table 3 are still subject to maintenance and repair requirements of Section 5.3.*



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- 5.2.8 *Annual Inspection:* The District will phase out Section 5.2.8. This will eliminate the possibility to revert to an annual leak inspection for components subject to Rule 4455. The District is requiring only quarterly inspection for all components subject to Rule 4455.
- 5.2.9 Added language to phase out the ability for an operator to request a change in their inspection frequency from quarterly to annually for specific component types.
- 5.2.10 Added language to phase out Section 5.2.10. Section is no longer needed since operators will not revert to annual inspections.
- 5.3.5 Update to reference new repair period Table 5 in Rule 4455 after June 30, 2024. The BARCT analysis concluded more stringent repair periods are required. Updates are referenced in new Table 5 is as follows:

**Table 4 – Repair Period until June 30, 2024**

Type of Leak	Repair Period in Calendar Days	Extended Repair Period in Calendar Days
<b>Gas Leaks</b>		
Minor Gas Leak (See Table 1)	7	7
Major Gas Leak greater than 10,000 ppmv but equal to or less than 50,000 ppmv	3	2
Major Gas Leak greater than 50,000 ppmv	2	0
<b>Liquid Leaks</b>		
Minor Liquid Leak (See Section 3.22.2)	3	0
Major Liquid Leak (See Section 3.22.1)	2	0

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**Table 5 – Repair Period After June 30, 2024**

Type of Leak	Repair Period in Calendar Days	Extended Repair Period in Calendar Days
<b>Gas Leaks</b>		
Minor Gas Leak (See Table 2)	7	7
Major Gas Leak greater than 10,000 ppmv but equal to or less than 50,000 ppmv	3	2
Major Gas Leak greater than 50,000 ppmv	1	0
<b>Liquid Leaks</b>		
Minor Liquid Leak (See Section 3.22.2)	1	0
Major Liquid Leak (See Section 3.22.1)	1	0

## **Section 6.0 – Administrative and Recordkeeping Requirements**

- 6.1.4 Added new language to instruct an operator to submit Operator Management Plans annually indicating any or no changes to their existing plans. Updated section reads as follows:

*By January 30 of each year, an operator shall submit to the APCO for approval, in writing, an annual report indicating any or no changes to an existing Operator Management Plan.*

- 6.2.2 Section will phase out and will be replaced by new Section 6.2.3
- 6.2.3 Added new language to clarify that leaks detected during quarterly operator inspection must be submitted to the APCO, CARB, or EPA upon request. New section reads as follows:

*After June 30, 2024, records of leaks detected by operator inspection, and each subsequent repair and re-inspection, shall be submitted to the APCO, ARB, and US EPA upon request.*

- 6.4.1.1 New subsection in 6.4.1.1 provides instruction on leaks identified while using OGI. The new section reads as follows:

*After June 30, 2024, All leaks detected with the use of an OGI instrument shall be measured using EPA Reference Method 21 within two (2) calendar days of initial OGI leak detection or within 14 calendar days of initial OGI leak detection of an inaccessible or unsafe to monitor component to determine compliance with the leak thresholds and repair timeframes specified in Table 4.*

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## ***Section 7.0 – Compliance Schedule***

- 7.1 Section deleted to remove outdated language.
- 7.2 Language added to phase out compliance schedule from previous amendment.

## **Proposed Amendments to Rule 4623**

In determining potential amendments to Rule 4623, the District considered the following rules and regulations:

- Bay Area Air Quality Management District (BAAQMD) Regulation 8 Rule 5
- Santa Barbara County Air Pollution Control District (SBCAPCD) Rule 331
- South Coast Air Quality Management District Rule (SCAQMD) 463
- Ventura County Air Pollution Control District (VCAPCD) Rule 74.10
- California Oil and Gas Regulation (COGR)
- EPA 2016 Control Technology Guideline for the Oil and Gas Industry (EPA-453/B-16-001)
- EPA NSPS Subpart OOOO
- EPA NSPS Subpart OOOOa

Table 4 provides a comparison of the District's proposed requirements to other local, State, and Federal regulations to Rule 4623.

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**Table 4 – Comparison of District Rule 4623 to Similar Rules and Regulations**

Rule 4623 – Storage of Organic Liquids							
Current Leak Standard	VCAPCD Rule 74.10	SBCAPCD Rule 331	BAAQMD Regulation 8 Rule 5	SCAQMD Rule 463	CARB COGR	EPA NSPS Subpart OOOO and OOOOa	EPA 2016 CTG for the Oil and Gas Industry (EPA-453/B-16-001)
<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 10,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 1,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• Minor: 1,000 ppmv</li> <li>• Major: 10,000 ppmv</li> </ul> <p><b>Liquid</b></p> <ul style="list-style-type: none"> <li>• Minor: +3 drops min.</li> <li>• Major: continuous flow</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• 100 ppmv (all other components except the ones with 500 ppmv)</li> <li>• 500 ppmv (pumps, compressors, PRDs)</li> </ul>	<p><b>Gas</b></p> <ul style="list-style-type: none"> <li>• 500 ppmv (any tank with a capacity of 19,815 gallons or greater)</li> </ul>	<ul style="list-style-type: none"> <li>• Limit: 1,000 ppmv</li> </ul>	<ul style="list-style-type: none"> <li>• Leak Limit: 500 ppmv</li> <li>• Leak Limit: 2,000 ppmv for pumps in light crude service</li> <li>• Leak Limit: 10,000 ppmv for pumps in heavy crude service</li> </ul>	<ul style="list-style-type: none"> <li>• Leak Limit: 500 ppmv (valves, compressors, PRDs)</li> <li>• Leak Limit 2,000 ppmv (pumps)</li> <li>• Tanks with the PTE more than 6 Tons/year of VOC are recommended to be on Vapor Recovery or keep emissions under 4 tons/year</li> </ul>

Based on the above comparison, the District evaluated lowering the LDAR threshold to 1,000 ppmv, 500 ppmv, and 100 ppmv. Based on the District’s analysis and cost-effectiveness analysis shown in Appendix C, the District is proposing a 500 ppmv LDAR threshold, which meets or exceeds BARCT requirements.

**Section 1.0 – Purpose**

Language updated for clarity and consistency.

**Section 2.0 – Applicability**

To address the comments from EPA’s TSD for the 2016 CTG, the District added language to clarify control requirements on storage tanks to include the following additional language:

*This rule applies to any tank with a capacity of 1,100 gallons or greater in which any organic liquid is placed, held, or stored, and any tank used in crude oil or natural gas production operations with a potential to emit six (6) tons of VOC or greater per year.*

**Section 3.0 – Definitions**

The District added multiple definitions for clarity and consistency between the District LDAR rules.

- 3.4 *Component*: New definition added for clarity, consistency across other District rules. The component definition reads as follows:

*Component: includes, but is not limited to, any valve, fitting, threaded connection, pump, compressor, pressure-vacuum relief valve, pressure relief device, pipe, flange, process drain, sealing mechanism, hatch, sight-glass, meter, or seal fluid system in VOC service. This definition includes tanks and separators.*

- 3.5 *Compressor*: New definition added for clarity, consistency across other District rules. The new compressor definition reads as follows:

*Compressor: a device used to compress gases or vapors or a combination of gases and vapors by the addition of energy, and includes all associated components used for connecting and sealing purposes. The phrase "all associated components used for connecting and sealing purposes" means the first VOC leak points (first components) connected on the body of the compressor. For example, a valve that is connected to a threaded hole on body of the compressor, the first VOC leak point is the threaded connection on the body side of the compressor, but the valve itself is not a "first VOC leak point". Similarly, a compressor shaft seal is considered as a first "VOC leak point".*

- 3.6 *Compressor Part*: New definition added for clarity, consistency across other District rules and to assist in Section 5.9.4.9 and Section 3.5. The new definition reads as follows:

*Compressor Part: for the purpose of Section 5.9.4.9, a compressor part refers to the "first VOC leak point" as explained in Section 3.5.*

- 3.14 *Gas Leak*: Updates to Table 1 contain new language to indicate that Table 1 is effective until June 30, 2024. The requirements of new Table 2 go into effect after June 30, 2024. Table 2 contains a new minor leak definition for components subject to Rule 4623. Components will have a minor gas leak of 500 ppmv, and a major gas leak of 10,000 ppmv or greater.

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<b>Table 1 – Gas Leak (Until June 30, 2024)</b>	
	Gas Leak
Components	Greater than 10,000

<b>Table 2 – Gas Leak (After June 30, 2024)</b>		
	Minor Gas Leak	Major Gas Leak
Components	500 to 10,000	Greater than 10,000

- 3.19 *Inaccessible Component*: New definition added for clarity, consistency across other District rules as follows:

*Inaccessible Component: a component that is located over 15 feet above ground when access is required from the ground; or a component that is located over six (6) feet away from a platform when access is required from the platform, or a component in a location that would require the elevation of monitoring personnel higher than six (6) feet above permanent support surfaces.*
  
- 3.22 *Leak Minimization*: New definition added for clarity, consistency across other District rules on the practice for safely minimizing a leak on component without stopping or slowing down production. The new definition reads as follows:

*Leak Minimization: reducing a leak to the lowest achievable level without damaging the component using best modern practices which include, but are not limited to, adding sealing material to the component, tightening the component, or adjusting the component without shutdown of the process that the component serves and that can be safely accommodated.*
  
- 3.28 *Optical Gas Imaging (OGI)*: The District added a definition to include OGI. The new definition reads as follows:

*Optical Gas Imaging (OGI): an instrument that makes emissions visible that may otherwise be invisible to the naked eye.*
  
- 3.30 *Process Drain*: New definition added for clarity, consistency across other District rules as follows:

*Process Drain: any open portion of a non-continuous piping system, including open origination portion(s) of such a system used for collection and transport of liquids discharged from process vessels, spills, or other sources.*

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- 3.32 *Pressure Relief Device (PRD)*: New definition added for clarity, consistency across other District rules. The new definition reads as follows:

*Pressure Relief Device (PRD): a pressure relief valve, a rupture disk, or an automatic pressure-relieving device associated with a process vessel or piping system that is activated by pressure upstream of the device and relieves to the atmosphere.*

- 3.33 *Pump*: New definition added for clarity, consistency across other District rules. The new definition reads as follows:

*Pump: a device used to transport fluids by the addition of energy, and includes all associated components used for connecting or sealing purposes. The phrase "all associated components used for connecting and sealing purposes" means the first VOC leak points (first components) on the body of the pump. For example, a valve that is connected to a threaded hole on body of the pump, the first VOC leak point is the threaded connection on the body side of the pump, but the valve itself is not a "first VOC leak point." Similarly, a pump shaft seal is considered as a first "VOC leak point".*

- 3.34 *Pump Part*: New definition added for clarity, consistency across other District rules. The purpose of this definition is to further clarification of a pump in Section 3.33.

- 3.40 *Tank*: Updated the definition of a tank under Rule 4623. The definition update is necessary to further define which components are considered part of the tank or separate components. This definition provides clarity to the existing rule. The update reads as follows:

*Tank: any stationary container, reservoir, or vessel, in which an organic liquid is placed, held, or stored. This definition includes components connected to the body of the tank. For example, a valve that is connected to a threaded hole on the body of the tank, the first VOC leak point is the threaded connection on the body side of the tank, but the valve itself is a separate component from the tank.*

- 3.44 *Unsafe-to-Monitor Component*: New definition added for clarity, consistency across other District rules. The new definition reads as follows:

*Unsafe-to-Monitor Component: a component installed at a location that would prevent the safe inspection or repair of a component as defined by OSHA standards or in provisions for worker safety stated in 29 CFR 1910.*

### **Section 4.0 – Exemptions**

To address the comments from EPA’s TSD for the 2016 CTG, the District added language to clarify control requirements on storage tanks and is proposing to remove, or modify the following exemptions in Section 4.0:

- 4.1.3 The following language is being added to the *Storage Tanks Used for Clean Produced Water* section as follows:

*Tanks that are used for storage/processing of clean produced water, or other water that meets the VOC standard specified in the definition of “clean produced water” in Rule 1020 (Definitions) unless the tank has a potential to emit six (6) tons of VOC emissions or greater per year and is used in crude oil and natural gas production operations.*

- 4.4 *Storage Tanks Handling Organic Liquid with TVP Less Than 0.5*: The District is modifying Section 4.4 from Rule 4623. The District is proposing to modify this section to include tanks with liquid TVP 0.1 or greater.
- 4.4.5 New section added for storage tanks degassing and interior cleaning requirements. This new section will still require exempt tanks to follow the cleaning provisions of Section 5.7.5 of Rule 4623. The new section reads as follows:

*After June 30, 2024, operators shall follow the storage tank degassing and interior cleaning requirements pursuant to Section 5.7.5 for notification, recordkeeping, tank degassing, tank cleaning, and sludge removal.*

### **Section 5.0 – Requirements**

- 5.1 New tables created to establish new control system requirement for tanks that are less than 0.5 TVP to provide consistency between other District rules and to ensure that the District is meeting BARCT.



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**Table 4 – General VOC Control System Requirements after June 30, 2024**

Tank Capacity (Gallons)	True Vapor Pressure (TVP) of Organic Liquid			
	0.1 psia to <0.5 psia	0.5 psia to <1.5 psia	1.5 psia to <11 psia	≥11.0 psia
(Group A) 1,100 to 19,800	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure vessel or vapor recovery system
(Group B) >19,800 to 39,600	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Internal floating roof, or external floating roof, or vapor recovery system	Pressure vessel or vapor recovery system
(Group C) >39,600	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Internal floating roof, or external floating roof, or vapor recovery system	Internal floating roof, or external floating roof, or vapor recovery system	Pressure vessel or vapor recovery system

**Table 6 – Small Producer VOC Control System Requirements for Crude Oil Storage Tanks after June 30, 2024**

Tank Capacity (gallons)	TVP and Crude Oil Throughput			
	0.1 psia to <11 psia and a tank throughput of >50 to <150 barrels of crude oil per day	0.1 psia to <0.5psia and a tank throughput ≥150 barrels of crude oil per day	0.5 psia to <11 psia and a tank throughput ≥150 barrels of crude oil per day	≥11 psia and regardless of crude oil tank throughput
(Group A) 1,100 to 39,600	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure vessel or vapor recovery system
(Group B) >39,600	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Internal floating roof, or external floating roof, or vapor recovery system	Pressure vessel or vapor recovery system

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- 5.1.1.1 Current District Rule 4623 requires vapor control systems based on size of tank and TVP of the stored liquid. EPA's CTG requires a vapor control system based on if the PTE of storage tank equals or exceeds six (6) tons per year and if the actual VOC emissions exceed four (4) tons per year. However, to ensure that there is no deficiency in meeting the CTG requirements, the District is proposing to add the following language:

*If a tank has the Potential to Emit greater than or equal to six (6) tons per year of VOC and actual emissions are greater than or equal to four (4) tons per year using a generally accepted model or calculation methodology, operator must install a vapor control system meeting the specifications described in Sections 5.3, 5.4, 5.5 or 5.6.*

- 5.1.2.1 Current District Rule 4623 requires vapor control systems based on size of tank and TVP of the stored liquid. EPA's CTG requires a vapor control system based on if the PTE of storage tank equals or exceeds six (6) tons per year and if the actual VOC emissions exceed four (4) tons per year. However, to ensure that there is no deficiency in meeting the CTG requirements, the District is proposing to add the following language:

*If a tank has the Potential to Emit greater than or equal to six (6) tons per year of VOC and actual emissions are greater than or equal to four (4) tons per year using a generally accepted model or calculation methodology, operator must install a vapor control system meeting the specifications described in Sections 5.3, 5.4, 5.5 or 5.6.*

- 5.3.1.3 *Specifications for External Floating Roof Tanks:* Update to section 5.3.1.3 now reduces the time an operator must notify the District of a roof landing from five (5) days to three (3) days allowing operators faster response time to ensure proper maintenance of their tanks.
- 5.4.1 *Specifications for Internal Floating Roof Tanks:* Updated section to reduce the minimum vertical distance an internal floating roof tank seal can extend above the stored liquid surface from 18 inches to 6 inches, which is consistent with requirements found in other districts and to allow for newer seal technologies to operate within these parameters without any impact in emissions.
- 5.5.1 Update to Section 5.5.1 provides a new reference of a pressure vacuum valve.

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- 5.5.2.2.1 *Requirements for External Floating Roof Deck Fittings*: Updated language to provide consistency and clarity. Updated section reads as follows:

*Except for automatic bleeder vents and rim vents and pressure-vacuum relief vents valves, each opening in a non-contact external floating roof shall provide a projection below the liquid surface.*

- 5.6.1.1 *Specifications for Vapor Recovery Systems*: Update to identify California Geologic Energy Management Division (CalGEM) as follows:

*A condensation or vapor return system that connects to one of the following: a gas processing plant, a field gas pipeline, a pipeline distributing Public Utility Commission quality gas for sale, an injection well for disposal of vapors as approved by the ~~Department of Oil, Gas, and Geothermal Resources (DOGGR)~~ California Geologic Energy Management Division (CalGEM).*

- 5.7 New language added to phase out the Voluntary Tank Preventive Inspection and Maintenance, and Tank Cleaning Program. Tanks will now be required to comply with Rule 4623 new LDAR provisions after June 30, 2024. Edits to the tables found in this section reflect the phase out date of June 30, 2024 of all three tables in the voluntary tank inspection and maintenance program.

- 5.7.5 New section added to specify tank maintenance activities after June 30, 2024. New section reads as follows:

*After June 30, 2024, operators of Fixed and Floating Roof Tanks shall comply with the provisions of Section 5.7.5. Operators may disconnect from vapor recovery provided that the procedures are performed as expeditiously as practicable and emissions are minimized to the maximum extent practicable.*

- 5.7.5.3 *Fixed-Roof Tank Operating Only a Pressure-Vacuum Relief Valve*: section updated to provide consistency with other requirements in Rule 4623. The update reads as follows:

*Except for complying with Section 5.7.5.3.2 requirements, fixed-roof tanks allowed, pursuant to Tables 3, Table 4, Table 5 and Table 6 of this rule, to operate with a pressure-vacuum relief valve ~~as the primary VOC control system~~ are not subject to the degassing requirements specified in Section 5.7.5.4.*

- 5.7.5.4 *Tank Degassing Requirements*: Updated to account for the TVP exemption change in Section 4.4. The changes phase out the section

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where the rule references TVP 0.5 psia and introduces TVP 0.1 psia after June 30, 2024.

- 5.7.5.6 Updated to phase out all three of the Voluntary Tank Preventive Inspection and Maintenance, and Tank Cleaning Program tables.
- 5.8 *Preventive Maintenance and Interior Cleaning Requirements for Fixed Roof Tanks*: New section added to require operators of fixed roof tanks to adhere to the maintenance and cleaning activities pursuant to Section 5.7.5 of Rule 4623.
- 5.9.1 *Inspection and Re-Inspection Requirements*: New section and subsections added to establish an LDAR program for all components subject to Rule 4623. Section 5.9.1 defines a violation as the following:
  - 5.9.1.1 The discovery of a major gas leak greater than 10,000 ppmv.
  - 5.9.1.2 The discovery of a liquid leak as defined in Section 3.23.
  - 5.9.1.3 Exceeding the allowable number of minor leaks defined in Table 8.
  - 5.9.1.4 Failure to repair leaks within the timeframes specified in Table 9.

<b>Table 8 – Allowable Leaks</b>		
Leak Threshold	200 or Less Components Inspected*	More than 200 Components Inspected*
500-9,999 ppmv	5	2% of total inspected

*\*Effective after June 30, 2024*

- 5.9.2 *Determination of Compliance with the Leak Standards during Operator Inspection*: New section added to establish a violation if a facility does not repair a leak within the timeframes of new Table 9.
- 5.9.3 New section added for leaks discovered during operator and District inspections above the leak thresholds defined in Section 3.14 and in Table 2 under the time frames of the following Table 9, that take effect after June 30, 2024:

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Table 9 – Repair Time Periods	
Leak Threshold	Repair Time Period
Minor Leak	14 Calendar Days
Major Leak	2 Calendar Days
Liquid Leak	2 Calendar Days

- 5.9.4 New Section 5.9.4 added that establishes quarterly LDAR for components subject to Rule 4623. This section also highlights that current requirements to inspect external floating roof tanks and internal floating roof tanks remain the same, as per Section 6.1.3 and Section 6.1.4.
- 5.9.4.1 New Section 5.9.4.1 establishes the requirement to test for leaks of total hydrocarbons in units of ppmv in accordance with U.S. EPA Reference Method 21.
- 5.9.4.2 New Section 5.9.4.2 establishes a 12 month timeframe to inspect inaccessible and unsafe-to-monitor components using U.S. EPA Reference Method 21.
- 5.9.4.3 New Section 5.9.4.3 establishes a 24-hour requirement for audio-visual inspections for components not considered inaccessible, unsafe-to-monitor, floating roof tanks, deck fittings. Audio-visual inspections are allowed once a week for facilities that are not visited at least once every 24-hours.
- 5.9.4.4 New Section 5.9.4.4 provides further guidance for operator whenever a leak is detected while conducting an audio-visual inspection. U.S. EPA Reference Method 21 must be conducted within 24-hours after a leak detected while doing an audio-visual inspection.
- 5.9.4.5 New Section 5.9.4.5 requires operators to inspect all new replaced, or repaired fittings flanges, and threaded connections within 72 hours of placing the component in service.
- 5.9.4.6 New Section 5.9.4.6 states that a District inspection does not qualify as quarterly operator inspection. District inspections are conducted to determine compliance with District rules, and shall not replace the mandatory operator inspection for components subject to Rule 4623.
- 5.9.4.7 New Section 5.9.4.7 requires operators to tag leaking components with visible identification that includes the date and time of a leak detection and the measured leak concentration.

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- 5.9.4.8 New Section 5.9.4.8 requires components, with the exclusion of tanks, to be replaced if five repair actions occur within a rolling 12 months period.
- 5.9.4.9 New Section 5.9.4.9 requires operators to attempt to minimize all component leaks immediately to the maximum extent possible, but no later than one hour after detection of the leak in order to stop or reduce leakage to the atmosphere.
- 5.9.4.10 New Section 5.9.4.10 requires an operator to comply with at least one of the requirements of the following Sections (5.9.4.10.3, 5.9.4.10.4 or 5.9.4.10.5) as soon as practicable but not later than the time period specified in Table 9 if a leak still exceeds the applicable leak standards. Determination of the leak standards referenced in Sections 5.9.4.10.1 and 5.9.4.10.2.
  - 5.9.4.10.1 *The leak rate measured, after leak minimization has been performed, shall be the leak rate used to determine the repair period specified in Table 9.*
  - 5.9.4.10.2 *The start of the repair period shall be the time of the initial leak detection.*
  - 5.9.4.10.3 *Repair or replace the leaking component; or*
  - 5.9.4.10.4 *Vent the leaking component to a VOC control system as defined in Section 3.1; or*
  - 5.9.4.10.5 *Remove the leaking component from operation.*

## **Section 6.0 – Administrative and Recordkeeping Requirements**

- 6.1.3.1 *External Floating Roof Tank Inspection:* Added the word “roof” to provide clarity that this section is referencing floating roof tanks. New section reads as follows:

*Inspect all floating roof tanks at least once every 12 months to determine compliance with the requirements of this rule. The actual gap measurements of the floating roof primary and secondary seals shall be recorded. The inspection results shall be submitted to the APCO as specified in Section 6.3.5.*
- 6.1.4.3 *Internal Floating Roof Tank Inspection:* New language added for Internal Floating Roof Tanks. The new language instructs operators to submit results of seal gap measurements and seals to the APCO as specified in Section 6.3.5.
- 6.2 *TVP and API Gravity Testing of Stored Organic Liquid in Uncontrolled Fixed Roof Tanks:* Modifications to the TVP and API gravity requirements to provide clarity for the sampling location and frequency of sampling. Section 6.2.2 and 6.2.3 were removed from the rule to ensure all tanks

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subject to the 2016 CTG recommendations comply with the requirements of Rule 4623.

- 6.3.4 *Recordkeeping*: Updated to identify CalGEM as the leading agency requiring recordkeeping for throughput of crude oil for exempt tanks under Rule 4623.
- 6.3.8 *Recordkeeping*: New section added to provide clarity on recordkeeping for tanks operating under Sections 5.1.1.1 and 5.1.2.1. The new section reads as follows:

*An operator who is demonstrating that their tank PTE emissions are below six (6) tons of VOC per year or actual emissions are below four (4) tons of VOC per year shall keep an accurate record of each organic liquid stored in each tank, including storage temperature, TVP, and monthly throughput.*

- 6.3.9 *Inspection Log*: New section added to establish an inspection log regimen for inspections, tracking of leaking components, and records of calibration of detection instruments. This new section provides consistency across other District rules with LDAR programs.
- 6.4.2 *Test and Inspection Methods*: Updated methods referenced to provide the most up-to-date methodology.
- 6.4.8.1 *Test and Inspection Methods*: New section added to establish OGI.

### **Section 7.0 – Compliance Schedule**

- 7.1 Section deleted to remove outdated language.
- 7.2 New section added to establish a compliance deadline for LDAR requirements and other new sections of Rule 4623 as follows:

<b>Table 10 – Compliance Schedule</b>		
	<b>Authority to Construct</b>	<b>Full Compliance</b>
Leak Standards (Table 2), Inspection and Re-Inspection Requirements in Section 5.9	N/A	July 1, 2024
Tanks required to comply with Sections 5.1.1.1, 5.1.2.1, or required to install a pressure-vacuum relief valve	March 31, 2024	12 months after issuance of ATC

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## Proposed Amendments to Rule 4624

In determining potential amendments to Rule 4624, the District considered the following rules and regulations:

- Bay Area Air Quality Management District (BAAQMD) Regulation 8 Rule 5
- Sacramento Metropolitan Air Quality Management District (SMAQMD) Rule 447
- Santa Barbara County Air Pollution Control District (SBCAPCD) Rule 346
- South Coast Air Quality Management District Rule (SCAQMD) 462
- Ventura County Air Pollution Control District (VCAPCD) Rule 71.3
- EPA NSPS Subpart OOOO
- EPA NSPS Subpart OOOOa

Table 5 provides a comparison of the District’s proposed requirements to other local, State, and Federal regulations to Rule 4624.

**Table 5 – Comparison of District Rule 4624 to Similar Rules and Regulations**

Rule 4624 – Transfer of Organic Liquid								
Current Leak Standard	VCAPCD Rule 71.3	SBCAPCD Rule 346	BAAQMD Regulation 8 Rule 5	SCAQMD Rule 462	SMAQMD Rule 447	CARB COGR	EPA NSPS Subpart OOOO and OOOOa	EPA 2016 CTG for the Oil and Gas Industry (EPA-453/B-16-001)
<b>Gas</b> • Leak: 1,000 ppmv  <b>Liquid</b> • Leak: +3 drops min.	<b>Gas</b> • Leak: 10,000 ppmv	<b>Gas</b> • Leak: 10,000 ppmv	<b>Gas</b> • 100 ppmv (all other components except the ones with 500 ppmv) • 500 ppmv (pumps, compressors, PRDs)	<b>Gas</b> • Leak: 3,000 ppmv  <b>Liquid</b> • Leak: +3 drops min.	<b>Gas</b> • Leak: 10,000 ppmv  <b>Liquid</b> • Leak: +3 drops min.	• Limit: 1,000 ppmv	• Leak Limit: 500 ppmv • Leak Limit: 2,000 ppmv for pumps in light crude service • Leak Limit: 10,000 ppmv for pumps in heavy crude service	• Leak Limit: 500 ppmv (valves, compressors, PRDs) • Leak Limit 2,000 ppmv (pumps)

Based on the above comparison, the District evaluated lowering the LDAR threshold to 1,000 ppmv, 500 ppmv, and 100 ppmv. Based on the District’s analysis and cost-effectiveness analysis shown in Appendix C, the District is proposing a 500 ppmv LDAR threshold, which meets BARCT requirements.

### **Section 1.0 – Purpose**

Language updated for clarity. Updated section reads as follows:

*The purpose of this rule is to limit Volatile Organic Compound (VOC) emissions from the transfer of organic liquids.*



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## Section 2.0 – Applicability

No changes proposed at this time.

## Section 3.0 – Definitions

The District added multiple definition for clarity and consistency between the District LDAR rules. The District is proposing new definitions to identify components, compressors, compressor part, leak minimization, inaccessible component, pump, pump part and unsafe-to-monitor components.

- 3.10 *Closed VOC Emission Control System:* Update to existing definition to identify California Geologic Energy Management Division (CalGEM) as the leading agency for disposal of vapors.

- 3.11 *Component:* New definition added for clarity of what a component is under Rule 4624. New definition reads as follows:

*Component: includes, but is not limited to, any valve, fitting, threaded connection, pump, compressor, pressure relief device, pipe, flange, process drain, sealing mechanism, sight-glass, meter, or seal fluid system, separators, and pressure vessels in VOC service.*

- 3.18 *Inaccessible Component:* New definition added for clarity to define an inaccessible component in Rule 4624. This provides consistency to the new LDAR program introduced in Rule 4624 and reads as follows:

*Inaccessible Component: a component that is located over 15 feet above ground when access is required from the ground; or a component that is located over six (6) feet away from a platform when access is required from the platform, or a component in a location that would require the elevation of monitoring personnel higher than six (6) feet above permanent support surfaces.*

- 3.19 *Leak:* Updates to Table 1 contain new language to establish that Table 1 is effective until June 30, 2024. The requirements of new Table 2 go into effect after June 30, 2024. Table 2 contains a new minor leak definition for components subject to Rule 4624. Components will have a minor gas leak of 500 ppmv, and a major gas leak of 1,000 ppmv or greater.

Table 1 – Leak in ppmv as Methane (Until June 30, 2024)	
	Leak
Component	1,000 and greater

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Table 2 – Leak in ppmv as Methane (After June 30, 2024)		
	Major Leak	Minor Leak
Component	1,000 and greater	500 to less than 1,000

- 3.22 *Optical Gas Imaging (OGI)*: The District added a definition to include OGI. The new definition reads as follows:

*Optical Gas Imaging (OGI): an instrument that makes emissions visible that may otherwise be invisible to the naked eye.*

- 3.27 *Process Drain*: New definition added for clarity to define a process drain. New section reads as follows:

*Process Drain: any open portion of a non-continuous piping system, including open origination portion(s) of such a system used for collection and transport of liquids discharged from process vessels, spills, or other sources.*

- 3.30 *Tag*: New definition added to provide clarity on the identification of a leak. New definition reads as follows:

*Tag: a piece of paper, metal, plastic or other suitable material that is attached to a component for the purpose of identification or other information.*

- 3.32 *True Vapor Pressure*: Update to definition to provide clarity and consistency across other District LDAR rules. Update to the definition reads as follows:

*True Vapor Pressure: the equilibrium partial vapor pressure exerted by an organic liquid at actual storage temperature as determined by the applicable test methods specified in Section 6.3.*

- 3.33 *Unsafe-to-Monitor*: New definition added to address the components that would prevent the safe inspection or repair of a component. New definition reads as follows:

*Unsafe-to-Monitor: a component installed at a location that would prevent the safe inspection or repair of a component as defined by OSHA standards or in provisions for worker safety stated in 29 CFR 1910.*

- 3.34 *Volatile Organic Compound*: Updated definition to provide consistency.

**Section 4.0 – Exemptions**

- 4.1 Updated language to provide clarity. Updated section reads as follows:

*The requirements of Section 5.0 of this rule shall not apply to organic liquid transfer facilities which transfer less than 4,000 gallons of organic liquids in ~~any one day~~ daily. The operator shall meet the applicable recordkeeping requirements of Section 6.1.1.*

**Section 5.0 – Requirements**

- 5.9.3 *Repair Time:* The District created a table of the current repair times under Rule 4624.

<b>Table 3 – Repair Time Periods</b>	
<b>Type of Leak</b>	<b>Repair Time Period</b>
Liquid Leak	72 hours
Gas Leak	72 hours

- 5.9.4 *Leak Detection and Repair Inspection:* The District is proposing to phase out Section 5.9.4 to remove the option of LDAR inspection reverting to annual. All components subject to 4624 will require inspection in accordance with Section 5.9.1 of Rule 4624. This will establish quarterly inspections for all components subject to Rule 4624.

- 5.9.5 *Allowable Leaks:* The District is proposing new Section 5.9.5, effective after June 30, 2024, which provides an allowable number of minor leaks. This provides consistency across other District LDAR rules. Leaks falling under Table 4 of the proposed Rule are still subject to the leak repair timeframe of Rule 4624.

<b>Table 4 – Number of Allowable Leaks after June 30, 2024</b>	
Minor leaks	2.0% of number inspected
Major leaks	0

- 5.9.6 *Audio-visual Inspections:* New Section 5.9.6 establishes requirements to perform audio-visual inspection at least once every 24 hours for facilities that are visited daily. These inspections do not replace a quarterly LDAR inspection and further actions are needed if a leak is detected while performing an audio-visual inspection. Pipes shall also be inspected once every 12 months.

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- 5.9.7 *Audio-visual Inspection*: New section requires operators to test leaks found under Section 5.9.6 with EPA Reference Method 21 within 24 hours, and requires the operator to repair leaks as directed in Section 5.9.3.
- 5.10 *Maintenance Requirements*: New section added to include requirements for tagging leaking equipment.

## **Section 6.0 – Administrative and Recordkeeping Requirements**

- 6.1.4 *Record Retained and Request*: Replaced the word “or” with “and” to provide clarity of who has access to operator records.
- 6.1.6 *Inspection Log*: New sections 6.1.6.1 through 6.1.6.10 establish an inspection log regimen for inspections, tracking of leaking components, and records of calibration of detection instruments. This new section provides consistency across other District rules with LDAR programs.
- 6.3.8 *Test Method*: New section to clarify OGI observed leaks. New subsection 6.3.8.1 further defines procedures for leaks detected when using OGI. The new section reads as follows:

*All leaks detected with the use of an OGI instrument shall be measured using EPA Reference Method 21 within two (2) calendar days of initial OGI leak detection or within 14 calendar days of initial OGI leak detection of an inaccessible or unsafe to monitor component to determine compliance with the leak thresholds and repair timeframes specified in Table 3.*

## **Section 7.0 – Compliance Schedule**

- 7.1 Section deleted to remove outdated language.
- 7.2 Section deleted to remove outdated language.

## **III. ANALYSIS**

### **A. Emission Reduction Analysis**

In order to determine the emission reductions associated with the proposed changes, District staff queried the District Permit Services Database for all affected facilities impacted from the proposed changes, and data provided by CARB staff from surveys conducted in 2007, along with information provided by industry on affected components. Based on existing permitted limits, District staff calculated the PTE for each affected unit, and then, based on the proposed requirements and leak limits, calculated the

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percent reduction that would be achieved through compliance with the proposed rule amendments.

For State Implementation Plan (SIP) purposes, the District applied the percent reduction achieved through compliance with the proposed rule changes to the baseline emissions inventory used in the District's *2022 Ozone Plan*. Based on these calculations, the SIP-creditable emission reductions estimated to be achieved from the proposed amendments to Rules 4401, 4409, 4455, 4623, and 4624 are illustrated in the table below, in tons per day (tpd) on an annual average basis.

**Table 6 – SIP Emissions Reductions for 2024**

Rules	% of Emissions Reduced at 500 ppmv	Tons/day of VOC reduced from CEPAM Data @ 500ppmv
4401	19.9%	0.20
4409		
4455	12.8%	0.02
4623	28.7%	0.69
4624	15.6%	0.18
<b>Total</b>		<b>1.09</b>

Details of the District's emissions reduction analysis is contained in Appendix B of this staff report.

## **B. Cost Effectiveness Analysis**

CH&SC Section 40920.6(a) requires the District to conduct both an absolute cost effectiveness analysis and an incremental cost effectiveness analysis of available emission control options before adopting each BARCT rule. The purpose of conducting a cost effectiveness analysis is to evaluate the economic reasonableness of the pollution control measure or rule. The analysis also serves as a guideline in developing the control requirements of a rule. Cost effectiveness will depend on the current level of controls, number of subject components, leak limit and final emission levels. Details of the cost effectiveness analysis is contained in Appendix C to this report.

## **C. Socioeconomic Analysis**

State law requires the District to analyze the socioeconomic impacts of any proposed rule or rule amendment that significantly affects air quality or strengthens an emission limitation. Appendix D includes the socioeconomic impact analysis.

**D. Environmental Impact Analysis**

According to Section 15061 (b)(3) of the CEQA Guidelines, a project is exempt from CEQA if, “(t)he activity is covered by the general rule 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, substantial evidence supports the District’s assessment that the rule amendment project will not have any significant adverse effects on the environment.

Furthermore, the rule amendment project is 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. 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 rule amendment project.

Therefore, for all the above reasons, the rule amendment project is exempt from CEQA. Pursuant to Section 15062 of the CEQA Guidelines, District staff will file a Notice of Exemption upon Governing Board approval.

**E. 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. District staff has concluded that the proposed rules are not in conflict with nor inconsistent with other District rules, nor are the proposed rules in conflict with nor inconsistent with federal policy, rule, or regulations governing the same source category. Appendix E will include further details on the District’s rule consistency analysis.

**F. Reasonably Available Control Technology (RACT) and Best Available Retrofit Control Technology (BARCT) Analyses**

Sections 182(b)(2) and 182(f) of the federal Clean Air Act require ozone nonattainment areas to implement RACT for sources that are subject to CTG documents issued by EPA and for “major sources” of VOCs and NO<sub>x</sub>, which are ozone precursors. RACT can be defined as devices, systems, process modifications, or other apparatus or

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techniques that are reasonably available, taking into account the necessity of imposing such controls in order to attain and maintain a national ambient air quality standard (NAAQS); the social, environmental, and economic impact of such controls; and alternative means of providing for attainment and maintenance of such a standard. These control techniques, which EPA defines in guidelines for limiting emissions from existing sources in nonattainment areas, are adopted and implemented for nonattainment areas by state analysis.

In September of 2017, the California State Legislature and Governor passed AB 617, Non-vehicular Air Pollution: Criteria Air Pollutants and Toxic Air Contaminants. One requirement of AB 617 is for air districts located in nonattainment areas to perform a BARCT analysis of their existing rules and regulations, and if applicable, propose an expedited schedule for revising rules found not meeting BARCT requirements. Most existing stationary sources in nonattainment areas such as the San Joaquin Valley have been subject to BARCT requirements since the 1980s. CH&SC Section 40406 defines BARCT as follows:

*“Best Available Retrofit Control Technology (BARCT) is an air emission limit that applies to existing sources and is the maximum degree of reduction achievable, taking into account environmental, energy and economic impacts by each class or category of source.”*

Appendix F will include further details on the District’s BARCT and RACT analysis.

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