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April 15, 2022

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sent via e-mail: vdouglas@baaqmd.gov

Re: WSPA Comments on the Revised Proposed Regulation 13, Rule 5: Industrial Hydrogen Plants

Dear Mr. Douglas,

The Western States Petroleum Association (WSPA) is a non-profit trade association representing twenty-six companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California, Arizona, Nevada, Oregon, and Washington. Our members in the Bay Area have operations and facilities regulated by the Bay Area Air Quality Management District (BAAQMD or District). WSPA submits the following comments on the revised Proposed Regulation 13, Rule 5: Industrial Hydrogen Plants.

WSPA appreciates the schedule amendment for implementation of controls reflecting the authority to construct. This maintains the overall schedule requirement and allows the refineries to focus on a single deadline.

One amendment we would request be revisited is in Section 402 for notifying the APCO of an exceedance. It was changed from 72 hours to "*immediately upon discovery*". WSPA is not aware of a similar BAAQMD reporting provision associated with exceeding an emission limit. There are more reasonable deadlines for reporting found in other existing District regulations, and we would request staff consider those for this requirement. For example, Title V requires reporting of non-compliance instances within 10 calendar days. Regulation 1-522 already requires "*any indicated excess of any emission standard to which the source is require to conform, as indicated by the monitor, shall be reported to APCO within 96 hours after such occurrence*."

Lastly, we note that staff did not address many of the issues expressed in our March 10, 2022 comments. Issues raised in the March 10, 2022 letter as well as previously submitted comments brought light to some critical issues with the rule language. For example, one of the significant issues is lack of clarity as noted in the "Clarity in Monitoring/Testing Requirements" section. Clarity is one of the requirements of the Health and Safety code [40727(a)] for regulation issuance. With the current language it is completely unclear what the requirements are around some monitoring which will pose a significant issue for regulators performing auditing as well as the regulated community trying to implement this regulation. We strongly believe this and many other key issues in the comments remain unresolved and need to be addressed before rule issuance. Due to unresolved issues previously included in past comments, many of the comments below are iterated from the March 10, 2022 letter.

Textbook Example of What the IPCC Identified as a "Problematic" Regulation

The Staff Report acknowledges that the sources targeted by this rule are covered by California's GHG Cap-and-Trade program, however it fails to clearly identify a known consequence of this to decisionmakers and the public. Even if the proposed rule were to reduce GHGs at individual refineries, it will have no impact for the Cap-and-Trade program sources in aggregate and will create GHG emissions from the associated sources not in the Cap-and-Trade program. Those associated sources include GHGs from steelmaking, fabrication, and the erection of the flares.

The BAAQMD proposed regulation is an example of what the Intergovernmental Panel on Climate Change (IPCC) identified as a "problematic"/"ineffective" rule that would not reduce statewide GHG emissions. Specifically, the IPCC's 5th Assessment Report section on "Interactions between climate policies conducted at different jurisdictional levels" has a subsection on "Problematic interactions" that identified this exact type of policy:

> *"Policies introduced at different levels sometimes interact in ways that compromise or weaken the intended environmental or economic impacts.*
>
> *One particular difficulty that may arise is the problem of emissions leakage. This can occur, for example, when a climate policy introduced at a lower jurisdictional level is 'nested' within a cap-and-trade programme implemented at a higher jurisdictional level. Consider the case where a cap-and-trade programme exists at the national level, and where a sub-national authority introduces a new policy intended to reduce its own (sub-national) emissions beyond what would result from the national programme alone. The sub-national jurisdiction's efforts might indeed yield reductions within that jurisdiction, but facilities in other sub-national jurisdictions covered by the cap-and-trade programme will now use these*

> *allowances leading to higher emissions in these jurisdictions completely compensating the abatement effort in the more stringent jurisdiction.*
>
> *Since overall emissions at the higher level are determined by the given national-level cap, the effort by the sub-national jurisdiction does not succeed in reducing nationwide: it just causes emissions leakage — offsetting increases in emissions elsewhere in the nation. The national cap effectively prevents sub-national jurisdictions from achieving further emissions reductions (Goulder and Stavins, 2011; Shobe and Burtraw, 2012).*"[1]

The IPCC's example is of a national cap-and-trade program and a sub-national regulation on sources in that program, however the reasoning is identical for the California cap-and-trade program and the District proposed Regulation 13-5. The GHG impacts of the rule on Bay Area refinery methane emissions are going to be offset by GHG impacts from other sources in the Cap-and-Trade program, and the proposed rule would not result in GHG reductions statewide or globally.

The District's proposed regulation of these methane sources—sources that fall within CARB's definition of "de minimis" GHG sources at the refineries—should not be adopted. The Staff Report is deficient in multiple key areas and should be amended:

- It should incorporate the IPCC narrative in the Executive Summary or its two-sentence section on "State Regulations" (Section II.C.2);
- It incorrectly associates societal benefits to the GHG reductions associated with this rule (Section V.E), when those reductions will be offset by other emissions within the Cap-and-Trade program as described by the IPCC; and
- Asserts contrary to the IPCC that the regulation "*is in harmony with, and does not conflict with or contradictory to, existing…state or federal regulations.*" Therefore the Proposed Rule does not meet the statutory requirement for consistency (Section VIII.D).

[1] IPCC, "Problematic interactions", Section 15.7.2.2 of Somanathan E., T. Sterner, T. Sugiyama, D. Chimanikire, N. K. Dubash, J. Essandoh-Yeddu, S. Fifita, L. Goulder, A. Jaffe, X. Labandeira, S. Managi, C. Mitchell, J. P. Montero, F. Teng, and T. Zylicz, 2014: National and Sub-national Policies and Institutions. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Global Warming Potentials

The District is proposing a regulation to decrease methane emissions by oxidizing them to CO_2. Since both of these are GHGs, there is a need to gauge the relative importance of these gases. The most significant issue with the values of the methane Global Warming Potentials (GWPs) required by Section 13-5-206 of the proposed rule and cited in the draft EIR (DEIR) is that they are inconsistent with the value of 25 used by US EPA and CARB, and neither the staff report nor the DEIR acknowledges that fact or explains why. There is also no explanation as to why the BAAQMD should have its own GWPs and effectively require a "second set of books" with regard to CO_2e calculations.

The staff report cites the IPCC's 5th Assessment Report (AR5) as the source of their methane GWPs of 34 (over a 100-year time horizon) and 86 (over a 20-year time horizon). However it fails to mention that AR5 identified a variety of metrics, including GWPs and other metrics such as Global Temperature Potential (GTP),[2] and their own summary of GHG impacts by sector[3] evaluated weightings for methane that were as low as 4.3.[4]

Rather than specifying relative methane weightings of 34 and 86 as implied by District staff, AR5 concluded that,

> "*Various metrics can be used to compare the contributions to climate change of emissions of different substances. The most appropriate metric and time horizon will depend on which aspects of climate change are considered most important to a particular application. No single metric can accurately compare all consequences of different emissions, and all have limitations and uncertainties*."[5]

[2] Chapter 8 of AR5 identifies (p. 712) that "by accounting for the climate sensitivity and the exchange of heat between the atmosphere and the ocean, the GTP includes physical processes that the GWP does not".
[3] Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestvedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, 2013: Anthropogenic and Natural Radiative Forcing. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. pp. 719-720.
[4] Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestvedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, 2013: Anthropogenic and Natural Radiative Forcing Supplementary Material. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Available from www.climatechange2013.org and www.ipcc.ch. pp. 8SM-39 and 8SM-41.
[5] IPCC, 2013: Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker,

The District's Staff Report also explains that, *"Unless otherwise stated, this report uses the 20-year global warming potential (GWP) of 86 when calculating the carbon dioxide equivalent of methane emissions since the emission reduction actions being considered are within that time frame."*[6] However, this reflects a fundamental misunderstanding of what IPCC means by the phrase "time horizon". The "time horizon" is not intended to refer to the timeframe over which actions are being considered, but instead is reflective of the atmospheric lifetime of methane being approximately five times shorter than that of CO_2.

Accordingly, most if not all state, national and global policies (including the Paris Agreement) to address GHGs over the next 20 years are not using the 20-year time horizon GWPs either.

Tradeoffs, and Errors in Staff's Analyses

For the refineries that the District anticipates will need to install flares, staff have presented that the proposed rule would create a 1.0% decrease in their GHG in exchange for a 1.3% increase in affected facility total NO_x.[7] However, the tradeoff will be much worse than that, because staff's analysis is erroneously based on the assumption that rule compliance will only require two flares that:

(1) are handling a vent stream that is consistently approximately 95% hydrogen, 4% methane, and 1% natural gas (even though they have been informed otherwise), and therefore will require zero assist gas to boost the heat content;[8]

(2) only require consumption of an additional 2.7 million cubic feet of natural gas per year[9] for flare pilots (based on two pilots per flare), whereas (a) modern flare designs likely require 3 or 4 pilots per flare, and (b) EPA's Air Pollution Control Cost Manual estimates an additional 7.9 million cubic feet of natural gas demand for purge gas.[10]

With regard to the first assumption, the primary issue is that some hydrogen vent configurations can have substantially different composition and flow, especially during certain startup and shutdown procedures and emergencies, that is they are not always the idealized

T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. p. 17.

[6] Staff Report, p. 1, footnote 2.

[7] "Proposed Regulation 13: Climate Pollutants, Rule 5: Industrial Hydrogen Plant", presentation given by Victor Douglas at the BAAQMD Stationary Source Committee's February 22, 2022 meeting, slide 11.

[8] DEIR, p. 1-8.

[9] DEIR p. B-21 shows 1.35 mmscf/yr per flare.

[10] US EPA, "Flares", Chapter 1 of Section 3.2 to Air Pollution Control Cost Manual, August 2019, p. 1-24: for a 24" diameter flare, $(7.85 \times 10^{-4}$ kscf/hr) $\times 24^2 \approx 450$ scf/hr per flare, $\times$ 2 flares $\times$ 8760 hr/yr = 7.9 million cf. DEIR, p. B-22.

composition that the District has assumed. With regard to the second assumption, it appears that the District simply neglected the gas demand associated with purge gas, as there is no discussion of purge gas in the body of the analysis.

The District's cost analysis (Appendix C to the staff report) is flawed, for reasons that include and are not limited to the following:

- For the flares, the District annualized capital costs across 20 years simply by dividing by 20. This is not the correct calculation for annualizing capital costs, and substantially underestimates annualized cost in dollars per year and dollars per ton. There are well-known formulas for annualizing costs using a Capital Recovery Factor (CRF) that the District has used previously but has not used here.

- For monitoring costs, the conclusion that "*potential cost for all hydrogen [plants] to comply with emissions monitoring requirements in Section 500 of Rule 13-5 is estimated from approximately $3,540,000 to $5,162,000*" appears to result from adding up the values in the columns in Table 2, without regard to which of these values were capital costs and which were annual costs.

- For monitoring, the District cites EPA's flare cost calculation spreadsheet, but appears to have simply taken vendor capital costs (without the associated costs for sampling systems, air-conditioned placements, etc.), and assumed zero or negligible operating and maintenance costs associated with these complex analyzers; all of which is unrealistic as well as inconsistent with what the District would typically require.

Timing and Schedule Issues

<u>Deadline for Monitoring</u>

The proposed deadline to meet monitoring requirements within two years of rule adoption does not appear to be feasible nor are the requirements clear, as detailed later in this letter and in previous WSPA comment submittals.

The current language of 13-5-501, -504, and -505 sets deadlines to have monitors installed and operational just two years from rule adoption. This is not feasible for new monitoring systems.

A refinery's installation of a continuous emissions monitoring system for even a typical application where ports and sampling platforms (and associated ladders, etc.) exist requires multiple steps, including:

a. Understanding the requisite analytical specifications (which are not specified in the rule);

b. Engineering evaluations of monitoring system options/compatibility with regard to both those specifications and the specific sources they are being applied to. This includes not just the analyzer itself but also assessing and mitigating the potential for fire hazards (which would be applicable to high hydrogen-content vents), permanent support structures for periodic access to high hazard areas, the potential need for electrically heated sampling lines (for high-moisture vents), sampling line permeability (which may be more of an issue for hydrogen than traditional exhausts), potential need for temperature-controlled sheds and determination of what the associated specifications would need to be for those and where there is space to locate them, gas calibration systems/gas cylinder racks, specifications for sampling line tie-down points and length specifications, etc.;

c. Management of Change reviews and critical safety plan development;

d. Proposals to District staff for evaluation for each specific monitoring location;

e. District staff's approval or disapproval;

f. Once approval has been received, ordering the analyzers and associated equipment (and waiting for delivery, which is typically several weeks and has sometimes been several months) and coordinating with other refinery staff with regard to electronic data handling systems, calibration systems and gases (and for the target gases here, the gas quality specifications may be unknown or not available), access, safeguards, etc.;

g. Installation of all the relevant equipment mentioned above;

h. Personnel training; and

i. Testing/verification of the monitoring system.

This is not feasible to do within two years. It is not clear what would be a feasible timeframe, given that the precise requirements and specifications are not even clear (as discussed later in this comment letter).

The timing requirement for monitoring conflicts with the timing for control device installation. The District has repeatedly identified that monitors are not required for vents that get

controlled (e.g., flared/combusted), but the proposed rule's deadline for monitors to be operational precedes the date by which such vents could get controlled.

It does not make sense to expend exorbitant time, effort, and capital to specify and install a vent monitor to then have it become pointless a few years later when that vent is controlled. WSPA appreciates the text in the District's cost analysis that identifies that "*the cost to install atmospheric monitoring equipment can be avoided if a facility can demonstrate that atmospheric vents can no longer vent to atmosphere after the vent control technology is installed and operational*,"[11] but that language needs to be in the rule itself, and in the body of the staff report.

Reporting Deadlines

Past experience with cause analyses has shown that these analyses take time. A meaningful root cause analysis of an exceedance should not be required in 30 days as identified in Section 402.2. Instead, WSPA recommends 60 days after the end of the month of the event, which is consistent with the timeline for reporting a "reportable flaring event" in Regulation 12, Rule 12. The following revision (in underline/strikeout format) is recommended in order to be consistent with other BAAQMD reporting requirements and to support good quality cause information.

> **402.2** Within ~~30 days~~ *60 days of following the end of the month of an occurrence*, the owner and/or operator shall report the following information to the APCO: the cause of the occurrence; the date and time of the occurrence; data for the duration of the occurrence; the make, model and type of control device; the operating parameters of the control device including temperature, pressure, flow rate, and concentrations of each constituent in the gaseous stream; and the mass emissions for each constituent in the gaseous stream including TOC.

Clarity in General

Although changes to the rule language initially appeared to have addressed some of our earlier comments, there are multiple instances in which the rule language change made interpretation more ambiguous, while the staff report identifies that the interpretation has not changed at all.

WSPA believes that important details in rule applicability and implementation should be in the rule itself. We disagree with the staff report's one-sentence assertion that the proposed rule meets the statutory requirement for clarity and that "*its meaning can be easily understood by*

[11] Appendix C to Staff Report, p. 6.

the persons directly affected by it"[12]. There is no support for this statement and we have provided ample evidence to the contrary as noted in our previous comments regarding draft versions of the rule. We reiterate many of those same comments below.

Clarity with Regard to Applicability/Definition of "Atmospheric Vent"

The proposed language "*including, but not limited to*" in the proposed definition of "Industrial Hydrogen Plant" [Section 13-5-208] is ambiguous as to what the definition is limited to. The terms "hydrogen distribution system" and "hydrogen delivery system" in that definition are not defined.

Based on how these terms are typically used, conversations with the refineries and the District, and the analyses conducted by staff, it is WSPA's understanding that the District is seeking to apply common industry definitions of those terms and that the applicability of the rule stops at the point that the hydrogen reaches process unit consumers. This should be stated explicitly in the staff report.

The proposed definition of "Atmospheric Vent" [Section 13-5-202] removes the draft language "*after being routed to a control device or a gas recovery device*". Our understanding from discussions with staff both before and after the currently proposed rule was issued is that this was to address that it is not possible to monitor emissions downstream of a combustion device such as a flare and that it is unlikely to demonstrate compliance with the proposed 13-5-301 standard (as required by Title V regulations) if the vent is redirected to a combustion device or gas recovery device.

We understood that staff intended to ***exclude*** such streams from the definition of "atmospheric vent". However, nothing in the rule states this. Page 18 of the staff report identifies that "*Atmospheric vents include openings where gas streams are discharged directly to the atmosphere or are discharged to the atmosphere after being routed to a control device or a gas recovery device*." [underline added] We request the staff report be clarified with language to say "***exclude***" instead of "***include***", and this clarification should also be made in the rule itself.

Clarity Regarding "Comingling and Dilution"

The proposed language prohibiting comingling and dilution [Section 13-5-302] needs clarification. We understand the District's intent to disallow stream dilution so that the concentration falls below the level identified in Section 13-5-301, however there may be a need

[12] BAAQMD Staff Report, p. 40.

to comingle some streams for purposes of control. This is reflected in the District's own cost analysis. WSPA proposes that the language of Section 13-5-302 be rephrased to,

> "*Any atmospheric vent that is in service prior to the adoption of this rule cannot comply with the concentration standard set forth in Section 13-5-301 solely through dilution and/or comingling*."

Clarity in Monitoring/Testing Requirements

The proposed rule does not contain sufficient clarity to understand what monitoring/testing the rule is requiring, and one year is not sufficient time for almost any monitor installation.

The District's cost analysis indicates that at least in some cases, staff's interpretation may be that existing process or parametric monitoring systems or modeling are sufficient to meet the rule requirements.[13] However, this is not explicitly stated or confirmed either in the rule or staff report.

Typically, rules distinguish between monitoring (with continuous monitors or periodic grab sampling, for example) and testing (e.g., "stack testing" with a contractor crew). Several of the monitoring requirements identified in Section 13-5-500 are on a daily basis; however, the only monitoring procedures specified in Section 13-5-600 are stack testing procedures. And, in some cases, it is not feasible to stack test on a daily basis.

While the proposed rule does allow for alternative methods, it does not specify a single alternative that is feasible on a daily basis. In addition, for the stack testing procedures, WSPA has already identified technical issues in one of our previous comment letters[14] that have not yet been addressed by staff.

Previous drafts of this rule[15] identified <u>continuous</u> monitoring, which WSPA identified as not technically feasible in several instances.14**Error! Bookmark not defined.**,[16] For vents subject to control requirements, staff changed the rule language to identify "*monitor[ing] on a daily basis" [13-5-501.1, and -502.1]* but page 21 of the staff report identifies that for 13-5-501 staff is interpreting this as being "continuous", as does the cost analysis in Appendix C to the staff report.

[13] Appendix C to Staff Report, page 6.
[14] Kevin Buchan (WSPA), letter to William Saltz (BAAQMD) "Re: WSPA Comments on Proposed Regulation 13, Rule 5: Petroleum Refinery Hydrogen Plants", October 19, 2020.
[15] September 2020 draft.
[16] Kevin Buchan (WSPA), letter to Jacob Finkle (BAAQMD) "Re: WSPA Comments to Draft Regulation 13 Rule 5: Petroleum Refinery Hydrogen Plants", July 30, 2021.

In addition, the requisite specifications have not been identified, nor are there existing standard environmental regulatory requirements for these types of streams (high hydrogen levels). For environmental compliance, these are non-traditional monitors. In some cases the District has taken years to develop their specifications for non-traditional monitors (e.g., fenceline monitors for H_2S).

Although the proposed rule language identifies monitoring for "TOC", "TOC" is not a specific compound. It is a class of compounds, and accordingly there are no true precise "TOC" monitors, just monitors that approximate.[17]

Section 13-5-501.3 requires that methane be tracked separate from the other organic compound emissions, which could be interpreted as another requirement. The staff report also identifies "*continuous recording of data of gas composition*", which is also another requirement depending on how the District is interpreting the phrase "*gas composition*".

To the extent that the District is interested in quality assurance of the monitors, WSPA is not aware of any continuous analyzer whose results have been shown to match results from the SCAQMD stack testing Method 25.3 that is identified in the proposed Section 13-5-600. Process GC analyzers are installed at some existing PSA systems for process purposes, but the regulatory requirements being proposed by the District and their associated feasibility are completely unknown. The District needs to clarify these.

Alternatively, if the proposed requirement for "continuous" monitoring is referring to daily grab samples, we would welcome that clarification. We appreciate the rule's allowance of alternative approved methods, as source sampling often requires technical adjustments. However at least one acceptable sampling and analytical method needs to be identified, and currently the only methods identified are stack sampling methods.

At least one WSPA member company has previously requested ASTM D7833 for analysis, but the District has not identified this in the method. As noted previously in this comment letter, it is not feasible to monitor downstream of flares and the purpose of conducting detailed monitoring upstream of flares or inside closed loops is not clear.

[17] As identified in EPA's Performance Specification 8 for VOC CEMS, "In most emission circumstances, most VOC monitors can provide only a relative measure of the total mass or volume concentration of a mixture of organic gases, rather than an accurate quantification" [§1.2.2]. That paragraph continues on to state that "This problem is removed when an emission standard is based on a total VOC measurement as obtained with a particular detection principle"; however, as has been discussed in EPA stakeholder calls regarding Methods 18, 25A, and 320, this is also not true, given that even for a given detection principle, different analyzers do not necessarily respond to different hydrocarbons in the same way (i.e., they have different response factors).

Alternatives subject to the monitoring requirements of 13-5-502 are required to also conduct daily monitoring for GHGs. Like TOC, GHG is a category; there is no method that can be used to monitor all GHGs as defined in Section 13-5-207. WSPA's understanding is that the relevant GHGs for this particular source category and rule are CO_2 and methane. If this is the case, then we request the District specify so.

For deaerator, CO_2, and PSA vents (vents that are not subject to control requirements), the District has specified quarterly monitoring in Sections 13-5-504.2 and 13-5-505. While it is technically possible to conduct stack testing quarterly, it is not advisable. Local source testing resources are already stretched thin, the District is over a year behind in reviewing source test reports, and the test frequency for the largest sources in the District are typically only annual or semiannual at most. Again, it is not clear what the rule is requiring. If the District's intent is that this requirement could be complied with using quarterly spot sampling that can be done by refinery personnel using sampling bags or pressurized cylinders (or quarterly summation of continuous monitoring), that is a different type of requirement from source testing.

Moreover, our understanding from previous discussions was that the District was allowing this for the high-purity PSA vents instead of the monitoring requirements for atmospheric vents, not in addition to them. However, the Section 13-5-505 to include (in underline),

> "*…All records shall be retained for a minimum of five years and shall be submitted to the APCO upon request as alternative to complying with Section 13-5-501*".

The rule requirements for CO_2 Strippers and Deaerators appears to be in conflict with the Health & Safety Code 40727(b)(1) in that the necessity for monitoring equipment and high frequency source testing has not been developed. While WSPA understands that District staff are interested in collecting more information to characterize emissions from the exempt vents covered by Section 13-5-504, we propose staff collect that data via a survey and not as part of an ongoing monitoring requirement in the rule. This survey could be coordinated with WSPA and be due one year after the adoption of the regulation and based on a few data points for each Hydrogen Plant.

Alternative Plans/Reductions from Other Sources

WSPA appreciates that the proposed rule incorporates provisions for an Alternative Compliance Plan, but it is unclear why the scope of such a plan needs to be limited to the hydrogen plants. If a refinery were to develop a plan which achieves equivalent reductions from some other part of the plant or even offsite (i.e., generating reductions outside the Cap-and-Trade program sources), it would seem this should be allowed. H&SC §40001(d)(2) states that,

> "*A district shall allow the implementation of alternative methods of emission reduction, emissions monitoring, or recordkeeping if a facility demonstrates to the satisfaction of the district that those alternative methods will provide equivalent performance. Any alternative method of emission reduction emissions monitoring, or recordkeeping proposed by the facility shall not violate other provisions of law*."

We recommend the proposed rule allow for this.

Allowance for Control Device Maintenance

The District's analysis of the rule appears to reflect the venting of multiple hydrogen plants at a refinery to a common flare. However, it is not feasible to shut down all of those hydrogen plants at once to do preventive maintenance on the flare. Therefore, the control requirements need to incorporate an allowance for such preventive maintenance to be done for a short period of time (e.g., over the course of a 5-year period) while the other hydrogen plants continue to operate.

The Proposed Regulation 13-5 Violates California Law

The District's proposed rule contains numerous technical errors and deficiencies. These failings render the proposed rule contrary to California law and invalid for several distinct reasons. The California Health & Safety Code (H&S Code) imposes several substantive requirements on the District when it engages in rulemaking. Among other things, the District "shall" make findings and assure that rules meet the following criteria: "necessity, authority, clarity, consistency, nonduplication, and reference." H&S Code § 40727 (italics added).) The District also "shall consider . . . the cost effectiveness of a control measure." H&S Code § 40703.

These are mandatory requirements that the District must comply with when adopting any regulation. The District must satisfy each of these requirements with substantial evidence in the administrative record which, for the reasons explained above, it has failed to do so. Among other things, the District has not justified the necessity of the methane emissions reductions at these facilities that are within the Cap and Trade program, or the costs associated with those emissions reductions and the monitoring of numerous de minimis vents. The District has not complied with the need for clarity in its rulemaking. These and other failings run afoul of the H&S Code.

The District's decisions also must be fair and reasoned. When the District's actions are "arbitrary, capricious, entirely lacking in evidentiary support, unlawful, or procedurally unfair," California courts must set them aside. On the whole, the District's proposed Regulation 13-5

fails this test. The proposal would impose new requirements with no technical justification and no basis in the administrative record. For example,

- As stated above, the BAAQMD proposed regulation is an example of what the IPCC identified as a "problematic"/"ineffective" rule in which localized decreases would be offset by increases at Cap-and-Trade facilities elsewhere in the state, and the rule will cause some increased GHG for the sources outside the Cap-and-Trade program (i.e., construction emissions).

- The magnitude of the emissions does not justify the rule. Not only are the emissions small in BAAQMD's inventory, they meet CARB's definition of de minimis in the refineries' own individual GHG inventories.

- The requirements are unclear. For example, although the District changed the wording for the monitoring requirements from "continuous" to "monitor[ing] on a daily basis", [13-5-501.1, and -502.1], the Staff Report defines the daily basis as "continuous". This language is not clear and as stated in our previous comments, requiring continuous monitoring of all atmospheric vents is unreasonable and the proposed rule does not contain an adequate basis for such frequent monitoring.

- Additionally, it appears the District did not account for the need for assist gas (for when the vent composition is not as described by the District) or purge gas, and may have underestimated pilot gas.

These are just a few examples of the issues identified above, and yet they highlight the arbitrary and capricious nature of the District's proposed Regulation 13-5.

The proposed amendments also violate the California Environmental quality Act (CEQA). CEQA requires all public agencies to conduct an environmental review of any "project" they carry out. (Pub. Res. Code § 21080.) A "project" is an "activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." (Pub. Res. Code, § 21065.) CEQA "projects" include an agency's adoption of a rule or regulation, including those aimed at environmental protection.

Note that the objectives of the proposed rule are identified in the EIR. Yet, the rule does not meet those objectives.

The objectives of Proposed Regulation 13-5 are to:

- Reduce emissions of GHGs, as well as other organic compounds, associated with

operation of industrial hydrogen plants.

- Assist the Air District in meeting its policy goal of reducing Bay Area GHG emissions to 40 percent below 1990 levels by 2030

Here, WSPA has noted numerous environmental impacts arising from the proposed requirements, including increased energy use, and therefore conflicts with California's GHG reduction plans and fails the first objective above.

The second objective will also not be met due to the increased energy use for control measures and the related GHGs, and also due to the IPCC problematic/ineffective rule critique discussed above. The impacts of the rule on Bay Area refinery methane emissions are going to be offset by impacts from other sources in the Cap-and-Trade program, and the proposed rule would not result in GHG reductions statewide or globally. Again, the District's proposed rule would not comply with California's statewide GHG reductions which is a violation of CEQA.

The District has not adequately evaluated these and other impacts, has not discussed mitigation of these impacts, has created a scenario where GHGs will likely be increased or be in conflict with statewide GHG reduction goals, and has not complied with the requirements of CEQA in proposing to amend Rule 13-5.

We are disappointed that the District continues to pursue this rule on sources already included in the Cap-and-Trade program that are also classified as de minimis GHG sources by the state's Mandatory Reporting Rule for GHG. We are also disappointed that as identified above, several of our expressed concerns made in our 2020 and 2021 comments have yet to be addressed.

For the reasons stated above, WSPA recommends that the District not proceed with the rule as drafted. The District should amend the rule to be consistent with the law as stated in this comment letter.

We look forward to staff's response to our comments prior the May 4, 2022 Board hearing where rule adoption will be considered.

Sincerely,

Enclosure Appendix A: Other Detailed Comments

Appendix A. Other Detailed Comments

1. The proposed regulation defines "Organic Compound" [Section 13-5-209] as in Regulation 1—i.e., "Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic and metallic carbides or carbonates and ammonium carbonate"—and "Total Organic Compound (TOC)" as "Any organic compound or mixture of organic compounds, including methane" [13-5-212].

   The 13-5-212 definition leaves the classification of CO, CO_2, and carbides/carbonates ambiguous. WSPA does not believe that these are considered TOC and our understanding is that District staff does not believe that either. Accordingly, for clarity, please change the definition language in 13-5-212 to define TOC as "The sum of methane and organic compounds as defined in Section 13-5-209."

   Additionally, some confusion might also be alleviated if the District would use the term "Organic Compound" in a manner that is more similar to standard chemical classifications—i.e., methane is generally considered an organic compound, and CO, CO_2, and carbides/carbonates are not—and use the phrase "Nonmethane Organic Compound" (or "Nonmethane Organic Gas") to refer to the instances when the District is referring to organic compounds less methane. These NMOC and NMOG acronyms are more readily recognizable, having been commonly used in both published scientific literature and by both US EPA and CARB.

2. In Table 3.2-2, the District tabulates 2019 data for "existing conditions". It's 2022; the District should be able to show 2020 data.

3. WSPA agrees with the reasoning of the personnel who prepared the EIR with regard to how to calculate emissions from hydrogen plant flares in Section 3.2.4.2.1 and 3.2.4.3 of the EIR--i.e., using AP-42 factors for criteria pollutants when pilot gas (natural gas) is combusted, and that there is essentially no SOx and no PM and no generated TAC when vent gas is being combusted--but also understands that for existing hydrogen plant flares, District engineering staff have been insisting on calculating emissions in the same way as non-hydrogen plant flares[18] (and have also been charging exorbitant fees based on this method). The EIR needs to explain this discrepancy in reasoning: i.e., WSPA does not feel that it is appropriate for the District to represent one thing in its own EIR and then force refineries to identify and use a much different number when reporting the same emissions.

[18] BAAQMD Engineering Division, "Flare Methodology and default emission factors 5-27-2020" spreadsheet

4. Table 3.3-1 on page 3.3-4 of the DEIR identifies that the values shown are "taken from the IPCC 5th Assessment Report (AR5), with the exception of black carbon", yet fails to identify the fact that IPCC identified several values—including, notably, GTP values—and that IPCC did not recommend the values identified by the District: i.e., the District's values are not consistent with the values shown in the table of metrics at the end of the relevant chapter of AR5 (Chapter 8) – i.e., the values in Appendix 8.A, Table 8.A.1.[19] Please identify specifically the source of the District's values, and explain why the District did not use either (a) values consistent with other state and Federal regulations (and the state's inventory numbers that are cited below Table 3.3-1) or (b) values that were summarized by IPCC in Table 8.A.1.

5. Page 3.4-8 of the DEIR identifies that the District's estimate of 77 scf per hour per pilot light was "based on a review of fuel use reported to the Air District by other similar facilities" while page B-21 labels it as an "Estimate from manufacturer" and relabeled it as "Purge/Pilot Gas Consumption". The DEIR discusses the need for pilot gas on page 3.3-18 but has no similar discussion of the need for purge gas. Is there any reason that the District did not follow the procedures for evaluating flares that are laid out in US EPA's Air Pollution Control Cost Manual? Those procedures identify approximately 450 scf/hr for purge gas.[20] In addition, although that guidance does identify two pilots for a 24" diameter flare, WSPA's understanding is that modern-day flare designs are much more likely to have 3 or 4 pilots each.

6. The District's EIR emissions analysis is based on "AP-42 emissions factors for light smoking petroleum flares" and cites a URL which is no longer valid. These factors are no longer in AP-42 but the District appears to be referring to factors in EPA's Emissions Estimation Protocol for Petroleum Refineries (Version 3, April 2015), which identifies a PM emission factor of 0.027 lb/MMBtu (LHV).

   WSPA member companies who have attempted to use this PM emission factor for their own flares have been told by District engineering staff that this is deficient and a factor of 0.12 lb/MMBtu (LHV) should be used instead; within the last month, the District has identified that 0.084 lb/MMBtu could be used.

   WSPA objects to the District requiring one emission factor for emissions calculations

[19] IPCC, 2013: Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. p. 731.
[20] Ibid., p. 1-24; i.e., $(7.85 \times 10^{-4}$ kscf/hr) $\times 24^2 \approx 450$ scf/hr.

conducted by refineries and then staff using a different (lower) emission factor when calculating emissions from the District's actions for the same source type.