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***Via Internet Upload at* http://www.arb.ca.gov/lispub/comm/bclist.php, oilandgas2016**

Clerk of the Board
Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities

To the California Air Resources Board and Staff:

The Center for Biological Diversity submits the following comments on the Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities, and the accompanying the Initial Statement of Reasons ("ISOR") and Draft Environmental Analysis ("Draft EA") prepared by the California Air Resources Board ("ARB").

The Center is a non-profit organization with more than one million members and online activists and offices throughout the United States, including in Oakland, Los Angeles, Sacramento, and Joshua Tree, California. The Center's mission is to ensure the preservation, protection and restoration of biodiversity, native species, ecosystems, public lands and waters and public health. In furtherance of these goals, the Center's Climate Law Institute seeks to reduce U.S. greenhouse gas emissions and other air pollution to protect biological diversity, the environment, and human health and welfare. Specific objectives include securing protections for species threatened by global warming, ensuring compliance with applicable law in order to reduce greenhouse gas emissions and other air pollution, and educating and mobilizing the public on global warming and air quality issues.

The Center supports many elements of the proposed regulation, and these comments offer specific recommendations intended to strengthen its goals and enhance its effectiveness.

I. The Regulation Should Eliminate Methane Emissions from the Oil and Gas Sector Entirely, and on the Shortest Possible Timeline

The Center has long supported taking action to address methane emissions from the oil and gas sector. In fact, Californians have been waiting too long for this. Both the 2008 Climate Change Scoping Plan and the subsequent First Update to the Climate Change Scoping Plan identified the regulation of oil and gas operations as an important greenhouse gas ("GHG")

mitigation measure. Furthermore, the currently proposed regulation was developed largely based upon data that were collected in 2009.

Methane is a substantial component of anthropogenic greenhouse gas emissions, responsible for as much as a quarter of climate forcing, and methane emissions from the oil and gas industry are responsible for approximately 15 percent of methane emissions in the state. Furthermore, methane emissions from the oil and gas sector are strongly associated with co-pollutants that are known health threats, and many of these emissions are located in close proximity to communities already suffering from poor air quality and associated health impacts.

The staff report points to the recently proposed Short-Lived Climate Pollutant strategy that includes a 40 percent reduction of methane by 2030 with a 40-45 percent reduction from the oil and gas sector as a whole by 2025. The Center agrees with the need for this action, but the goal should be for much greater reductions and on a shorter timeline, and there are numerous ways that the Proposed Regulation could be strengthened to achieve greater reductions.

In many ways methane from the oil and gas sector is among the most ripe and obvious targets for reductions, as the emissions are unintended, accidental, and unnecessary for the underlying activities. The Center strongly supports the goal of achieving substantial reductions in fugitive methane emissions from the oil and gas industry, and urges ARB to consider all options to eliminate methane emissions from the oil and gas sector entirely. The following are specific provisions in the Proposed Regulation that must be strengthened to increase the effectiveness of the

A. Implementation Starting in 2017

Compared with the discussion proposal, the implementation start date for the regulation was pushed back a year, from January 2017 to January 2018. There is no need for this delay, and no reason to allow uncontrolled emissions from the oil and gas industry for any additional time, especially when many of those emissions can be easily reduced through repairs.

B. Quarterly Leak Detection and Repair

The proposed rule requires quarterly LDAR monitoring of facilities initially, but allows facilities to downgrade to annual monitoring if no leaks are found in five consecutive quarters.[1] Not only does this mean that some leaks may occur for up to a year before being detected, but it also creates a perverse incentive for operators to act less effectively to find and report leaks. To maximize compliance and minimize fugitive emissions, LDAR must be required quarterly.

[1] § 95669.(g)(1): "The quarterly inspection frequency may be reduced to annually provided that the following conditions are met: (A) All components have been measured for five (5) consecutive calendar quarters and the number of leaks has been determined to be below the number of allowable leaks for each leak threshold category..." Proposed Regulation at 22.

C. Critical Components

The proposed regulation includes special allowances for methane leaks from sources identified as critical components.[2] These special allowances would allow such leaks to continue for up to a year if the repair requires shutting down the operation.[3] While it may make sense not to require the removal of a component for which there is no replacement or possibility of bypass, this option should apply only in those cases where shutdown of the particular operation as a whole would not curtail the leak.

D. Low-Bleed Pneumatics and Heavy Crude Components

The testing of low-bleed pneumatics is required only annually, and heavy crude components are exempt from leak detection and repair requirements entirely because they "emit less total hydrocarbons, and therefore less methane, than other components found in gas or other liquid service."[4] The fact that high-bleed devices generally emit even higher volumes than low-bleed devices is no reason to allow for continued methane emissions from low bleed devices. Low-bleed pneumatics are also exempt from the requirement to be replaced with no-bleed devices. Staff Report at 101. The staff report explains that this allowance is offered in large part because those components were recently replaced in response to recent rule changes. Again, this is no reason to allow for continued methane emissions from low bleed devices.

E. Flaring

While the Proposed Regulation creates a hierarchy that prioritizes gas collection and use over combustion, the potential for increased incidence of flaring should be addressed. Specifically, ARB could set a hard limit on flaring allowed at each type of operation to require collection and use at the larger sources.

II. The Current Requirements for Underground Storage Facilities Must Be Strengthened to Avoid Catastrophic Leaks Not Covered in the Proposed Regulation

The Proposed Regulation at section 95668(i) requires monitoring combined with leak detection and repair at underground storage facilities, but these measures alone will not prevent future disasters like that at Aliso Canyon. By the time that increased ambient methane

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[2] " 'Critical component' means any component that would require the shutdown of a critical process unit if that component was shutdown or disabled." "'Critical process unit' means a process unit that must remain in service because of its importance to the overall process that requires it to continue to operate, and has no equivalent equipment to replace it or cannot be bypassed, and it is technically infeasible to repair leaks from that process unit without shutting it down and opening the process unit to the atmosphere." Proposed regulation at 3.

[3] "Critical components are allowed additional time to make repairs, but must be repaired during the next process unit shutdown or within 12 months from the date of the initial leak concentration measurement, whichever is sooner." 95668(d)(3)(F). Regulation at 46.

[4] Section 95669(b)(2)

concentrations are detected, it may be too late to avoid disaster. The largest danger is wells with a single barrier without surrounding cement. Thus, the Proposed Regulation should first identify all single-barrier storage operations. These must be inspected for evidence of corrosion, cracking, or other loss of casing strength. If such evidence is found, the well must be taken out of operation immediately. Furthermore, all storage facilities should be required to have downhole shutoff valves, something that Aliso Canyon storage well SS25 lacked. The presence of a downhole shutoff valve could have avoided the massive leakage at Aliso Canyon and must be required of all storage wells going forward.

III. The Proposed Regulation Must be Expanded to Address Fugitive Emissions from Abandoned Wells

Although the ISOR mentions that "abandoned or idle wells may be located at facilities that were previous oil or natural gas production fields," no further attempt is made to address these emissions. It is clear that abandoned oil and gas wells can be a significant source of methane emissions, yet current GHG inventories omit this source. One recent study measured methane emission rates from abandoned wells in Pennsylvania and estimated that the emissions accounted for 4 to 7 percent of the state's total methane emissions.[5] In California, approximately 45 percent of wells in DOGGR's database are classified as "plugged and abandoned,"[6] raising the distinct possibility that these wells are emitting substantial volumes of methane. These sources must be addressed under the Regulation to achieve the level of reductions necessary to avoid catastrophic climate change.

IV. Leak Detection Devices Must Be Carefully Tested and Calibrated

The requirements of the Proposed Regulation depend on accurate methane measurements; acceptable devices must be thoroughly screened. Recent data suggest that at least one commonly used methane sensor is prone to failures that result in underestimation of methane emissions.[7] ARB should revise the Regulation to ensure that known problematic devices are disallowed and furthermore require evidence that any device used to detect leaks is operating accurately with proper protocol followed to maintain calibration.

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[5] Mary Kang et al., *Direct measurements of methane emissions from abandoned oil and gas wells in Pennsylvania*, 111 PNAS 18173 (2014), *available at* http://www.pnas.org/content/111/51/18173.full.pdf.

[6] Presentation by Mary Kang to California Energy Commission (Nov. 10, 2015), *available at* http://www.energy.ca.gov/research/notices/2015-11-10_workshop/presentations/05_Stanford_University_M_Kang.pdf.

[7] Touché Howard, *University of Texas study underestimates national methane emissions at natural gas production sites due to instrument sensor failure*, 3 ENERGY SCIENCE & ENGINEERING 443 (2015), *available at* http://onlinelibrary.wiley.com/doi/10.1002/ese3.81/epdf.

V. The Regulation is Needed to Fill Critical Gaps in the Current Regulation of Emissions From the Oil and Gas Sector

Although other aspects of the oil and gas sector are subject to a regulation, ARB's Proposed Regulation would be the only state-wide limit on methane from existing oil and gas sources. The federal EPA rules requiring oil and gas operators to check well site facilities for methane leaks on a semi-annual basis and compressor stations on a quarterly basis apply only to new or modified facilities. For these reasons, the proposed regulation is sorely needed to fill critical gaps in the current regulation of emissions from the oil and gas sector. Furthermore, existing regulations of well stimulation do not address methane emissions specifically from these operations, nor do they affect other aspects of oil and gas extraction that are significant sources of fugitive methane.

ARB appears to be interpreting SB 1371 as preemptive of its role in regulating methane emissions from natural gas pipelines.[8] However, the fact that the CPUC is developing regulations as mandated by SB 1371 does not mean that ARB cannot or should not develop emissions requirements for those sources.[9] Nothing in SB 1371 indicates that pipeline emissions cannot also be addressed through regulations developed at ARB to address GHG emissions from the oil and gas sector.

Finally, we note that ARB has indicated the importance of reducing methane from the oil and gas sector as a part of its Strategy to Reduce Short-Lived Climate Pollutants. This is critical not only to achieving the climate goals of the state but to ensuring that our current fuel and supply does not result in unaccounted and unregulated methane leakage. First, as ARB concludes in the Strategy (at 77), meaningful reductions in methane from the oil and gas sector will ultimately depend upon reducing demand does not mean that methane emissions can be permissible in the meantime. To cap this methane source and to begin to move oil and gas toward a standard that allows for meaningful comparison to clean energy sources, fugitive methane should be capped at effectively zero by 2020. Furthermore, it essential that ARB

[8] "Accordingly, this regulation covers upstream emissions (production, gathering and boosting stations, and processing) as well as natural gas storage and transmission compressor stations (collectively "oil and gas"). This regulation does not cover the petroleum refining sector. Further, GHG emissions from oil and gas pipelines and related facilities are being addressed in a separate regulatory effort in partnership with the California Public Utilities Commission (CPUC)." Staff Report at 1.

[9] The Legislative Counsel's Digest to SB 1371, the 2014 legislation mandating that PUC develop regulations to minimize leaks from natural gas pipelines, describes that bill this way: "[SB 1371] would require the commission, giving priority to safety, reliability, and affordability of service, to adopt rules and procedures governing the operation, maintenance, repair, and replacement of those commission-regulated gas pipeline facilities that are intrastate transmission and distribution lines to minimize leaks as a hazard to be mitigated pursuant to the Natural Gas Pipeline Safety Act of 2011, consistent with specified federal regulations, and a specified order of the commission, and to reduce emissions of natural gas from those facilities to the maximum extent feasible in order to advance the state's goals in reducing emissions of greenhouse gases pursuant to the California Global Warming Solutions Act of 2006."

continue its efforts (Strategy at 79) to ascertain true levels of methane leakage from the oil and gas industry such that all fugitive emissions are effectively addressed.

VI. The Global Warming Potential for Methane Must Reflect the Latest Science

The Center strongly supports ARB's use of a 20-year global warming potential ("GWP") for methane. The time horizon used to equate methane and CO_2 emissions has significant implications for policy decisions in which the time horizon of the GWP critically influences the cost-benefit analysis of mitigation options. However, the Draft EA and Economic Analysis employ an outdated value for the 20-year GWP of methane, based on the IPCC's Fourth Assessment Report. Staff Report at 29, Economic Analysis at B-3.

We strongly urge ARB to use GWP values from the most recent IPCC Fifth Assessment Report ("AR5"), as it does for black carbon. The outdated 20-year GWP of 72 omits critical carbon cycle feedbacks. This must be corrected: carbon cycle feedbacks must be included to properly equate methane and CO_2 warming influences. The groundbreaking realization by the contributors to AR5 was that carbon cycle feedbacks are an inherent part of the warming caused by CO_2. Yet, until the most recent Assessment, they were omitted from GWP values for non-CO_2 greenhouse gases. As a result, until AR5, the GWP conversion was actually comparing apples to oranges. The only way to accurately compare among greenhouse gases—the entire purpose of a GWP—is to include carbon cycle feedbacks. According to the AR5, this results in a 100-year methane GWP of 36 and a 20-year GWP of 87.[10]

VII. The Draft EA Does Not Meet CEQA Requirements

The Draft EA fails to adequately analyze the project under CEQA for several reasons. First, the GHG analysis does not provide data on current and future oil and gas greenhouse gas emissions as context for the expected reductions from this regulation. Second, the alternatives analysis omits any alternatives that would provide greater environmental benefit in the form of deeper emissions cuts. We also note that while ARB considers this a programmatic environmental analysis (Draft EA at 7), this designation in no way excuses faulty or imprecise analysis where data are available. *Citizens for a Sustainable Treasure Island v. City and County of San Francisco*, 227 Cal. App. 4th 1036, 1052 (Cal. App. 2014). Finally, this Draft EA is prepared for a certified regulatory program. Draft EA at 6. This does not mean, however, that the analysis may short circuit the requirements for a thorough and meaningful analysis under CEQA. Mountain Lion Foundation v. Fish & Game Com., 16 Cal. 4th 105, 115 (1997); Conway v. State Water Resources Control Bd., 235 Cal. App. 4th 671, 680 (2015).

A. The GHG Impacts Analysis Fails to Place Emission Reductions in Context

[10] G. Myhre et al., *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 IPCC Table 8.7 at 714 (Cambridge Univ. Press 2013).

The Draft EA reports total GHG emission reductions at Table 4-4, but fails to show how these reductions compare with statewide oil and gas climate pollutants. An adequate description of a project's baseline, or environmental setting, is essential to allow decisionmakers to fully evaluate the impacts of a project. See CEQA Guidelines § 15125(a), (c). Furthermore, any specific information that would be necessary to evaluate impacts must be included in an environmental analysis document. See *Cadiz Land Co. v Rail Cycle*, 83 Cal. App. 4th 74, 93-94 (2000). Here, a critical component of the environmental setting for GHG impacts is the baseline emissions from the oil and gas industry as a whole, and from the various categories identified for reduction. The Draft EA must provide a direct comparison between baseline emission levels and targeted reductions in its section on GHG impacts.

Not only are current emissions levels essential, but also estimated future emissions must be disclosed. The Draft EA alludes to a historical decline in GHG emissions from the oil and gas sector (Draft EA at 11), but other data suggest that this trend may change in the future. First, it is well-established that the oil market is highly volatile, making historic trends questionable predictors. Second, Kern County recently issued an environmental impact report ("EIR") for its ordinance creating a ministerial process for oil and gas permitting in the County. The EIR indicated that there would be approximately 2,697 new producing wells per year in Kern County for the next 20 years and beyond.[11] These data strongly contradict the general evidence provided by the applicant of decreasing oil and gas production. Finally, a recent analysis of well stimulation by the California Council on Science and Technology found that well stimulation may result in expanded oil production in California, especially from the Monterey Formation.[12] Without an estimate of future potential emission trends, it is impossible for decisionmakers to evaluate how this rule may aid efforts to avoid future climate change.

Even though the rule will result in net GHG emission reductions, the public and decisionmakers have been denied the opportunity to assess the significance of those reductions as well as the relative impact of the increases in CO_2 emissions that will result from increased flaring as a result of compliance actions.

B. The Draft EA Fails to Consider Alternatives to Achieve Greater Reductions

The Draft EA considers only three alternatives, none of which represent increased emission reductions over the proposed rule. In so doing, the alternatives analysis denies the public and decisionmakers the opportunity to assess all reasonable options to reduce environmental impacts of the project. The range of alternatives should "include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. CEQA Guidelines 15126.6(c). The Draft EA

[11] Kern County, Environmental Impact Report: Revisions to Kern County Zoning Ordinance – 2015(c) at 3-30 (July 2015*), available at* http://pcd.kerndsa.com/planning/environmental-documents/421-oil-gas-deir.
[12] California Council on Science and Technology, AN INDEPENDENT ASSESSMENT OF WELL STIMULATION IN CALIFORNIA: WELL STIMULATION TECHNOLOGIES AND THEIR PAST, PRESENT AND POTENTIAL FUTURE USE IN CALIFORNIA (Jan. 2015), *available at* http://ccst.us/publications/2015/2015SB4-v1.pdf.

considers only three alternatives in addition to the proposed regulation: 1) No Project, 2) No Enhanced Monitoring; and 3) No Vapor Collection. Draft EA at 112. These three alternatives would achieve the same or fewer reductions. Greater climate benefits would be achieved with standards that require greater reductions, yet no such alternative was considered.

An alternative that includes a more rapid implementation schedule and more stringent requirements (See Section XX, *supra*) is both feasible and would accomplish the majority of the project objectives. In particular, stronger regulations would better meet Objective 7, which is to implement reductions to meet the state's 2020 GHG reduction goals, and Objective 8, which is to "include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects." Draft EA at 14. In addition, objectives such as developing a regulation to meet goals of the First Update to the Scoping Plan and supporting ARB's Short Lived Climate Pollutant Plan will be better achieved with earlier, more stringent requirements. Draft EA at 14. Notably, these alternatives are "consistent with the state board's legislatively mandated responsibilities and duties" as required under ARB's certified regulatory program. 17 Cal. Code Regs. § 60006.

Although one role of the alternatives analysis is to inform public and decisionmakers of alternate project formulations that will reduce significant impacts, an alternatives analysis can also present alternatives that will increase project benefits, aside from potential environmental costs. See Kostka & Zischke, Practice Under the California Environmental Quality Act §15.7.1.

VIII. Conclusion

Steep and immediate reductions in methane emissions from the oil and gas sector are necessary to achieve the state's GHG goals, avoid adverse near-term impacts of climate change, and to protect air quality and health of Californians. As discussed above, the Center supports ARB's proposals to reduce emissions of these "superpollutants" from the oil and gas industry. At the same time we urge ARB to consider all feasible measures to eliminate methane leaks to the greatest extent possible on the shortest possible timeline.

Sincerely,

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