California Air Resources Board

Public Hearing to Consider Proposed Amendments to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities

Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response

Public Hearing Date: June 22, 2023
Agenda Item No.: 23-6-2

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List of Acronyms and Abbreviations

BACT	Best Available Control Technology
BTEX	Benzene, toluene, ethylbenzene, and xylene
Cal e-GGRT	California Electronic Greenhouse Gas Reporting Tool
CalGEM	California Geologic Energy Management Division
CARB	California Air Resources Board
CEC	California Energy Commission
CH_4	Methane
COGR	California Oil and Gas Regulation (synonymous with Oil and Gas Methane Regulation)
CFR	Code of Federal Regulations
CTG	Control Techniques Guidelines for the Oil and Natural Gas Industry
EPA	United States Environmental Protection Agency (also: U.S. EPA)
FSOR	Final Statement of Reasons
GHG	Greenhouse gas
GWP	Global warming potential
IPCC	Intergovernmental Panel on Climate Change
ISOR or ISR	Initial Statement of Reasons
LDAR	Leak detection and repair
MTF	Methane Task Force
OAL	Office of Administrative Law
OGI	Optical gas imaging
RACT	Reasonably Available Control Technology
SCC	Social cost of carbon
SERP	(U.S. EPA's proposed) Super-Emitter Response Program
SIP	State Implementation Plan
SJVAPCD	San Joquin Valley Air Pollution Control District
SP	Scoping Plan
U.S. EPA	United States Environmental Protection Agency (also: EPA)
VCS	Vapor collection system
VOC	Volatile organic compound
WST	Well simulation treatment

I. General

The Staff Report: Initial Statement of Reasons for Rulemaking (ISOR or Staff Report), entitled "Public Hearing to Consider the Proposed Amendments to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities" (Proposed Amendments), released April 25, 2023, is incorporated by reference herein. The Staff Report contained a description of the rationale for the Proposed Amendments. On April 25, 2023, all references relied upon and identified in the Staff Report were made available to the public.

The California Air Resources Board (CARB or Board) adopted the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities (the Oil and Gas Methane Regulation or the Regulation) in 2017 to reduce methane emissions from the oil and natural gas sector. The Regulation applies to oil and natural gas production, natural gas gathering and boosting stations, natural gas processing plants, natural gas transmission compressor stations, and natural gas underground storage facilities. The Regulation reduces emissions depending on the type of equipment or component by requiring vapor collection, equipment replacement, and leak detection and repair (LDAR). Additionally, the Regulation includes monitoring at underground natural gas storage facilities for the early detection of large leaks or well failures, measurement of emissions from certain sources, and recordkeeping and reporting.

As explained in the Staff Report, the purposes of the Proposed Amendments are to meet United States Environmental Protection Agency (U.S. EPA) requirements for California's State Implementation Plan (SIP); leverage forthcoming remote methane emission plume detection data; and improve clarity, accuracy, and reporting requirements.

The Proposed Amendments add various new requirements to align with U.S. EPA's 2016 Control Techniques Guidelines (CTG) for the Oil and Natural Gas Industry[1] as required for SIP approval. These changes are based on deficiencies identified by U.S. EPA in a *limited approval, limited disapproval*[2] of the Regulation as submitted to the SIP (the SIP Decision). Most of these changes are minor or administrative in nature and address a wide range of issues. Some of the more substantial provisions in response to the SIP Decision include requiring LDAR plans, testing and other provisions to demonstrate that vapor collection and control systems are achieving sufficient control efficiency, removing or adjusting some exemptions, and reducing the amount of CARB Executive Officer discretion. These measures are necessary to achieve approval of the Proposed Amendments in the SIP.

The Proposed Amendments also add a provision that requires owners or operators to respond to satellite-based remote methane emission plume detections reported to them by CARB. The required actions include on-the-ground investigations to find the emission source (or alternatively reporting of an activity-based venting emission source), repair of the emission source depending the type of source found, and reporting on the outcomes of these inspections and repairs. These changes are important to find and mitigate large

[1] U.S. EPA. (2016). Control Techniques Guidelines for the Oil and Natural Gas Industry. Posted October 2016. *https://www.epa.gov/sites/default/files/2016-10/documents/2016-ctg-oil-and-gas.pdf*.

[2] U.S. EPA. (2022). Limited Approval, Limited Disapproval of California Air Plan Revisions; California Air Resources Board. FR Doc 2022–20870. Filed 29 September 2022. *https://www.govinfo.gov/content/pkg/FR-2022-09- 30/pdf/2022-20870.pdf*.

emission sources – which often make up a disproportionate share of total emissions – sooner than they would otherwise be found under the current Regulation's LDAR requirements.

Changes to address implementation experience in the Proposed Amendments include changes to recordkeeping and reporting requirements, clarifying potentially ambiguous requirements, removing reference to dates and deadlines in the past, and other changes to improve accuracy and clarity. These changes ensure more uniform implementation, provide CARB with better data to calculate emissions and emission reductions, improve recordkeeping and reporting for compliance verification, and make the Regulation easier to understand.

The Proposed Amendments amend the California Code of Regulations, Title 17, sections 95665, 95666, 95667, 95668, 95669, 95670, 95671, 95672, 95673, 95674, 95675, 95676, 95677, Appendix A, and Appendix C, and adopt the California Code of Regulations, Title 17, sections 95669.1, 95670.1, Appendix D, Appendix E, Appendix F, and Appendix G.

On April 25, 2023, CARB released the Notice of Public Hearing (45-Day Notice) and Staff Report. The formal comment period for the Proposed Amendments opened April 28, 2023, and closed June 12, 2023. CARB received 21 written comments during the 45-Day Notice comment period. The proposed regulatory text released on April 25, 2023, is sometimes referred to herein as the "45-Day Changes."

On June 22, 2023, CARB held a public hearing to consider the Proposed Amendments as described in the 45-Day Notice and Staff Report. At this hearing, one additional written comment was submitted and eight oral comments were provided. Subsequently in the hearing, the Board approved for adoption the Proposed Amendments and directed the Executive Officer, through Resolution 23-18, to determine if additional conforming modifications to the regulation were appropriate and to make any proposed modified regulatory language available for public comment, with any additional supporting documents and information, for a period of at least 15 days in accordance with Government Code section 11346.8.

On November 2, 2023, additional proposed changes and supporting documents were made available for a 15-day comment period through a "Notice of Public Availability of Modified Text and Availability of Additional Documents and Information" (15-Day Notice). The 15-Day Notice and modified regulatory language were available for public review and comment through November 17, 2023. During the comment period, CARB received five additional written comments. CARB did not make any changes to the regulatory text based on comments received during the 15-day comment period. The proposed regulatory text released on November 2, 2023, is sometimes referred to herein as the "15-Day Changes."

This Final Statement of Reasons (FSOR) updates the Staff Report by identifying and providing the rationale for the modifications made to the originally proposed amendments to the regulatory text. The FSOR also contains a summary of the comments received by CARB during the formal rulemaking process on the Proposed Amendments or the process by which they were adopted, and CARB's responses to those comments.

A. Mandates and Fiscal Impacts to Local Governments and School Districts

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district the costs of which are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

B. Consideration of Alternatives

For the reasons set forth in the Staff Report, in staff's comments and responses at the hearing, and in this FSOR, the Board determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law than the action taken by the Board. Because oil and gas industry operations are exempted from being considered a small business, the Proposed Amendments have no effect on small business according to California Government Code 11342.610(b).

The Executive Officer analyzed two alternatives to the Proposed Amendments. Alternative 1 would be to remove the proposed provision that requires owners or operators to investigate and repair the sources of remotely detected methane emission plumes in response to notifications from CARB (and the associated recordkeeping and reporting). Removal of this provision would result in the loss of emission reductions associated with the provision (unquantified) and reduce the cost of the amendments by $375,886 per year. In the Staff Report, staff reasoned that this provision is likely to be more cost effective than the traditional periodic LDAR requirements in the Regulation and thus is a beneficial overlay to backstop traditional LDAR efforts through more frequent checks for large emission events.

Alternative 2 would be to make the Regulation more stringent by banning all venting from pneumatic controllers and removing an exemption from performing leak detection and repair on equipment handling exclusively heavy oil (oil with an API gravity of less than 20). These provisions would collectively add costs of $26.7 million to $27.4 million per year and result in emission reductions of approximately 156,495 metric tons of carbon dioxide equivalent per year (using 100-year global warming potential). In the Staff Report, staff concluded that because this alternative is significantly more costly and wider in scope than the Proposed Amendments, it would be difficult to meet the sanctions deadline set by U.S. EPA if these provisions were included in the Proposed Amendments. Further, because the details of potential future requirements to prohibit venting pneumatic controllers and require broader LDAR are still being developed in U.S. EPA's proposed Emissions Guidelines, it is prudent to wait until the requirements are finalized before considering the addition of such measures. For more information regarding these alternatives, please see Chapter IX of the Staff Report.

II. Modifications Made to the Original Proposal

A. Modifications Approved at the Board Hearing and Provided for in the 15-Day Comment Period

No modifications to the proposed regulatory language were provided at the June 22, 2023, public hearing. Through Resolution 23-18, the Board directed the Executive Officer to determine if additional conforming modifications to the regulation were appropriate and to make any proposed modified regulatory language available for public comment, with any additional supporting documents and information, for a period of at least 15 days in accordance with Government Code section 11346.8. The Board further directed the Executive Officer to present the proposed regulation to the Board for further consideration if warranted or take final action to adopt the regulation after addressing all appropriate modifications.

On November 2, 2023, CARB released a Notice of Public Availability of Modified Text (15-Day Notice)[3] for the Proposed Amendments along with modified regulatory text. The specific proposed modifications are detailed in the 15-Day Notice and companion underline/strikeout modified regulatory text. The 15-day modifications are also discussed, where appropriate, in the summary of comments and agency responses in Section IV of this document. These modifications mostly consisted of changes to better harmonize the Proposed Amendments with local air district rules, improve clarity, and make additional minor changes to address comments (e.g., adjusting timelines). The list below summarizes the changes in more detail:

- Updated the amended dates of several recently amended local air district rules that provide exemptions[4] from the Proposed Amendments.
- Added an additional local air district rule to the exemption list for leak detection and repair to account for changes in local air district rule applicability.
- Updated all compliance dates that were previously set for April 1, 2024, to July 1, 2024, to align with the compliance dates in some newly amended local air district rules.
- Removed incorporation by reference of local air district rules for the exemptions in the Proposed Amendments.
- Added requirement for owners or operators to maintain lists of components and equipment exempt from leak detection and repair under the Proposed Amendments due to being subject to a few specific local air district rules.
- Extended timeline for owners or operators to report results of inspections following notifications of remotely detected methane plumes.
- Set a maximum timeline for CARB to send notifications of remotely detected methane plumes after CARB receives the remote monitoring data.
- Corrected various mistakes in grammar, terminology, or phrasing.
- Made additional minor changes for consistency, clarity, or cleanup.

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[3] See CARB. (2023). "Notice of Public Availability of Modified Text and Availability of Additional Documents." Available November 2, 2023. *https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2023/oilgas2023/15daynotice.pdf*

[4] Some equipment is exempt from specific provisions in the Proposed Amendments if it is covered under certain local air district rules.

B. Non-Substantial Modifications

Subsequent to the 15-day public comment period mentioned above, staff identified the following additional non-substantive changes to the regulation:

- Subsections 95673(b)(1) and 95674(b)(2)(A): Changed the website address for the California Electronic Greenhouse Gas Reporting Tool (Cal e-GGRT) from "https://ssl.arb.ca.gov/Cal-eGGRT/login.do" to "https://caleggrt.arb.ca.gov/login.do." Cal e-GGRT was moved to the new website address subsequent to the 15-Day Changes and this non-substantial modification reflects that move. The website address previously provided was accurate during the 45-day comment period and still redirects to the new website address.

Subsequent to initial submission to the Office of Administrative Law, staff identified the following additional non-substantive changes to the regulation:

- Globally: Removed "and," and "or," between items separated by subsections, except for the last instance in each list. For example, section 95666(a)(1)-(6) previously included "and," between each item, but now there is only an "and" after (5). These are solely grammatical changes.
- Globally: Removed "electronic" when describing emails because "e-mail" already signifies that the communication is electronic. Additionally, reordered or slightly rephrased text when describing where to send email and with what subject line for better grammatical flow (but without changing the email address or subject line requirements).
- Globally: Added spelled-out version of numerals under 10, followed by the numeral enclosed in parentheses where appropriate (e.g., six (6)).
- Globally: Changed the format of callouts to deep heading levels to use periods rather than parentheses for consistency with heading formats (e.g., callout to section 95668(h)(4)(B)(2)(g) becomes 95668(h)(4)(B)2.g.).
- Authority and Reference citations: Moved *section 38566 of the Health and Safety Code* from Authority to Reference in each section of the Proposed Amendments.
- Subsection 95668(b)(1): Removed "located" in the first sentence for consistency with the same global change that was made throughout the Proposed Amendments and described in the ISOR (p. 11).
- Subsection 95668(h)(4)(A)6. and 7.: Removed ";and," from after each of these subsections for grammatical reasons as the ";and," serves no purpose.
- Subsection 95668(h)(4)(A)9.a.: Changed "shall" to "must" (reverted to the language used in the current Regulation). As described in the ISOR (p. 11), changes from "must" to "shall" were not intended to affect the meaning, interpretation, or implementation of those passages, and "must" is more grammatically correct in this instance.
- Subsection 95669(c)(14): Added "activities" and changed "completed" to "finished" in the sentence which now reads "…calendar quarter in which the drilling, completion, or maintenance activities are finished." The word "activities" was added to conform to the phrasing previously used in the subsection and "finished" avoids the awkward construction of using "completion" and "completed" near one another.
- Subsection 95669(d)(1)(C): Added "for each piece of equipment" for clarity.
- Subsection 95669(h)(1): Changed "and" to "which" for improved grammatical flow.

- Immediately after subsection 95669(j): Removed the floating header "Additional Requirements" because this header served no purpose.
- Table 2 (directly after subsection 95669(o)(1)(A)): Changed "Less" to "Fewer" in table header row because the number of components is countable and therefore "fewer" is more grammatically correct.
- Subsection 95669.1(a)(2): Added "plume" to "the emission(s)" in subsections (B), (C), and (D) for consistency with the phrasing used previously.
- Subsection 95669.1(b): Changed "except in the case that" to "unless" to remove unnecessary wordiness but leave intact the same meaning.
- Subsection 95669.1(b)(1): Changed "that demonstrate that" to "demonstrating that" in both instances to avoid awkward phrasing. Added "plume" in "remote emission plume detection" for consistency. Changed "as described in" to "in accordance with" for improved flow.
- Subsections 95669.1(d)(1), (2), (3)(A), (3)(B), and (4); 95670.1(a)(2)(A); and 95673(a)(14), (15), (16), (17), (18), (20), and (21): Changed "of" to "after" in describing when reporting must occur for consistency. In these instances, "of" and "after" have the same intended meaning but were used inconsistently and interchangeably.
- Subsection 95670(a)(2): Changed "meets the definition in section 95667(a)(14) to be a critical process unit" to "meets the definition of a critical process unit in section 95667(a)(14)" to improve the flow of the sentence.
- Subsection 95670.1(a)(1)(A): Changed "timeline" to "deadline" to better reflect that the timeline referenced is the deadline to make a repair.
- Subsection 95670.1(a)(3)(C): Changed "shall" to "must" in the first sentence because this sentence is referencing a theoretical scenario where a process unit needs to be shut down; it is not giving a direction to do so. This is clear from the context of the sentence and because this text is providing an example situation. "Must" is a better word choice with the same intended meaning here.
- Subsection 95670.1(g)(1) and (g)(1)(A): Removed "number of" in the phrases "why the number of days requested are necessary" and "that the additional number of days requested are necessary" because the words "number of" are unnecessary and the new phrasing is more concise.
- Subsection 95673(a)(17): Fixed the callout for section 95669.1(d)(4), which previously read "95669(d)(4)." It would have been clear to regulated entities from the context of the passage that 95669.1 was the section being referred to (and, in fact, there is no section 95669(d)(4)).
- Subsection 95673(a)(21): Removed "the owner or operator shall" before "report the date(s) the equipment" as this wording was unnecessary (the direction to the owner or operator is already given in section 95673(a)) and the new language is more concise.
- Subsection 95674(b)(2)(B)1.: Added "Notification of" to the start of the subsection to improve the flow and be consistent with the subsequent sentence describing this as a "notification."
- Appendix E(b)(1)(A)4.c.: Added "the device" after "Owners or operators shall operate" for better clarity and to correct a grammatical mistake.
- Appendix E(b)(2)(B)2.: Added cross reference to "a subpart in 40 CFR Part 60 or Part 63" to better guide regulated parties to where US EPA volatile organic compound standards are listed, which aligns with federal rules containing similar language.

- Appendix E(d)(2)(A)1.: Added "flame" after the first instance of "pilot" for consistency with the phrasing used later in the same subsection and throughout the subarticle.
- Appendix E(d)(2)(A)4.: Changed "audible" to "auditory" for consistency with the phrasing used to describe this type of inspection elsewhere in the subarticle.
- Appendix E(f)(6): Split this subsection into a header and further subsections below to better organize the flow and represent the requirements of the subsection. It also clarifies that the sentence about US EPA Method 22 results is a requirement to keep records of inspections performed on equipment subject to vapor control device requirements in Appendices E and F. These changes are mainly grammatical (including adding "For" and deleting "which" in (f)(6)(A)1.) and do not modify the substantive requirements in any way.
- Appendix F(d)(2): Changed "data acquisition system" from uppercase to lowercase as this does not refer to any specific system, but rather a type of system.
- Appendix G(a)(2) and (3): Changed "a methane gas sensor(s)" to "one or more methane gas sensors" and "a flow measurement sensor(s)" to "one more flow measurement sensors" for better grammatical flow with the same intended meaning. Similarly, removed the "(s)" from the sensor descriptions throughout Appendix G.

The above-described modifications constitute non-substantial changes to the regulatory text and do not materially alter the requirements or conditions of the proposed rulemaking action. In addition to these changes, additional non-substantial changes were made to correct grammar, punctuation, and spelling throughout the proposed regulatory text.

III. Documents Incorporated by Reference

The Proposed Amendments adopted by the Executive Officer incorporate by reference the following documents in the specified sections of the regulation:

- ASTM International, 2006. Specification D4891-89: Standard Test Method for Heating Value of Gases in Natural Gas Range by Stoichiometric Combustion. Reapproved 2006. Copyrighted. Incorporated by reference in Appendix F(d)(5)(B)(3).

- ASTM International, 2000. Specification D6522-00: Standard Test Method for Determination of Nitrogen Oxides, Carbon Monoxide, and Oxygen Concentrations in Emissions from Natural Gas-Fired Reciprocating Engines, Combustion Turbines, Boilers, and Process Heaters Using Portable Analyzers. February 10, 2000. Copyrighted. Incorporated by reference in Appendix F(b)(4)(A)(1).

- ANSI/ASME, 1981. PTC 19.10-1981: Flue and Exhaust Gas Analyses. Copyrighted. Incorporated by reference in Appendix F sections (b)(4)(A)(1) and (d)(7)(C).

- United States Environmental Protection Agency (U.S. EPA), 2012. Protocol 1: EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards. May 2012. Incorporated by reference in Appendix F(d)(9)(D).

- Title 40 Code of Federal Regulations (CFR), Part 60 – Standards of Performance for New Stationary Sources, section 60.112b. Last amended October 8, 1997. Incorporated by reference in sections 95668(a)(2)(C), 95668(a)(3), 95669(c)(3)(B), Appendix D(b)(2), and Appendix D(h)(6).

- Title 40 CFR, Part 60 – Standards of Performance for New Stationary Sources, section 60.18. Last amended December 22, 2008. Incorporated by reference in Appendix E(b)(1)(C) and Appendix F(a)(1).
- Title 40 CFR, Part 60 – Standards of Performance for New Stationary Sources, Subpart Kb. Last amended January 19, 2021. Incorporated by reference in Appendix D(b)(2).
- Title 40 CFR, Part 60, Appendix A-1 – Test Methods 1 through 2F. Last amended January 14, 2019. Incorporated by reference in section 95667(a)(17)(B), Appendix F sections (b)(1), (d)(4)(A), (d)(4)(B), and (d)(6)(A)(2), and Appendix G section (a)(4)(B).
- Title 40 CFR, Part 60, Appendix A-2 – Test Methods 2G through 3C. Last amended October 31, 2016. Incorporated by reference in Appendix F sections (b)(2), (b)(4)(A), (d)(7)(A)(4), (d)(7)(B), (d)(7)(C), and (d)(9)(F).
- Title 40 CFR, Part 60, Appendix A-3 – Test Methods 4 through 5I. Last amended March 23, 2021. Incorporated by reference in Appendix F sections (b)(3), (d)(7)(A), and (d)(7)(B).
- Title 40 CFR, Part 60, Appendix A-4 – Test Methods 6 through 10B. Last amended December 7, 2020. Incorporated by reference in Appendix F(d)(8).
- Title 40 CFR, Part 60, Appendix A-7 – Test Methods 19 through 25E. Last amended December 7, 2020. Incorporated by reference in Appendix E sections (b)(1)(A)(3), (b)(1)(C), (d)(2)(A)(2), and (f)(6), and Appendix F sections (a)(1), (b)(3), (b)(4), (d)(8), (d)(9)(A), (d)(9)(B), (d)(10), (d)(11)(A)(1), (d)(11)(A)(2), (e)(3), and (e)(5).
- Title 40 CFR, Part 63 – National Emission Standards for Hazardous Air Pollutants for Source, section 63.1207. Last amended October 28, 2008. Incorporated by reference in Appendix E sections (b)(2)(B)(3) and (b)(2)(B)(4), and Appendix F sections (a)(4) and (a)(5).
- Title 40 CFR, Part 63 – National Emission Standards for Hazardous Air Pollutants for Source, Subpart EEE. Last amended October 28, 2008. Incorporated by reference in Appendix E sections (b)(2)(B)(3) and (b)(2)(B)(4), and Appendix F sections (a)(4) and (a)(5).
- Title 40 CFR, Part 264 – Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart X. Last amended February 7, 2020. Incorporated by reference in Appendix E(b)(2)(B)(1).
- Title 40 CFR, Part 266 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities, Subpart H. Last amended March 18, 2010. Incorporated by reference in Appendix E sections (b)(2)(B)(5) and (b)(2)(B)(6), and Appendix F section (a)(4).
- Title 40 CFR, Part 270 – EPA Administered Permit Programs: the Hazardous Waste Permit Program. December 9, 2019. Incorporated by reference in Appendix E sections (b)(2)(B)(1) and (b)(2)(B)(5), and Appendix F section (a)(4).

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the California Code of Regulations. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed

without violating the licensing agreements. The documents are lengthy and highly technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the California Code of Regulations is not needed because the interested audience for these documents is limited to the technical staff at a portion of reporting facilities, most of whom are already familiar with these methods and documents. Also, the incorporated documents were made available by CARB upon request during the rulemaking action and will continue to be available in the future. The documents are also available from college and public libraries or may be purchased directly from the publishers.

IV. Summary of Comments and Agency Response

Written comments were received during the 45-day comment period in response to the June 22, 2023, public hearing notice, and written and oral comments were presented at the Board Hearing. Written comments were also received during the 15-day comment period in response to the release of the 15-Day Notice. This chapter contains all comments submitted to CARB along with CARB's responses.

The comments are coded according to the comment period in which they were received and the name of the organization or individual commenting. Table 1 shows the coding abbreviation for each comment period. The format of the commenter code is the comment period abbreviation and the commenter name (either last name or abbreviation of organization name[5]) with an underscore between these elements. The text of each comment is further subdivided into individual sub-comments for each topic or concept expressed by the commenter. This is denoted by a dash and a number appended to the end of the commenter code in the comment and response portion of this chapter. Figure 1 shows this coding structure using a fictitious organization with the acronym "ABC". The example represents the second sub-comment within the comment letter submitted by the organization "ABC" during the 45-day comment period.

[5] In one instance, an organization submitted two comments within the same comment period, in which case the numbers 1 and 2 were added to the organization abbreviation to signify the first and second comment submitted, respectively (Vaquero Energy, Inc. in the 15-day comments).

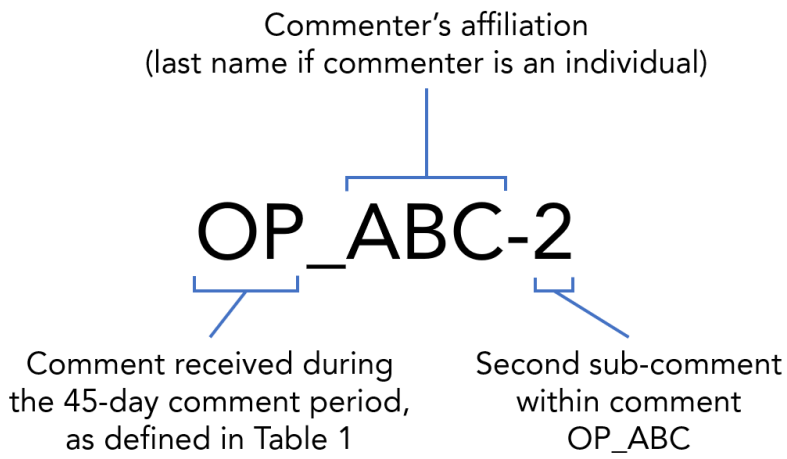


Figure 1. Example of Comment Code

Table 2 contains the list of written comments received during the 45-day comment period, including the name of the commenter, date the comment was received, affiliation of the commenter, and commenter code used in this FSOR. Table 3 includes the same information for written comments received at the Board Hearing, Table 4 includes the same information for oral comments presented at the Board Hearing, and Table 5 includes the same information for written comments received during the 15-day comment period.

Table 1. Comment Period Codes

Comment Period Code	Comment Period Received
OP, for original proposal	Comments received during the 45-day comment period for the original proposal, April 28 to June 12, 2023
B, for Board Hearing written comments	Comments received as written materials during the Board Hearing, June 22, 2023
T, for testimony at the Board Hearing	Comments received as oral testimony at the Board Hearing, June 22, 2023
F, for fifteen-day changes	Comments received during the 15-day comment period, November 2 to November 17, 2023

Table 2. Written Comments Received During the 45-Day Comment Period

Commenter, Date	Affiliation	Commenter Code
Nancy Oliver, 5/4/2023	Individual	OP_Oliver
Michael Sutton, 5/4/2023	Individual	OP_Sutton
Mark Ashby, 5/4/2023	Individual	OP_Ashby
Megan Shumway, 5/4/2023	CHN; Sacramento Climate Coalition; SacAct	OP_CHN
Janet McClure, 5/4/2023	Veterans Administration Health Care	OP_VAHC
Linda Dow, 5/4/2023	Individual	OP_Dow
Robyn Reichert, 5/4/2023	Individual	OP_Reichert
Gail Lee, 5/5/2023	Individual	OP_Lee
Will Brieger, 5/5/2023	Climate Action CA; 350 Sacramento	OP_CAC
Rowyn McDonald, 5/5/2023	Individual	OP_McDonald
Jeremy Thorner, 5/6/2023	UC Berkeley (retired faculty)	OP_Thorner
Ferris Kawar, 5/7/2023	Individual	OP_Kawar
Larisa Humphries, 5/8/2023	Individual	OP_Humphries
David Bezanson, 5/24/2023	Individual	OP_Bezanson
James Bartlett, 6/12/2023	Rockpoint Gas Storage	OP_RGS
Riley Duren, 6/12/2023	Carbon Mapper	OP_CM
Jon Goldstein, 6/12/2023	Environmental Defense Fund	OP_EDF
Christine Zimmerman, 6/12/2023	Western States Petroleum Association	OP_WSPA
Colby Morrow, 6/12/2023	SoCalGas	OP_SCG
Karin Urso, 6/12/2023	CA Nurses for EHJ	OP_CNEHJ

Jasmine Vazin, 6/12/2023	Sierra Club	OP_SC

Table 3. Written Comments Received at the Board Hearing

Commenter, Date	Affiliation	Commenter Code
Jon Costantino, 6/22/2023	California Independent Petroleum Association	B_CIPA

Table 4. Oral Comment Presented at the Board Hearing

Commenter, Date	Affiliation	Commenter Code
Jon Costantino, 6/22/2023	California Independent Petroleum Association	T_CIPA
Christine Zimmerman, 6/22/2023	Western States Petroleum Association	T_WSPA
Kayla Karimi, 6/22/2023	The Center on Race, Poverty, & the Environment	T_CRPE
Karin Urso, 6/22/2023	CA Nurses for EHJ	T_CNEHJ
Jasmine Vazin, 6/22/2023	Sierra Club	T_SC
Riley Duren, 6/22/2023	Carbon Mapper	T_CM
Ms. Morgan, The Originaldra, 6/22/2023	Individual	T_Morgan
Elise Fandrich, 6/22/2023	Environmental Defense Fund	T_EDF

Table 5. Written Comment Received During the 15-Day Comment Period

Commenter, Date	Affiliation	Commenter Code
Niko Welch, 11/17/2023	Vaquero Energy, Inc.	F_VE1
Christine Zimmerman, 11/17/2023	Western States Petroleum Association	F_WSPA

Commenter, Date	Affiliation	Commenter Code
Niko Welch, 11/17/2023	Vaquero Energy, Inc.	F_VE2
Rock Zierman, 11/17/2023	California Independent Petroleum Association	F_CIPA
Michelle Applegate, 11/17/2023	Project Canary	F_PC

The 45-day and board hearing comments (both written and oral) are intermixed and organized thematically in sections A through M of this chapter. The 15-day written comments are contained in section N of this chapter.

The following notes about the comments and responses will help with understanding how the comments are structured and labeled:

- Repetitive comments are listed together and responded to holistically.
- Comments are excerpted verbatim unless otherwise noted and are presented without quotation marks. Instances where CARB has added information to the comment to provide context (such as the meaning of an abbreviation) are provided in <angle brackets> starting with the text "CARB note:".
- In verbatim comment excerpts, CARB has not corrected or noted errors in the original (for example, by adding "[sic]"). The formatting of comment excerpts may differ from the formatting of the original comment.
- Emphasis added to comments were generally omitted, except that staff attempted to retain color, strikethrough, underline, or other formatting where it expresses requests for addition or removal of regulatory text.
- In-line ellipses are used to bridge between portions of a sentence or paragraph that express related topics or concepts. Ellipses on a standalone line are used to bridge between sections of a comment letter/comment transcript that express related topics or concepts.
- Website links included within comments have generally been converted to hypertext to adhere to accessibility standards.
- Footnotes in comments are treated based on the nature of the footnote. Those that provide context are generally included with the text of the footnote inside curly braces (i.e., {footnote text here}). Those that are simply website links have generally been inserted as hypertext within the comment to adhere to accessibility standards.
- In general, CARB has noted where it made changes in response to the comment. CARB has also noted where it either did not make changes or the comment was outside the scope of the rulemaking and therefore not subject to response pursuant to Government Code section 11346.9(a)(3).

A. Comments in Support

1. Statements of Support

Comment: I suppport CARB's efforts to reduce methane and co-pollutant emissions from oil and natural gas production, natural gas gathering and boosting, processing, and storage. I urge CARB to approve the the proposed amendments to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities and continue to identify and implement policy changes to mitigate climate change. (OP_Ashby-1)

Comment: California needs to step up and be a leader in dramatically reducing greenhouse gas emissions. I suppport CARB's efforts to reduce methane and co-pollutant emissions from oil and natural gas production, natural gas gathering and boosting, processing, and storage. I urge CARB to approve the the proposed amendments to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities and continue to identify and implement policy changes to mitigate climate change. (OP_McDonald-1)

Comment: My husband is a physical chemist and I am a heath care provider. We both strongly endorse the Proposed Amendments to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities (oilgas2023.) We also endorse working closely with workers who actually run the facility (rarely done and vastly under appreciated) as well as managers. (OP_VAHC-1)

Comment: As an environmental health, sustainability professional, I support the proposal to increase carbon emissions controls in the extraction industry to protect public health and mitigate climate change. This mitigation is urgent and critical to slow the progression of climate change and maintain a viable planet for us and our children. (OP_Lee-1)

Comment: I whole-heartedly endorse all of the proposed amendments to the CARB Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. Methane is an especially problematic greenhouse gas and steps to further minimize its release are long overdue. Now that we have the means, via a satellite imaging and other new technologies, to monitor compliance, it is imperative that we do so and that industry comply. We cannot and must not allow any further rise in global warming (see attached PDF). <CARB note: the attached PDF is the study Hoegh-Guldberg et al. (2019) "The human imperative of stabilizing global climate change at 1.5 C." *Science*, *365*(6459).> Thank you for listening to my opinion. (OP_Thorner-1)

Comment: These proposed rules on limiting GHG emissions are reasonable and long overdue. (OP_Kawar-1)

Comment: As nurses who live and work in communities impacted by the oil and gas industry, we strongly support the California Air Resources Board's amendments to the state oil and methane regulations to better comply with the U.S. Environmental Protection Agency's requirements for California's State Implementation Plan. We also have suggestions to strengthen the amendments.

We care for patients as registered nurses, nurse practitioners, nurse clinical specialists, occupational health nurses, public health nurses and school nurses. Methane emissions are linked to emission of co-pollutant volatile organic compounds (VOCs) involved in ozone formation. Methane is also linked to climate change as a potent greenhouse gas. Poor air

quality, including ozone non-attainment, leads to multiple poor health outcomes, such as increased hospital and urgent care visits for asthma and COPD exacerbations, increased cardiac events, increased rates of chronic illnesses and cancer, and decreased longevity. In the recent past, leakage of VOCs into soil, which then percolated into houses, resulted in months-long evacuations and long-term health risks for residents. Recent methane leaks discovered in Kern County have worried the residents, especially the high percentage of tested wells that have active methane leaks. We look forward to satellite detection in the future and applaud those efforts. (OP_CNEHJ-1)

Comment: CARB's Oil and Gas Methane Regulation has been an important program for reducing methane emissions {See *CARB Paper*, Leak detection and repair data from California's oil and gas methane regulation show decrease in leaks over two years, available at Science Direct: Journal of Environmental Management—Environmental Challenges, Volume 8, August 2022}. SoCalGas appreciates CARB staff engaging with stakeholders to assure timely implementation of the Oil and Gas Methane Regulation's many complex requirements and for balancing the needs of both community members and oil and gas facility operators in preparing the proposed modifications to the regulation. Particularly, language revision clarifications, and more definitive language under Remotely Detected Emission Plumes are most appreciated. (OP_SCG-1)

Comment: We appreciate CARB's efforts to strengthen the protectiveness and enforceability of its Oil and Gas Methane Regulation. CARB's current methane rule contains a suite of best practices to reduce methane from oil and gas facilities across the oil and natural gas supply chain. The revisions CARB proposes here will further the reductions achieved by the current rule and assist the state in reaching its GHG reduction goals.

…

We greatly appreciate CARB's efforts to strengthen the protectiveness and enforceability of its Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities.

…

We appreciate CARB's leadership with respect to eliminating or reducing methane and other harmful emissions from oil and natural gas facilities. The current proposal furthers CARB's leadership role and will the aid the state in achieving carbon neutrality by 2045. We support the proposal.

…

CARB's proposed remotely detected emissions plumes provision has the potential to achieve significant reductions in methane emissions from the oil and gas industry. Super-emitting sources, which can be intermittent and difficult to predict, pose unique problems for methane mitigation efforts. Thus, there is significant need for standards and rules that specifically address these major emission events.

…

We support CARB's proposed rule on Remotely Detected Emission Plumes. It is both appropriate and feasible to require operators to respond to remotely detected emissions. We offer recommendations below to strengthen CARB's proposal and align it more closely to EPA's recently proposed Super-Emitter Response Program (SERP). <CARB note: the

recommendations referenced by the commenter are those comments marked OP_EDF-2 through OP_EDF-4, which are responded to later in this FSOR.> (OP_EDF-1)

Comment: CIPA would like to thank staff for the process that we went through. It was clear, and as they said, they walked through the amendments. And so there were no real surprises. We understand that this is being done for EPA's necessity, but we appreciate that staff took the opportunity to make amendments that, as they said, streamline and reduce duplicative implementation. So we really appreciate that aspect of what staff was trying to do.

And then also on the remote sensing, we understand that it's coming and that changes were made based on the first draft, which we thought were not quite up to the rigor of what needed to be done in a State regulation, so we appreciate that. We look forward to working with staff on both the implementation of the new remote sensing and the implementation of the updated rulemaking. (T_CIPA-1)

Comment: I wanted to start this morning by thanking CARB staff. We met and worked with Carolyn Lozo, with Jim Nyarady, and with Dr. Langfitt. And that made the process of understanding what needed to be accomplished in getting there that much easier, so I just wanted to commend your staff for their excellent work throughout this process. (T_WSPA-1)

Comment: We applaud CARB's efforts to reduce methane emissions, which protects our most vulnerable populations, the very young, the very old, and pregnant persons. Before a baby takes it first breath, it is already exposed to air pollution in many places in California, as these pollutants can pass the placental barrier. (T_CNEHJ-1)

Comment: Remote sensing enables us to precisely and unambiguously locate high emission methane sources, in many cases at the level of individual components. Empirical field studies like these, and publications in the open scientific literature provide overwhelming evidence that remote sensing methods can offer important contributions to methane mitigation.

We applaud California's continued climate leadership and look forward to supporting implementation of this important program. (T_CM-1)

Agency Response to Combined Comments:

(OP_Ashley-1) (OP_McDonald-1) (OP_VAHC-1) (OP_Lee-1) (OP_Thorner-1) (OP_Kawar-1) (OP_CNEHJ-1) (OP_SCG-1) (OP_EDF-1) (T_CIPA-1) (T_WSPA-1) (T_CNEHJ-1) (T_CM-1)

No changes were made in response to these comments. These comments support the rulemaking, including pointing out the importance of reducing emissions from the oil and gas sector and appreciative comments about the stakeholder engagement process. CARB staff appreciate the supportive comments and thank the commenters.

The PDF attached to OP_Thorner is out of scope for this rulemaking because it is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. The article generally examines the potential impacts of climate change at different levels of warming.

B. General Comments

1. Create a Strong Regulation/Further Reduce Emissions

Comment: Please create emission standards that actually have teeth! (OP_Oliver-1)

Comment: I am a retired RN/PHN who has asthma. I grew up in Los Angeles before the EPA, which is the probable cause of the damage that resulted in my asthma. Please create strong oil and gas regulations. Our addiction to fossil fuels must end immediately if we are to have a climate in which we can survive. It is a serious problem that oil and gas emissions are causing physical health harm to millions. Asthma, heart disease, stroke, diabetes, preterm babies, low birthweight babies and all the additional health care and suffering directly resulting from mining, refining and burning of fossil fuels.

Every year we have more emissions than the year before. It is literally killing humans and the other species in our ecosystem. We are in great peril!

Your work at the CA Air Resources Board is critical to slowing climate change and stopping the damage to our Hearts, lungs and future generations. Please create regulations to prevent the damage to our future. (OP_CHN-1)

Comment: Please make the standards for greenhouse gas emissions for crude oil and natural gas facilities as strict as possible. (OP_Dow-1)

Comment: As a resident of California, and a long time supporter of our standard setting emissions requirements, I am writing to ask that our state continue to go above and beyond federal standards. As recent events have shown these industries are unable or unwilling to 'self-regulate' safety, emissions, containment, nor best practices-I believe our state can and should do better than the federal departments who are understaffed and underfunded. There has to be real consequences or there won't be compliance. These companies make billions at our expense, and they consider small fines to be a part of doing business. This is unacceptable.

…

Our residents can't continue to assume these greedy industries will do the right thing; not when they've proven themselves incapable. Thank you for your consideration. (OP_Humphries-1)

Comment: Thank you for drafting these amendments. Collectively, they will provide a wide array of benefits for the fossil fuel industry and all CA residents. The amendments would be even more effective if the proposed magnitudes and durations were more stringent. The proposed baby steps should be replaced with bold strides.

…

<CARB note: the links below were provided as URLs but were converted into hypertext to improve accessibility.>

Bezanson Link 4

Bezanson Link 5

(OP_Bezanson-1)

Comment: We would like to emphasize that stronger regulation of methane emissions and the co-pollutant VOCs will protect the most vulnerable among us. Pregnant individuals, infants, children, adolescents and the elderly are all less able for physiological and social/behavioral reasons to protect themselves from environmental contaminants. Exposure is increased through higher resting respiratory rates in the young and the body systems that would protect our patients are ineffective through immaturity or the effects of aging. They cannot always wear masks or transport themselves to safety in case of emergencies. By protecting the most vulnerable, our entire community will be safer. It is not enough to protect only working adults. (OP_CNEHJ-2)

Comment: In 2023, as our wildfire-charred state endures a dozen atmospheric rivers and braces for record flooding as the Sierra snow melts, It is an understatement to say that producing and selling petroleum is disfavored. Accordingly, the notion that regulations intended to limit harms caused by those activities must be balanced, softened or in any way accommodating to industry is, on its face, ludicrous. Fossil fuel companies are not health care providers, or public libraries whose activities we regulate, balancing against the desirability of allowing them to provide wholesome services. Petroleum companies only serve the public to the extent of our dependence on gasoline-powered transportation. If we regulate them and enforce those regulations, they won't stop operating in California. They might sue, but they will lose in court. It is time to more strictly regulate an industry that the state has long since decided – for sound reasons – we simply don't like, and can't trust.

With this history and our challenging present and terrifying future in mind, we submit the following adjustments to the proposed regulatory amendments. <CARB note: the adjustments referenced are those in comments OP_CAC-2 through OP_CAC-8, which are responded to later in this FSOR.> Each suggestion holds some promise of controlling additional emissions. Taken together, these measures modestly tighten the current proposal and improve oversight accountability. We should not worry that these adjustments may make it slightly less convenient or profitable to take oil and gas from the ground so that it can be burned and its waste products discarded in the atmosphere. As noted, the people of the State of California have already decided that inconvenience and diminished profit are not legitimate critiques in this context. (OP_CAC-1)

Comment: The ongoing methane leaks from oil wells in Arvin only exemplify the urgency of drafting these regulations in a way that addresses the very real threats to communities that oil and gas infrastructure poses. We hope that the final draft regulations incorporate the feedback above, and that the state is able to create regulations that prioritize protecting community health and safety. Thank you for considering these recommendations. <CARB note: the "feedback above" refers to comments OP_SC-1 through OP_SC-7, addressed later in this FSOR.> (OP_SC-8)

Comment: We need to start regulating (mandating) the elimination of all greenhouse gases. Only the government can produce real change. Talk talk talk is all we get, 2022 was the highest release of climate warming gasses in the history of the world. I don't think 2023 will be any less and most likely a new record. All we get from our leader (that is a laugh), is talk about economic growth. The economy is being wrecked by climate change. How much are we spending (creating more greenhouse gas) on rebuilding after every disaster? And spending will continue to rise untill unsustainable. This is the definition of insanity. All hope is lost. I give up :((OP_Sutton-1)

Comment: Please do whatever you can to lower emissions and go green, this affects all of us animals and humans alike for generations to come. Climate change is all in our hands, we need to stop it NOW! Thank you (OP_Reichert-1)

Agency Response to Combined Comments:

(OP_Oliver-1) (OP_CHN-1) (OP_Dow-1) (OP_Humphries-1) (OP_Bezanson-1) (OP_CNEHJ-2) (OP_CAC-1) (OP_SC-8) (OP_Sutton-1) (OP_Reichert-1)

No changes were made in response to these comments. These comments generally request that CARB create a strong regulation and take action to reduce emissions as much as possible. Staff agree that it is very important to continue reducing emissions from the oil and gas sector. The Proposed Amendments include a new provision to reduce emissions from remotely detected emission sources and include new testing, inspections, design analysis, recordkeeping, and reporting requirements to help ensure that the originally envisioned emission reductions from the current Regulation are achieved in practice. CARB staff will continue to consider further actions to reduce emissions in the future.

The links provided in OP_Bezanson-1 are out of scope for this rulemaking because the documents they lead to are not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action.

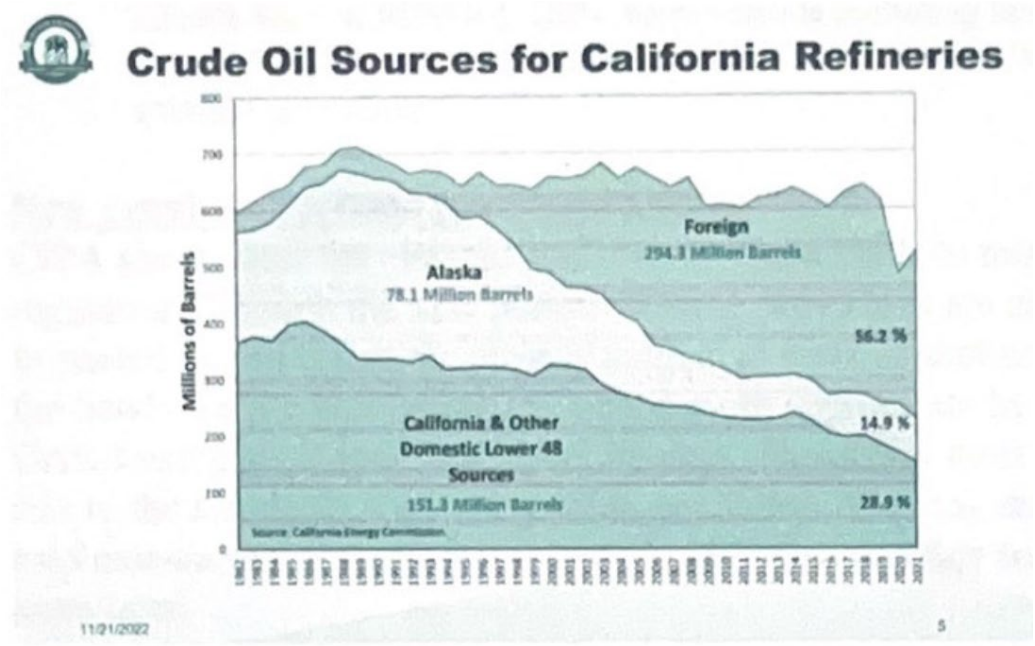
Comment: Our large urban areas have the worst air quality of any state in the nation. About 70% of this is due to the use of fossil fuels. This indicates that CA is failing in its aspiration to be recognized as a climate leader. CARB scientists are urged to lead the board to adopt more effective mitigation regulations for GHGs and toxic air contaminants. The sixth synthesis report of the IPCC indicates that this is an urgent matter requiring significant progress by 2030. The CARB Scoping Plan 2022 is not up to the task of achieving this because it targets larger annual mitigation magnitudes in years after 2030. The SP would be improved by performing cost to benefit analyses outlined above. (OP_Bezanson-5)

Agency Response:

No changes were made in response this comment. This comment is about the 2022 Scoping Plan and is out of scope for this rulemaking because it is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action.

2. "Emissions Leakage" from Shifting Production Location

Comment: Before discussing the proposed amendments in detail, we must reiterate that CIPA remains strongly opposed to any amendments in which in-state crude, produced under the strictest environmental standards in the world, is replaced with imported crude either by direct regulation or indirect impact. A true and successful methane reduction program would not shift emissions, tax-base and jobs to other jurisdictions. The CEC <CARB note: CEC stands for "California Energy Commission"> staff presented the slide below at *meeting on gasoline prices* showing just such a shift has occurred. This effect is known as 'emissions leakage' and CARB is statutorily mandated to minimize it. The *2022 Scoping Plan Update* explicitly states that reducing in-state production will lead to increased crude imports — which bring port communities additional pollution burdens.



…

The adopted *2022 Update to the AB 32 Scoping Plan* acknowledges that California will need petroleum and natural gas fuels for many years, and that when in-state production is reduced faster than the demand reduction, GHG leakage occurs {[pages 100-106]}. During this time, California should prioritize in-state supply. Any regulatory proposals that run counter to the ultimate goal of reducing GHG emissions worldwide should be discarded.

The last barrel of oil used in this state, should be produced in state. (B_CIPA-1)

Comment: And then finally, it wouldn't be a CIPA comment if we didn't say that adding additional requirements on State production and can cause leakage and leakage is when that production occurs elsewhere and comes into the state. And the Scoping Plan, and Quinn mentioned it, that we're going to have production for a while in the state. And if you -- if you produce -- if you need more production and you're reducing it in-state, then it has to be imported. And that produces emissions at the port. And we know that California's regulatory system is more Stringent than other foreign entities in the -- oh, that's it. (T_CIPA-2)

Agency Response to Combined Comments:

(B_CIPA-1) (T_CIPA-2)

No changes were made in response to these comments. As discussed in the ISOR, the costs of the Proposed Amendments to the regulated industries are small relative to their overall output. Direct first year and annual ongoing costs were estimated to be approximately 0.03% and 0.01%, respectively, of the economic output generated by the regulated industries. Therefore, creation or elimination of jobs or businesses in the directly regulated industries are not expected, and staff also expect any impacts to competitiveness to be negligible. Therefore, these Proposed Amendments are not expected to cause "emissions leakage" as the commenter discusses.

3. Overly Stringent Regulatory Actions

Comment: And you guys have to make more and more, stricter and stricter rules and requirements as time goes on, because you're afraid of federal sanctions, because it's like the top down. Everybody has to enforce this in order for it to work, because if you don't have this kind of stuff, you can't force people into this new way of living. Just like with driving, if you don't start taxing people, Nora, right, then you're not going to get them to stop driving like you guys want.

So everything you do, there's a punitive fee, or regulation, or something that comes along with it, because you have to push this.

…

And you guys are never going to get to a zero reduction. It's impossible. It is absolutely impossible. You guys leak methane. And some of you probably are right now. What are you going to do about that? Are we going to start doing this for people and telling them that they can't, you know, pass gas? I mean, it's ridiculous, the earth is self-healing and you guys are manipulating it so it can't be. (T_Morgan-3)

Agency Response:

No changes were made in response to this comment. The comments are out of the scope of this rulemaking because they are not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. However, additional details are provided below for transparency.

CARB is required to put in place mechanisms to achieve California's greenhouse gas emission reduction targets and must comply with requirements for California's State Implementation Plan (meeting reasonably available control technology standards in the CTG for ozone nonattainment areas of moderate or above). The Proposed Amendments are a necessary step to achieve those purposes. The Proposed Amendments do not require complete abatement of all emissions. For example, leaks are defined based on a concentration threshold, and repair or control requirements for venting sources are often based on exceeding an allowable emission rate threshold.

4. Stakeholder Involvement

Comment: Solutions can meet the goals of the CARB and on the ground workers and managers but only if all of these groups are involved at the beginning.

Part of the opposition to government involvement is the failure to include FROM THE BEGINNING and through all phases of a project. Asking for this involvement when the project has completed developed means input from workers and management will encounter resistance and unwillingness to make any suggested changes. (OP_VAHC-2)

Agency Response:

No changes were made in response to this comment. This comment is out of the scope of this rulemaking because it is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. However, additional details are provided below for transparency.

CARB staff agree with the commenter that outreach and collaboration with stakeholders is important to successful outcomes in projects and regulatory processes. Staff has met with a diverse range of stakeholders starting in the pre-regulatory phase to gain perspectives and communicate throughout this process. Staff are committed to being available and responsive to all stakeholders through the implementation of the Proposed Amendments.

C. Interplay between Rules and Requirements from CARB, other State Agencies, Local Air Districts, and/or U.S. EPA, and U.S. EPA SIP Approval

1. Separator and Tank System Exemptions based on Following Local Air District Rules

Comment: WSPA members are concerned that with the addition of SIP-approved prohibitory rules but not the non-prohibitory rules, several separator and tank systems with existing vapor recovery will no longer be exempt from COGR <CARB note: "COGR" stands for "California Oil and Gas Regulation" and is synonymous with the "Oil and Gas Methane Regulation">, resulting in duplicative requirements for such tanks. Similarly, the differences in applicability of district rules compared with COGR to the separator and tank systems has also resulted in partial applicability of COGR to separator and tank systems with existing vapor control.

…

I. Standards [Section 95668]

A. Separator Tank Systems [Section 95668(a)]

Per the EPA recommendation to include State Implementation Plan- or SIP-approved rules, CARB has proposed revisions to this section of the COGR to include specific rules for areas in nonattainment with ozone air quality standards. These include rules from the San Joaquin Valley Air Pollution Control District (SJVAPCD), South Coast Air Quality Management District, and Ventura County Air Pollution Control District.

In *WSPA's previous comment letter dated February 10, 2023*, WSPA pointed out that the proposed revisions for 95668(a)(2)(C) are written in such a way that the exemption would only apply where that air district has adopted the prohibitory rule mentioned. The section excludes non-prohibitory rules such as SIP-approved rules from the exemption list - i.e. SJVAPCD Rule 2201. However, there are several issues with the proposed revisions.

1) Tanks with Existing Vapor Recovery Systems Not Subject to Rule 4623

Several tanks with existing vapor recovery systems, either installed as a result of Best Available Control Technology (BACT) assessments under Rule 2201 or installed voluntarily, will no longer be exempt from COGR requiring operators to reassess compliance requirements under COGR.

2) Separators with Existing Vapor Recovery Systems are not subject to Rule 4623

Specifying SIP-approved Rule 4623 has also resulted in partial applicability of COGR to separator and tank systems with existing vapor control, as separators are exempt from Rule 4623, unlike tanks. Separators can be pressure vessels that are capable of maintaining working pressures sufficient to prevent losses to the atmosphere at all times (Rule 4623, Section 3.24). Pressure vessels are exempt from Rule 4623 per Section 4.1.1, making them subject to COGR. However, these separators direct fluids to tanks that are subject to Rule 4623 and both the separator and tank are under vapor control that meet the requirements of Rule 4623. Please see Figure 1 below.

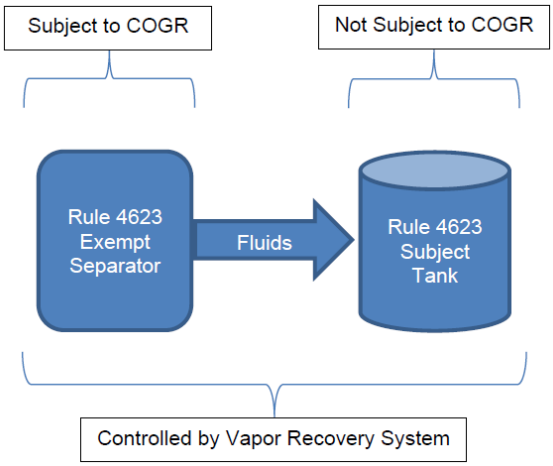


Figure 1. Partial applicability scenario of COGR to separator and tank systems due to Rule 4623 applicability

WSPA members understand that it was not CARB's intent to create a partial applicability scenario. As such, WSPA requests that CARB include exemptions for existing vapor-controlled separators that direct fluids to tanks that are subject to Rule 4623.

…

WSPA Recommendation #2

WSPA recommends that CARB add the following exemption to Section 95668(a)(2) for vapor-controlled separators that direct fluids to tanks that are subject to Rule 4623 (also included in Appendix A):

95668(a)(2)(J) Separators in a separator and tank system connected to a vapor collection system, which direct collected vapors according to 95671(b) and direct separated fluids to tanks with vapor collection systems exempted under 95668(a)(2)(C). (OP_WSPA-2)

Comment: We're concerned about the addition of SIP-approved prohibitory rules and the exclusion of non-prohibitory rules creating duplicative requirements for certain separator and tank systems. (T_WSPA-2)

Agency Response to Combined Comments:

(OP_WSPA-2) (T_WSPA-2)

No changes were made in response to these comments. U.S. EPA's SIP Decision specified in Deficiency 1 that subsections 95668(a)(2)(C), 95669(b)(1), and 95670(a)(1) include insufficiently specific exemptions for storage tanks or components ''approved for use by a local air district'' or ''subject to a local air district requirement.'' Through subsequent discussion with U.S. EPA, staff determined that for SIP approval reasons U.S. EPA would not view permit requirements resulting from non-prohibitory rules as an acceptable basis for exemption. U.S. EPA does not view such conditions as sufficiently enduring, are not able to assess the stringency of those conditions, and are unable to enforce those permits through the Clean Air Act because specific permit conditions are not in the SIP. Although some exemptions may be lost through the Proposed Amendments, there is no viable alternative to maintain exemptions for vapor collection systems (VCS) installed pursuant to non-prohibitory rules that would meet U.S. EPA's requirements for SIP approval. Therefore, in order to achieve SIP approval, VCS installed as a result of a Best Available Control Technology (BACT) assessment (such as under SJVAPCD Rule 2201), but not mandated by a prohibitory rule, cannot be used as an exemption for the requirements of the Proposed Amendments.

The text suggested by the commenter (OP_WSPA) is too open-ended. Providing an exemption for separators controlled by a vapor collection system without specifying any parameters about the effectiveness or operation of that system (such as efficiency of the system and how that is verified) could allow potential abuse of the provision. The Clean Air Act requires that the SIP provisions be enforceable. Any potential provision staff considered, including permit conditions by the air districts, lacked the requisite operating parameters and specific requirements for enforceability and would therefore not be approved by the U.S. EPA.

2. LDAR Exemptions based on Following Local Air District Rules

Comment: WSPA members are also concerned about similar issues within the Leak Detection and Repair (LDAR) section of COGR. While SIP-approved prohibitory rules 4401 and 4409 were included for exemptions, CARB did not include SIP-approved rules 4623 and 4624 that also require LDAR programs and specify performance standards. Exclusion of these rules will result in duplicative LDAR requirements under both COGR and the district rules. We understand that it was not CARB's intent to create duplicative or partial applicability scenarios. As such, WSPA's recommendations in the attached enclosures are intended to address these potential issues with the proposed amendments.

…

II. Leak Detection and Repair [Section 95669]

A. Existing LDAR Programs [Section 95669(c)(1)(B) and (d)]

Per the EPA recommendation to include SIP-approved rules, the CARB has proposed revisions to section 95669(c)(1)(B) of the COGR to include specific rules for areas in nonattainment with ozone air quality standards. These include rules from the San Joaquin Valley Air Pollution Control District, South Coast Air Quality Management District, and Ventura County Air Pollution Control District.

In WSPA's previous comment letter dated February 10, 2023, WSPA stated that the proposed revisions for 95669(c)(1)(B) are written such that the exemption would only apply where that air district has adopted the prohibitory rules mentioned. The section excludes non-prohibitory rules such as SIP-approved rules from the exemption list - e.g. SJVAPCD Rule 2201. However, there are several issues with the proposed revisions.

1) Components with Existing LDAR Programs under SIP-approved Rules 4623 and 4624

SIP-approved SJVAPCD Rules 4623 and 4624 require LDAR programs to be implemented on tanks subject to the rule. However, CARB did not list Rules 4623 and 4624 in section 95669(c)(1)(B). As explained in WSPA's previous comment letter, operators with existing LDAR programs under these rules will also need to determine compliance with COGR, which was not CARB's intent based on our understanding. To avoid duplicative requirements and compliance obligations, WSPA requests that SIP-approved Rule 4623 and 4624 be added to section 95669(c)(1)(B).

…

WSPA Recommendation #4

WSPA recommends that CARB add SIP-approved Rule 4623 and 4624 to section 95669(c)(1)(B) to recognize existing LDAR programs implemented under these rules. (OP_WSPA-4)

Comment: There are similar issues in the LDAR section of the language that are also of concern to us. <CARB note: the commenter is referring here to their concern about "the addition of SIP-approved prohibitory rules and the exclusion of non-prohibitory rules creating duplicative requirements">. (T_WSPA-3)

Agency Response to Combined Comments:

(OP_WSPA-4) (T_WSPA-3)

To the extent possible, staff attempted to avoid situations in which LDAR is required on the same components under both the Proposed Amendments and local air district rules. However, any local air district rule used as an exemption in the Proposed Amendments must meet the reasonably available control technology (RACT) requirements in the CTG to be SIP-approvable. Therefore, adding rules to the exemption list must be done with extreme care.

U.S. EPA already evaluated the rules listed in section 95669(c)(1)(B) of the 45-Day Changes against the CTG requirements through previous action. LDAR requirements were newly added to SJVAPCD Rules 4623 and 4624 through amendments by the air district on June 15, 2023. Therefore, it would have been illogical to list these rules as exemptions in section 95669(c)(1)(B) in the 45-Day Changes, which were released in April 2023.

U.S. EPA evaluated Rule 4623 as it existed prior to the June 2023 amendments as part of their evaluation of the Regulation that led to their 2022 SIP Decision. Staff have examined the LDAR requirements in SJVAPCD Rule 4623 that were added in June

2023 and sought an opinion from U.S. EPA about whether the LDAR requirements in the rule adhere to the RACT recommendation in the CTG. One element appears to be missing from Rule 4623 – LDAR plans that list the components and equipment subject to the rule and those which are inaccessible or unsafe-to-monitor. In the 15-Day Changes, staff added Rule 4623 to the list of exemptions, however, proposed to require that components (and associated equipment) qualifying for this exemption be included in LDAR plans and identified as following Rule 4623 in those plans (as was also proposed for a few other air district rules with the same issue). This reduces duplicative work while also ensuring that the RACT standard is met for SIP approval.

Staff did not add Rule 4624 to the exemption list. Due to vapor pressure limits and other applicability specifications within Rule 4624, the rule applies mostly to equipment not subject to the Proposed Amendments and would likely only result in a small amount of overlap. Discussions with SJVAPCD confirm this understanding. Unlike Rule 4623, U.S. EPA did not evaluate Rule 4624 as part of their analysis leading to the 2022 SIP Decision. Therefore, there is additional risk that elements within Rule 4624 may be found to not meet the RACT standard established by the CTG. Because staff expect only a small number of components to be impacted by omission of Rule 4624 from the exemption list and the risk carried by including the rule, staff did not add Rule 4624 to the exemption list.

The limitation that only prohibitory rules can be used as exemptions while still maintaining RACT for U.S. EPA SIP approval is described in the response to comments OP_WSPA-2 and T_WSPA-2 in section C.1 of this chapter.

3. Updated Versions of Local Air District Rules

Comment: To address EPA-identified deficiency of SIP-approved rules in COGR, CARB has proposed amendments to incorporate SIP-approved versions of San Joaquin Valley Air Pollution Control District (SJVAPCD) Rules 4623, 4401 and 4409 in the proposed amendments. However, SJVAPCD is currently updating their rules to meet EPA's CTG requirements. CARB intends to incorporate the updated versions of SJVAPCD rules and submit a single package including updated COGR and SJVAPCD rules to EPA for approval.

…

WSPA recommends the following revisions to 95668(a)(2)(C) (also included in Appendix A):

Separator and tank systems that are controlled with either the use of a floating roof that meets the requirements of 40 CFR 60.112b(a)(1) or (2) (October 8, 1997, which is incorporated herein by reference) or with the use of a vapor collection system subject to a local air district Rule. If the separator and tank system is controlled with the use of a floating roof or vapor collection system and is located in a region classified as non-attainment with any federal ambient air quality standard for ozone, the separator and tank system shall be subject to one of the following local air district rules for the exemption to apply.

1. San Joaquin Valley Air Pollution Control District Rule 4623: Storage of Organic Liquids (~~Amended May 19, 2005~~Upcoming Adoption Date), which is incorporated herein by reference.

…

2) Rules 4401 and 4409 Versions

CARB has proposed the June 2011 and April 2005 versions of Rule 4401 and Rule 4409 respectively under this section. However, SJVAPCD is in the process of updating both Rules 4401 and 4409 to meet EPA's 2016 Control Techniques Guidelines (CTG) requirements for the oil and gas industry. It is our understanding that CARB plans to incorporate the updated versions of 2023 Rules 4401 and 4409 into COGR replacing the previous versions.

…

WSPA recommends the following revisions to 95669(c)(1)(B) (also included in Appendix A):

If the components are located in a region classified as non-attainment with any federal ambient air quality standard for ozone, the components shall be subject to one of the following local air district rules for the exemption to apply:

1. San Joaquin Valley Air Pollution Control District Rule 4401: Steam-Enhanced Crude Oil Production Wells (~~Amended June 16, 2011~~Upcoming Adoption Date), which is incorporated herein by reference.

2. San Joaquin Valley Air Pollution Control District Rule 4409: Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities (~~Adopted April 20, 2005~~Upcoming Adoption Date), which is incorporated herein by reference.

3. San Joaquin Valley Air Pollution Control District Rule 4623: Storage of Organic Liquids (Upcoming Adoption Date), which is incorporated herein by reference.

4. San Joaquin Valley Air Pollution Control District Rule 4624: Transfer of Organic Liquid (Upcoming Adoption Date), which is incorporated herein by reference.

5. South Coast Air Quality Management District Rule 1148.1: Oil and Gas Production Wells (Amended March 5, 2004). 6. South Coast Air Quality Management District Rule 1173: Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants (Amended February 6, 2009), which is incorporated herein by reference.

7. South Coast Air Quality Management District Rule 1176: VOC Emissions from Wastewater Systems (Amended September 13, 1996), which is incorporated herein by reference.

8. Ventura County Air Pollution Control District Rule 74.10: Components at Crude Oil and Natural Gas Production and Processing Facilities (Amended March 10, 1998), which is incorporated herein by reference.

9. *Yolo-Solano Air Quality Management District Rule 2.23: Fugitive Hydrocarbon Emissions (Amended March 23, 1994), which is incorporated herein by reference.* (OP_WSPA-1)

Agency Response:

In the 15-Day Changes, staff proposed to update the versions of SJVAPCD Rules 4401, 4409, and 4623 referenced in the Proposed Amendments to the versions dated June 15, 2023. That change addresses this comment. The additions of SJVAPCD Rules 4623 and 4624 requested by the commenter here are addressed in the response to comments OP_WSPA-4 and T_WSPA-3 in section C.2 of this chapter.

4. Incompatible Implementation Timelines with Local Air District Rules

Comment: Furthermore, the implementation timelines between COGR and district rules are incompatible.

…

3) Incompatible Timelines

The revised COGR requirements are slated to take effect on or after April 1, 2024. The revised requirements of Rule 4623 will take effect after June 30, 2024. The COGR's dependence on SJVAPCD's Rule 4623 for exemption is concerning given the different implementation timelines for each rule and the enforcement implications for operators during the period between the implementation dates. Given this potential issue, WSPA believes the implementation schedule for COGR should be adjusted to align with SJVAPCD's Rule 4623.

WSPA Recommendation #1

WSPA recommends that CARB align the compliance dates to be compatible with the compliance schedule of revised SJVAPCD's Rule 4623 (and other air district rules).

…

WSPA Recommendation #3

WSPA recommends the following revisions to 95668(a)(6) to align with the compliance schedule for revised Rule 4623 (also included in Appendix A):

On or after <the later of ~~April~~ July 1, 2024 or the effective date – OAL to insert>, if a separator and tank system is required to use a vapor collection system as specified in section 95671 in order to control emissions, the owner or operator of that system shall comply with all applicable requirements in Appendix D. This requirement applies regardless of whether the system was controlled prior to or after <the later of ~~April~~ July 1, 2024, or the effective date – OAL to insert>.

…

3) Incompatible Timelines

The revised COGR requirements are slated to take effect on or after April 1, 2024. The revised requirements of Rules 4401, 4409, 4623, and 4624 will take effect after June 30, 2024. The COGR's dependence on SJVAPCD's rules for exemption is concerning given the different implementation timelines for each rule and the enforcement implications for operators during the period between the implementation dates. Given this potential issue, WSPA believes the implementation schedule for COGR should be adjusted to align with SJVAPCD's Rules 4401, 4409, 4623, and 4624.

…

WSPA Recommendation #5

WSPA recommends the following revisions to 95669(d)(1) to align with the compliance schedule for revised SJVAPCD Rules 4401, 4409, 4623, and 4624 (also included in Appendix A):

By <the later of ~~April~~ July 1, 2024 or the effective date – OAL to insert>, owners or operators shall develop facility-specific leak detection and repair plans that encompass all components not identified in section 95669(c). The plans shall be updated annually if any changes are made to the facility or equipment that alter the plan. Leak detection and repair plans shall include the following: (OP_WSPA-3)

Comment: We believe that the alignment of implementation timelines between COGR and the regional air districts is essential and we hope to see that that moves forward smoothly. (T_WSPA-4)

Agency Response to Combined Comments:

(OP_WSPA-3) (T_WSPA-4)

CARB staff did not intend for there to be misalignment of the compliance schedules between the Proposed Amendments and the amended SJVAPCD rules. In the 15-Day Changes, staff changed the compliance dates to July 1, 2024, for all of the provisions pointed out by the commenter above (note that staff did not include SJVAPCD Rule 4624 as an exemption from LDAR requirements as explained in the response to comments OP_WSPA-4 and T_WSPA-3 in section C.2 of this chapter).

5. Consistent Regulation across CARB, Local Air Districts, and U.S. EPA

Comment: CIPA would be interested in sitting down with CARB, the local districts and U.S. EPA in an effort to see if there is a better way to consistently regulate the sector in practice. Initial invitations have been sent, and we hope to be able to meet in a reasonable timeframe. (B_CIPA-2)

Agency Response:

No changes were made in response to this comment. This comment is out of scope of this rulemaking because it is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. However, in the interest of transparency, CARB provides that staff met with CIPA, SJVAPCD, and U.S. EPA in July 2023 in response to the invitation that the commenter mentioned. CARB staff are always open to meeting with interested parties to address concerns.

6. Disallow other State Agencies from Implementing Different Methane Leak Detection and Emission Standards

Comment: This regulation, as an adopted set of statewide standards and limits should be used by other state agencies as they address methane emissions from this sector. CIPA strongly requests that within the Final Statement of Reason, or adopting resolution that CARB states such intention as a fact. Other state agencies should not be allowed to implement different methane leak detection and emission standards, thus putting CIPA members in Double Jeopardy. (B_CIPA-3)

Agency Response:

No changes were made in response to this comment. The purpose of the Proposed Amendments is to reduce methane emissions from specific portions of the oil and natural gas sector. Other agencies may have other mandates that require separate standards and rules to achieve their intended outcomes. Therefore, it would be inappropriate for CARB to unilaterally declare that the leak detection and emission standards in the Proposed Amendments must be used by other state agencies. Under sections 39602 and 39602.5 of the Health & Safety Code, CARB is charged with coordinating with the air districts to adopt and enforce rules and regulations that achieve ambient air quality standards set by the Clean Air Act. CARB's longstanding practice is to adopt and enforce rules, while coordinating with the districts, to achieve federal Clean Air Act standards. The air districts are free to adopt and enforce rules and regulations of their own as long as they are at least as stringent as CARB's. Section 7416 of Title 42 of the United States Code ("Clean Air Act") likewise prohibits a state agency from adopting standards that are not as stringent as those set by the U.S. EPA. Other state agencies are free to set their own standards pursuant to their enabling statutes, as dictated by the state legislature.

7. U.S. EPA SIP Approval

Comment: WSPA is also concerned that in case of EPA's partial or complete disapproval of any of the updated district rules from being SIP-approved, it is unclear how the rules-dependent COGR revisions will be handled by CARB. If EPA approvals are not received by April 30, 2024 and/or the compliance deadlines proposed in COGR, it is not clear if the operators will be in a non-compliance scenario or will have to follow multiple rules to ensure compliance, e.g. LDAR rules. WSPA members would like CARB to proactively address this issue and avoid any potential non-compliance scenario. WSPA members are willing to discuss potential solutions with SJVAPCD, CARB, and EPA to address this key issue.

…

VIII. Overall Comment

To address EPA-identified deficiency of SIP-approved rules in COGR, CARB has proposed amendments to incorporate SIP-approved versions of local Air District rules in the proposed amendments. However, local Air Districts are currently updating their district rules to meet EPA's CTG requirements. WSPA understands that EPA is working closely with Air Districts to update these rules and the updated rules will need to go through CARB and EPA's SIP approval process. It is our understanding that CARB intends to update the proposed amendments in COGR to the updated versions of SJVAPCD rules. COGR is intended to take

effect April 1, 2024 or later, while the updated requirements of local Air District rules are intended to take effect on July 1, 2024 or later. CARB is planning to submit to EPA for approval a single package including 1) the proposed amendments to COGR to address EPA-identified deficiency of SIP-approved rules in COGR, and 2) the updated versions of local Air Districts for SIP approval by EPA. Approvals from EPA for both regulatory actions are expected to be received together.

WSPA is concerned that in the case of EPA's partial or complete disapproval of any of the updated district rules from being SIP-approved, it is unclear how the rules-dependent COGR revisions will be handled by CARB. If EPA approvals are not received by April 30, 2024 and/or by the compliance deadlines proposed in COGR, it is unclear if the operators will be in any non-compliance scenario or will have to follow multiple rules to ensure compliance, e.g. LDAR rules. WSPA members would like CARB to proactively address this issue and avoid any potential non-compliance scenario. WSPA members are willing to discuss potential solutions with SJVAPCD, CARB, and EPA to address this key issue. (OP_WSPA-5)

Comment: Our only final concern is that in the case of EPA's -- not that we know that this would happen, but should, EPA give a partial or complete disapproval of any of the updated district rules from being SIP approved, we're not sure how the rules-dependent COGR revisions would be handled. (T_WSPA-5)

Agency Response to Combined Comments:

(OP_WSPA-5) (T_WSPA-5)

No changes were made in response to this comment. CARB does note that due to discussions with the U.S. EPA relating to SIP approvability of the amendments during the rulemaking process, the Proposed Amendments were revised to remove the incorporation by reference of the air district rules into the Regulation. Compliance with certain air district rules allows for an exemption, so in the event either rule is suspended for any reason, the only impact is either the lack of an exemption under the Regulation or a requirement to follow the air district rule instead. However, even had the revision not been made, owners or operators are obligated to follow the requirements of the Proposed Amendments upon the effective date or the later compliance deadlines within specific provisions of the Proposed Amendments. Whether the Proposed Amendments and local air district rules have been approved by U.S. EPA in the SIP does not affect whether an owner or operator complies with the Proposed Amendments. Subdivision (m) of section 7410 of the United States Code specifies that the only penalty for disapproval of a SIP is monetary sanctions asserted by the U.S. EPA, not invalidation of the regulation.

D. Definitions

1. "Separator" Definition

Comment: Definition of Separator: States "In natural gas production a separator may be referred to as a heater/separator". This is incorrect since it applies to an oil/gas/water separator. A gas separator would include a "chiller"/separator" but not a "heater/separator". (B_CIPA-4)

Agency Response:

CARB staff agree with the commenter that a "heater/separator" is not used in the natural gas production sector. The example of a type of separator in the natural gas production sector was removed in the 15-Day Changes. The remaining definition of a separator is sufficient on its own to describe what type of equipment is considered a "separator" without the example.

2. "Sump" Definition

Comment: Definition of "Sump": Under local regulations, sumps as currently defined are no longer in use. Furthermore, an impoundment containing produced water is defined as a "pond". This can be clarified by adding: "A pond containing produced water is not considered a sump". (B_CIPA-5)

Agency Response:

No changes were made in response to this comment. In the Regulation, a separator and tank system can include a sump if the sump is connected to the first separator. The terms "sump" and "pond" are defined in the Regulation. There has been no confusion about this point over the past five years of implementation of the Regulation. Thus, staff see no need to amend this definition.

3. "Remote Monitoring Data" Definition

Comment: B. Definition for "Remote monitoring data" [Section 95667(a)(62)]

CARB has defined the "remote monitoring data" as follows -

"Remote monitoring data" means, for the purposes of this subarticle, data obtained by CARB from a satellite-based measurement technology capable of detecting methane plumes."

WSPA members appreciate the clarification that remote monitoring data is limited to satellite-based technology capable of detecting methane plumes. It is our understanding that CARB's intent is to obtain the data from satellite-based technologies approved by the CARB Executive Officer, if the technology meets criteria for approvals established in Section 95669.1(a)(1). CARB intends to approve such technologies through a public Request For Proposal (RFP) process.

WSPA Recommendation #9

WSPA recommends additional clarification to the above definition specifying intent (also included in Appendix A) -

"Remote monitoring data" means, for the purposes of this subarticle, data obtained by CARB from a qualified and CARB-contracted and -approved satellite-based ~~measurement~~ monitoring technology capable of detecting methane plumes and that meets the minimum requirements in 95669.1(a)(1)." (OP_WSPA-11)

Agency Response:

No changes were made in response to this comment. Staff do not intend to limit the potential data platforms to those contracted by CARB. The specifications for technology approval included in the regulatory language sufficiently constrain the

technologies to only those that will be useful for the provision. The details around the technology approval process and fact that such an approval is necessary for any data source used for the remotely detected plumes provision is already clearly specified within section 95669.1 and there is no utility in repeating this in the definition of "remote monitoring data." The approval process proposed is sufficient to ensure that the remote plume detection data used in section 95669.1 (the only section in which "remote monitoring data" is applied, except for the recordkeeping section) are obtained from "a qualified" technology.

4. Define "Leak Free"

Comment: B. "Leak free"

CARB has provided detailed performance standards for vapor collection and control systems in Appendix E. One of the performance standards includes design and operation of vapor collection system in a leak free condition ((a)(2)). Similar requirements were added for vapor control devices ((b)(1)(A)(1) and (e)(7)). However, CARB has not clearly defined the term "leak free" which can cause confusion. WSPA recommends that CARB add a definition for the term "leak free" that aligns with existing definition of the term in SIP-approved Rule 4623.

WSPA Recommendation #20

WSPA recommends that CARB add the following definition for the term "leak free" that aligns with existing definition of the term in SIP-approved Rule 4623 (also included in Appendix A).

"Leak free" means a condition without leak or fugitive leak. (OP_WSPA-20)

Agency Response:

No changes were made in response to this comment. The Regulation defines "leak" in section 95667 (unchanged in the Proposed Amendments). Because "leak" is defined, "leak free" is clear in its meaning without a separate definition, and the definition proposed by the commenter is how staff intend "leak free" to be interpreted.

E. Standards

1. Separator and Tank System Exemptions Not Related to Air District Rules/Requirements

Comment: §95668 (a)(2) [separator and tank system exemptions]

(A) Exemption below 50 barrels per day (bpd) should be 25 bpd

(B) Exemption below 200 bpd should be 100 bpd

(C) Exemption for floating roof tanks subject to specified APCD rules should be lost upon receipt of a Notice of Violation, Notice to Comply or any credible evidence that the facility is in violation of the specified rule.

(D)

(E) exemption for less than 45 days per year should be limited to 10 days per year

(F) exemption for temporary tank up to 90 days should be limited to 30 days

(G) exemption for temporary tank up to 90 days should be limited to 30 days

(H) …

(I) Exemption for gauge tanks of less than or equal to 100 barrels should be for tanks with capacity for 50 barrels or less (OP_CAC-2)

Comment: The current regulation exempts separator and tank systems that receive an average of less than 50 barrels of crude oil or and condensate per day, and the proposed draft maintains that exemption. This exemption would exempt every single tank within community drilling sites as 98% of producing wells in the state produce less than this threshold (based on these assumptions below). The rule also does not consider the cumulative volume of multiple tanks on a site, which we recommend.

- 50 barrels of crude oil or condensate per day is 18,250 barrels per year from a well, if that tank services one well, as many do.
- That's a 1,550 barrel (65,000 gallon) tank if it is emptied once a month, as many are.
- Of the 44,791 wells that reported oil/condensate production in 2021, only 851 (under 2%) produced that much oil/condensate.

Given the state of ozone nonattainment in multiple California air basins, CARB should apply RACT requirements to all tank systems. These requirements should be applied to all tank sites including tanks holding below 50 barrels per day and heavy crude sites. (OP_SC-3)

Comment: the current exemptions for … separator and tank systems that receive an average of less than 50 barrels of crude oil or condensate per day, leave huge gaps in monitoring that will impact communities … and 98 percent of producing wells in the state produce less than the 50 barrel per day threshold meaning that all tanks within community drilling sites would be exempt the way the regulation is currently written and would place communities at risk for undetected leaks. (T_SC-2)

Agency Response to Combined Comments:

(OP_CAC-2) (OP_SC-3) (T_SC-2)

No changes were made in response to these comments. CARB was primarily limited to addressing those portions of the Regulation subject to the limited disapproval from U.S. EPA due to time constraints. Therefore, additional concerns relating to separator and tank exemptions or standards were not addressed in this rulemaking.

However, the referenced throughput exemptions were designed to reduce unnecessary flash testing since even if those separator and tank systems were not exempt, emission control would not be required unless flash testing showed emissions exceeding the annual limit. Analysis in the 2016 ISOR[6] for the current Regulation showed that separator and tank systems with a production level of than 50 barrels of

[6] CARB. (2016). Public Hearing to Consider the Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. Initial Statement of Reasons. Posted 31 May 2016. *https://www.arb.ca.gov/regact/2016/oilandgas2016/oilgasisor.pdf*.

crude oil or condensate per day[7] and less than 200 barrels of produced water do not produce enough liquids to meet the emissions limit and therefore do not warrant flash emissions testing.

The exemptions for tanks used for limited time periods (subsections (E)-(G)) are based on the rationale that they would be unlikely to produce emissions high enough to warrant emission controls or are types of tanks used only to hold small amounts of liquids, as described in the current Regulation's 2016 ISOR[8]. The commenters have not provided a rationale for changing these exemptions, so staff do not have a reason to make the changes requested.

Finally, for subsection (C), CARB does not believe it is appropriate in this case to base an exemption within the Regulation on the compliance status of the system under an air district rule. The local air districts enforce their own rules and can address compliance issues through their own enforcement processes.

2. Flash Testing Timing Requirements

Comment: §95668 (a)(3) [annual flash testing]

(A) Should occur within 30 days, not 90

(B) Delete entire subparagraph – annual flash testing should be annual (OP_CAC-3)

Agency Response:

No changes were made in response to this comment. While the section referenced by the commenter (section 95668(a)) was restructured, the requirements referenced are identical to those in the current Regulation. The commenter has not provided any data or rationale for the requested changes for CARB staff to consider, and therefore staff do not have a reason to make the changes requested.

3. Separator and Tank System Control Threshold

Comment: §95668 (a)(5) requires controls for emissions greater than 10 tons methane/year; controls should be required for emissions greater than 2 tons methane per year. Note that in a decade, two tons of methane per year is 1,680 tons of CO2e -- roughly equivalent to the annual emissions from 365 passenger vehicles. {*EPA's website* uses 4.6 tons per year for a typical light-duty vehicle.} (OP_CAC-4)

Agency Response:

No changes were made in response to this comment. The separator and tank system control threshold discussed by the commenter is pre-existing from the current Regulation and was not changed in the Proposed Amendments. However, for this

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[7] Note that the Proposed Amendments include a change to the exemption from "50 barrels of crude oil OR condensate per day" to "50 barrels of crude oil AND condensate per day" as part of the amendments requested for SIP approval by the U.S. EPA, but this does not appear to be related to the comments.

[8] CARB. (2016). Public Hearing to Consider the Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. Initial Statement of Reasons. Posted 31 May 2016. *https://www.arb.ca.gov/regact/2016/oilandgas2016/oilgasisor.pdf*.

specific industry and source type, U.S. EPA considers an emission rate of up to a potential for 6 tons per year of VOCs or actual emissions of 4 tons per year of VOCs to be allowable as the RACT standard. Based on CARB staff analysis[9] using a generic gas composition, the 10 metric ton per year methane limit equates to approximately 1.8 tons per year of VOC. The limit used in the Regulation is therefore well below the equivalent standard that U.S. EPA considers necessary to demonstrate reasonably available control technology and this provides evidence that the emission rate limit previously set by CARB is reasonably strict.

4. Phase Out Venting

Comment: Venting should be phased out wherever feasible, e.g., at well casings and from fracking operations. It should also be minimized by requiring equipment upgrades to non-venting technologies. (OP_Bezanson-2)

Comment: §95668 (f) consider simply requiring vapor collection as in (f)(1)(A) for all wells.

§95668 (g) consider banning open well casing vents to atmosphere (OP_CAC-5)

Agency Response to Combined Comments:

(OP_Bezanson-2) (OP_CAC-5)

No changes were made in response to these comments. No venting standards were addressed in the Proposed Amendments, only recordkeeping, reporting, and inspection regulations relating to venting. Nevertheless, in response to the concerns, the Regulation requires venting to be minimized in most cases through required controls or equipment replacement on separator and tank systems, compressors, and pneumatic controllers with any collected vapors being routed to a pipeline, process, or compliant destruction device achieving at least 95% destruction efficiency. The Proposed Amendments add additional inspections, design analysis, testing, recordkeeping, and reporting requirements for vapor collection and control systems to better ensure proper operation.

Staff will continue to evaluate reporting data received through the Regulation, including new data on venting originating from the remote sensing provision in section 95669.1 of the Proposed Amendments, to better understand the magnitude of venting emissions from various processes and will consider future action to further reduce venting emissions based on that data or other directives (e.g., U.S. EPA's Emissions Guidelines).

5. Well Stimulation Treatment Frequency

Comment: In regard to subarticle 95688(b)(2)-(4), we question the assumption that well stimulation treatment (WST) is declining, and that circulation tank regulations do not need to be strengthened. Due to the delay in implementation of the set-back ruling, permits for WST have increased and those of us who live in communities with oil extraction can view on a daily

[9] CARB. (2018). Staff Report: Proposed Submission of California's Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities into the California State Implementation Plan. Posted 21 September 2018. *https://ww2.arb.ca.gov/sites/default/files/2020-04/O_G%20CTG%20-%20Staff%20Report.pdf.*

basis WST equipment at oil wells near housing, schools, and medical facilities. This was not seen at this level in 2022. We would like to believe that fracking and WST will end in 2024, but the fossil fuel industry has delayed any reduction in their operations, even to the extent of suing the governor and the state with the goal of being permitted to continue fracking more and more wells. In light of this industry's resistance to regulation, please consider addressing the lack of adequate technology and inadequate regulation of WST operations, including cessation of those operations, for now at least within 3200 feet of vulnerable populations. In addition, carbon capture and sequestration are planned for many of these same locations in the very near future, which will impact methane, CO2 and VOC emissions. (OP_CNEHJ-4)

Agency Response:

No changes were made in response to this comment. CARB notes a transcription error in the comment with respect to the regulation section at issue. OP_CNEHJ-4 cited subsections 95688(b)(2)-(4) in the comment, which do not exist. Subsections 95668(b)(2)-(4), however, appear to address the concerns directly. The statements in the ISOR regarding the frequency of well stimulation treatment in recent years are based on data[10] reported by the California Geologic Energy Management Division (CalGEM), which permits well stimulation treatment in California. This data shows a decreasing trend in well stimulations per year in recent years, with the latest well stimulation treatment being performed in 2021. CARB staff believe that the activities being described by the commenter are likely not well stimulation treatments, but rather other types of operations that would not have been subject to the provisions in section 95668(b)(2)-(4) of the current Regulation. Additionally, as explained in the ISOR, staff have determined that control of venting emissions from circulation tanks is not technically feasible with currently available technologies and CalGEM has proposed a rulemaking[11] at the direction of the Governor[12] to stop issuing new well stimulation permits.

The comment regarding carbon capture and sequestration is out of the scope of this rulemaking because it is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. The well stimulation treatment provisions that are proposed for removal in the Proposed Amendments are unrelated to carbon capture and sequestration projects and would have no impact on such projects in the future.

[10] CalGEM. (2023). WellSTAR: Well Stimulation Treatment Disclosure. Accessed 10 February 2023.
[11] CalGEM. (2021). Updated Well-Stimulation Treatment Regulations: Text of Proposed Regulations. Accessed 2021.
[12] California Office of Governor. (2021). Governor Newsom Takes Action to Phase Out Oil Extraction in California. Posted 23 April 2021. *https://www.gov.ca.gov/2021/04/23/governor-newsom-takes-action-to-phase-out-oilextraction-in-california/*.

F. Leak Detection and Repair

1. Leak Detection and Repair Plans

Comment: Page 44, (d)(1) Leak Detection and Repair Plan: This section would require a written plan specific to each facility that encompasses all components, including the listing of components to be monitored. The existing regulations already provide clear guidance of what needs to be done and with what frequency; these have been carried out successfully for five years without such specificity. Listing "components" is akin to requiring individual component identification and numbering; there is no doubt that this is what would be required as it is currently proposed. This would add greatly to the time and cost of carrying out the plan to what is already a very costly and time-consuming program, without a demonstrated benefit to justify the additional cost. (B_CIPA-6)

Agency Response:

No changes were made in response to this comment. Leak detection and repair plans are included in the RACT recommendation in the CTG. The portion of the plans that the commenter specifically points to (as "adding greatly to the time and cost") – development of lists of components – are further specifically identified as a deficiency by U.S. EPA in their SIP Decision. Therefore, leak detection and repair plans, including the elements specified for inclusion in those plans, are necessary to meet RACT and achieve SIP approval.

While staff did not quantify any emission benefits associated with the development and maintenance of LDAR plans, these plans should improve enforceability of the Regulation by clearly delineating which components and equipment are subject to the Proposed Amendments and which are classified as "inaccessible" or "unsafe to monitor." Further, LDAR plans will help ensure that the LDAR practitioner has all the information necessary to carry out a complete LDAR inspection, and can therefore adhere to regulatory requirements. The costs of developing these plans were included in the economic analysis in the ISOR.

2. Violations for Violating Air District Rules

Comment: §95669 (c)(1)(B) add: any violation of the air district rules specified in this subparagraph also constitute violations of this regulation. (OP_CAC-6)

Agency Response:

No changes were made in response to this comment. As part of the 15-Day Changes at the request of the U.S. EPA, the air district rules cited under section 95669 are no longer incorporated by reference and therefore must be treated as separate and apart from CARB's Proposed Amendments. Furthermore, Health & Safety Code section 38562(d) requires CARB to adopt and enforce its regulations while Health & Safety Code section 40001(a) requires the air districts to adopt and enforce their rules. Air districts have their own enforcement mechanisms under their rules and thus staff do not believe it is appropriate, at this time, to make air district rule violations also violations of the Proposed Amendments.

3. Use of Optical Gas Imaging as a Screening Tool

Comment: C. Optical Gas Imaging (OGI) [Section 95669(g)(1)(A)]

OGI instruments may be used for leak screening but may not be used for required quarterly inspections which must be complete using US EPA Reference Method 21. CARB provided additional clarification in Section 95669(g)(1)(A) that if an operator detects leaks using OGI screening during their inspections, the leaks must also be measured using US EPA Reference Method 21.

WSPA Recommendation #7

WSPA recommends the following revisions to 95669(g)(1)(A) to clarify requirements (also included in Appendix A):

All leaks detected with the use of an OGI instrument during a quarterly~~n~~ inspection by an owner or operator or during a CARB Executive Officer inspection shall be measured using U.S. EPA Reference Method 21 (October 1, 2017) as specified in section 95669(b) within two 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 this subarticle. (OP_WSPA-8)

> **Agency Response:**
>
> CARB staff deleted sections 95669(g)(1) and 95699(g)(1)(A) in the 15-Day Changes, partially in response to this comment raising the potentially ambiguous applicability but primarily due to CARB's position that Method 21 is the only appropriate inspection method under section 95669 of the Regulation and therefore any reference to OGI detection should be stricken to remove confusion. As explained in the 15-Day Notice, the provisions housed in these sections were superfluous because the Proposed Amendments do not limit what types of leak screening owners or operators can perform outside of quarterly surveys and all components must be screened using Method 21 during quarterly surveys.

Comment: D. Allowable Number of Leaks Using OGI [Section 95669(o)(1)]

CARB has added provisions for CARB Executive officer inspections using OGI instruments in 95669(g)(1)(A). However, it is not clear how the allowable number of leaks will be calculated during CARB Executive officer inspections using OGI instruments. Section 95669(o)(1) needs to be revised to include references to OGI screening by CARB for appropriate calculation of allowable number of leaks for when OGI is used.

WSPA Recommendation #8

WSPA recommends the following revisions to 95669(o)(1) to clarify requirements (also included in Appendix A):

(1) The following provisions apply to inspections conducted by the CARB Executive Officer:

> *(A) No facility shall exceed the number of allowable leaks specified in Table 2 during a CARB Executive Officer inspection as determined in accordance with US EPA Reference Method 21 (October 1, 2017), as specified in section 95669(b) or in*

accordance with OGI screening followed by US EPA Reference Method 21 (October 1, 2017) as specified in section 95669(g)(1)(A).

Table 2 – Allowable Number of Leaks

Leak Threshold	***200 or Less Components Inspected/Screened using OGI***	***More than 200 Components Inspected/Screened using OGI***
1,000-9,999 ppmv	*5*	*2% of total inspected*
10,000-49,999 ppmv	*2*	*1% of total inspected*
50,000 ppmv or greater	*0*	*0*

(OP_WSPA-9)

Agency Response:

No changes were made in response to this comment. CARB Executive Officer inspections are provided for in section 95669(e) of the Proposed Amendments (which is unchanged from the current Regulation, except for non-substantive changes in the acronym used for CARB and section renumbering). This section stipulates that "[t]he CARB Executive Officer may perform inspections at facilities at any time to determine compliance with the requirements specified in this section." There is no limitation in the current Regulation or Proposed Amendments on the CARB Executive Officer using optical gas imaging (OGI) technology in an inspection and the Executive Officer has discretion on how to conduct audits and inspections. Furthermore, because CARB wished to alleviate unnecessary confusion in the Regulation, the 15-Day Changes include striking section 95669(g)(1) and 95669(g)(1)(A) since it is CARB's position that Method 21 testing is the only proper quarterly and verification inspection method, and operators are free to use the technology of their choice between inspections. Thus, there is no longer reference to any requirements on the owner or operator stemming from the use of OGI by the CARB Executive Officer making the proposed revisions superfluous. Section 95669(o)(1)(A) already states in the Proposed Amendments (and in the current Regulation) that the number of allowable leaks for this provision is based on measurement with U.S. EPA Reference Method 21.

4. Tagging of Leaks Identified by Leak Detection and Repair

Comment: LDAR Section 95669(i), CIPA recommends including language that allows a tag to also be affixed "near" the leaking component. As currently written, it is too restrictive, especially if the leak has a rotating component. (B_CIPA-7)

Agency Response:

No changes were made in response to this comment. The purpose of the tagging requirement is to identify the component in a way that specifies the date, time, concentration, and location of the leak. Staff are not aware of any situations in which issues have arisen from this regulatory language since the implementation of this provision in 2018. The phrasing "affix to," or a similar variant (such as "affix with"), is also used in the tagging requirement in multiple California local air district rules for oil and gas sector LDAR. CARB therefore believes it is best to stay with the presently

utilized language to avoid confusion. Changing the language to "near" as the commenter suggests could end up compromising the ability to clearly identify the correct component and would necessitate new standards for what proximity constitutes "near." This is unnecessary when the existing language has not been problematic and is common industry regulatory phrasing among multiple California local air districts.

5. Exemptions from Leak Detection and Repair Requirements Not Related to Air District Rules/Requirements

Comment: In Section 95669, Heavy crude oil (API gravity less than 20) is exempt from LDAR requirements. This puts the state in a vulnerable position to cover the costs for repairs to heavy crude wells to stop leaks. What is the rationale for sustaining this exemption? The leaking wells identified in Bakersfield last year fell under this exemption, and the initial response we received from CalGEM is that they had no authority to require the operators to stop the leaks. Specifically, why is this exemption being maintained, what percent of the state's wells have been determined it will exempt, what production time span is being used to define the API of the crude, and how does CARB plan to manage leaks from heavy crude wells? This exemption will cause undue stalling in leak detection and management, and we strongly recommend to strike this exemption from the final regulation. (OP_SC-1)

Comment: the current exemptions for heavy crude oil wells…leave huge gaps in monitoring that will impact communities, heavy crude wells were the type of wells that were found to be leaking methane outside of homes and a school a year ago in the Morning Star Neighborhood in Bakersfield (T_SC-1)

Agency Response to Combined Comments:

(OP_SC-1) (T_SC-1)

No changes were made in response to these comments. Staff considered removal of the heavy oil LDAR exemption as part of an alternative in the ISOR and provided a rationale for rejecting the alternative that included removal of this exemption. In summary, (1) details surrounding requirements for LDAR at all existing sites are currently being developed by U.S. EPA as part of their Emissions Guidelines so it is prudent to wait for finalization of those requirements, (2) this alternative was found to be significantly more costly than the Proposed Amendments (which could extend the length of the regulatory process through additional analysis requirements), and (3) focusing on the more limited set of changes in the Proposed Amendments helps ensure that the sanctions timeline for CTG-related changes can be met. Detailed emissions and cost analyses specifically for removal of the heavy oil LDAR exemption are in the ISOR Appendix B. Because CARB opted not to make any revisions to this subsection in the Proposed Amendments (except a clarification that the exemption does apply to the oil and associated water handling components), further discussion pertaining to the fraction of wells in the state that are heavy oil wells, the averaging time for API gravity determination, and CARB's general plans for managing heavy oil well gaseous leaks is outside the scope of the present rulemaking.

However, additional details pertaining to those questions are provided here for transparency. According to CARB's 2007 Oil and Gas Industry Survey[13], approximately 70% of active California wells were under 20 API gravity at that time. However, analysis in the ISOR Appendix B estimates that only approximately 34% of components in California fall into that category (<20 API gravity). The averaging time for API gravity is defined within the exemption in section 95669(c)(2) of the Proposed Amendments as averaged on an annual basis and based on certified reports that owners or operators submit to CalGEM (this is unchanged from the current Regulation). Heavy oil wells would be subject to inspection and repair requirements under the Proposed Amendments when CARB notifies an owner or operator that a remote methane plume detection has occurred at the facility. This is because section 95669.1 does not exempt the components that are exempt from section 95669. This provides a backstop in cases where large leaks are detected from heavy oil operations. CARB will continue to evaluate the potential to remove the heavy oil LDAR exemption in the future as new data becomes available and in relation to any future requirements under U.S. EPA's Emissions Guidelines, when those are finalized.

The commenter suggests that repair costs may fall onto the State due to the LDAR exemption for heavy oil wells. However, potential cases where repair costs might fall onto the State would not be related to the heavy oil LDAR exemption in the Regulation, and would more likely be related to an orphan well status (where there is no solvent owner or operator).

Comment: B. Components under active drilling, completion, or maintenance [Section 95669(c)(14)]

CARB has added exemption for components on equipment or wells actively undergoing drilling, completion, or maintenance activities. However, the currently written language suggests that these components would need to undergo leak detection upon completion of such activities in addition to the quarterly inspections required by 95669. It is our understanding that CARB did not intend to add redundant requirements. As such, WSPA requests that CARB clarify the requirement in Section 95669(c)(14).

WSPA Recommendation #6

WSPA recommends the following revisions to 95669(c)(114) to clarify requirements (also included in Appendix A):

Components on equipment or wells that are actively undergoing drilling, completion, or maintenance activities. These components shall ~~be~~ resume required quarterly inspections ~~ed~~ upon completion of the drilling, completion, or maintenance. (OP_WSPA-7)

Agency Response:

As evidenced by its inclusion within an exemption, CARB staff intended the inspections following the listed activities to only apply if the exemption was invoked to miss a regular inspection. Staff addressed this comment in the 15-Day Changes by including language specifying in what circumstances and by when the inspection must

[13] CARB. (2013). 2007 Oil and Gas Industry Survey: Final Report (Revised). *https://ww2.arb.ca.gov/sites/default/files/2020-04/FinalReportRevised_4.pdf*.

occur. The proposed text now specifies that the inspection requirement only applies if a regular inspection under section 95669(g) is missed, and that the standard for when the inspection must occur is by the end of the calendar quarter in which the activity is completed.

6. Inspection Requirements

Comment: Field monitoring, inspection, and report drafting should be conducted by CARB staff or a CARB-selected contractor. CARB is to provide job descriptions, performance standards, orientation, and on the job training. Owners of fossil infrastructure are to reimburse CARB for the entire cost of these services. This protocol avoids the risks of owners performing in ways that are inaccurate or at variance with CARB standards. It also prevents delays caused by owners having difficulties finding qualified labor. (OP_Bezanson-3)

Agency Response:

No changes were made in response to this comment. Owners or operators are required to perform inspections according to procedures specified in the Proposed Amendments. This includes the test methods to be used, the frequency of inspections, leak thresholds, repair timeframes, repair confirmation, recordkeeping, and reporting. Staff believe that these detailed requirements ensure that thorough inspections are carried out and compliance with the requirements are documented.

Adding a program whereby CARB or a CARB-selected contractor performs inspections would add a significant layer of complexity to the regulatory framework that is not necessary to ensure high quality inspections given the already detailed requirements for carrying out LDAR and documenting the inspections. Based on data submitted to CARB pursuant to the Regulation, owners or operators have been able to follow the required inspection schedules most of the time and have not experienced delays due to difficulties finding qualified labor, except for very isolated cases during the COVID-19 pandemic.

CARB (and local air districts as delegated) also has the authority to perform inspections at facilities and audit compliance records. These inspections and audits enable CARB (and local air districts) to ensure that effective LDAR is being carried out in accordance with the procedures required by the Regulation.

Comment: CARB should consider requirements for LDAR inspections to be increased at sites within 3,200 ft of sensitive receptors as opposed to the quarterly method 21 inspections that are required for all sites. The remote sensing that is being utilized can prioritize those areas, and increased attention to sites near receptors in addition to on the ground LDAR requirements for these sites that are in communities would be ideal in addition to CARBs schedule for inspections. (OP_SC-4)

Comment: As CRPE, we work closely with local communities to advocate for their needs and public health. Our communities are low-income communities of color with neighborhoods in close proximity to oil and gas wells and they depend on California agencies to protect them.

We at CRPE are extremely concerned about the leaking wells in the Arvin-Lamont areas that were recently discovered. These wells surrounding our communities pose a huge health risk to health and safety. Any leaks from these wells for any period of time are unacceptable.

Many of our communities suffer from effects of living near oil and gas wells including asthma, chronic headaches, cancer, and more. CRPE hopes these amendments include enhanced requirements for sites within 3,200 feet and are handled with extreme care. There should be increased leak detection and repair inspections at these sites, more than required at others.

…

No communities deserve to be sacrifice zones with the harm these communities have already unfairly suffered. (T_CRPE-1)

Agency Response to Combined Comments:

(OP_SC-4) (T_CRPE-1)

No changes were made in response to these comments. These comments do not address any specific Proposed Amendments and are therefore outside the scope of the present rulemaking. The Proposed Amendments are intended to reduce methane emissions. Methane is a greenhouse gas that mixes globally and its effects on climate change are not strongly dependent on the location of emissions. The Regulation does not have a definition of a sensitive receptor and staff are not aware of any existing database of such receptors near oil and gas facilities. Therefore, the commenter's suggestion would require extensive rulemaking activity that could not fit into the timeframe of the present rulemaking.

Understanding the impacts of emissions of volatile organic compounds and toxic air contaminants from oil and gas operations near communities and other receptors is important and is being pursued by CARB and other agencies. CARB is presently participating in the Methane Task Force (MTF), a joint effort between the California Natural Resources Agency, CalGEM, the California Environmental Protection Agency, and CARB. Called for by Governor Newsom in 2022, the MTF seeks to identify and respond to fugitive methane emissions located near communities. The MTF holds quarterly public meetings to gain communities' insights and has been accompanying local air districts to conduct field inspections and monitor repairs.

G. Remote Emission Plume Detections

1. CARB Verification of Owner or Operator Follow-up Actions

Comment: I hope that the newer technology will allow for consistent, industry wide monitoring. Will the state be following up on notifications? Will there be on-site conformation of actions required of offenders? (OP_Humphries-2)

Agency Response:

No changes were made in response this comment. The Proposed Amendments include reporting requirements at multiple stages along the inspection and repair pathway for remotely detected emissions plumes to keep CARB informed of the findings and actions taken by owners or operators. Owners or operators are required to submit accurate information about their follow-up actions and CARB has the authority to initiate enforcement action if they falsify their reporting. This will allow CARB to verify that owners or operators are complying with the provisions in section 95669.1 of the Proposed Amendments. CARB (or potentially local air districts

enforcing the Proposed Amendments by agreement with CARB) may also perform on-the-ground inspections to verify the repair of emission sources.

2. Specifying that Remote Monitoring Data Must Come from Satellite-based Technologies

Comment: Rockpoint has reviewed the Amendments and have concerns regarding Section 95669.1, and of the broad language which allows for remote monitoring methodologies which are not restricted to being satellite based.

In the Statement of Reasons CARB states:

> "The CARB Executive Officer may approve a technology for generation and use of satellite-based (*emphasis added)* remote monitoring data if it demonstrates a capability to detect methane plumes and meets certain specifications regarding data resolution, data availability, and plume visualization."

However, the text of the section does not use the word satellite. The section, at 95669.1(a)(1) reads:

> "The remote monitoring data shall be generated by a remote monitoring technology approved by the CARB Executive Officer if, in their best engineering judgment, the technology demonstrates a capability to detect methane emission plumes and meets the following requirements."

The section allows for the CARB Executive Officer to approve any manner of remote monitoring technology and is not restricted to satellite-based methodologies.

Rockpoint wishes to understand why the Amendment was drafted this way and what other remote monitoring technologies CARB would envision using. Specificity in this regard is required so that Rockpoint can properly assess how the Amendments will affect their facilities and business operations. Once gaining this understanding, then Rockpoint could properly provide feedback and comment to CARB about the implementation of its remote monitoring proposal and all of the possible methodologies employed for monitoring. The Amendment, as drafted, is broad enough that an operator cannot reasonably know how the remote monitoring will be conducted or what its impact on the operations will be.

If it is CARB's intention for the remote monitoring to be satellite based, then Rockpoint suggests the following language for section 95669.1(a)(1):

> "The remote monitoring data shall be generated by a satellite-based remote monitoring technology approved by the CARB Executive Officer if, in their best engineering judgment, the technology demonstrates a capability to detect methane emission plumes and meets the following requirements." (OP_RGS-1)

Agency Response:

No changes were made in response to this comment. The commenter is correct that the text of section 95669.1 does not specify that the remote monitoring technology must be satellite-based. However, the Proposed Amendments define "remote monitoring data" in section 95667(a)(62) as "for the purposes of this subarticle, data obtained by CARB from a satellite-based measurement technology capable of detecting methane plumes." Therefore, when section 95669.1 specifies that "CARB

> may issue a notification to an owner or operator if remote monitoring data includes a methane emission plume at their facility," the definition of "remote monitoring data" constrains the technology set to satellite-based instruments. Staff constructed this provision in this manner to reduce duplication in the regulatory text and prevent any inadvertent cases of inconsistency across sections of the Proposed Amendments.

Comment: CARB is proposing to utilize only data from satellite-based technologies because the Governor and Legislature have recently authorized funding for the purchase of methane satellite data, and because CARB will receive this satellite-based data at the frequency and quality needed to support leak-detection and repair under this Regulation. CARB should also explore other remote sensing methods to identify leaks, such as airplane flyovers, drones, or car-mounted detectors. Community submitted OGI footage and other forms of air quality complaints should also be included. For reference, last year the initial air quality complaint from Kyle Ferrar with Fractracker Alliance was the only indicator of the dozens of leaking idle wells discovered in and near Bakersfield, and inspired hundreds if not thousands of wellsite repairs (even though these wells fell under the heavy crude exemption listed above). (OP_SC-2)

Comment: We offer suggestions to achieve additional reductions from the proposed remotely detected emission plumes provision. Specifically, we urge CARB to:

> (1) expand the provision to allow CARB to use other types of remote detection technology capable of identifying "super-emitters" rather than limiting the proposal to satellites;

…

> A. CARB Should Allow Leak Detection by Other Types of Remote Sensing Technology, Not Just Satellites

CARB proposes to require owners or operators of oil and gas facilities to address emissions detected with satellite-based technologies. Specifically, the proposed amendments add a definition for "remote monitoring data," which the proposal defines as data CARB obtains from a satellite-based measurement technology capable of detecting methane plumes. CARB states it is proposing to utilize only data from satellite-based technologies "because the Governor and Legislature have recently authorized funding for the purchase of methane satellite data, and because CARB will receive this satellite-based data at the frequency and quality needed to support leak-detection and repair under this Regulation." {CARB, Public Hearing to Consider the Proposed Amendments to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities Staff Report: Initial Statement of Reasons (Apr. 25, 2023), at 17, (hereinafter "ISR").}

As outlined in our prior comments to CARB, we are requesting CARB make this provision applicable to leaks detected by other types of remote sensing technology, not just satellites. {EDF 2022 Comments, supra note 1, at 14-15.} We recommend this course of action because multiple types of remote sensing technologies exist that can detect methane, doing so is consistent with EPA's proposed SERP <CARB note: SERP stands for "Super-Emitter Response Program"> (albeit with our recommendation to expand SERP to include even more technologies than currently proposed) and doing so will incent the use and development of remote sensing technologies. Notably, CARB's Initial Statement of Reasons for this proposal points to studies and pilot projects using remote imaging techniques that have demonstrated

the potential for reducing emissions and utilized non-satellite technologies to detect plumes. {CARB states, "The California Methane Survey was performed from 2016-2018 using a visible/infrared imaging spectrometer mounted on an airplane to detect high-emitting methane sources (Duren et al. 2019)." ISR, at 9.} (OP_EDF-2)

Comment: Section: § 95667. Definitions.

Current text: (62) "Remote monitoring data" means, for the purposes of this subarticle, data obtained by CARB from a satellite-based measurement technology capable of detecting methane plumes.

Proposed text: (62)"Remote monitoring data" means, for the purposes of this subarticle, data obtained by CARB from a satellite- or aircraft-based remote sensing measurement technology capable of detecting methane plumes.

Rationale: Expanding "remote monitoring data" to include remote sensing aircraft provides flexibility and continuity of leak detection and repair programs during contingency scenarios such as observational gaps resulting from satellite anomalies. It also enables higher resolution location of smaller plumes with follow-up aircraft observations of facilities identified by satellites. Remote sensing is necessary to support the plume visualization capability specified in § 95669.1. (OP_CM-2)

Comment: Specifically, we urge CARB to: One, expand the provision and allow CARB to use other types of remote detecting technology capable of identifying super emitters rather than limiting the proposal to satellites … In particular, EDF is requesting CARB make this provision applicable to leaks detected by other types of remote sensing technology as well, not just satellites.

We recommend this course of action because multiple types of remote sensing technology can detect methane. And doing so is consistent with EPA's proposed Super-Emitter Response Program. So we appreciate CARB's consideration of these comments and welcome the opportunity to share with them today. (T_EDF-1)

Agency Response to Combined Comments:

(OP_SC-2) (OP_EDF-2) (OP_CM-2) (T_EDF-1)

No changes were made in response to this provision. The proposed regulatory requirement to respond to remotely detected methane plumes is a first-of-its-kind provision for a CARB regulation. This provision was spurred by the expected availability of satellite data in the near future through existing and separate channels, such as data provided from a partnership involving CARB and through a $100 million appropriation from the Legislature made in 2022. CARB wants to take advantage of these existing resources to achieve emission reductions.

The decision to limit the data collection platforms to satellite-based technologies is based on complexity and safety concerns, considering the novel nature of this provision. Under the proposed section 95669.1, the CARB Executive Officer is responsible for approving technologies and CARB would send notifications after determining that a plume has been detected at a covered facility. CARB will already have personnel in place to interpret satellite data and verify the presence of methane plumes in satellite data. If the provision were expanded to additional types of collection platforms, the data analysis and verification efforts would be significantly

more complicated and – for some technologies – may not be able to draw on existing resources at CARB. Although airplane detections have been used in research efforts at CARB, the resources already in place for satellite data acquisition and analysis make satellite-based technology a natural starting point for this provision.

Another key reason to limit this program to satellites at this time is to give further consideration to safety and access concerns addressed by industry stakeholders about incentivizing the use of near-source measurement technologies by outside parties. Many of the additional technologies suggested by the commenters would require the technology user to position themselves near the potential source, either on the ground (e.g., OGI cameras) or in the airspace immediately above the site (e.g., drones). If there is not proper access coordination with owners or operators, industry stakeholders are concerned that such attempts at measurements could imperil either the safety of the technology user, through hazards present at the facility, or the safety of on-site workers, if damage is done by flying technologies into overhead infrastructure. Opening the regulatory provision to many of the additional technologies requested by the commenters could incentivize outside parties to attempt such measurements in the hopes that the data could be used for the provision. CARB needs more time to explore these safety and access factors in coordination with industry stakeholders, technology providers, and others, beyond the timeline required for this rulemaking.

In summary, CARB proposes to start with satellites to take advantage of existing resources and gain more experience with the framework before considering expanding the technology set, which could increase the overall complexity of administering the provision, present unresolved safety concerns, and pose access issues.

3. Remote Monitoring Data Technology Approval Criteria and Process

Comment: Section: § 95669.1 Remotely Detected Emission Plumes

Current text: (1) The remote monitoring data shall be generated by a remote monitoring technology approved by the CARB Executive Officer if, in their best engineering judgment, the technology demonstrates a capability to detect methane emission plumes and meets the following requirements:

(A) Spatial resolution of 30 by 30 meters or better.

(B) Data available to CARB within 72 hours of collection.

(C) Produces a visualization of the emission plume.

Proposed text: (1)The remote monitoring data shall be generated by a remote monitoring technology approved by the CARB Executive Officer if, in their best engineering judgment, the technology demonstrates a capability to detect methane emission plumes and meets the following requirements:

(D) Spatial resolution of 40 meters by 40 meters or better.

(E) Data available to CARB within 72 hours of collection for at least 90% of plume detections.

(F) Produces a visualization of the emission plume.

Rationale: Many plume imaging satellites are designed for 30 meter spatial resolution however variations in orbit altitude and off-nadir viewing can translate to spatial resolution of up to 38 meters for prolonged periods. Data with resolution of 40 meters has nearly the same utility as 30 meter resolution. Also, the proper units are either x meters by x meters or meters^2.

It is unlikely that any system is capable of providing <= 72 hour latency for 100% of cases (without a large number of false alarms). Some tolerance is recommended for exceptions such as temporary gaps in satellite downlink, delays in transferring data to CARB, natural disasters, etc. (OP_CM-3)

Agency Response:

The only change made in response to this comment was to add the word "meters" to the first spatial resolution dimension in the 15-Day Changes. The criteria discussed by the commenter are listed as part of the technology requirements for the CARB Executive Officer approval of a technology providing remote monitoring data. Because this approval occurs before the technology is used, it follows that it must be based on the expected characteristics of the technology under normal operation. Staff recognize that occasional unanticipated events, such as communication outages, are bound to happen in practice as it is not reasonable to expect any technology to never experience an outage. CARB has therefore limited the data it will utilize to only that data that is made available to CARB within 72 hours of collection. This ensures reasonable, consistent application of the Proposed Amendments to all regulated entities.

The commenter states that some technologies which are designed for 30-meter spatial resolution may not achieve that resolution depending on orbital characteristics or off-nadir viewing (i.e., tilting the camera so that it is not pointing straight down). However, CARB intends to only use technologies for this provision in a manner that the spatial resolution is 30 meters by 30 meters or better, which can be assured by only utilizing collections that meet that resolution (and which can be accomplished in practice by setting parameter limits on when, where, and how observations occur).

Comment: C. Remote Monitoring Technology Approval Process [Section 95669.1(a)(1)]

The criteria for approval of remote monitoring technology is outlined in Section 95669.1(a)(1). CARB has included only three criteria for a technology to be approved -

(A) Spatial resolution of 30 by 30 meters or better.

(B) Data available to CARB within 72 hours of collection.

(C) Produces a visualization of the emission plume.

(1) Technical Criteria

WSPA believes that additional technical criteria are necessary to ensure high-quality data is received by CARB. A minimum methane emission rate threshold to trigger a response is necessary for the data obtained to be of high quality and that does not overwhelm available resources. This aligns with CARB's understanding that satellite-based remote monitoring technologies will most likely capture large plumes, not the smaller ones.

Currently, a emission rate of 100 kg/hr is being considered by EPA for their super-emitter response program in their supplemental notice of proposed rulemaking of 40 CFR Part 60, Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review (November 11, 2022; *EPA-HQ-OAR-2021-0317; FRL-8510-04-OAR*). Carbon Mapper predicts a methane detection limit its satellite as of 50 to 150 kg/hr depending on multiple factors. <CARB note: a link to the Carbon Mapper "*Technology*" webpage was provided by the commenter here.> WSPA requests that CARB include a defined emissions rate of 100 kg/hr, as measured at a facility, to trigger operator response.

(2) Non-Technical Criteria

WSPA also believes that in addition to technical criteria, CARB should consider security, transparency, and other criteria for approvals. For example, EPA is considering multiple criteria for pre-approval of technologies for their super-emitter response program discussed above. These criteria include –

(1) Requestors are limited to any individual or organization located in or that has representation in the U.S.;

(2) Requestor must have direct knowledge of the design, operation, and characteristics of the underlying technology;

(3) The underlying technology must have been applied to methane measurements in the oil and gas production, processing, and/or transmission and storage sectors either domestically or internationally;

(4) The technology must be a commercial product, meaning it has been sold, leased, or licensed, or offered for sale, lease, or license, to the general public.

WSPA Recommendation #10

WSPA recommends the following changes to Section 95669.1(a) to incorporate above considerations (also included in Appendix A) -

(1) The remote monitoring data shall be generated by a remote monitoring technology approved by the CARB Executive Officer if, in their best engineering judgment, the technology demonstrates a capability to detect methane emission plumes and meets the following requirements:

(A) Spatial resolution of 30 by 30 meters or better.

(B) Data available to CARB within 72 hours of collection.

(C) Produces a visualization of the emission plume.

(2) The applications for remote monitoring technology approvals must include the following minimum information:

(A) A description of the monitoring technology and system; and

(B) Supporting information verifying that the technology meets the desired detection threshold(s) as applied in the field.

(3) The requestors for technology approvals must also meet the following criteria:

(A) Requestors are limited to any individual or organization located in or that has representation in the U.S.;

(B) Requestor must have direct knowledge of the design, operation, and characteristics of the underlying technology;

(C) The underlying technology must have been applied to methane measurements in the oil and gas production, processing, and/or transmission and storage sectors either domestically or internationally; and

(D) The technology must be a commercial product, meaning it has been sold, leased, or licensed, or offered for sale, lease, or license, to the general public.

(4) CARB Executive Officer shall issue either an approval or disapproval in writing to the requestor within 60 days of receipt of the request. (OP_WSPA-12)

Agency Response:

No changes were made in response to this comment. CARB staff did not intend to make the satellite technology approval a public petition process. Subsection 95669.1(a) of the Proposed Amendments is only intended to provide guidelines for Executive Officer approval of technology, not to deputize a third-party provider to act on its behalf. It is for this reason there is not a process for a technology provider to request that their technology be used for this provision nor a specific time period by which the CARB Executive Officer must act on a request included in the Proposed Amendments.

For the CARB Executive Officer to evaluate a potential technology and use their best engineering judgment as to whether it meets the requirements in the Proposed Amendments, the Executive Officer will be evaluating the monitoring technology's characteristics and supporting information about the system's capabilities, including how it has demonstrated a capability to detect methane plumes. The proposed U.S. EPA program that the commenter references would enable third parties to be deputized and directly notify the owner or operator without the further involvement of a regulatory agency. In the case of the section 95669.1 of the Proposed Amendments, CARB would be sending the notifications after evaluating the remote monitoring data. This is the reason why the elements related to the "requestor" characteristics are pertinent for the proposed U.S. EPA program, but not for section 95669.1 in the Proposed Amendments.

The request to include an emission rate limit is addressed in the response to comment OP_WSPA-13 in section G.4 of this chapter.

4. Remote Emission Plume Notification Process and Requirements

Comment: §95669.1 [remote detection]

(a)(2) add that the notification shall contain the following information, if reasonably available, to the Executive Officer… (OP_CAC-7)

Agency Response:

No changes were made in response to this comment. The Proposed Amendments specify what information must be included in the notifications to ensure that owners or operators know what minimum level of information they will be provided with, and the elements are necessary to ensure that owner or operator will be able to effectively determine the source of the emissions. Providing the option to not include any of the notification elements listed in section 95669.1(a)(2) in the case that they are not "reasonably available to the Executive Officer" could result in owners or operators being unable to carry out effective field inspections (or searches of their records for activity-based venting).

Comment: D. Remote Monitoring Notification Process [Section 95669.1(a)(2)]

1. Notification Threshold

It is WSPA's understanding that CARB intends to notify owner/operator of any plumes detected by the remote monitoring technology. WSPA members are concerned that this approach could overwhelm resources for operators, depending on the detection limits of the technology used. CARB should consider a minimum emission rate threshold that can capture most of the potential emissions, while considering cost-effectiveness. As the satellite technologies evolve, the methane detection capabilities are likely to improve, leading to detection of smallest plumes and at a certain point costs of remote detection response begins to outweigh the benefits. Applying a minimum emission rate threshold for plumes will allow CARB to evaluate thresholds as new technologies evolve, and to conduct cost-benefit analyses prior to adjusting the existing threshold. WSPA requests that CARB include a minimum emission rate of 100 kg/hr for operator response in alignment with the minimum methane detection limit for approved technologies.

2. Notification Content

In Section 95669.1(a)(2), CARB has outlined information that should be included in their notification to a facility owner or operator. The information includes -

(A) An emission ID number.

(B) An estimate of the latitude and longitude coordinates where the emissions appear to be originating.

(C) A visualization of the emission.

(D) The date and time of the emission detection.

WSPA members consider the above details necessary for timely and effective response to these notifications and potential emissions reductions. However, additional details will be necessary to quickly identify the potential leaks. In their November 2022 proposal, EPA is proposing that each notification under their super-emitter response program must contain specific information to help owners and operators verify the emissions are correctly linked to their site and aid in a focused investigation to swiftly identify the source of emissions. Specific information that would be required in each notification includes –

(1) the location of emissions in latitude and longitude coordinates,

(2) description of the detection technology and sampling protocols used to identify the emissions,

(3) documentation depicting the emissions and the site (e.g., aerial photograph with emissions plume depicted),

(4) quantified emissions rate,

(5) date(s) and time(s) of detection and confirmation after data analysis that an emissions event was present.

In addition to the above, additional data about specific equipment, if available, can be used to interpret data quickly and easily, especially at multi-operator sites. Additional information about background atmospheric data can be useful to locate known process emissions, and to avoid delays in potential emission reduction responses. WSPA also recommends including the technology provider's monitoring plan with each notification, that provides quality assurance and other technical information to operators.

3. Notification Timeline

CARB has not included a notification timeline from CARB to operators in the proposed requirements. As discussed above, WSPA recommends a timely delivery (within a few days) of notification to operators.

WSPA Recommendation #11

WSPA recommends the following changes to Section 95669.1(a)(2) to incorporate above considerations (also included in Appendix A) -

CARB shall notify facility owner or operator if the methane emission plume has a quantified emission rate of greater than or equal to 100 kg/hr. The notification shall be e-mailed electronically to the e-mail address supplied by the facility owner or operator pursuant to section 95674(b)(2) within 72 hours of receiving methane plume data from the technology provider. The notification shall contain the following information:

a. An emission ID number.

b. An estimate of the latitude and longitude coordinates where the emissions appear to be originating.

c. A visualization of the emission.

d. The date and time of the emission detection.

e. Any available equipment specific information.

f. Background atmospheric data.

g. Quantified emissions rate.

h. Monitoring plan including description of the detection technology and protocols used to identify the emissions.

i. Spatial resolution dimensions. (OP_WSPA-13)

Agency Response:

Emission rate quantification is a slower process than plume identification. CARB expects to have detection data much earlier than quantification data in many cases. Adding an emission rate threshold would likely have a significant impact on the speed

of notification, thereby reducing the likelihood of finding the emission source and decreasing the amount of the emission reductions that can be achieved. Current satellite technologies are generally able to detect methane emission plumes at rates of greater than 50 or 100 kilograms per hour and thus would only identify large emission sources.[14]

The elements proposed by CARB for the notifications provide sufficient information to the owner or operator for the purpose of determining the source of the emission plume. Equipment-specific information, a monitoring plan from the technology provider, and the spatial resolution do not give the owner or operator additional data that would be helpful to locate and repair the emission source. To the extent that background atmospheric data may be helpful, such data should already be readily available to the owner or operator from public sources and need not be provided by CARB. As discussed in the previous paragraph, a quantified emission rate may not be available at the time of notification. Therefore, CARB staff made no changes related to the required information contained within the notification.

As a result of this comment, in the 15-Day Changes CARB staff added a seven-business day timeline for notification from the time that the data became available to CARB. This accounts for time to perform quality control checks to verify that the data includes a plume image and to determine who the responsible party is, while also balancing the likely case that older plume detections are less likely to be still occurring than more recent detections. That said, staff expect (based on experience from airplane detection campaigns) to generally send out notifications within the 72-hour timeline requested by the commenter most of the time and will endeavor to do so.

5. Owner or Operator Inspection and Reporting Requirements

Comment: (2) require operators to investigate all detected super emitters, even those that may occur due to authorized maintenance activities

…

B. We Recommend CARB Require Operators to Investigate Emissions Detected with Remote Monitoring Technologies Even Where Emissions Prove Permissible

CARB has proposed to require owners or operators conduct an inspection of a leak detected by CARB's remote sensing technologies within 5 days of receiving the notification from CARB unless the owner or operator has records demonstrating that venting was occurring at the time of the remote emission detection due to an allowable activity such as planned maintenance. Consistent with our prior comments, we urge CARB to require operators to investigate all emissions detected with remote monitoring technologies. Investigation of venting, even if such activity is permissible, nevertheless can provide highly useful information to CARB and the operator. For example, repeat detection of high emission events during maintenance activities, such as liquids unloading, could lead to future

[14] U.S. EPA. (2021). Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review. Background Technical Support Document for the Proposed New Source Performance Standards (NSPS) and Emissions Guidelines (EG). October 2021. *https://downloads.regulations.gov/EPA-HQ-OAR-2021-0317-0166/content.pdf*.

regulations where technologies exist to further cost effectively control such emissions. Similarly, operators may learn to optimize the efficiency of certain activities resulting in gas loss that otherwise could be captured and sent to sales. Requiring investigation of all detected super-emitters is also consistent with EPA's SERP. (OP_EDF-3)

Comment: two; require operators to investigate all detected super emitters, even those that may occur due to authorized maintenance activities (T_EDF-2)

Agency Response to Combined Comments:

(OP_EDF-3) (T_EDF-2)

No changes were made in response to these comments. Under the Proposed Amendments, owners or operators are required to respond to notifications of emission plumes that turn out to be venting due to an activity (including authorized maintenance) and investigate why the venting occurred through consulting records of activities (rather than a field inspection). They must report to CARB a summary of the source of the venting and why the venting occurred and must maintain records demonstrating that the venting was occurring due to the activity. This reporting and recordkeeping provides the information that the commenter states would be gained by requiring the owner or operator to perform a field inspection. Adding a requirement for the owner or operator to survey equipment in the field would increase the burden on regulated parties and would be unlikely to generate additional useful information.

Comment: E. Inspection Radius [Section 95669.1(b)(2)(A)]

CARB has proposed a 100-meter radius for operator inspection upon notification from CARB. WSPA believes that using technologies with a spatial resolution of 30 meters by 30 meters should provide fairly precise information about the location of a potential source. Inspection of a large area of 100-meter radius will most likely be unnecessary and require significant resources especially in locations with high density of components. Further, the large, fixed inspection area will become increasingly unnecessary with improvements to the spatial resolution of the technology. While OGI may be used to screen large areas within required timeframe of 5 days, operators using U.S. EPA Reference Method 21 may not be able to inspect large areas in a timely manner. WSPA requests that the inspection radius be reduced to reasonable area based on the spatial resolution of the satellite.

WSPA Recommendation #12

WSPA recommends the following changes to Section 95669.1(b)(2)(A) to incorporate above considerations (also included in Appendix A) -

All components and equipment under the control of the owner or operator within ~~at least~~ a ~~100-meter~~ radius ~~of~~ equal to the pixel width of utilized technology ~~the location sent in the notification~~ has been inspected; (OP_WSPA-14)

Agency Response:

No changes were made in response to this comment. The 100-meter radius was chosen to account for both pixel resolution as well as pixel geolocation accuracy. There may be multiple adjacent pixels with similar concentrations depending on where the origin point is and the wind speed and direction. Location of the plume on the

pixels is therefore not necessarily in the same location as the emission source, but skewed depending on weather patterns. Staff's experience interpreting similar imagery from airplane-mounted instruments suggests that the source location can sometimes only be constrained to an area a few or several pixels across.

Further, operators are not required to inspect the entire radius if they find the emission source sooner. Plume images will be included in the notification, so if operators are able find the source while only inspecting a smaller radius due to their familiarity with their property and general weather conditions, the full radius will not need to be searched. Limiting the search area to a 30-meter radius as the commenter proposes may delay the owner or operator in locating the source if the source is outside that search area.

CARB considered the time requirements for Method 21-only surveys when developing the proposal. In fact, in a pre-rulemaking workshop CARB had proposed a timeline of three calendar days for this task and then extended the timeline to five days based on subsequent conversations with owners and operators. At most facilities, a 100-meter radius would likely only include several wells and associated equipment. At denser facilities (such as natural gas underground storage facilities and natural gas processing plants), staff expect that most owners or operators would have access to OGI cameras and, if not, Method 21 surveys can be carried out more quickly by increasing the size of the team performing the survey, if needed. Further extension of the allowable search time or reduction of the radius would risk emissions occurring for an extended period of time or not being located, respectively.

Comment: F. Report Timeline [Section 95669.1(c)]

CARB proposes that within 24 hours after conducting an inspection pursuant to 95669.1(b), the owner/operator must report to CARB. WSPA believes that 24 hours does not allow for adequate time to compile the report including all information specified in Section 95673(a)(15) and to undergo all internal reviews and approvals prior to the submittal to CARB. WSPA recommends that the report timeline after conducting an inspection be extended to at least 3 days.

WSPA Recommendation #13

WSPA recommends the following changes to Section 95669.1(c) to incorporate above considerations (also included in Appendix A) -

Within 72 ~~24~~ hours after conducting an inspection pursuant to section 95669.1(b), the owner or operator shall report to CARB the information specified in section 95673(a)(15). (OP_WSPA-15)

Agency Response:

Staff proposed to change the reporting timeline to 72 hours in the 15-Day Changes as suggested by the commenter. Staff agree that it is reasonable to give more time to undergo internal reviews and approvals that staff had not accounted for in the timeline proposed in the 45-Day Changes, and 72 hours is a reasonable time period to do so.

Comment: G. Not Components [Section 95669.1(d)(4)]

In Section 95669.1(d)(4), CARB has identified repair timelines for emissions sources that are not components. The definition of term "component" in Section 95667(a)(10) is inclusive of potential emission sources identified using leak detection methodologies.

"Component" means a valve, fitting, flange, threaded-connection, process drain, stuffing box, pressure-vacuum valve, pressure-relief device, pipes, seal fluid system, diaphragm, hatch, sight-glass, meter, open-ended line, well casing, natural gas powered pneumatic controller, natural gas powered pneumatic pump, or reciprocating compressor rod packing or seal for compressors located at onshore or offshore crude oil or natural gas production facilities.

It is WSPA's understanding that CARB intends to only include point sources for leak detection, which are already covered by the existing definition of "component."

WSPA Recommendation #14

WSPA recommends that CARB delete Section 95669.1(d)(4) (also included in Appendix A). (OP_WSPA-16)

Agency Response:

No changes were made in response to this comment. CARB staff included subsection 95669.1(d)(4) in the Proposed Amendments to account for situations where an emission source is discovered by an optical gas imaging inspection following a remote plume detection notification that is not originating from a component (and therefore may not be amenable to a U.S. EPA Reference Method 21 measurement). For example, if a hatch on a tank is left open or a hole develops in a tank or on piping due to corrosion, there may not be a "component" involved. In these cases, a follow-up Method 21 measurement may not be practical or meaningful, and it may not be clear how to apply the method to such sources (especially if the surface area of the defect is large such that a high amount of emissions could be coming from a source with a low measured concentration). This provision backstops those cases and ensures that a clear repair timeframe exists.

Comment: And I'm not saying that we should be having leaks, but with the things that you guys are pushing into trying to get rid of this type of resource, you know, the way to do it, because you're basically saying if they have a leak that you've detected through a satellite, they have to shut down and go find it. So, I mean, whether or not there is a leak, they still have to report to you, but it's a good way to get them to shut down and not be, you know, producing any supplies for people.

…

And I find it very dangerous that you could just tell these people that they have to shut down whether or not there is a leak, but you supposedly found one with the satellite. (T_Morgan-2)

Agency Response:

No changes were made in response to this comment. The commenter has misinterpreted the requirements of the Proposed Amendments. Under the Proposed Amendments, facilities would not be required to shut down operations while inspecting for an emission source following a CARB notification of a remotely detected emission plume.

6. Implementation of Remote Sensing Provision

Comment: (2) The Implementation of §95669.1 will Require Continued Collaboration with CARB Staff

SoCalGas collaborated with NASA's Jet Propulsion Laboratory and Caltech on their Methane Source Finder program {See *NASA JPL Methane Source Finder*} and we have a long-standing commitment to modernizing our system infrastructure to increase safety and reliability, and to reduce methane emissions {See *SoCalGas-Methane Emissions*}. Thus, we recognize the benefit of CARB's involvement with Carbon Mapper, Inc. {See *Carbon Mapper, Inc.*} as discussed at the January 20, 2023, public workshop on Potential Amendments to the Oil and Gas Methane Regulation. We do, however, hope to further collaborate with staff on implementation of some parts of this section that require short turnarounds, such as reporting to CARB within 24 hours after conducting an inspection pursuant to section §95669.1(b), the owner or operator shall report to CARB the information specified in section §95673(a)(15), which includes submittal of an initial mitigation plan. We are concerned that such language under the new Remotely Detected Emission Plumes portion of the Oil and Gas Methane Regulation may be interpreted too prescriptively by different air districts or may impact facility safety and security. (OP_SCG-3)

Comment: New provisions related to remote sensing

CIPA appreciates the changes and clarifications made to this new section of the proposed regulation. Though the new remote sensing provisions are adding costs and workload to impacted facilities that are already subject to Leak Detection and Repair standards and reporting, the newly update provisions are indeed more appropriate by limiting notices to only come from CARB using state-sponsored satellite data. The earlier draft was far too open ended and did not rise to the standard of an enforceable regulation. We look forward to working with CARB on implementation of this new set of technology, so that fair and consistent practices can be developed. (B_CIPA-8)

Agency Response to Combined Comments:

(OP_SCG-3) (B_CIPA-8)

As discussed in response to comment OP_WSPA-15 in section G.5 of this chapter, staff did propose in the 15-Day Changes to extend the reporting timeframe for the referenced provision from 24 hours to 72 hours, which may help alleviate the concerns about that "short turnaround" item. Staff also included more specificity in the 15-Day Changes to describe what an "initial mitigation plan" entails. For clarification, Commenter B_CIPA-8 frames the satellite data as "state-sponsored." CARB would like to point out the Proposed Amendment does not allow the state to sponsor a third party to act on its behalf. Under section 95669.1, CARB staff would be interpreting data received from technology approved by the Executive Officer. Regarding the remaining content of these comments, staff are committed to being transparent and working with regulated parties to ensure smooth implementation of section 95669.1, including regarding facility safety and security.

Comment: III. Inspection and Repair of Remotely Detected Leaks [Section 95669.1]

Requirements applicable to Remotely Detected Emission Plumes are outlined in Section 95669.1. This section authorizes the CARB to issue a notification to an owner or operator

if remote monitoring data includes a methane emission plume at their facility. Obtaining credible and actionable data from large emissions events is important to our members to help them reduce emissions efficiently and expeditiously.

WSPA members appreciate CARB clarifications in the proposed rule that explain the focus on satellite monitoring and timelines for CARB receipt of data from approved technology providers. We understand the challenges in designing and executing a first-of-its-kind remote monitoring detection and notification program in California, particularly in a fast-evolving technology space.

A. Program Rollout and Outreach with Owners and Operators

Given the fast-evolving nature of satellite technology, WSPA requests that CARB roll out a transparent program with proactive operator outreach across the range of sectors (oil and gas, agriculture, landfills, etc.), as satellite-based monitoring will not uniquely identify emissions only from oil and gas operations. WSPA recommends that CARB conduct reasonable operator outreach at least 60 days before a future remote monitoring technology is approved by the CARB Executive Officer and at least 60 days before the receipt of data by CARB so that owners and operators have awareness about the technologies that will be used and can prepare resources to respond to detections. We understand that some of these timelines may not be feasible for the current, Phase 1 contract that CARB is pursuing with CarbonMapper but believe this sets out reasonable expectations for engagement with relevant industries for future project phases.

Prior to approving a remote monitoring technology, at minimum, this outreach should include the following information:

- Basic information on the data collection platform, data analysis algorithms, and on-going needs for calibration and maintenance.
- Data from blinded controlled release studies, such as *those conducted by researchers at Stanford University*, that can independently characterize the detection limits, false positive rates, and accuracy of the technologies.
- Information on uncertainty for plume quantification and geolocation information as well as descriptions of known interferences for the technology (for example: the technology does not work over large bodies of water or under certain wind conditions).
- Recent examples of the methane plume imagery from the satellite technology and platform that show the types of information that would be received in the event of a detection.
- Data privacy provisions and timelines related to the technology.

Prior to CARB initiating a remote monitoring campaign from approved remote monitoring technology, at minimum, this outreach should include the following information:

- A data collection plan that includes the starting date, expected frequency of monitoring activities (monthly, weekly, daily, etc.), and covered geographic regions within the state.
- A completed workflow that documents the expected timeline from detection to receipt of information by CARB (within 72 hours), expected timeline for relaying a detection to an operator, and expected response timelines from operators.

- Response plan for CARB in the event that the technology provides multiple false positives for detection or incorrect geospatial information as part of the detections.
- Recent examples of the methane plume imagery from the satellite technology and platform that show the types of information that would be received in the event of a detection.
- Assurance and testing of the communication pathway between CARB and operators to enable timely follow up and compliance with reporting requirements of remotely detected emission plumes.

WSPA members have significant experience with advanced methane detection technology deployment for voluntary programs and have learned some key lessons around what works well for wider deployment:

- Source Location Specificity: Technologies provide varying levels of location specificity for methane emission sources, from the several-kilometer scale down to the component level. Advanced technology trials by operators have pointed to equipment-level information as the most useful for following-up on a detection, which would be an important consideration given the response times in the COGR proposed rule.
- Data Delivery Timeline: Having timely data available can improve follow-up activities. The utility of screening data decreases as more time passes after initial detection. The COGR proposed rule indicates data delivery to CARB within 72 hours. WSPA would encourage technologies and processes that could provide the information to CARB, and from CARB to operators soon after as timely receipt of information within a few days is most useful to inform follow-up activities.
- Independently Assessed Performance: Blinded controlled release testing that assesses detection limits and the potential for false positive readings will be critical considerations for technology selection. These tests can give the monitored industries more confidence in the technology vendors claims and understand the potential situations where false positives for detection might arise.

Incorporating the above requests and learnings, WSPA is providing the following comments and recommendations for adding clarity. <CARB note: the "following comments" referenced here are those labeled OP_WSPA-11 through OP_WSPA-16, and are responded to elsewhere in this FSOR.> (OP_WSPA-10)

Agency Response:

No changes were made in response to this comment. The commenter appears to be suggesting that CARB engage on these topics during implementation, but not include these as requirements in the regulatory text. This is apparent from the format of the comment letter in which regulatory text revisions are provided and in which the comments in OP_WSPA-10 are framed as background for specific recommendations that follow. To the extent that the commenter is requesting this process be formalized in the Regulation, CARB provides the following. CARB agrees that communication and transparency in the process of implementing the remote sensing provision will help build trust across a wide range of stakeholders. However, the information and process requested in the comment are not necessary for the owner or operator to be able to successfully comply with the provision. The follow-up activities required from an owner or operator are already specified in the Proposed Amendments and the information

contained within the notification is all that is necessary to carry out the required inspections or reporting. CARB intends to communicate to stakeholders basic information about the data collection platform, example imagery, studies performed using the technology, communication pathways, and other information as requested by the commenter. At this time, owners and operators will not have advance notice of when their property will be subject to satellite monitoring as CARB is waiting to determine how satellite paths take shape, the flow of data to CARB, and what concerns, if any, arise during implementation of section 95669.1.

CARB staff are always looking for opportunities to learn about key lessons from stakeholder-led efforts. CARB thanks the commenter for their insights and welcomes future communication on lessons learned and best practices as operators gain more experience with their own independent use of remote sensing technologies.

7. U.S. EPA's Proposed "Super-Emitter Response Program"

Comment: For reference, I'm also attaching the Carbon Mapper/RMI joint input to EPA's O&G Supplemental rule. I think our comments on EPA's proposed Super Emitter Response Program may have some overlap with CARB's program but I'm not suggesting that it be expanded further. (OP_CM-1)

Agency Response:

No changes were made in response to this comment. The commenter specifically stated that they are not suggesting any expansion of the program and had attached their EPA O&G Supplemental rule comments "for reference." CARB staff thank the commenter for bringing this document to their attention.

8. Costs and Benefits of Satellite Data Collection

Comment: But so you guys, wow, $100 million for satellites and you can't even quantify what the reductions would be. So you don't even know if it would be worth that $100 million of the people's money. (T_Morgan-1)

Agency Response:

No changes were made in response to this comment. The $100 million appropriation was made independent of, and prior to, this regulatory proposal and provides benefits far beyond those described in the ISOR. These include potential emission reductions in other sectors, methane data for scientific purposes in other regions, and non-methane products (e.g., land use indicator data).

H. Vapor Collection Systems and Vapor Control Devices

1. Emergency Flaring

Comment: IV. Vapor Collection Systems and Vapor Control Devices During Emergency Situations [Section 95671]

For equipment subject to vapor collection and control systems installed in a region classified as non-attainment, CARB has included performance standards for vapor control devices in

Appendix F. Most existing vapor collection and control systems in SJVAPCD only use vapor control devices, e.g. flares, in emergency situations or for safety reasons. Emergency and low-use flares are subject to SIP-approved SJVAPCD Rule 4311. However, these flares may not meet the requirements of Section 95671(d)(2)(B). As the proposed SIP-rule requirements in COGR will likely result in existing vapor collection and control systems being newly subject to COGR, CARB will need to consider existing vapor control devices that are necessary for emergency use. WSPA requests that CARB incorporate provisions for operators to use existing emergency flares.

WSPA Recommendation #15

WSPA recommends that CARB add the following definition for the term "emergency" that aligns with existing definition of the term in SIP-approved Rule 4311 (also included in Appendix A).

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

WSPA Recommendation #16

WSPA also recommends that CARB incorporate provisions for operators to use existing emergency flares in Section 95671(a) as follows (also included in Appendix A).

The following requirements apply to equipment at facilities in sectors listed in section 95666 that shall be controlled with the use of a vapor collection system and control device as a result of the requirements specified in section 95668 of this subarticle. The requirements of this section are not applicable in emergency situations as defined in Section 95667(a). (OP_WSPA-17)

Agency Response:

No changes were made in response to this comment. The language proposed by the commenter is too broad and could potentially allow excessive venting of gas in emergency situations, rather than just flaring. Based on discussions staff have had during this amendment process with industry and air district stakeholders, emergency flaring appears to be very rare. Safety is the top priority and emergency situations must be dealt with accordingly. Staff do not believe that an emergency exemption is necessary because CARB can consider specific situations and extenuating circumstances on a case-by-case basis when evaluating whether a violation has occurred and if it has, what an appropriate penalty would be under the specific circumstances of that violation, in accordance with CARB's Enforcement Policy. Such an evaluation would include whether the situation arose outside of the control of the owner or operator. Furthermore, depending on the specific circumstances, use of an emergency flare may be specifically allowable under the Proposed Amendments. For example, if the emergency is brought about by a defect in the vapor collection system

or control device that needs to be repaired, it could fall under the 14-days per year maintenance exemption in the Proposed Amendments. Shutdowns of these systems related to utility power outages are also allowed under the current Regulation (and the Proposed Amendments).

I. Recordkeeping and Reporting

1. CARB Request Frequency or Reporting for Audio-Visual Inspections

Comment: Given that the current draft tasks operators to conduct audio-visual testing for leaks, but only requires operators to present that data to CARB upon request, how often will CARB request records of audio-visual inspections at operator facilities? Records should be reported monthly with production figures or requested monthly by CARB to ensure testing is being performed. (OP_SC-5)

Agency Response:

No changes were made in response to this comment. Staff believe that a recordkeeping requirement is appropriate instead of reporting because the records of when the inspections were performed is mostly useful for auditing purposes or in the course of investigating incidents. In those cases, CARB can request the records as pointed out by the commenter.

However, CARB is dedicated to ensuring owners and operators comply with the Regulation and will request records as appropriate to ensure audio-visual inspections are occurring as required. Communicating a specific strategy about how often CARB would request such records could compromise enforcement and auditing effectiveness. Additionally, if owners or operators find any leaks through the audio-visual inspections, those leaks would be reported to CARB under the existing leak reporting requirements.

2. Reporting Methods

Comment: V. Reporting Requirements [Section 95673(b)(2) – (5)]

CARB is proposing that operators report data outlined in Section 95673(b)(2) through (5) via email to *oilandgas@arb.ca.gov*.

WSPA Recommendation #17

WSPA recommends that CARB accept all new reports through Cal-eGGRT rather than via email to improve data organization and reduce emails. (OP_WSPA-18)

Agency Response:

No changes were made in response to this comment. The California Electronic Greenhouse Gas Reporting Tool (Cal e-GGRT) is a powerful database-style tool that allows CARB to analyze extensive data sets easily. However, it is not designed for rapid communication between regulated parties and CARB. Email is more appropriate in cases where both CARB and regulated parties need to communicate quickly and enables the parties to send information back and forth in instances where such two-way communication is necessary. Additionally, some smaller owners or operators use

contractors to interface with the Cal e-GGRT system and this could hinder their ability to quickly communicate with CARB on items requiring more immediate attention or notification. Staff carefully considered each reporting element for whether it requires the capabilities of email or the database format of Cal e-GGRT when designing the Proposed Amendments and believe that it would be inappropriate to change the email reporting to Cal e-GGRT reporting for the elements recommended by the commenter.

J. Enforcement

1. Separate Violations for each Metric Ton Emitted

Comment: §95675 [enforcement]

(c) to be consistent with other climate change regulations, this provision should read, "each metric ton of CO2e emitted in violation of this subarticle constitutes a separate violation" of this subarticle. Without that change, methane violations would count as 84 times less serious than a CO2 violation in other regulations. There is no reason to specially favor methane. (OP_CAC-8)

Comment: We support the 350 Sacramento/Climate Action California letter and the proposed changes to the amendments which would move us closer to protecting the most vulnerable. In particular, we support their proposed amendment to subarticle 95675 that "each metric ton of methane emitted in violation of this subarticle constitute a separate violation" to raise methane violations to the level of CO2 violations contained in other regulations. (OP_CNEHJ-3)

Agency Response to Combined Comments:

(OP_CAC-8) (OP_CNEHJ-3)

No changes were made in response to these comments. These comments are out of scope of this rulemaking because the enforcement metrics were unchanged from the current Regulation and thus the comment is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. However, additional details will be provided for transparency. The intent of separate violations for each metric ton of methane emitted is to ensure that continued violation in circumstances where emissions are ongoing continues to add penalties to provide an incentive to rectify the issue. This is already accomplished by issuing a violation for each metric ton of methane emitted as in the current Regulation.

2. Compliance Advisories

Comment: (1) A Compliance Advisory is Needed for §95669(d)(1) to Ensure Consistent Enforcement Across the State

Section 95669(d)(1) reads in part:

> (d) All components, including components found on tanks, separators, wells (including idle wells), and pressure vessels not identified in section 95669(c) shall be inspected and repaired within the timeframes specified in this section.

(1) By <the later of April 1, 2024 or the effective date – OAL to insert>, owners or operators shall develop facility-specific leak detection and repair plans that encompass all components not identified in section 95669(c). The plans shall be updated annually if any changes are made to the facility or equipment that alter the plan. Leak detection and repair plans shall include the following: …

New section 95669(d)(1) will require operators to develop facility-specific leak detection and repair (LDAR) plans with detailed data, such as procedures for conducting leak surveys that comply with US EPA Reference Method 21 when §95669(b) already specifies how Method 21 should be used for LDAR measurements. This is just one example of how the LDAR plan must list requirements already contained within the Oil and Gas Methane Regulation. There is concern amongst stakeholders that local air districts may view the LDAR plan as a separate compliance document to be used for additional enforcement purposes rather than as an informational document to assist in LDAR component identification, which is the purpose of the plan.

Many local air districts are incorporating the Oil and Gas Methane Regulation as a permit condition of their Title V permits. If air districts see this as a distinct compliance document it could lead to duplicate enforcement of the regulation by district enforcement officials. For instance, under Title V Federal Operating Permit requirements, a deviation from any "applicable rule or requirements" associated with the facility permit is to be self-reported to the local air district. Thus, districts may write notices of violation if an operator deviates in any manner from the LDAR plan. A CARB-issued compliance advisory, therefore, is needed to make clear that the LDAR Plan is an informational tool and not an enforcement document. (OP_SCG-2)

Agency Response:

No changes were made in response to this comment. To the extent this comment is requesting an action from CARB outside of the regulatory process, it is outside the scope of this rulemaking because it is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. Therefore, a response would not be required. However, to the extent the commenter is seeking additional rulemaking to clarify violation of the LDAR plan does not constitute violation of the Regulation, CARB is providing more information. The leak detection and repair plan proposed in section 95669(d)(1) is intended to be a document to guide LDAR surveys and to identify which components are subject to the Proposed Amendments. Under the Proposed Amendments, records must be kept on deviations from these plans, but the plans themselves do not create new requirements beyond the requirements specifically provided in the Proposed Amendments. In other words, CARB does not consider a diversion from the plan a violation under the Regulation or noncompliance with the Regulation.

Comment: (3) A Compliance Advisory for §95676 would Ensure Consistent Enforcement Across the State

Section §95676 states that "This regulation does not preempt any more stringent requirements imposed by any air district." SoCalGas understands that local air districts have the right to develop regulations per their regulatory authority to reduce criteria air pollutants. However, air districts have misconstrued this as providing them with the authority to utilize similar existing local regulations which are in fact not applicable to facilities covered in the Oil

and Gas Methane Regulation. SoCalGas respectfully requests that CARB staff consider publishing a compliance advisory to clarify that local air districts cannot use §95676 to expand the applicability of an existing air district regulation without following the formal public rule making process. (OP_SCG-4)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of this rulemaking because it is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. Furthermore, no substantive changes to section 95676 are made in the Proposed Amendments. The commenter is requesting an action from CARB outside of the regulatory process that has not been necessary since the subarticle's implementation.

Comment: In addition, WSPA recommends that CARB develop a compliance advisory with SJVAPCD, providing a mechanism and clear guidance to operators on what actions will be considered as compliant, incorporating realistic timelines for permit/Title V updates. <CARB note: this comment is repeated twice in OP_WSPA referring to both separator and tank systems and LDAR.> (OP_WSPA-6)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of this rulemaking because it is not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action. Instead, it is requesting an action from CARB outside of the regulatory process. However, for transparency, additional details are provided here. Staff believe that the commenter is referring to the time required to update permits to include air district rules that newly cover separator and tank system vapor control and newly provide leak and detection and repair requirements. Any potential time delays to update those permits will not impact what equipment is subject to the Proposed Amendments. The applicability criteria and requirements of the relevant rules drive which equipment are subject to those rules, not whether the permits have been updated to specifically list the rules.

K. Appendices

1. Specify within Appendices which Systems They Apply To

Comment: VI. Additional Requirements for Separator and Tank Systems [Appendix D]

CARB has provided additional detailed requirements for separator and tank systems subject to 95668(a)(5) and (6) in Appendix D. However, the applicability to separator and tank systems needs to be clarified.

WSPA Recommendation #18

WSPA recommends that CARB clarify applicability of Appendix D as follows (also included in Appendix A).

This appendix applies to separator and tank systems ~~that are required by section 95668(a) to have emissions controlled with a vapor collection system.~~ subject to 95668(a)(5) and (6).

VII. Additional Requirements for Vapor Collection Systems and Vapor Control Devices [Appendix E]

A. Applicability

CARB has provided additional detailed requirements for vapor collection and control systems subject to 95671 in Appendix E. However, the applicability to vapor collection and control systems needs to be clarified.

WSPA Recommendation #19

WSPA recommends that CARB clarify applicability of Appendix E as follows (also included in Appendix A).

Additional Requirements for Vapor Collection Systems and Vapor Control Devices subject to 95671. (OP_WSPA-19)

Agency Response:

No changes were made in response to this comment. Appendices are not self-executing and therefore it is not necessary to specify within the appendices themselves which equipment or systems they apply to. The equipment that is subject to appendices D and E is clearly specified within the body of the Proposed Amendments in sections 95668 and 95671, and the commenter does not contend any lack of clarity in those sections regarding what equipment is subject to each appendix.

L. Leak Composition and Community Notification

1. Leak Composition Testing

Comment: We also urge testing for volatile organic compounds when methane leaks are discovered, which is not a current practice. We expect CARB and CalGEM to coordinate efforts to put this testing into policy and into practice soon because the impacted communities have requested this on multiple occasions. (OP_CNEHJ-5)

Comment: While these regulations are pertaining to methane specifically, we urge CARB to include requirements for testing for co-pollutants like BTEX <CARB note: BTEX stands for "benzene, toluene, ethylbenzene, and xylene"> compounds and VOCs when leaks are found within 3,200 ft of sensitive receptors. Currently, regulation does not require testing for co-pollutants, but it is known that the risk of pollutants other than methane being released from oil and gas infrastructure that is leaking methane are high. Quantifying what exactly is leaking from these sites must be conducted by the state when these leaks happen within 3,200 ft of communities, to best respond to and mitigate health impacts. (OP_SC-6)

Comment: These inspections should include testing for co-pollutants that are the culprit for health harms our communities suffer from, in order to mitigate the harm as quickly as possible. (T_CRPE-2)

Agency Response to Combined Comments:

(OP_CNEHJ-5) (OP_SC-6) (T_CRPE-2)

No changes were made in response to these comments. These comments are outside the scope of the rulemaking because the changes noticed for the Proposed

Amendments do not relate to measurement or reporting of co-pollutants. These comments are therefore not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action.

2. Community Notification of Leaks and Owner or Operator Follow-up Actions

Comment: Missing from the regulation are any requirements or standards for notifying community members of the details and response plan when leaks are found near sensitive receptors like parks, schools, homes, hospitals, and other community areas. There must be timely notification of leaks from the state to communities on the fenceline of leak sites, and specific requirements for clear and timely communication with community members should be added to this regulation. (OP_SC-7)

Comment: (3) publicize the data identified and reported to CARB as part of the remotely detected emissions plumes program so that community members are updated while the events are occurring.

…

C. CARB Should Make Data on Plumes Publicly Available

We recommend CARB establish a notification framework to ensure information on these emissions events and the response action are publicly available and easily accessible in real time so that community members are updated while the events are occurring, not after the fact. We made a similar recommendation to EPA in our comments on SERP. {2022 Joint Environmental Comments, supra note 4, at 72-73.}

Information, including the initial detection, initial operator response, repairs, corrective action planning and completion, and the final written report should be publicly-available in real time so that nearby communities and other stakeholders can stay informed and take protective action while emissions are occurring. Further, publicizing the operator's responsive actions can help build trust in the process and between communities and operators by demonstrating that responsible and quick action was taken. The initial detection by CARB should be immediately available to the public as soon as it is submitted to the operator. Communities must know about emissions of this size occurring in their vicinity.

We urge CARB to make this information publicly available in real time on a single, centralized website. The website should also include geographic and operator information, as well as links to the corrective action plan and other relevant follow-up information. A centralized database with geographic coordinates and ownership information can streamline and ensure detections are accurately attributed to the correct site and operator. CARB should also centrally maintain information including the site type, geographic location, responsible owner or operator, as well as other relevant records (e.g., fugitive monitoring plan and scheduled maintenance events), so that investigations after notifications are efficient. (OP_EDF-4)

Comment: We request that CARB plan and implement a more robust community notification policy.

Recently, we had the unfortunate situation in which a South Kern high school held an outdoor graduation ceremony on June 2nd. Three major methane leaks had been identified within a thousand feet of the school. The school claims it wasn't notified, although CARB stated in a

comment in a public meeting that it had notified the school, so there is some confusion there. The community members were not notified, so their right to make decisions impacting their health and the health of their families was violated.

Please close the communication gap to assure that community members are informed in a timely manner to any threat to their health and safety. (T_CNEHJ-2)

Comment: And also the regulation, as others have mentioned, doesn't set out any requirements for community notification or testing for co-pollutants, which we heard earlier in the staff presentation are quite common when methane is leaking from these sites. And so we want to recommend that when sites are found to be leaking within 3,200 feet of sensitive receptors, that there is a robust notification and health testing regime set out in these regulations explicitly.

We've seen kind of this lack of notification and testing right now over the last month with the 27 wells that are leaking in Arvin, and so we really want to urge CARB to include standards of community level response and notification in the final regulation. (T_SC-3)

Comment: three, publicize the data identified and reported to CARB as part of the Remotely Detected Emissions Plumes Program, so that community members are updated while these events are occurring. (T_EDF-3)

Comment: Lastly, reports from these inspections should be public and communities within 3,200 feet should be notified as soon as possible. (T_CRPE-3)

Agency Response to Combined Comments:

(OP_SC-7) (OP_EDF-4) (T_CNEHJ-2) (T_SC-3) (T_EDF-3) (T_CRPE-3)

No changes were made in response to these comments. These comments request that CARB include in the Proposed Amendments a community notification process for leaks found near sensitive receptors and post real-time data publicly.

CARB intends to get data about emissions sources close to communities, schools, and other similar receptors into the hands of the public as quickly as possible. Publicization of satellite data will depend on the agreements that CARB has with the operators of any instruments that are used. Therefore, it is impractical to specify within the regulatory language exactly what data will be shared and how quickly. True "real-time" notification is also not possible because of the time needed for CARB to receive the data and confirm the presence of a plume.

For the initial data from its intended sources, CARB is in the process of developing a data portal that will provide the public with mapping and other information for methane emission plumes detected. CARB expects to be able to make data available on an accelerated timeframe for those plumes that meet criteria which could indicate a potential risk to populations living or working near the emission source. We intend to share this data with the public and with emergency responders as soon as possible.

The comment requesting co-pollutant testing is responded to in response to comments OP_CNEHJ-5, OP_SC-6, and T_CRPE-2 in section L.1 of this chapter.

M. Economic Analysis

1. Perform a Cost-Benefit Analysis

Comment: COST TO BENEFIT

The following paragraphs address Initial Statement of Reasons Appendix 8 and 9 as well as Economic Analysis Appendix, Appendix B., section III Cost Savings.

Costs of the proposed regulation are probably justified by benefits to the fossil fuel industry and benefits to all CA residents. It is recommended that CARB conduct a cost to benefit analysis that provides an itemization of economic and noneconomic benefits to CA residents. It is to be based on the latest estimates of Social Cost of Carbon released by EPA, using the lowest discount rate.

The annual SCC for CA using these parameters is billions of dollars (dwarfing the $100M allocated by CA gov. for addressing CH4 emissions from the fossil sector). Provide a range of estimates (low, medium, high) per ton of emissions reduction of each GHG and each toxic air contaminant co-pollutant. Count fugitive emissions as well as combustion emissions. Use a 20-year duration of GWP for CH4, because within this time nearly all of it has naturally degraded into other gasses. This will concentrate costs over a 20-year duration, rather than spreading them over a century (100-year GWP).

…

<CARB note: the links below were provided as URLs but were converted into hypertext to improve accessibility.>

Bezanson Link 1

Bezanson Link 2 OBM has proposed that a discount rate of 1.7% be used in cost to benefit analyses.

Bezanson Link 3

…

Final 2022 IEPR Update - Clean Version See Appendix B re. Cost to benefit.

(OP_Bezanson-4)

Agency Response:

No changes were made in response to this comment. Emissions benefits and costs of the current Regulation were calculated at the time of its adoption in the original Regulation's 2016 ISOR[15], 15-day modifications Attachment 2[16], and 15-day

[15] CARB. (2016). Public Hearing to Consider the Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. Initial Statement of Reasons. Posted 31 May 2016. *https://www.arb.ca.gov/regact/2016/oilandgas2016/oilgasisor.pdf*.

[16] CARB. (2017). Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities. Proposed 15-Day Modifications: Attachment 2. Posted 10 March 2017. *https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2016/oilandgas2016/oilgasatt2.pdf*.

modifications errata[17]. The Proposed Amendments provide many benefits, including improved clarity, better data compliance verification, additional tasks to ensure systems are operating properly, and expected emission reductions from inspection and repair of remotely detected emission sources. As discussed in the ISOR, staff were unable to quantify the emission reductions from the remotely detected plumes measure due to a lack of reliable data that would be required to perform such a calculation. Because the Proposed Amendments do not contain any calculation of emission reductions, there are no quantified emission reductions on which to apply cost to benefit analysis, a social cost of carbon, or to select a 20-year global warming potential (GWP). Staff do not contend that there would be a reduction in combustion emissions from the new or revised provisions in the Proposed Amendments.

The analysis of alternatives does include calculations of emission reductions that would result from alternative measures (quantified in the case of Alternative 2). These measures were rejected for multiple reasons, one of which was the additional time that would be needed to perform more detailed cost and environmental impacts analyses that would be required (which could result in missing the sanctions deadline set by U.S. EPA). The method of valuation of the emission reductions in terms of social cost and global warming potential time horizon would not change the outcome of the costs and complexities that would be added by the analyzed alternatives in relation to meeting the sanctions deadline.

The suggested 1.7% discount rate is based on a proposed version of OMB guidance as the commenter pointed out. Staff elected to use a discount rate based on the latest final version of that OMB guidance document (Circular A-4) and other standard practice from historical regulatory analysis, as discussed in the ISOR Appendix B, and CARB believes following finalized guidance is most appropriate here. Staff also performed a sensitivity analysis on the discount rate in the ISOR Appendix B.

The commenter provided little to no context to the other links provided. The documents they lead to are not specifically directed at the proposed CARB action or the procedures followed by CARB in proposing or adopting the action, so these links are out of scope for this rulemaking.

N. Comments Received During the 15-Day Comment Period

1. General Comments and Comments of Support

Comment: As noted in previous comments, we appreciate that staff has been open and willing to discuss these amendments with CIPA in a transparent process. This effort led to early discussions and subsequent improvements, thus leaving this amendment package with mainly administrative updates to District rule adoption dates, and other non-substantiative changes. (F_CIPA-1)

Agency Response:

[17] CARB. (2017). Proposed 15-day Modifications: Errata to the Revised Emission and Cost Estimates for the Leak Detection and Repair Provision. Posted 17 February 2017. *https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2016/oilandgas2016/oilgaserrata.pdf*.

No changes were made in response to this comment. This comment supports the 15-day modifications. CARB staff appreciate the supportive comment and thank the commenter.

Comment: During the rulemaking process, it was noted that future amendments to the rule may be forthcoming in a separate rulemaking effort. CIPA remains strongly opposed to any amendments in which in-state crude, produced under the strictest environmental standards in the world, is replaced with imported crude either by direct regulation or indirect impact. This effect is known as 'emissions leakage' and CARB is statutorily mandated to minimize it. The *2022 Scoping Plan Update* explicitly states that reducing in-state production will lead to increased crude imports — which bring port communities additional pollution burdens.

This regulation, as an adopted set of statewide standards and limits should be used by other state agencies as they address methane emissions from this sector. CIPA strongly requests that within the Final Statement of Reason, or adopting resolution that CARB states such intention as a fact. Other state agencies should not be allowed to implement different methane leak detection and emission standards, thus putting CIPA members in Double Jeopardy.

Conclusion

The adopted *2022 Update to the AB 32 Scoping Plan* acknowledges that California will need petroleum and natural gas fuels for many years, and that when in-state production is reduced faster than the demand reduction, GHG leakage occurs {[pages 100-106]}. During this time, California should prioritize in-state supply. Any regulatory proposals that run counter to the ultimate goal of reducing GHG emissions worldwide should be discarded.

The last barrel of oil used in this state, should be produced in state. Thank you for continuing the dialogue with us. We look forward to working with CARB on this important topic. (F_CIPA-2)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of the modifications proposed in the 15-Day Notice. Therefore, no response is required, but additional details are provided below for transparency.

For further information on "emissions leakage," see the response to comments B_CIPA-1 and T_CIPA-2 in section B.2 of this chapter. For further information on other state agencies' standards, see the response to comment B_CIPA-3 in section C.6 of this chapter.

2. Remote Emission Plume Detections

Comment: The burden of maintaining on-call status with a third-party contractor or internal staff who may conduct a method 21 survey in the given timeframe triggered by a notification under this rule is immense. We believe the financial and logistic burden of this section may adversely affect compliance rates of operators. (F_VE1-1)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of the modifications proposed in the 15-Day Notice. Therefore, no response is required, but additional details are provided below for transparency.

In the ISOR, CARB staff estimated that this provision will increase the number of component inspections by approximately 1% over the current number of component inspections required due to quarterly LDAR provisions in the Regulation. Therefore, CARB does not agree that this would place an immense burden on owners or operators.

Comment: We are deeply concerned that this section poses a threat of abuse by third parties. The proposed text does very little to outline the QA/QC process of data validation or procedure used to correlate an emission event to a facility. A third party intent on causing an outsized administrative burden on operators could selectively report emissions events to target given operators. (F_VE1-2)

Comment: CARB to develop a mechanism to track and publish quarterly for each 3rd party reporter:

- Name and address
- Number of reports made in previous quarter
- Number of reports which proved fruitless

3rd parties should be assessed a penalty for reporting more then 3 non substantiated or misattributed plumes in any month and the 3rd party should be suspended from reporting plumes for 90 days (F_VE2-1)

Agency Response to Combined Comments:

(F_VE1-2) (F_VE2-1)

No changes were made in response to these comments. These comments are outside the scope of the modifications proposed in the 15-Day Notice. Therefore, no response is required, but additional details are provided below for transparency.

No third parties are involved in notifying owners or operators of remote plume detections. Therefore, third parties would not be able to target operators with notifications. There are likewise not any metrics to track and publish regarding third party reporters.

Comment: The nature of narrow lease spacing in the oil fields of California are likely to result in mis-identified facilities, or worse, CARB notifying multiple adjacent operators of the same emission event. There is no language to prevent a scatter-shot of reports to lock down entire fields (F_VE1-3)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of the modifications proposed in the 15-Day Notice. Therefore, no response is required, but additional details are provided below for transparency.

In pilot testing with airplane detections conducted by CARB, this was not an issue, so CARB expects this situation to be rare, if it occurs at all. If this does occur when using satellite data with a coarser resolution, CARB intends to first notify the owner or

operator where the plume appears most likely to be originating (i.e., the estimated origin point sent in the notification). The regulatory language does not limit CARB to only sending one notification because there may be instances where more than one owner or operator would need to inspect their facility to find the emission source. To the extent that notifications may end up being sent to multiple owners or operators, the area to search would be reduced for each owner or operator to only the portion of the search radius within their facility. Therefore, the burden to each owner or operator would be proportionally lower. Further, the requirement to inspect and repair would not necessarily "lock down" the facility as the commenter suggests because no operational changes are required under the Proposed Amendments while conducting the inspection.

Comment: The proposed text does not set a leak rate threshold for reporting, thus allowing for any and all remotely detected emissions events to be reported to an operator. Further, if there is no threshold for reporting, operators may be mobilizing survey teams for marginal emissions events from protracted distances to respond leaks of lesser impact than the scope 2 emissions created by vehicle mobilization. (F_VE1-4)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of the modifications proposed in the 15-Day Notice. Therefore, no response is required, but additional details are provided below for transparency.

See the response to comment OP_WSPA-13 in section G.4 for discussion of an emission rate threshold for notification of a remotely detected emission plume. In the ISOR environmental analysis (Chapter VI), CARB staff estimated the additional component inspections occurring because of this measure to be approximately a 1% increase over the pre-existing level to complete the other LDAR tasks required under the current Regulation, and therefore represents only a minimal increase in emissions from vehicles to perform the inspections and repairs.

Comment: B. Remote Monitoring Technology Approval Process [Section 95669.1(a)(1)]

Section 95669.1(a) is missing an effective date for when CARB may start issuing notifications to owners or operators. The current text reads as follows:

"(a) Beginning <effective date – OAL to insert>, CARB may issue a notification to an owner or operator if remote monitoring data includes a methane emission plume at their facility."

WSPA Recommendation #2

WSPA recommends an effective date be added to section 95669.1(a) prior to the final rule issuance. (F_WSPA-2)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of the modifications proposed in the 15-Day Notice. Therefore, no response is required, but additional details are provided below for transparency.

The "effective date" referenced here is the effective date for the Proposed Amendments, which is ultimately determined once the Office of Administrative law approves the Proposed Amendments. CARB cannot be sure what this date will be at

the time the Proposed Amendments are released for public review because it depends on the length of time needed for the regulatory process to transpire. This is commonly used terminology in the development of regulations and no commenters suggested any confusion at this phrasing in the 45-day comment period or at the board hearing when this language was available for comment.

Comment: C. Report Timeline [Section 95669.1(c)]

CARB is proposing a series of tight notification, inspection and reporting timelines for the remote leak detection. WSPA members are concerned that tight reporting timelines, like the 72-hour reporting requirement, if it occurred over a weekend, will become problematic due to unavailability of necessary personnel.

WSPA Recommendation #3

WSPA recommends that CARB exclude non-business days from notification, inspection and reporting timelines. (F_WSPA-3)

Agency Response:

No changes were made in response to this comment. In the 45-Day Changes, CARB staff proposed a 24-hour reporting timeline for this item. WSPA's 45-day comments included a request to increase this timeline from 24 hours to 72 hours to allow for compiling the information and undergoing internal reviews and approvals (see comment OP_WSPA-15 in section G.5 of this chapter). CARB staff agreed with the suggested change and made it as requested in the 15-Day Changes. CARB's experience in working with regulated entities is that oil and natural gas facilities operate every day of the week and existing LDAR requirements utilizing calendar days instead of business days have not been a concern. CARB therefore believes that 72 hours is sufficient for this simple reporting requirement and reasonably quick reporting is important for this item so that CARB staff know that the owner or operator has followed the regulatory requirements and no follow up is needed to ensure the emission source is being investigated.

No other modifications to inspection and reporting timelines for the remote leak detection provision were proposed in the 15-Day Notice, so changes to the timelines for other provisions are outside the scope of this comment period. Therefore, no response is required.

3. Separator and Tank Systems

Comment: In our previous comment letter dated June 12, 2023, WSPA members had highlighted a critical concern about partial applicability of COGR to separator and tank systems with existing vapor control. Due to the current language in COGR, several separators within the separator and tank systems that are already under vapor control, may be interpreted as non-compliant unless CARB's intent is not clearly stated or the language modified. However, CARB did not clarify the requirements in the 15-day package. It is our understanding that CARB intends to address the clarification outside of the rule in a guidance document or in the final statement of reasons (FSOR). But WSPA is concerned that guidance outside the rule might not be enough and cause compliance issues due to potential different interpretations between agencies.

…

I. Standards [Section 95668]

A. Separator Tank Systems [Section 95668(a)]

1) Separators with Existing Vapor Recovery Systems are not subject to Rule 4623

In the previous comment letters dated *February 10, 2023* and *June 12, 2023*, WSPA had pointed out that by specifying SIP-approved Rule 4623 an issue of partial applicability to COGR was created for separator and tank systems with existing vapor control. Separators are exempt from Rule 4623 per Section 4.1.1, making them subject to COGR. However, the separators direct fluids to tanks that are subject to Rule 4623 and both the separator and tank are under vapor control that meet the requirements of Rule 4623. Please see Figure 1 below.

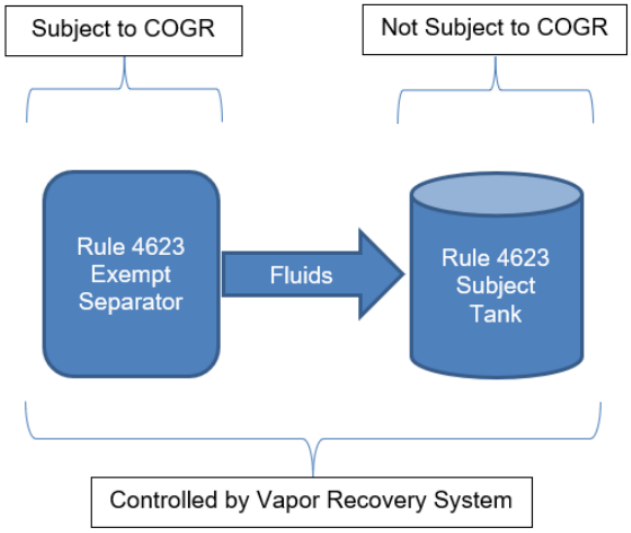

Figure 1. Partial applicability scenario of COGR to separator and tank systems due to Rule 4623 applicability

WSPA members had requested CARB to include an exemption to Section 95668(a)(2) for existing vapor-controlled separators that direct fluids to tanks that are subject to Rule 4623 as it was not CARB's intent to create a partial applicability scenario. However, the previously provided comments were not addressed in the November 2, 2023 version.

It is our understanding that CARB did not intend the previous regulatory updates to create a partial applicability scenario for the existing "separator and tank system" exemption. However, as currently written, the proposed COGR leaves unnecessary ambiguity, with significant room for different interpretations. While we understand that CARB has proposed to address this issue through guidance or an FSOR statement, WSPA members are concerned that dealing this matter through guidance or FSOR could result in differing interpretations between agencies leading to potential non-compliance issues. This approach does not provide legal protection to operators who are otherwise in compliance with the requirements of COGR. CARB's clarification on this matter in the regulatory language is critical to avoiding any potential interpretation-related noncompliance issues.

WSPA Recommendation #1

WSPA recommends that CARB clarify their intent to exempt "separator and tanks systems" with tanks with vapor recovery systems exempted under 95668(a)(2)(C). (F_WSPA-1)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of the modifications proposed in the 15-Day Notice. Therefore, no response is required, but additional details are provided below for transparency.

CARB disagrees with the commenter's characterizations of CARB intent. For further details, see CARB's response on this topic to comments OP_WSPA-2 and T_WSPA-2 in section C.1 of this chapter.

4. Alternative LDAR

Comment: Project Canary supports CARB's continual improvement of the Oil and Gas Methane Regulations Subarticle 13. In the 15-day notice posted November 2, 2023 CARB continue to refine and improve the regulation. We continue to advocate for the inclusion and recognition of the use of direct measurement and continuous monitoring technology in monitoring plans and for Leak Detection and Repair (LDAR) requirements. We believe consideration should also be given to ensure that new and emerging technologies can be utilized by operators to meet the variety of existing and pending air quality regulations at the state and federal level.

There is movement underway in the industry with respect to the dramatic advancements in leak detection, monitoring, and measurement technology that are now available as well as evolving voluntary and regulatory standards. The final regulation should recognize the industry is at a turning point and allow for flexibility in the use of direct measurement and continuous monitoring technology in monitoring plans and for Leak Detection and Repair (LDAR) requirements. By ensuring new and emerging technologies can be utilized by operators to meet the variety of existing and pending air quality regulations at the state and federal level, we can avoid the need to quickly revisit regulations.

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Proposed Modifications to Regulations

Research and recent studies have shown that a comprehensive approach, inclusive of a variety of technologies, is a more accurate method of reporting actual emissions from the oil and gas industry {*Reconciling divergent estimates of oil and gas methane emissions" Zavala-Araiza, et.al. 2015*}. Additionally, the landscape of state and federal oil and gas regulations is shifting towards rulemakings with empirical data and measurement at its core. The objectives of recent, related federal rulemakings— including the Environmental Protection Agency's Supplemental Rule regarding air emissions in the oil and gas sector, the imposition of a charge on avoidably lost gas in the Inflation Reduction Act (IRA), the climate disclosure requirement proposals from the Securities and Exchange Commission and the Department of Defense —would all be advanced by measurement and continuous monitoring technology. Operators using these technologies could efficiently and cost-effectively provide consistent and accurate data under multiple regulatory regimes, including at the state level. CARB and other agencies can move towards requiring the use of more precise measurement

technology, and at minimum to allow the data collected by operators who are already using continuous monitoring to qualify under these Draft Regulations.

Enabling the use of alternative Leak Detection and Repair methods and technologies, such as advanced methane detection and monitoring technologies will enable operators to take advantage of tools and technology available for maximum impact.

We believe that the regulations should allow for advanced technologies to be utilized. As operators propose leak detection and repair programs, site-level measurement and continuous monitoring should be identified as an allowable alternative to OGI. Older detection methods such as periodic OGI provide a snapshot from a specific time frame and must be deployed at the exact moment a leak forms to capture the full extent of the release. In contrast, continuous monitoring detects intermittent leaks quickly, allowing the operator to quickly identify and mitigate the leak. Continuous monitoring technologies are widely available, cost-effective methods to prevent and avoid emissions, and capturing potential lost revenue for operators. This technology is currently state of the art and is being increasingly adopted by energy producers. Given the ability of site-level continuous monitoring to accurately identify lost gas and help operators avoid emissions, it should be an allowable option for operators to maintain compliance and included in record keeping forms.

We recommend that an LDAR program, with continuous monitoring technology be an option to fulfill an operator's annual inspection obligation, as well as provide support and follow-up for reconciliation of remotely detected leaks. Continuous monitoring involves far more frequent observations and much more accurate leak detection than traditional annual inspection methods. Operators using continuous monitoring technology are alerted to leaks in real-time and some systems can pinpoint specific areas of releases. Requiring operators that already use such technology to conduct an additional annual inspection for compliance purposes or for reconciliation of remotely detected leaks with OGI or US EPA Method 21 would be duplicative. By allowing the annual inspection compliance and remote leak reconciliation to be satisfied through continuous monitoring technology, CARB achieves two objectives: (1) alleviating operator compliance burdens and (2) promoting superior gas conservation in alignment with CARB's mission. EPA has already acknowledged this in its current proposed Supplemental Proposed Methane Rule by also recognizing that an operator using a continuous monitoring approach can use that method in lieu of OGI (and other) requirements {Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review; [EPA–HQ–OAR–2021–0317; FRL–8510–04– OAR], section 60.5398b(d) an owner or operator that meets the requirements for using a valid alternative test method may use that method "in lieu of the requirements for fugitive emissions components at affected facilities."}.

For the same reasons, operators should be able to use continuous monitoring technology to determine if a leak repair is effective. Continuous monitoring allows operators to quickly verify if leaks are correctly repaired. For example, Project Canary's continuous monitoring software includes rapid leak verification by confirming that levels have fallen back below a given threshold for a set period. This eliminates the need for operators to expend more labor in determining if a repair is effective. Thus, such technology should be recognized as an adequate system to assess leak repairs.

As CARB attempts to reconcile remotely detected leaks using satellites and fly-over devices, with groundbased leak detection at the site level, the use of site-level measurement and

continuous monitoring represent the best, and most ideal, solution. The current Draft Regulations identify OGI or US EPA Method 21 as the tools an operator can use to inspect a facility for leaking or venting components and equipment. As explained above, the use of, continuous monitoring can be an alternative to OGI, and we recommend that operators have the option to use additional technologies to confirm the location of an emission source, or alternatively, verify that the leak was not part of the operator's facility.

Conclusion

CARB can take advantage of technological advances that are rapidly occurring in this sector to set a higher standard when it comes to the operation and monitoring of oil and gas facilities in the state of California. Project Canary appreciates that this process is ongoing, and the encourages CARB to recognize the opportunity for use of advancing and available technology and allow those tools for annual and quarterly inspection obligations, as appropriate, as well as for reconciliation of remotely detected leaks. (F_PC-1)

Agency Response:

No changes were made in response to this comment. This comment is outside the scope of the modifications proposed in the 15-Day Notice. Therefore, no response is required, but additional details are provided below for transparency.

CARB appreciates the information provided by the commenter. CARB is always looking to improve monitoring and is open to considering alternative leak inspection methods and technologies in future rulemaking action. CARB is also closely following U.S. EPA's development of their proposed Emissions Guidelines, which may provide information about equivalency of alternative LDAR approaches. Please note that most periodic inspections required by the Regulation must occur on a quarterly basis (not annually) and must be carried out using Method 21 (rather than optical gas imaging being an option).

V. Peer Review

Health and Safety Code section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including CARB. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to this peer review process. Here, CARB determined that the rulemaking did not contain a scientific basis or scientific portion subject to peer review, and thus no peer review as set forth in section 57004 was or needed to be performed.