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Sent: Monday, November 10, 2025 2:54 PM

To: Compliance <Compliance@baaqmd.gov>

Subject: Public Comment on 2025 Flare Minimization Plan – Remote Flare Monitoring

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Public Comment on 2025 Flare Minimization Plan – Remote Flare Monitoring

As part of the public review of the 2025 Flare Minimization Plan (FMP) Annual Updates under Regulation 12, Rule 12, I respectfully submit the following recommendation to strengthen transparency, accountability, and public health protections.

I urge the Air District to require each refinery to install *both optical and thermal cameras* focused on every flare stack, operating continuously day and night. These systems should stream live footage online and archive recordings by day and hour, accessible to the public. This is a simple and feasible measure—if real-time surveillance is standard at gas station registers, it should be expected for flare stacks that emit pollutants with acute health impacts.

Gas stations routinely use high-resolution cameras to monitor transactions 24/7, with time-stamped archives retrievable for audits or investigations. If this level of transparency is achievable for routine retail exchanges, it is certainly achievable for industrial emissions that affect community health.

Additionally, each flare should be clearly linked to the specific process units feeding into it. This transparency is essential for understanding the source of emissions and holding operators accountable for flare events. The public has a right to know, in real time, when flaring occurs and what it means for our exposure.

Importantly, major refinery events, such as upsets, are often reflected in excessive temperature and pressure fluctuations that are preceded by refinery flaring events. So the Air District, should be notified immediately of flaring events, not after the fact, to better understand both ongoing or sudden refinery process irregularities.

Flaring remains a persistent issue not only at petroleum refineries but also at renewable fuel facilities. These sites must be held to the same flare monitoring standards. Real-time visibility and historical access to flare activity are critical tools for community protection, emergency response, and environmental justice.

I ask the Air District to include this recommendation as a feasible prevention measure in the FMP updates and to require its implementation expeditiously. Public access to flare monitoring is not just a technical upgrade—it's a matter of public trust and health.

Thank you for your consideration.

Charles Davidson, Hercules CA

November 10, 2025

Submitted via e-mail (compliance@baaqmd.gov)

Subject: Chevron 2025 Flare Minimization Plan

Dear Bay Area Air District,

Thank you for the opportunity to comment on Chevron's 2025 Flare Minimization Plan (FMP). The following comments build on the past three years of analysis and responses to Chevron's FMPs, and are informed by CBE's decades-long organizing, research, and legal expertise in Richmond and across the state. This letter starts by reiterating key points from CBE's previous FMP response letters, showing how these points have not been adequately addressed in the 2025 FMP. It then details suggested structural changes to Rule 12-12's FMP process more broadly.

2025 FMP Comment

This letter is now CBE's fourth comment letter on Chevron's Flare Minimization Plans in recent years. Across the 2022 to 2025 FMPs, we see very little difference in how Chevron addresses the issues that we have raised time and again. If anything, Chevron continues to double down on its efforts to normalize flaring. Below is a restatement of the four issues we raised in the 2024 letter, still unaddressed in this year's new FMP:

1. Standardize summary graphs that Chevron must produce annually to avoid data manipulation and improve consistency and transparency in reporting.
2. Ensure Chevron does not use data analysis and visualization methods that are false and/or misleading.
3. Identify strategies to decrease flaring at the Hydrogen Plant, including the incorporation of a flare gas recovery system.
4. Require Chevron to include Hydrogen Plant Flare Gas Recovery in Section 5.2.5 and update cost-effectiveness calculations for increased recovery capacity options.

Given that Chevron has largely copy-and-pasted its 2024 into its 2025 FMP, all of CBE's 2024 comments still stand. In particular, CBE's aforementioned concerns about a lack of standardized graphs and the risks of data manipulation have only increased through our analysis of the 2025 FMP, as the actual numbers Chevron reported in 2025 are inconsistent throughout the report. For example, the number of "Reportable Flaring Events" in its executive summary is outlined as 11 for the 2025 FMP duration, while the following graphs specifying the time period July 1, 2024-June 30, 2025 (the same period) depict 13 separate flaring events.¹ Meanwhile, Table 5-1a outlines 12 occasions of flaring requiring causal analysis across the same time

¹ "Annual Update of Flare Minimization Plan - Chevron Refinery 2025," pages 2-5.

period.² These discrepancies beg the question of how Chevron is actually counting “reportable” flaring events despite clear guidance in Rule 12-12, and what other occurrences may be excluded.³ We will expand on points #1 and #2 with concrete suggestions later in this letter, while we elaborate on points #3 and #4 in the following paragraphs.

Chevron's 2025 FMP continues to fail to address flaring from its Hydrogen Plant. The patterns identified from CBE's 2024 FMP comment letter have only continued, and we've grown increasingly concerned about the lack of oversight for this portion of the refinery. Of the 12 reported flaring events from Table 5-1a, 7 of them (58.33%) involved the Hydrogen Plant or Hydrogen malfunction, including 5 incidents in February 2025 alone.⁴ The flaring events that occurred with reference to Hydrogen or the Hydrogen Plant consistently lasted the longest (with 3 incidents above 18 hours, compared to the rest being 0-10.5 hours) and experienced the most vent gas flow (with 4 incidents at 13.3-26.3 mmscf, compared to the rest at 0-5.3).⁵

These Hydrogen-specific flaring events produced 19.21 tons in SO₂ emissions, 54.8% of the total 35 tons across all stacks.⁶ Sulfur dioxide is detrimental to residents' respiratory systems, with symptoms including difficulty breathing, tightness in the chest, and pain while breathing.⁷ Children, older adults, and people with asthma (25% of Richmond residents) are especially impacted.⁸ Hydrogen-specific flaring events also accounted for 9.8/9.9 (99%) of methane emissions. As noted in CBE's 2024 comment letter, methane is a major driver of climate change, as well as the primary contributor to ground-level ozone, a hazardous air pollutant that causes respiratory illness in humans and is responsible for roughly 1 million premature deaths worldwide annually.¹⁴ Note this review does not include the May 31, 2025 flaring incident since it is not noted whether it occurred at the Hydrogen Plant, as it is excluded from Table 5-1a. It also does not include a review of NO_x emissions, which are linked to chronic health conditions.⁹ Higher levels of Nitrogen Oxide emissions are a known impact of combusting hydrogen (as compared to combusting hydrocarbons).⁶ Emissions of nitrogen oxides impact local and regional air quality and contribute to the formation of ozone and secondary particulate matter.⁷

For each of the last three years, the Hydrogen Plant has been the source of the majority of the reportable flares at Chevron. To address these issues, it remains paramount for BAAD to

² “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 69-71.

³ Rule 12-12 § 208.

⁴ “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 69-71.

⁵ “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 69-71.

⁶ Combustion Engineering Association, “Practical Considerations for Firing Hydrogen vs. Natural Gas” <https://cea.org.uk/wp-content/uploads/2021/06/Zecco-Hydrogen-Article.pdf> (“Hydrogen’s high flame propagation speed allows the combustion process to occur more rapidly than natural gas . . . Field and test facility data have shown that standard low-NO_x burners firing H₂ typically exhibit an increase in NO_x emission rates by up to a factor of three . . .”).

⁷ Bay Area Air District, “Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters – 2023 Amendment (Current),” <https://www.baaqmd.gov/rules-and-compliance/rules/reg-9-rule-6-nitrogen-oxides-emissions-from-natural-gas-fired-water-heaters> (“Emissions of nitrogen oxides impact local and regional air quality and contribute to the formation of ozone and secondary particulate matter.”).

conduct a real analysis of how flare gas recovery (FGR) could be implemented at the Hydrogen Plant. To our disappointment, Section 5.2.5 of Chevron's 2025 FMP remains identical to that of its 2024 FMP, despite our detailed concerns that Chevron is misusing this section to dismiss promising solutions in the name of “cost effectiveness.” Meanwhile, Chevron continues to use 2005 data, which is now 20 years outdated, as the basis of its cost-effectiveness calculations.⁸ We worry that if these trends continue, flaring will only become more and more normalized, and these FMPs will remain simply a checkbox for Chevron to resubmit year over year with no real accountability or updating. As we detail below, we strongly encourage BAAD to strengthen the cost effectiveness threshold as part of its upcoming rulemaking for Rule 12-12 to ensure that community and environmental health, not industry profits, drive the implementation of flare gas recovery and other safety measures at refineries.

Structural Comments on the FMP Process

The chronic issues regarding Chevron’s 2025 FMP are widely applicable to other refineries and could be resolved through District-wide policy adjustments. Consistent with CBE’s previous comments, Fuel Refining Strategy 2.6 outlined in the Path to Clean Air for Richmond, North Richmond & San Pablo,⁹ and the ongoing rule development effort exploring potential updates to Rule 12-12, we advocate for the following structural changes to the FMP process:

1. Use the Annual FMP Update to Evaluate Progress Towards Set Performance Targets
2. Ensure Accountability by Updating Definitions
3. Create a Standardized, Comprehensive FMP Form

While only a starting point for improvements, these proposals are designed to address community members’ transparency concerns, optimize how FMPs communicate facilities’ changes over time, and prevent the FMP from continuing to act as a mere checkbox on the road to business-as-usual flaring pollution. Instead, Rule 12-12 can actualize its purpose, “to *reduce* emissions from flares at refineries by *minimizing* their frequency and magnitude.”¹⁰ We look forward to the ongoing process of exploring innovative solutions in collaboration with the Air District and other community members.

Use the Annual FMP Update to Evaluate Progress Towards Set Performance Targets

Years of identical “updates” amidst increasingly normalized flaring demonstrate the need to strengthen Rule 12-12's efficacy as an accountability tool. CBE supports setting performance targets and an accountability structure aimed at reducing refinery flaring, proposed in the Path to

⁸ “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 84-85.

⁹ Bay Area Air District, “Path to Clean Air Plan (April 2024) Appendix A – Detailed Action Descriptions,” pages A-40-A-41, https://www.baaqmd.gov/~/_media/files/ab617-community-health/richmond/2024/042024-final-ptca-plan-files/apa_strategyactions-april-2024-pdf.pdf?rev=128cd353eb3d423d8b3944ee5b27d748&sc_lang=en.

¹⁰ Rule 12-12 § 101 (emphasis added).

Clean Air Fuel Refining Strategy 2.6.¹¹ Like the approach taken in South Coast Air Quality Management District (SCAQMD)’s Rule 1118, BAAD should adopt a mechanism to set time-bound performance targets for maximum emissions of SO₂ and NO_x related to flaring.¹² Similar targets should be evaluated for volatile organic compounds (VOCs) and particulate matter, especially because the Air District is not in attainment for ozone, PM_{2.5}, and PM₁₀.¹³ Violating these maximum thresholds without a genuine showing that the cause was beyond the reasonable control of the refinery would trigger an obligation to pay a mitigation fee to the Air District. Mitigation funds could then be reinvested to address the health and socioeconomic needs of those most impacted by the violation through the Air District’s Local Community Investment Fund program.¹⁴ As SCAQMD staff stated during its initial implementation, Rule 1118’s mitigation fee provision encourages total industry emissions to stay below pollution limits and prevents backsliding.¹⁵ SCAQMD attributes its documented decreases in flaring and flaring emissions during years following an exceedance to the mitigation fee provision.¹⁶ Two decades of experience with this structure demonstrate how performance targets with maximum emissions caps that decline over time can incentivize real reductions, while allowing technology that prevents emergency flaring episodes to improve over time.

Ensure Accountability by Updating Definitions

To effectuate its purpose, Rule 12-12’s language and definitions section should be strengthened, particularly in relation to the following terms:

- **Reportable Flaring Event:** The current reporting threshold of 500,000 standard cubic feet per day of vent gas or 500 pounds per day of SO₂ should be revised. As discussed in the Path to Clean Air,¹⁷ the Air District should adopt a lower minimum based on health impacts analysis from its Assessment, Inventory, and Modeling Division. This would capture smaller flares with cumulative impacts that currently go unaddressed. CBE recommends studying scenarios with the highest exposure potential and minimal combustion efficiency to ensure preparedness for the worst-case scenario.
- **Emergency:** CBE has long been concerned about how Chevron classifies emergency vs. non-emergency flaring.¹⁸ A more detailed definition that adopts SCAQMD’s categorical

¹¹ Bay Area Air District, “Path to Clean Air Plan Appendix A – Detailed Action Descriptions,” page A-41.

¹² South Coast Air Quality Management District, Rule 1118(f), <https://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1118.pdf>.

¹³ Bay Area Air District, “Air Quality Standards and Attainment Status,” <https://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status>.

¹⁴ Bay Area Air District, “Community Investments Office,” <https://www.baaqmd.gov/en/community-health/community-investments-office>.

¹⁵ South Coast Air Quality Management District, “Final Staff Report Proposed Amended Rule 1118 – Control of Emissions from Refinery Flares, page V-1 (October 2005), <https://www.aqmd.gov/docs/default-source/compliance/rule-1118/rule-1118-staff-report.pdf?sfvrsn=2>.

¹⁶ South Coast Air Quality Management District, “Final Staff Report Proposed Amended Rule 1118 – Control of Emissions from Refinery Flares, page 3-2 (April 2024), <https://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2024/2024-Apr5-029.pdf?sfvrsn=10>.

¹⁷ Bay Area Air District, “Path to Clean Air Plan Appendix A – Detailed Action Descriptions,” page A-41.

¹⁸ Communities for a Better Environment, 2022 Chevron FMP Comment Letter, fn. 3.

exclusion of flare events caused by poor maintenance or operator error would protect communities and boost transparency.¹⁹

- **Cost Effective:** The Air District’s threshold for cost-effectiveness, which Chevron attributes to a 1997 staff report for Rule 8-28,²⁰ must be clarified to stop refineries from sidestepping meaningful analysis of reducing flaring through capacity improvements. The threshold of \$20,000/ton of NMHC emissions reduction that Chevron provides when analyzing cost-effectiveness is not traceable to a publicly accessible document, nor appropriate for modern needs to protect public health and combat climate change.²¹ Following a Public Records Act request, CBE’s search of the Final Staff Report for the 1997 proposed amendments to Rule 8-28 found no such general NMHC threshold. Instead, the report provides a cost effectiveness range of \$3,450-\$19,430/ton of VOC emissions, specifically for those 1997 Rule 8-28 amendments and based on equipment costs and reduction estimates from 1993.²² This does not support Chevron’s claim and demonstrates the need for clarification. For comparison, as of October 2025, SCAQMD’s cost effectiveness threshold is \$124,020/ton for NOx, \$65,696/ton for SOx, and \$29,054/ton for PM₁₀.²³ Updating the threshold, and continuing to do so regularly, would allow for progress over time as the cost of adding storage, treatment, and compressor capacity lowers. It is unacceptable for refineries to continue dismissing feasible technological improvements based on 1993 technology, 1997 standards, and 2005 monetary values.²⁴

Create a Standardized, Comprehensive FMP Form

As discussed in CBE’s 2024 comments, FMPs vary widely in format, leading to lower public accessibility and the possibility of data manipulation. To maximize the FMP’s effectiveness as a tool for accountability, the Air District should promulgate an FMP Template with consistent graphs and sections mapping onto the reporting requirements and purpose of Rule 12-12. This template should effectuate Rule 12-12’s purpose, reducing and minimizing emissions, by centering refineries’ most recent preventative actions. In addition to more

¹⁹ South Coast Air Quality Management District, Rule 1118(c)(3).

²⁰ “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 85-86.

²¹ This is made more confusing because Chevron expresses its capital cost estimates in 2005 dollars. “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 84-85.

²² Bay Area Air Quality Management District, Final Staff Report for Rule 8-28 Control of Episodic Releases of VOCs from Pressure Relief Devices at Petroleum Refineries, pages 4, 16 (December 1997).

²³ 2025 South Coast Air Quality Management District BACT Maximum Cost Effectiveness Values (\$/Ton), (October 2025) https://www.aqmd.gov/docs/default-source/bact/cost-effectiveness-values/2025q3_equipment_cost_index.pdf. SCAQMD expresses its Maximum Cost Effectiveness Values in (1) average cost effectiveness, which considers difference in cost and emissions between a proposed emission reduction measure and an uncontrolled case and (2) incremental cost effectiveness, which compares a proposed emission reduction measure to alternative control options. South Coast Air Quality Management District, “Cost Effectiveness Values and Calculations,” <https://www.aqmd.gov/home/permits/bact/cost-effectiveness-values>. We provide incremental values because Chevron’s analysis using the purported threshold compares proposed emission reduction measures to its current system, an alternative control option. “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 84-86.

²⁴ “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 84-86.

accurately tracking flaring for purposes of reducing it, standardization will also highlight long-term patterns across facilities, as well as help both the Air District *and* fenceline communities hold refineries accountable for their flaring. Below, we expand upon proposed standard FMP Template sections, grouped by Rule 12-12's mandated FMP components.

Technical Data (Section 401.1)

Under Rule 12-12, FMPs must include technical information for each flare, including, “a detailed process flow diagram accurately depicting all pipelines, process units, flare gas recovery systems, water seals, surge drums and knock-out pots, compressors and other equipment that vent to each flare.”²⁵ Because this design information is important for setting readers’ basic understanding, the FMP should present it upfront and to the public. Right now, the 2025 Chevron FMP places its design diagrams in a series of redacted appendices, requiring Air District readers to scroll to the end of the report to follow up on the references at the very beginning and depriving public readers altogether. The diagrams should be accessible, consolidated in a section with relevant narrative information, and clearly labelled. Furthermore, a map illustrating the location of each flare and its relation to various process units would allow residents to better track and understand flaring activity. This would make it easier for readers to follow references, help discern which specific flare is being discussed, and enable fenceline communities to make tangible health decisions based on their own tracking of flaring trends.

Reductions Previously Realized (Section 401.2)

Rule 12-12 requires the FMP to describe steps taken, “within the last five years to reduce flaring.”²⁶ Thus, facilities’ successful reductions within five years of the FMP update period should be disaggregated from reductions in the more distant past. As it stands, refineries appear confused about the meaning of Section 401.2. Chevron interprets it as a requirement to discuss actions during the five years immediately preceding promulgation of Rule 12-12,²⁷ yet, perhaps recognizing this interpretation’s inconsistency with the Rule’s purpose to actively reduce emissions, continues to list more recent actions in the same table (Table 3-1).²⁸ The FMP Template should keep its main body limited to steps taken in the five years preceding the contemporary FMP reporting period. Including reductions from the distant past in the same chart is unnecessarily distracting at best and misleading at worst.²⁹ Narrative descriptions of further past actions, which do not change with the annual update and are less relevant to ongoing flare minimization work, should be placed into their own appendix.

²⁵ Rule 12-12 § 401.1.

²⁶ Rule 12-12 § 401.2.

²⁷ “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 26-27.

²⁸ “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 27-32.

²⁹ For example, Chevron’s 2025 FMP begins its Reductions Previously Realized discussion in 2000, which was two decades ago. The 27 total entries in Chevron’s chart give the appearance of extensive ongoing work on flaring. However, only 2 of the reduction methods provided actually occurred within five years of this 2025 FMP Period. “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 26-32.

As discussed above, and in our previous FMP comments, requiring standardized graphs in each annual update improves transparency, prevents data manipulation, and enables identification of patterns across time and geography. Therefore, we suggest that the FMP Template graphs/charts clearly summarize the following information:

- Frequency of flaring events during the five years preceding the FMP period, including the dates that flaring occurred, the length of the event in hours, and whether the flaring event was considered an emergency.
- The date, duration, emissions, and root causes of every flaring event during the FMP period, including total emissions as well as disaggregated emissions of methane, non-methane hydrocarbons, and sulfur dioxide in tons. Chevron's 2025 FMP provides a compliant example.³⁰
- Total emissions as well as disaggregated emissions of methane, non-methane hydrocarbons, and sulfur dioxide during the five years preceding the FMP period in tons.
- The ten total largest flaring events during the five years preceding the FMP period, including total emissions as well as disaggregated emissions of methane, non-methane hydrocarbons, and sulfur dioxide in tons.
- Flaring events attributable to production of conventional vs. unconventional fuels, identifying whether events occurred during processing of petroleum, hydrogen, biofuels, etc.

Echoing CBE's previous comments, these standard graphs express the frequency and magnitude of flaring while advancing Rule 12-12's intent to require reporting of reductions previously realized "within the past five years." Standardization could also identify seasonal patterns to study and assess further reductions. Refineries may include other relevant historical graphs and charts in an appendix or at the discretion of the Air District. Finally, while we believe that the five bullet points above provide a strong basis for graph requirements in a standardized FMP form, we would welcome the opportunity to collaborate with the Air District and other community-based organizations to decide together which graphs should be required by all refineries.

Planned Reductions (Section 401.3)

Rule 12-12 requires the FMP to describe "equipment, processes, or procedures the owner or operator plans to install or implement to eliminate or reduce flaring."³¹ This provision focuses on future reductions, which Chevron acknowledges by titling the section of its 2025 FMP intended to comply with this provision, "Planned (Future) Reductions."³² Chevron's 2025 FMP, however, only includes initiatives undertaken in 2007 and 2008 with a statement that they are "ongoing."³³ Chevron has copied and pasted this exact content into each of its past four FMPs without updates. For new planned measures, the FMP should include: the planned future date for

³⁰ "Annual Update of Flare Minimization Plan - Chevron Refinery 2025," pages 3-5.

³¹ Rule 12-12 § 401.3.

³² "Annual Update of Flare Minimization Plan - Chevron Refinery 2025," page 32.

³³ "Annual Update of Flare Minimization Plan - Chevron Refinery 2025," pages 32-33.

implementation, a detailed description of the equipment and/or personnel implicated, any updates on past strategy (or a discussion of why there was no progress), the estimated anticipated reductions, and the underlying rationale. Refineries can use the section for “Reductions Previously Realized” to provide annual updates on continuing measures that were initiated in the past.

Prevention Measures (Section 401.4)

Refineries are supposed to provide “a schedule for the expeditious implementation of all feasible prevention measures”³⁴ to address flaring resulting from major maintenance activity, gas issues, or recurrent failures under Rule 12-12. Planned maintenance, however, continues to be a prevalent cause of Chevron’s flaring, and its discussion purporting compliance with this section fails to describe new potential methods of reduction beyond existing operating procedures.³⁵

In describing prevention measures, the FMP Template should require refineries to analyze:

- Operational improvements that could have prevented each reportable flaring event during the FMP Period, with input from relevant unions and refinery worker organizations.
- How public communication about each reportable flaring event was carried out and could be improved.
- Any physical changes to the facility performed during the FMP period that will foreseeably impact flaring, what their impact will be, and, if necessary, the steps to mitigate.
- The estimated additional compressor, storage, and treatment capacity needed to avoid each reportable flaring event. These estimates should be taken into account for future Performance Targets.
- Potential Flare Gas Recovery system designs for any stacks currently lacking any.

CBE looks forward to continued engagement in the evaluation of Chevron’s 2025 FMP and the overall amendments to Rule 12-12. We appreciate your thoughtful consideration of these proposals, which will foster accountability for fenceline communities across the Bay Area. If there are any questions, please do not hesitate to reach out to us at: erika@cbecal.org and kalcontin@cbecal.org.

Sincerely,

Kaitlin Alcontin

Legal Fellow

Communities for a Better Environment

³⁴ Rule 12-12 § 401.4.

³⁵ “Annual Update of Flare Minimization Plan - Chevron Refinery 2025,” pages 77-88.

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