



November 8, 2024

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

Re: Chevron 2024 Flare Minimization Plan

Dear BAAQMD,

Thank you for the opportunity to comment on Chevron's 2024 Flare Minimization Plan (FMP). The following comments are informed by CBE's many decades of organizing alongside Richmond residents, and by our technical knowledge of the oil refining and hydrogen production processes, including existing flaring regulations and feasible flaring reductions.

CBE has submitted three separate letters on Chevron Flare Minimization Plans this year, reviewing the 2022 FMP, the 2023 FMP, and now the 2024 FMP. In reviewing Chevron's 2024 FMP, we were disappointed to see that many of the most critical issues we raised with the previous two FMPs have not been adequately addressed. As we wrote in comments on Chevron's 2022 FMP, we celebrate the intention behind BAAQMD's Rule 12-12 to minimize the frequency and magnitude of flaring at all Bay Area refineries. However, flaring remains a persistent issue at the Chevron facility, and Chevron consistently leverages these FMPs to *normalize* their flaring rather than actually reduce its frequency and magnitude. In fact, despite Chevron's claims in the FMP that flaring incidents have decreased in recent years,¹ BAAQMD's own data shows that flaring has significantly *increased* in recent years, following the construction of Chevron's new hydrogen facility.² Chevron's 2024 FMP should not be approved in its current state and must be brought into compliance with Rule 12-12. BAAQMD can achieve this through the following changes:

- 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, as it currently does in the 2024 FMP.**
- 3. Identify strategies to decrease flaring at the Hydrogen Plant, including the incorporation of a flare gas recovery system.**

¹ For example, on page 9 of the 2024 FMP, Chevron writes that "the new Hydrogen Plant has proven to be more efficient and more reliable than the previous plant and has led to an overall reduction in flaring events."

² BAAQMD. "Frequency of Flaring Events," n.d. <https://bit.ly/BAAQMDflaring2005-23>.

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.

On top of these four changes, detailed below, we believe that BAAQMD could greatly improve the annual FMP review process for both the Air District and the general public by creating a standardized FMP form. We discuss this point at greater length in the conclusion.

1. Standardize summary graphs that Chevron must produce each year to avoid data manipulation and create consistency and transparency in their reporting.

Having recently reviewed Chevron's 2022 and 2023 FMP formats, much of which is copy and pasted each year, we were surprised to see dramatic changes in the Executive Summary graphs for Chevron's 2024 FMP. In particular, the previous graphs that highlighted differences between the Hydrogen Plant and the rest of the refinery, and the others that tracked flaring patterns over time were eliminated. In their place were graphs that focused exclusively on flaring events during the FMP period. While we certainly welcome the inclusion of additional information on each flaring event during the FMP period – their length, vent gas flow, and emissions – Chevron has managed to focus so narrowly on the 2024 reporting period that it has compromised the public's ability to track their flaring patterns across years across years.³ Furthermore, as we discuss in Section 2, one of the new graphs seriously manipulates the data to give the impression that Chevron's flaring has decreased when it has not.

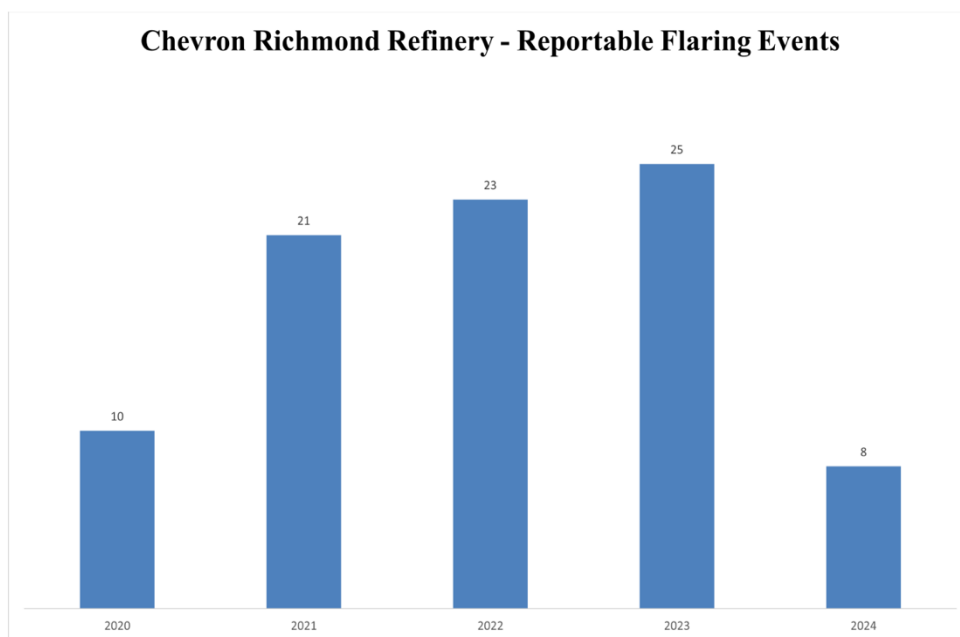
To avoid dramatic changes in graphs year to year and improve public accessibility, CBE encourages the Air District to outline a standard set of graphs for refineries to produce each year. This would build trust with the public, who could count on being able to see and interpret these graphs in every FMP, and track changes over time. Residents would not only feel empowered to hold Chevron accountable for flaring in a single year, but across multiple years. As we discuss in the conclusion, these graphical standards could be rolled out to other refineries to increase public accountability across the Air District and ease BAAQMD's review process.

CBE would welcome a conversation with the Air District to determine which graphs are the most helpful and will reach out via separate email to set up a meeting.

2. Ensure Chevron does not use data analysis and visualization methods that are false and/or misleading, as it does in the 2024 FMP.

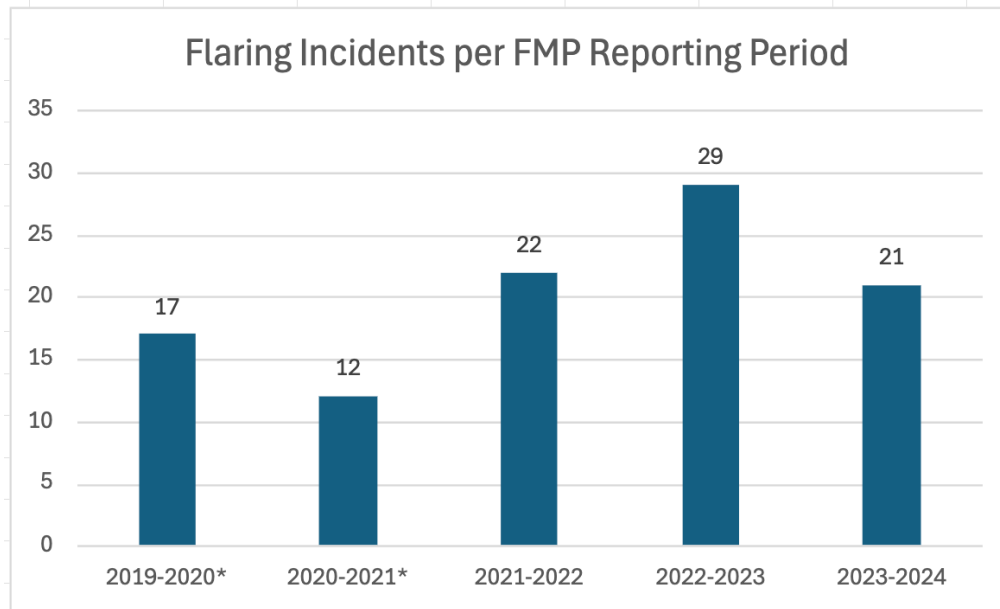
³ We suspect that the inclusion of these graphs may be related to our 2022 FMP comment letter, which called for additional graphs on Chevron's largest and most harmful flaring events during the FMP reporting period. We support the inclusion of new graphs that reflect how residents experience flaring events – concentrated bursts of pollutants in the air, not dispersed annual averages. However, we had not hoped to eliminate the multi-year analyses, we simply hoped to *expand* the graphical data available to the public on each of the reported flaring events, as this information was not available in the 2022 and 2023 FMPs.

As it currently stands, Chevron's 2024 FMP misrepresents data to suggest that flaring has decreased at the refinery when it has not. This is extremely misleading to the public. The most serious example of this is the first chart in the Executive Summary, which shows reportable flaring events by year and suggests that there was a huge drop off in flaring in 2024 (see image below).⁴



Of course, we would be thrilled if flaring genuinely had decreased. However, the visible decrease does not reflect an actual decrease in flaring, but rather that the 2024 bar only measures data through June 30, 2024, meaning that half of the year is not included in the 2024 data. At the very least, Chevron should clearly explain and disclaim that 2024 only reflects half the year. A more accurate and truthful graph would present the data by FMP reporting period, showing that there has not been a meaningful drop in flaring events, as shown in CBE's revised chart below:

⁴ "Annual Update of Flare Minimization Plan - Chevron Refinery 2024," September 30, 2024. https://www.baaqmd.gov/~media/files/compliance-and-enforcement/flares/2024/chevron-2024-fmp-update-pdf.pdf?rev=8153c89cf3b448bd8f5c474fdfca9f9a&sc_lang=en, page 2.



*Decreased refining activity during COVID-19 pandemic

As this corrected graph makes clear, the 2023-2024 reporting period is roughly on par with previous years and has not seen the dramatic decrease that their current summary graph misleads readers of the report to believe. We strongly encourage BAAQMD to require Chevron to update this misleading graph as part of the larger set of graphical standards discussed in the previous point.

We genuinely worry how this sort of data manipulation and visualization supports additional claims in the FMP. For example, Chevron claims that “the new Hydrogen Plant has proven to be more efficient and more reliable than the previous plant and has led to an overall reduction in flaring events. As a result, it argues, the use of the new Hydrogen Plant flare is consistent with refinery flare minimization.”⁵ The Hydrogen Plant very well may be more efficient at producing hydrogen; **however, it is false that the Hydrogen Plant has led to an overall reduction in flaring events. BAAQMD data shows a significant *increase* in flaring since 2018, when the new Hydrogen Plant was opened.**⁶ Furthermore, 14 of the 21 flaring events reported during the 2024 FMP period involved the Hydrogen Plant – 67% of all reported flaring!⁷ This is not just a fluke problem in 2024; the 2022 FMP showed that 42% of all reported flaring involved hydrogen production,⁸ and the 2023 FMP showed 78%.⁹ Chevron states that

⁵ “Annual Update of Flare Minimization Plan - Chevron Refinery 2024,” page 9.

⁶ BAAQMD. “Frequency of Flaring Events,” n.d. <https://bit.ly/BAAQMDflaring2005-23>.

⁷ “Annual Update of Flare Minimization Plan - Chevron Refinery 2024,” pages 68-74.

⁸ Ten of 24 flaring incidents reported in Table 5-1a involved the Hydrogen Plant. See “Annual Update of Flare Minimization Plan - Chevron Richmond Refinery 2022,” p. 84-92.

⁹ Of the 23 reported incidents, 18 mentioned the Hydrogen Plant or hydrogen production. See “Annual Update of Flare Minimization Plan - Chevron Richmond Refinery 2023,” September 14, 2023, https://www.baaqmd.gov/~media/files/compliance-and-enforcement/flares/2024/2023-chevron-annual-fmp-update-pdf.pdf?rev=f27e1070aa6f4c94a5d1f4cc9117b873&sc_lang=en, p. 89-96.

“there will be no routine flaring operations” at the Hydrogen Plant, but hydrogen-related flaring has become exactly that – routine.¹⁰ The Hydrogen Plant is the single largest source of flaring at the Chevron Refinery, and needs to be more heavily investigated, and regulated as discussed in the following section.

3. Identify strategies to decrease flaring at the Hydrogen Plant, including the incorporation of a flare gas recovery system.

As previously discussed, flaring at Chevron’s Hydrogen Plant is a consistent and serious issue. This is not just an issue because of the *number* of flaring events at the Hydrogen Plant, but because of the *harmful pollutants and greenhouse gases* emitted during each event. Of the five largest releases of non-methane hydrocarbons (NMHCs) during the 2024 FMP period, three (60%) were associated with hydrogen production.¹¹ Of the five largest methane releases, *all five resulted from startup or shutdown of the Hydrogen Plant*.¹² As we are sure BAAQMD is well aware, both of these are major problems for the health of Richmond residents and the environment. NMHCs such as benzene and toluene have serious negative health effects and have been shown to cause cancer and other respiratory and cardiovascular problems.¹³ Methane is a major driver of climate change, and 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 Flaring at the Hydrogen Plant cannot continue to slip by unnoticed; it must be investigated, regulated and contained.

The flare gas recovery (FGR) system at Chevron's North Yard and South Yard has helped decrease flaring for portions of the refinery that are connected to the FGR system, and BAAQMD should require Chevron to either incorporate the Hydrogen Plant into the existing FGR system or construct an additional FGR system to mitigate flaring at the Hydrogen Plant. Chevron currently states in the 2024 FMP that “the potential use of the existing refinery North

¹⁰ “Annual Update of Flare Minimization Plan - Chevron Refinery 2024,” page 9.

¹¹ “Annual Update of Flare Minimization Plan - Chevron Refinery 2024,” pages 68-74.

¹² “Annual Update of Flare Minimization Plan - Chevron Refinery 2024,” pages 68-74.

¹³ Gas Sensing. “What Are NMHCs,” n.d. [https://www.miteco.gob.es/content/dam/miteco/es/calidad-y-evaluacion-ambiental/temas/atmosfera-y-calidad-del-aire/20140410individualnon-methanevocshavelargeimpactsonhumanhealth_tcm30-188134.pdf](https://www.gas-sensing.com/information/nmhc#:~:text=Respiratory%2C%20allergic%2C%20or%20immune%20responses,Measuring%20NMHCs; European Commission. “Individual Non-Methane VOCs Have Large Impacts on Human Health.” Science for Environment Policy, 2014. <a href=).

¹⁴ UN Environment Programme. “Methane Emissions Are Driving Climate Change. Here’s How to Reduce Them.” UNEP (blog), August 20, 2021. [https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/cutting-methane-emissions-key-fighting-climate-change-and-harmful-ozone-2024-09-20_en#:~:text=Like%20carbon%20dioxide%20\(CO2\)%2C,yields%20%2D%20if%20we%20act%20fast.](https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them#:~:text=Agricultural%20methane%20doesn't%20only,can%20we%20reduce%20methane%20emissions?; EU Science Hub. “Cutting Methane Emissions Key to Fighting Climate Change and Harmful Ozone.” September 20, 2024. <a href=)

and South Yard flare systems to flare gas streams from the new Hydrogen Plant was evaluated, and it was determined that this option is not feasible because of the distance to existing refinery flare systems.”¹⁵ Beyond this sentence, there is no further evidence or discussion of that evaluation – the distance between the plants, why distance is an issue, what it would cost to cover that distance, or what Chevron means by “feasible.” The District should not accept Chevron’s statement the Hydrogen Plant cannot be incorporated into the existing FGR system without proper justification. All in all, and as we noted in our 2022 and 2023 FMP comment letters, CBE is curious and concerned why there has not been any real analysis of how FGR could be implemented at the Hydrogen Plant. This analysis was never included in the 2022, 2023, or 2024 FMPs, or any FMP since the facility opened, and belongs in Section 5.2.5 – Evaluation of Options for Additional Capacity, which we discuss in greater detail in the following point.

BAAQMD should fact-check Chevron’s under-evidenced claims by completing its own independent research on options for FGR at hydrogen plants. This analysis is urgent, especially given Chevron’s dramatic uptick in flaring over the past five years. Given the projected increases in hydrogen production and refinery conversions across the entire state of California, BAAQMD’s independent analysis of FGR (and other non-FGR methods for reducing flaring) at hydrogen plants would not only be relevant for reducing flaring at the Chevron Richmond Refinery but for dozens of other refineries and impacted communities across the Bay Area Air District and the state.¹⁶

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.

Section 5.2.5 evaluates options to increase the capacity of the existing FGR system through expanded or improved storage, compressor, and treatment capacity. While just a few pages, this section carries serious weight as it provides opportunities for protecting the health of Richmond residents, improving Richmond’s air quality, and protecting our environment.

Unfortunately, Chevron uses this section to do the exact opposite. As in 2022 and 2023, Chevron dismisses the possibility of any additional compressor, storage, or treatment capacity by claiming that none of these are cost-effective and referencing BAAQMD’s cost-effectiveness threshold. As we noted in our 2022 and 2023 FMP comment letters, Chevron has copy-and-pasted its cost-effectiveness calculations for the past 19 years, using 2005 data on both flaring emissions and the cost of implementing new technology.¹⁷ The 2005 data is simply no longer relevant and must be updated. Furthermore, BAAQMD’s threshold for cost-effectiveness was set over 25 years ago in 1997 and is long overdue for reassessment, especially given the rapid

¹⁵ “Annual Update of Flare Minimization Plan - Chevron Refinery 2024,” page 9.

¹⁶ See, for example, the State of California’s hydrogen goals and funding estimates at <https://business.ca.gov/industries/hydrogen/>.

¹⁷ “Annual Update of Flare Minimization Plan - Chevron Refinery 2024,” pages 87-89.

escalation of climate change and our expanded knowledge of the health harms of flaring.¹⁸ This threshold has been seemingly forgotten in the shuffle of FMPs, but it greatly limits BAAQMD's ability to require Chevron (and other refineries) to upgrade their equipment and expand compressor, storage, and treatment capacity to decrease flaring. We also want to highlight that Chevron never actually completed cost-effectiveness analysis for storage or treatment capacity in its 2022, 2023 or 2024 FMPs, another reason this section is out of compliance with Rule 12-12. As BAAQMD works to strengthen its cost-effectiveness threshold, we suggest that BAAQMD require Chevron to update and recalculate its analysis in this section.

Finally, there is no mention, let alone cost-effectiveness calculation, of implementing an FGR system at the Hydrogen Plant, which would greatly reduce flaring and protect Richmond's air, environment, and community. BAAQMD should require Chevron to complete and include this analysis in Section 5.2.5. CBE also encourages BAAQMD to complete its own cost-effectiveness calculations for all options to increase flare gas recovery, including Hydrogen Plant FGR.

While the four points above focus on Chevron's 2024 FMP, we hope that these lessons could translate to all future FMPs – for Chevron and the other four Bay Area refineries. Along these lines, we started to review the FMPs for Phillips 66 and Marathon Martinez to understand flaring patterns at oil refineries that have been converted to biofuel refineries and noticed major differences in format, analysis, and presentation across the refineries. For example, Chevron's Section 5.1.4a – Past Flaring Activities Requiring Causal Analysis – is in Phillips 66's FMP as Attachment H and is redacted in Marathon's FMP as a non-existent Attachment 6. As another illustrative example, Options for Expanded FGR Capacity is Chevron's Section 5.2.5, Phillips 66's Section 4.2.2.1, and Marathon's 3.4.2. In addition, each refinery includes different graphs (or none, in the case of Phillips 66) in their Executive Summaries. As members of the public trying to understand broader trends in flaring across the Air District, these differences and inconsistencies make it much harder to jump between different refineries' FMPs. We also imagine that this range of formats makes it harder for the Air District to review the FMPs as well. We encourage BAAQMD to establish a consistent set of graphs that each refinery must include in the Executive Summary (see point 1), and a standardized template for each refinery to complete. We believe that this would increase public accessibility and accountability while easing BAAQMD's review process, freeing up staff capacity for other important issues.

In conclusion, we urge BAAQMD to hold Chevron accountable to the greatest extent possible using Rule 12-12. We sincerely hope that these comments will not only be considered for Chevron's 2024 FMP, but for all future Bay Area refinery FMPs, and in BAAQMD's upcoming flaring rulemaking, particularly with regards to flaring at hydrogen plants. We greatly

¹⁸ "Annual Update of Flare Minimization Plan - Chevron Refinery 2024," page 88; Karras, Greg, and Suguey Hernandez. "Flaring Hot Spots," July 2005. <https://www.cbecal.org/wp-content/uploads/2012/05/Flaring-Hot-Spots-report.pdf>.

appreciate you taking the time to read and review this comment letter and welcome any follow-up questions or comments you may have.

Sincerely,

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