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VIA ELECTRONIC MAIL

Department of Conservation
California Geologic Energy Management Division
ATTN: Leak Detection RFI
715 P Street, MS 1907
Sacramento, CA 95814
Email: CalGEMRFI@conservation.ca.gov

Re: Request for Information—Leak Detection at Oil and Gas Operations

We, the undersigned organizations, urge the California Geologic Energy Management Division (CalGEM) to enact strong regulations that prioritize leak *prevention* at oil and gas sites while mandating the use of the best available leak detection technology at all fields, particularly in those fields containing wells within 3,200 feet of sensitive receptors. Our organizations include members of a broad statewide coalition called Voices in Solidarity Against Oil in Neighborhoods (VISIÓN) that advocates for frontline environmental justice communities in Kern and Los Angeles counties and elsewhere that are directly and disproportionately affected by the oil and gas industry, along with the Sierra Club, FracTracker Alliance, and Elected Officials to Protect America.

While we appreciate CalGEM’s acknowledgment that gas leaks are “an indication that the well or facility is not being properly maintained and therefore may pose a threat to life, health, property, and natural resources,”¹ we note that leak-related regulations would be treating a symptom rather than the root cause. As stated by the Scientific Advisory Panel that CalGEM commissioned, the only way to truly protect all Californians from the dangerous effects of oil and gas production is a complete phase-out of oil and gas activities, followed by engineering controls together with setbacks between well sites and sensitive receptors as the next most protective option.²

We hoped that CalGEM was headed in the direction of a complete phase-out after the agency’s own Finding of Emergency in December 2022, recognizing that “[p]roximity to oil and gas extraction sites pose[s] significant health risks,”³ and the regulation CalGEM proposed in

¹ CalGEM, Request for Information: Leak Detection at Oil and Gas Operations at 2 (Feb. 29, 2024) (hereafter RFI), <https://www.conservation.ca.gov/calgem/Documents/RFI%20Leak%20Detection.pdf>.

² Letter from Cal. Oil and Gas Public Health Rulemaking Scientific Advisory Panel, Response to CalGEM Questions at 12–13 (Oct. 1, 2021) (hereafter Scientific Advisory Panel), https://www.conservation.ca.gov/calgem/Documents/public-health/Public%20Health%20Panel%20Responses_FINAL%20ADA.pdf.

³ CalGEM, SB 1137 First Emergency Implementation Regulations: Notice of Proposed Emergency Rulemaking Action at 3 (Dec. 19, 2022), <https://www.conservation.ca.gov/>

February 2024 to ban well stimulation treatments, which the agency recognizes as “necessary to prevent damage to life, health, property, and natural resources, and to protect public health, public safety, and environmental quality, including the mitigation and reduction of greenhouse gas emissions associated with oil and gas development.”⁴ We are disappointed that the agency now appears to be moving in reverse, as it recently approved 14 wells in the carbon-intensive Midway Sunset field adjacent to the Derby Acres community—with 40 residential parcels located within 3,200 feet of several proposed wells—while relying on a mitigated negative declaration under the California Environmental Quality Act that is inaccurate and 13 years out of date.

Given that neighborhood drilling poses a public health emergency,⁵ and new neighborhood wells appear to be imminent, there is an urgent need for the agency to proceed as quickly as possible with promulgating regulations that will both prevent leaks and ensure their immediate detection and repair.

While the preamble to the RFI contains a vague reference to the requested information “guid[ing] future actions,”⁶ it is important to note the substantial progress that CalGEM has already made toward regulations in this area—both in the context of the ongoing public health rulemaking,⁷ and in the context of the emergency rulemaking to implement Senate Bill (SB) 1137⁸ (which is currently on pause due to the November 2024 ballot measure). Rather than ignoring the important work that has already been done, it is imperative that CalGEM uses this RFI to improve and finalize the leak-related proposals contained in both of those rulemakings.

In particular, in the event voters vote to keep SB 1137 in the November 2024 election, CalGEM should finalize the engineering controls it previously proposed in regulations to implement that

[calgem/Documents/SB%201137%20Emergency%20Regulations%20-%20Rulemaking%20Notice.pdf](https://www.conservation.ca.gov/calgem/Documents/SB%201137%20Emergency%20Regulations%20-%20Rulemaking%20Notice.pdf).

⁴ CalGEM, Well Stimulation Treatment Phase-Out Regulations, Initial Statement of Reasons at 1 (Feb. 9, 2024), <https://www.conservation.ca.gov/calgem/Documents/3.%20WST%20Initial%20Statement%20of%20Reasons.pdf>.

⁵ See Scientific Advisory Panel at 1–11 (concluding with a “high level of certainty” that (1) “health-damaging air pollutants, including criteria air pollutants and toxic air contaminants, are more concentrated near [oil and gas development] activities compared to further away,” and (2) serious harm to the public is occurring within 1 kilometer (3,200 feet) of oil activities, particularly adverse birth and respiratory outcomes).

⁶ RFI at 1.

⁷ CalGEM, Public Health Rulemaking: Draft Rule for Protection of Communities and Workers from Health and Safety Impacts from Oil and Gas Production Operations Pre-Rulemaking Release for Public Review and Consultation (Oct. 21, 2021) (hereafter Draft Public Health Regulations), <https://www.conservation.ca.gov/calgem/Documents/public-health/PHRM%20Draft%20Rule.pdf>.

⁸ CalGEM, SB 1137 First Emergency Implementation Regulations (proposed Dec. 19, 2022, finalized Jan. 6, 2023), <https://www.conservation.ca.gov/calgem/Documents/Final%20Text%20SB%201137%20First%20Emergency%20Regulations%2020230106.pdf>.

law as soon as possible, with the additional amendments we have sought in prior comments⁹ along with any new information that comes to light in the RFI that would have the effect of making the regulations more protective of human health and the environment. Alternately, in the event voters vote to overturn SB 1137, CalGEM should return its focus to the public health rulemaking, including the engineering controls proposed therein, along with the amendments we have sought in the prior comments cited above and any new information obtained from the RFI that will improve the regulations' protectiveness.

The comments below (I) highlight the magnitude of the current crisis of well leaks in California, particularly in frontline communities; (II) underscore the importance of leak prevention relative to leak detection from a public health and safety standpoint; (III) challenge the RFI's focus on cost-effectiveness rather than making polluters pay to employ best available technology to address a problem of their own making; (IV) emphasize the need for continuous leak detection technology in all fields and at all wells; (V) provide examples from our prior comments and other jurisdictions of technical aspects that will be essential to include in leak-related regulations; and (VI) stress the importance of robust and transparent community engagement in all leak-related matters.

⁹ In particular, these comments build on and incorporate VISIÓN's comments in CalGEM's public health rulemaking, including scoping comments dated June 10, 2020, supplemental comments dated November 30, 2020, March 29, 2021, and May 16, 2022, and comments on the Draft Public Health Regulations dated December 21, 2021. We also build on and incorporate VISIÓN's comments in CalGEM's SB 1137 Emergency Rulemaking dated December 28, 2022.

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I. Leaking oil and gas wells are creating a statewide public health crisis

According to CalGEM's online database, California currently has around 40,000 idle wells.¹⁰ By one estimate, two-thirds of those idle wells are leaking methane.¹¹ In 2020, researchers identified a combined total of 69,425 idle wells and economically marginal wells, 2,975 wells at high risk of becoming orphans in the near future, and 2,565 wells that were likely orphans, meaning there is no owner or operator for those wells.¹² Unplugged wells can be "super-emitting" sources of methane,¹³ and also emit volatile organic compounds (VOCs).¹⁴

Methane is a potent greenhouse gas¹⁵ known to cause difficulty breathing, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, loss of coordination, and asphyxiation.¹⁶ VOCs contribute to the formation of ozone, which inflames the lungs, constricts

¹⁰ CalGEM, *WellSTAR Data Dashboard*, https://www.conservation.ca.gov/calgem/Online_Data/Pages/WellSTAR-Data-Dashboard.aspx (accessed May 28, 2024).

¹¹ Eric D. Lebel et al., *Methane Emissions from Abandoned Oil and Gas Wells in California*, *Envtl. Science and Technology*, 54 (2020), <https://pubs.acs.org/doi/10.1021/acs.est.0c05279>.

¹² Judson Boomhower et al., *Orphan Wells in California: An Initial Assessment of the State's Potential Liabilities to Plug and Decommission Orphan Oil and Gas Wells*, California Council on Science and Technology (2020) at 16, <https://ccst.us/wp-content/uploads/CCST-Orphan-Wells-in-California-An-Initial-Assessment.pdf>.

¹³ Mary Kang et al., *Identification and Characterization of High Methane-Emitting Abandoned Oil and Gas Wells*, *Proceedings of the National Academy of Sciences*, 113(48) (2016), <https://www.pnas.org/content/pnas/113/48/13636.full.pdf>; John Sullivan, *Abandoned Wells Can Be 'Super-Emitters' of Greenhouse Gas*, Princeton University, Dec. 9, 2014, <https://www.princeton.edu/news/2014/12/09/abandoned-wells-can-be-super-emitters-greenhouse-gas>.

¹⁴ See 87 Fed. Reg. 59314, 59317 (Sept. 30, 2022) ("With respect to the commenters' concerns regarding leaking wells, the [U.S. Environmental Protection Agency (EPA)] agrees that if wells are leaking methane, they are likely to also leak VOCs.").

¹⁵ "Methane is the second most abundant anthropogenic [greenhouse gas] after carbon dioxide (CO₂), accounting for about 16 percent of global emissions. Methane is more than 28 times as potent as carbon dioxide at trapping heat in the atmosphere . . . Because methane is both a powerful greenhouse gas and short-lived compared to carbon dioxide, achieving significant reductions would have a rapid and significant effect on atmospheric warming potential." U.S. EPA, *Importance of Methane* (last updated Nov. 1, 2023), <https://www.epa.gov/gmi/importance-methane>.

¹⁶ N.J. Dept. of Health, *Right to Know Hazardous Substance Fact Sheet* at 3 (2016), <https://www.nj.gov/health/eoh/rtkweb/documents/fs/1202.pdf>; U.S. Nat. Library of Medicine, *Methane*, <https://pubchem.ncbi.nlm.nih.gov/compound/Methane> (accessed May 31, 2024).

breathing, and can lead to death.¹⁷ Ozone causes and exacerbates asthma attacks, emergency room visits, hospitalizations, and other serious health harms.¹⁸

Moreover, VOCs “are important precursors” to secondary organic aerosols (SOAs),¹⁹ which are tied in particular to the production of heavy oil like the vast majority of the oil currently produced in California.²⁰ SOAs are the components of fine particulate pollution (PM_{2.5}), which causes an increased risk of cancer, and various lung and heart problems.²¹

An estimated 30 million tons of methane spewed from a single idle well in California.²² This would equate to **8.34 tons** of VOCs from a single well.²³ Countless other idle and deserted wells may also be leaking significant quantities of methane and VOCs. For example, a 2015 air quality monitoring study from the South Coast Air Quality Management District demonstrated that VOC emissions from oil and gas wells are considerably underestimated, and oil and gas wells actually contribute to more than half of the district’s stationary source VOC emissions.²⁴

Inspections conducted by CalGEM and community watchdogs over the past two years further demonstrate wells in frontline communities pose a nuisance to nearby residents. These

¹⁷ U.S. Environmental Protection Agency (EPA), *National Ambient Air Quality Standards for Ozone*, 80 Fed.Reg. 65292, 65308–09 (Oct. 26, 2015); U.S. EPA, *Integrated Science Assessment for Ozone and Related Photochemical Oxidants* at 2-20 to -24, Table 2-1 (Feb. 2013) (hereafter Science Assessment) (EPA-HQ-OAR-2008-0699-0405).

¹⁸ See, e.g., U.S. EPA, *Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards* at 3-18, 3-26 to -29, 3-32 (Aug. 2014) (hereafter Policy Assessment) (EPA-HQ-OAR-2008-0699-0404); Science Assessment at 2-16 to -18, 2-20 to -24, Table 2-1.

¹⁹ Peemapat Jookjantra et al., *Formation Potential and Source Contribution of Secondary Organic Aerosol from Volatile Organic Compounds*, 51 J. Env'tl. Quality 1016, 1017 (2022), <https://doi.org/10.1002/jeq2.20381>. See also *id.* at 1031 (identifying fuel evaporation and vehicle exhaust as major sources of VOCs contributing to SOAs).

²⁰ See, e.g., U.S. Energy Information Administration, *Petroleum & Other Liquids: Crude Oil and Lease Condensate Production by API Gravity* (released May 31, 2024) (showing that 91% of California’s oil production in February of 2024 came from oil with an API gravity of 30 degrees or lower), https://www.eia.gov/dnav/pet/pet_crd_api_adc_mbbldpd_m.htm.

²¹ John Liggio et al., *Oil Sands Operations as a Large Source of Secondary Organic Aerosols*, *Nature* at 91–94 (2016), <https://www.nature.com/articles/nature17646>.

²² Mya Frazier, *Gas Companies Are Abandoning Their Wells, Leaving Them to Leak Methane Forever*, *Bloomberg*, Sept. 17, 2020, <https://www.bloomberg.com/news/features/2020-09-17/abandoned-gas-wells-are-left-to-spew-methane-for-eternity>.

²³ EPA uses a VOC-to-Methane ratio of 0.278 pounds VOC per pound of methane. U.S. EPA, *Control Techniques Guidelines for the Oil and Natural Gas Industry*, EPA-453/B-16-001 at 5–7 (Oct. 2016), <https://www.epa.gov/sites/default/files/2016-10/documents/2016-ctg-oil-and-gas.pdf>.

²⁴ FluxSense, *Using Solar Occultation Flux and other Optical Remote Sensing Methods to Measure VOC Emissions From a Variety of Stationary Sources in the South Coast Air Basin* at 3, 6 (Sept. 14, 2017), http://www.aqmd.gov/docs/default-source/fenceline_monitoring/project_2/fluxsense_project2_2015_final_report.pdf?sfvrsn=6.

inspections exposed the “widespread” leaking of methane and other air pollutants from dozens of oil and gas wells and infrastructure in the Bakersfield, Arvin-Lamont, Los Angeles, and Ventura areas, including some wells leaking methane at explosive levels.²⁵ Further highlighting the seriousness of the problem, CalGEM has also issued many Notices of Violation to a range of operators across the state in recent years addressing leaks at poorly maintained sites and ordering the operators to complete remedial work or cease and desist activity entirely.²⁶

Leak-related incidents are an ongoing reality for frontline communities. As recently as January of this year, a pipeline ruptured at a drill site in the Wilmington neighborhood of Los Angeles and sprayed a massive geyser of oil onto the nearby street and cars.²⁷ In February, a pipeline burst in the middle of Bakersfield, leaking crude oil right in front of an elementary school.²⁸ In March, Chevron agreed to pay a \$13 million fine for 2 million gallons of oil spilled in Kern County.²⁹ In April, residents and first responders in Bakersfield reported a leak from a nearby well site that caused a range of symptoms including “fatigue, [a] bad headache . . . brain fog,

²⁵ See, e.g., John Cox, *State Finds 27 Oil Wells Leaking Methane in Arvin-Lamont Area*, Bakersfield Californian, June 1, 2023, https://www.bakersfield.com/news/state-finds-27-oil-wells-leaking-methane-in-arvin-lamont-area/article_52120332-00da-11ee-b466-83e7f8b280c5.html; Kyle Ferrar, *FracTracker Finds Widespread Hydrocarbon Emissions from Active Idle Oil and Gas Wells and Infrastructure in California*, FracTracker Alliance, Aug. 22, 2022, <https://www.fractracker.org/2022/08/fractracker-finds-widespread-hydrocarbon-emissions-from-active-idle-oil-and-gas-wells-and-infrastructure-in-california/>; CalGEM, *Well Inspections and Repair Updates* (last updated May 17, 2023), <https://www.conservation.ca.gov/well-inspections-repair-updates#:~:text=July%2019%2C%202022,all%20leaks%20are%20properly%20fixed.&text=All%20six%20wells%20previously%20found%20to%20be%20leaking%20methane%20are%20repaired.,-Post%2Drepair%20inspections>.

²⁶ See, e.g., CalGEM, Order to Plug and Abandon Wells, Decommission Attendant Facilities, and Restore Well Sites No. 1331, issued to Golden Valley Energy, LLC in the Edison & Mountain View Fields in Kern County (Sept. 1, 2023); CalGEM, Order to Pay Civil Penalties No. 1314, issued to PowerDrive Energy Services Company, LLC in Kern and Orange Counties (July 19, 2023); CalGEM, Order to Plug and Abandon Well, Decommission Attendant Facility, and Restore Well Site No. 1302, issued to W.G. Young in Lake County (Apr. 24, 2023); CalGEM, Order to Plug and Abandon Wells, Decommission Attendant Facilities, and Restore Well Sites No. 1301, issued to Tri-Valley Oil and Gas Company in the Moffat Ranch Gas, Semitropic, and Edison fields in Madera, Kern, San Joaquin, and Fresno Counties (Mar. 28, 2023); CalGEM, Order to Cease and Desist Operations No. 1338, issued to PowerDrive Energy Services Company, LLC (Oct. 13, 2023).

²⁷ Liza Gross, *Battle to Prioritize Public Health over Oil Company Profits Heats Up*, Inside Climate News, May 3, 2024, <https://insideclimatenews.org/news/03052024/california-public-health-battle-idle-wells/>.

²⁸ Dominique LaVigne, *Pipe Burst Spills Oil in Front of Buena Vista Elementary School*, ABC 23, Feb. 8, 2024, <https://www.turnto23.com/news-in-your-neighborhood/bakersfield/pipe-burst-spills-oil-in-front-of-buena-vista-elementary-school>.

²⁹ Janet Wilson, *Chevron to pay \$13M after Desert Sun, ProPublica report, but massive oil spill still flows*, Desert Sun, Mar. 21, 2024, <https://www.desertsun.com/story/news/environment/2024/03/21/chevron-oil-spills-13-million-dollar-settlement/73047701007/>.

trouble with concentration, and . . . nausea.”³⁰ Due to the lack of simple and transparent public access to data from CalGEM on leaks and spills, it is difficult for residents to understand the extent of these instances, their cumulative public health impact, and whether the crisis in frontline communities is far worse than currently known, as discussed later in these comments.

II. CalGEM must prioritize leak prevention as equally, if not more important, than leak detection.

We call upon CalGEM to take a proactive, rather than reactive approach, and adopt regulations that stop leaks before they can occur. Community members should not be expected to continue to pay for operators’ leaks, spills, and other accidents with their health and safety. Going forward, CalGEM must center community voices and concerns and craft regulations that prioritize leak prevention.

The Scientific Advisory Panel commissioned by CalGEM has recognized that there is a hierarchy of ways to protect public health from oil and gas drilling—with reducing or eliminating new and existing wells being most effective, followed by setbacks, followed by engineering controls to reduce releases of known hazards onsite (i.e., leak *prevention*), with these last two approaches “needed in tandem.”³¹

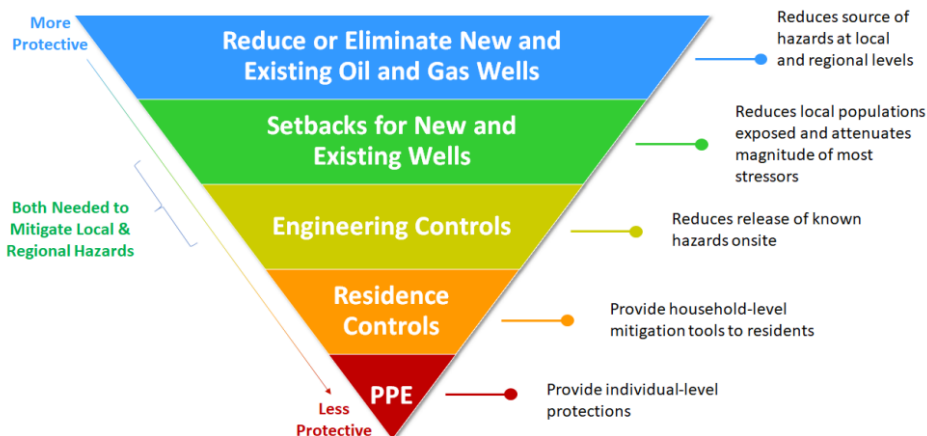


Figure 3. Hierarchy of strategies to reduce or eliminate public health harms for OGD activities. Note: the use of the term “wells” includes the ancillary infrastructure used to develop, gather and process oil and gas in the upstream oil and gas sector.

Thus, CalGEM must proceed as quickly as possible to evaluate existing engineering control regulations and propose new controls, such as “cradle-to-grave noise and air pollution emission mitigation controls on [oil and gas development] infrastructure including new, modified and existing infrastructure, and proper abandonment of legacy infrastructure, prioritizing those nearest to residential sites and schools and those associated with the highest emissions, leaks and other environmental hazards.”³² In other words, “monitoring approaches that lead to rapid leak

³⁰ See, e.g., Identifying Violations Affecting Neighborhoods (IVAN), *Local Reports*, Kern County (multiple reports on April 3 to 5, 2024), <https://kernreport.org/report/list>.

³¹ Scientific Advisory Panel at 12.

³² *Id.* at 13.

detection and repair for new and existing wells and ancillary infrastructure” must be “associated” with “the deployment of [adequate] engineering emission controls.”³³ CalGEM must not lose sight of the forest for the trees in its focus on leak *detection*, but must use its regulatory authority to enact strong leak *prevention* measures currently missing from the agency’s regulations, including those discussed below.

In particular, we generally endorse the leak prevention measures proposed in CalGEM’s public health rulemaking, with the caveats noted as follows, along with those discussed more fully in our prior comment letters, cited above.

A. CalGEM must address tank-related venting and leaks.

CalGEM must consider the recommendations of Physicians, Scientists, and Engineers (PSE) for Healthy Energy in crafting regulations applicable to tanks.³⁴ Upstream liquid storage tanks have emerged as the single largest fugitive emissions source of both methane and VOCs—despite being underestimated in previous inventories—creating a need to reduce tank-related venting and leaks by means such as vapor recovery units.³⁵ Specific policy recommendations from PSE include (i) “inhibiting the usage of formaldehyde,” which increases toxic emissions associated with liquid storage tanks; (ii) targeting methanol, 2-propanol, and ethanol for further restrictions to reduce occupational inhalation exposures; (iii) “[i]dentify[ing] and implement[ing] vapor control measures aimed at reducing fugitive leaks from liquid storage tanks, especially from tank thief hatches” to reduce health-damaging air pollutants; and (iv) adding “retrofit and replacement requirements for thief hatches and dehydrators on condensate tanks and for produced water tanks, both new and existing.”³⁶

CalGEM must also include measures that address so-called “small producers” of oil and gas and their exemptions from critical air quality permit and pollution control requirements relevant to tanks at the local level. For example, the San Joaquin Valley Air Pollution Control District currently does not require small producers to obtain construction or operation permits for their heavy-oil, low throughput tanks or meet VOC control requirements for such tanks.³⁷ CalGEM must work with local agencies to address these regulatory gaps.

We further endorse the following tank-related proposals from Dr. Tanja Srebotnjak, who provided expert testimony on behalf of VISIÓN on the Draft Public Health Regulations (Srebotnjak Report): specifying examples of authorized methods of secondary containment; requiring better recordkeeping to help with compliance monitoring; combining subdivisions (c)

³³ *Id.* at 13.

³⁴ Drew Michanowicz et al., *Methane and Health-Damaging Air Pollutants from the Oil and Gas Sector: Bridging 10 Years of Scientific Understanding* (Oct. 6, 2021) at 6–7, 14, 3-19, 3-44, 4-19, 4-22, 5-9, 5-15, https://www.psehealthyenergy.org/wp-content/uploads/2021/10/Full-Report_Bridging-10-Years-of-Scientific-Understanding.pdf.

³⁵ *Id.* at 6–7, 14.

³⁶ *Id.* at 4-19, 4-22, 5-15.

³⁷ San Joaquin Valley Air Pollution Control Dist. Rule 1020, § 3.46; Rule 2020, § 6.6.12; Rule 4623, § 4.3.

and (d) in section 1773.2 of the Draft Public Health Regulations to avoid confusion and redundancy; imposing a one-year period for retrofitting tanks in the 3,200-foot setback and limiting retrofitting of other tanks to two years; and mandating testing before leaking equipment may be returned to operational status; and defining the term “significant threat” in section 1773.4, subdivision (g) of the Draft Public Health Regulations.³⁸

B. CalGEM must prohibit venting and flaring.

The proposed requirement for a vapor venting prevention system in section 1766.1 of the Draft Public Health Regulations is designed to “ensure[] that no venting to atmosphere occurs,” which is important to the reduction of atmospheric methane and, thus, public health. PSE’s 2020 study showed that flaring and venting during oil production were “the highest contributors to sector emissions [of methane], accounting for 32% and 24%, respectively.”³⁹ Even so, section 1766.1 contains no explicit prohibition on vapor venting and no consequences for vapor venting such as suspension or shutdown of operations. CalGEM must prohibit vapor venting and require reporting whenever it occurs, suspension of operations until the source of the vapor is identified and any leak is repaired, and permanent shutdown of wells and production facilities that repeatedly violate such prohibitions. CalGEM must also reduce implementation time from two years to one year and further specify the types of information operators must provide in connection with inspections.⁴⁰

Even though flaring also represents a major source of emissions, section 1766.1 of the Draft Public Health Regulations only addresses venting, with no reference to flaring. The inclusion of a regulation designed to “ensure[] that no venting to atmosphere occurs” reflects CalGEM’s implicit recognition of the public health need to eliminate venting as a source of emissions. A similar prohibition on flaring is a necessary corollary. The PSE study cited above shows that flaring is an even bigger source of methane emissions than venting, and flaring currently occurs at oil and gas wells in major oil-producing regions of the state like the San Joaquin Valley.⁴¹ Ventura County has already enacted a flaring ban that could serve as a starting point for a state regulation.⁴² A prohibition on flaring would significantly reduce public health and safety risks in frontline communities and go a long way toward addressing the statewide impacts of flaring on air quality.

³⁸ Tanja Srebotnjak, Comments on the Department of Conservation Geologic Energy Management Division Public Health Rulemaking (Dec. 16, 2021) (hereafter Srebotnjak Report) at 9–10.

³⁹ Michanowicz at 3-9.

⁴⁰ Srebotnjak Report at 7.

⁴¹ San Joaquin Valley Air Pollution Control District Rule 4311, § 3.33.

⁴² While Ventura’s flaring and venting ban contains an exception for “infeasibility,” CalGEM should enact a stricter ban without this caveat, for the polluter-pays and health-protection reasons discussed *infra*. Ventura Cty. 2040 General Plan, § 6 Conservation and Open Space Element at 6-13 (as amended April 9, 2024), https://vcrma.org/docs/images/pdf/planning/plans/Final_2040_General_Plan_docs/VCGP_06_C_OS_Element_2024_04_09.pdf.

CalGEM must prohibit both venting and flaring and specify the consequences if operators violate this ban. Importantly, such regulation must apply to both new and existing wells and production facilities throughout the state, and must require implementation at the earliest feasible date.

C. CalGEM should consider preventative approaches in use in other states.

In addition to setbacks and engineering controls, discussed above, CalGEM should conduct a careful environmental review of each application for a drilling permit that considers the cumulative risk to frontline communities of leaks from new wells prior to making permitting decisions. Likewise, CalGEM should work with the California Air Resources Board (CARB) to promulgate regulations aimed at curtailing industry-wide emissions, beyond just wells, to reduce the air pollution baseline and help prevent some of the worst impacts that leaking wells are known to exacerbate.

i. Treating potential leaks as a cumulative impact in permitting decisions

Similar to the Central Valley and Los Angeles Basin of California, the Front Range of Colorado is a topographical hotspot for the generation and trapping of non-attainment levels of ozone due to atmospheric inversions. The main source of VOCs, the primary pollutants leading to the formation of ozone, in both geographies is the oil and gas extraction sector.⁴³ While California has done very little to address VOC emissions from the oil and gas industry sector-wide, Colorado legislators are moving forward with multiple bills to limit emissions of VOCs from the industry.⁴⁴ The bills include proposals to consider the impact of permit applications for new oil and gas wells on the areas of Colorado already in nonattainment for ozone.⁴⁵ CalGEM should be considering the impact of the contribution of VOCs to ozone by new oil and gas permit applications in existing non-attainment areas as a way to prevent cumulative leaks that could lead to compounded public health harms.

⁴³ Letter from Gov. Jared Polis to Colorado Oil and Gas Conservation Commission and Colorado Department of Public Health and Environment (Mar. 16, 2023), <https://drive.google.com/file/d/1OByLS0TEoJx2SGpqgM4FQlhcxFVlFLc3/view>; Colo. Air Quality Control Panel, State Implementation Plan for the Denver Metro and North Front Range Ozone Nonattainment Area (Dec. 2, 2022), <https://drive.google.com/file/d/1ieJg4wQ2TdGirhWbFwD71WDzseRRplSJ/view>.

⁴⁴ Brandon Richard, *Colorado Lawmakers Introduce New Set of Air Quality Bills*, Denver 7 News, Feb. 22, 2024, <https://www.denver7.com/news/politics/colorado-lawmakers-introduce-new-set-of-air-quality-bills>.

⁴⁵ Bacon & Wildord, House Bill 24-1330, <https://leg.colorado.gov/bills/hb24-1330>; Winter & Priola, Senate Bill 24-229, https://leg.colorado.gov/sites/default/files/documents/2024A/bills/2024a_229_01.pdf.

ii. Electrifying rigs to reduce the cumulative impact of leaks

Colorado also requires operators to vastly reduce nitrogen oxide emissions by 2025.⁴⁶ Operators will have to move away from diesel rigs to comply. Requiring the electrification of existing drilling rigs via upgrades and modifications, along with mobile transformer units on skids, is an immediate solution to reducing ozone precursors and reducing community exposures to diesel pollution. These electric retrofits are being done in other oil and gas basins, such as throughout Texas.⁴⁷ This should be a top priority for CalGEM as it will have immediate impacts on decreasing ozone concentrations. In other words, electrification of rigs would help prevent some of the worst public health impacts from leaking wells by reducing the baseline cumulative pollution burden.

III. The RFI's emphasis on cost-effectiveness and industry self-reporting could produce regulations that fail to effectively prevent leaks and protect the public.

As an overarching matter, we question two of the RFI's premises: (A) the idea that self-interested operators will provide objective information to CalGEM regarding "what is/isn't working"⁴⁸ sufficient for the agency to rely on when crafting future leak prevention and detection regulations, and (B) CalGEM's emphasis on "using cost-effective technologies" to address leaks rather than making polluters pay to employ the best available technologies based on evolving scientific standards.

A. CalGEM must not base leak prevention and detection regulations on inherently self-serving operator anecdotes rather than the scientific method and precautionary principle.

Industry lacks an incentive to voluntarily share objective information that could lead to more stringent regulation. It is well accepted that, when left to itself, industry will *not* "take steps to safeguard the public health and public welfare by using less polluting but possibly more expensive technology."⁴⁹ Instead, "because pollution is a negative externality, industry generally has insufficient incentive to develop or adopt new pollution control technology in the absence of

⁴⁶ Colo. Governor Jared Polis, *Improving Air Quality: Governor Polis Directs State Agencies to Take New & Comprehensive Steps to Help Build Upon Administration's Landmark Clean Air Efforts, Cut Pollution Including Ozone*, Mar. 16, 2023, <https://www.colorado.gov/governor/news/9751-improving-air-quality-governor-polis-directs-state-agencies-take-new-comprehensive-steps>; Colo. Dept. of Public Health & Environment, *Reducing Nitrogen Oxides from Oil and Gas Exploration and Production*, <https://cdphe.colorado.gov/reducing-nitrogen-oxides-from-oil-and-gas-exploration-and-production#:~:text=In%20March%202023%2C%20Governor%20Polis,reduction%20in%20NOx%20by%202025> (accessed May 30, 2024).

⁴⁷ WorldOil, *Rig Electrification Drives Down Emissions, Bolsters Efficiency While Improving Onshore Drilling Economics*, Oct. 2023, <https://worldoil.com/magazine/2023/october-2023/special-focus-advances-in-drilling/rig-electrification-drives-down-emissions-bolsters-efficiency-while-improving-onshore-drilling-economics/>.

⁴⁸ RFI at 2.

⁴⁹ *Sherwin-Williams Co. v. South Coast Air Quality Management Dist.*, 86 Cal. App. 4th 1258, 1280 (2001), *as modified* (Feb. 15, 2001).

regulation.”⁵⁰ The oil industry, in particular, has a long history of using its resources “to block reforms, invest overwhelmingly in fossil fuel extraction, and support efforts to extend the life of fossil fuel investments,” including by spending “billions to promote climate disinformation through branding and lobbying” and using trade groups to conceal their involvement.⁵¹ Most recently, the industry “obstructed and delayed” a Congressional investigation into its “decades-long deception campaign.”⁵² We are deeply concerned that the success of any leak prevention and detection regulations currently rests on industry self-reporting and regulators with a history of enforcement problems, particularly in environmental justice communities that have suffered from poor enforcement by CalGEM compared to wealthier areas.⁵³

As CalGEM’s mandate includes “prevent[ing], as far as possible, damage to life, health, property, and natural resources,”⁵⁴ and enforcing “requirements for operators to maintain their production facilities and operations in a leak-free environment,”⁵⁵ it is the agency’s duty to regulate with *these* goals in mind, rather than the goal of saving money for the fossil fuel

⁵⁰ *American Coatings Assn. v. South Coast Air Quality Management Dist.*, 54 Cal. 4th 446, 466 (2012). See also *Sherwin-Williams*, 86 Cal. App. 4th at 1280.

⁵¹ House Committee on Oversight & Reform, *Fueling the Climate Crisis: Exposing Big Oil’s Disinformation Campaign to Prevent Climate Action* (Oct. 28, 2021), <https://oversight.house.gov/legislation/hearings/fueling-the-climate-crisis-exposing-big-oilsdisinformation-campaign-to->

⁵² House Committee on Oversight & Accountability, Democrats and Senate Committee on the Budget, *Denial, Disinformation, and Doublespeak: Big Oil’s Evolving Efforts to Avoid Accountability for Climate Change* at Exec. Summary (Apr. 2024), https://www.budget.senate.gov/imo/media/doc/fossil_fuel_report1.pdf.

⁵³ See, e.g., Janet Wilson, *Are California Oil Companies Complying with the Law? Even Regulators Often Don’t Know*, Desert Sun & ProPublica, Mar. 22, 2021, <https://www.propublica.org/article/are-california-oil-companies-complying-with-the-law-even-regulators-often-dont-know> (describing CalGEM’s lack of a centralized enforcement database and that only 11 of 66 enforcement orders issued from 2018 to 2020 were complied with); Earthworks, *California Oil and Gas Waste Report* at 14–15 (Jan. 2021), <https://earthworks.org/assets/uploads/2021/01/CA-Waste-Report-2021-Final-2-1.pdf> (detailing CalGEM’s years’ long unlawful practice of permitting underground injection of oil and gas waste into freshwater aquifers that are not exempt from federal protections); Petition for Abatement of Public Nuisance at Jefferson Drill Site, submitted on behalf of Redeemer Community Partnership to Los Angeles Dept. of City Planning (June 9, 2016) (describing residents’ years of concerns about dangerous and disruptive conditions at the Jefferson oil drill site in South Los Angeles).

⁵⁴ Pub. Resources Code, § 3106.

⁵⁵ RFI at 1.

industry. To ensure “a leak-free environment,” we encourage the use of “technology-forcing” standards⁵⁶ based on “the best available scientific information”⁵⁷ in all future regulations.

For example, an existing leak detection regulation concerning underground gas storage contains a technological standard based on a technology’s effectiveness in “provid[ing] for immediately reporting leaks,” while “tak[ing] into consideration detection limits, remote detection of difficult to access locations, response time, reproducibility, accuracy, data transfer capabilities, distance from source, background lighting conditions, geography, and meteorology”—but *not* costs.⁵⁸

Likewise, CalGEM must employ the precautionary principle in connection with all leak prevention and detection regulations, erring on the side of public health and safety to adopt the most protective approach supported by science.⁵⁹ The body of peer-reviewed literature reviewed by CalGEM’s Scientific Advisory Panel suggests that the harms posed by oil and gas development are likely far more severe than currently documented. CalGEM must therefore act now to protect communities rather than attempt to mitigate harms to human health and the environment after the fact.

Full scientific certainty may be impossible given the ongoing refusal of the oil and gas industry to operate transparently and CalGEM’s failure historically to monitor drilling activity rigorously or require proper public disclosure. For example, many chemicals commonly used in oil and gas operations are not disclosed to the public based on broad trade secret and confidentiality exemptions in disclosure mandates,⁶⁰ obstructing the public from having full knowledge of the scope and harm from leaks and spills.

Key elements of an approach that employs the precautionary principle include taking protective actions despite scientific uncertainty; exploring alternatives to actions that risk harm; placing the burden of proof on proponents of a harmful activity rather than on victims; and ensuring the public is informed and has opportunities to engage.⁶¹

In sum, we encourage CalGEM to take operator anecdotes submitted in response to this RFI with a grain of salt and to promulgate robust leak prevention and detection regulations based on objective scientific data; published, peer-reviewed research; and the precautionary principle.

⁵⁶ *American Coatings Assn.*, 54 Cal. 4th at 466. Cf. *Whitman v. Am. Trucking Ass’ns*, 531 U.S. 457, 492 (2001) (Breyer, J., concurring) (noting that technology forcing requirements “are still paramount in today’s [Clean Air] Act”).

⁵⁷ See, e.g., Pub. Resources Code, § 3160 (requiring CalGEM to employ “the best available scientific information, including the results of [an] independent scientific study” prior to revising certain threshold values).

⁵⁸ Cal. Code Regs., tit. 14, § 1726.7.

⁵⁹ Srebotnjak Report at 14.

⁶⁰ Pub. Resources Code, § 3160(j), (k).

⁶¹ Frank Ackerman, *Critique of Cost-Benefit Analysis and Alternative Approaches to Decision-Making*, Report to Friends of the Earth: England, Wales and Northern Ireland (2008), http://frankackerman.com/publications/costbenefit/Critique_Cost_Benefit_Analysis.pdf.

B. CalGEM must make polluters pay to employ leak prevention and detection technologies that are necessary or may be necessary in the exercise of caution.

It bears further emphasis that the oil industry continues to rake in obscene profits⁶² while under ongoing scrutiny for lying for years about the negative effects of drilling activities. The State has sued five of the world's largest oil companies for "engaging in a decades-long campaign of deception and creating statewide climate change-related harms in California" in order "to further their record-breaking profits at the expense of our environment."⁶³ Such actions have resulted in California "spen[ding] tens of billions of dollars to adapt to climate change and address the damages climate change has caused so far," and anticipating the "need to spend multiples of that in the years to come."⁶⁴ CalGEM must follow the "polluter pays" principle to ensure that the oil industry—which can well afford to do so—employs every possible technology to prevent harmful leaks and emissions at all of their drilling and production sites, as the absolute minimum step necessary to start triaging the damage these operators have already done to our health and climate.

C. CalGEM must require leak prevention and detection technologies at both light- and heavy-oil wells.

Existing regulations contain a major loophole that exempts heavy-oil wells from fugitive emissions monitoring.⁶⁵ As the vast majority of California's oil and gas extraction sites process heavy oil, this exemption facilitates the creation of dangerous emergencies and inadequate agency response, enabling leaks to go unnoticed and unrepaired for lengthy periods of time. A prime example includes the leaking wells recently identified throughout Kern County, and specifically within the city limits of Bakersfield. CalGEM's initial responses to complaints from community members was that nothing could be done to stop the leaks because the wells produced heavy oil.⁶⁶

⁶² See Stanley Reed, *Oil Giants Pump Their Way to Bumper Profits*, NY Times, Feb. 2, 2024, <https://www.nytimes.com/2024/02/02/business/oil-gas-companies-profits.html> (noting that Exxon earned \$36 billion in 2023 and Chevron earned \$21.4 billion in 2023); Shaina Sadai, *Fossil Fuel Companies Make Billions in Profit as We Suffer Billions in Losses: 2024 Edition*, Union of Concerned Scientists, Apr. 17, 2024, <https://blog.ucsusa.org/shaina-sadai/fossil-fuel-companies-make-billions-in-profit-as-we-suffer-billions-in-losses-2024-edition/> (stating that "the combined profits of ExxonMobil, Chevron, Shell, and BP total[ed] over \$100 billion" in 2023).

⁶³ State of Cal., Dept. of Justice, *Attorney General Bonta Announces Lawsuit Against Oil and Gas Companies for Misleading Public About Climate Change*, Sept. 16, 2023, <https://oag.ca.gov/news/press-releases/attorney-general-bonta-announces-lawsuit-against-oil-and-gas-companies>.

⁶⁴ *Id.*

⁶⁵ 17 Cal. Code Regs., § 95669(c)(2).

⁶⁶ Cesar Aguirre & Kobi Naseck, *Community Leads Regulators to More Methane-Spewing Wells in Morningstar Neighborhood*, Central California Environmental Justice Network, May 24, 2022, <https://ccejn.org/2022/05/24/community-leads-regulators-to-more-methane-spewing-wells-in-morningstar-neighborhood/>.

The exemption for heavy-oil wells exists, in part, to save the oil industry money.⁶⁷ As discussed above, an industry cost-savings rationale is simply indefensible in the present context. Moreover, reducing fugitive emissions from oil wells would have untold cost savings due to improvements in public health and reductions in premature mortality.⁶⁸

Moreover, while the exemption for heavy-oil wells also has a supposed scientific basis—the assumption that heavy-oil wells do not typically emit as much gas as light-oil wells—that theory clearly does not hold up in California. The explosive levels of methane leaking from heavy oil wells in the Morningstar neighborhood shows that the flux and volume of leaking hydrocarbons needs to be considered and regulated for heavy-oil facilities.⁶⁹

Independent certified thermographers have captured hundreds of instances of heavy-oil wells and facilities leaking actionable levels of methane and VOCs.⁷⁰ Due to the limited sensitivity of optical gas imaging, it is very likely that tens of thousands more heavy-oil facilities are currently leaking. Heavy-oil wells and facilities should be required to abide by the same leak prevention and detection standards because optical gas imaging shows they can be major sources of uncontrolled emissions on par with light-oil wells and facilities.

IV. Continuous leak detection monitoring systems are uniformly necessary at every field, in the interests of protecting human health and the environment.

These comments build on and incorporate VISIÓN’s previous comment letters in CalGEM’s public health rulemaking and SB 1137 emergency rulemaking, referenced above. Those prior letters discussed continuous leak detection monitoring technologies throughout.

⁶⁷ See 89 Fed. Reg. 36729, 36735 (May 3, 2024) (claiming “that monitoring for well sites producing heavy oils would not be sufficiently cost effective, as leaks associated with heavy oil production will generally emit less VOC”).

⁶⁸ See, e.g., Am. Lung Assn., *Zeroing in on Healthy Air* at 3, 12 (2022), <https://www.lung.org/getmedia/13248145-06f0-4e35-b79b-6dfacfd29a71/zeroing-in-on-healthy-air-report-2022.pdf> (estimating \$1.2 trillion in public health benefits across the U.S. by 2050 from an accelerated transition away from fossil fuels to zero-emissions transportation, including \$95.5 billion in benefits in the Los Angeles area alone). See also James Bono et al., *Recommendations to CalGEM for Assessing the Economic Value of Social Benefits from a 3,200’ Buffer Zone Between Oil & Gas Extraction Activities and Nearby Communities* at 14–16 (Dec. 2021) (discussing a health benefit of between \$500 million and \$828 million annually due to a decline in premature mortality related to reduced exposure to PM_{2.5} with a 3,200-foot setback between sensitive receptors and oil and gas wells).

⁶⁹ Manola Secaira, *How Idle Wells Leaked Explosive Levels of Methane in Bakersfield*, CapRadio, June 21, 2022, <https://www.capradio.org/articles/2022/06/21/how-idle-oil-wells-leaked-explosive-levels-of-methane-in-bakersfield/>.

⁷⁰ Earthworks, Selection of Optical Gas Imaging Videos from the California Community Empowerment Project, <https://www.youtube.com/playlist?list=PL9BS7nDf-8tqlaUT8pc0Yr0Tpfl0UFDMK> (accessed May 31, 2024); Kyle Ferrar, *FracTracker Finds Widespread Hydrocarbon Emissions From Active and Idle Oil And Gas Wells and Infrastructure in California*.

We fully support continuous onsite monitoring, as some of the Draft Regulations in CalGEM's public health rulemaking also require.⁷¹ Moreover, continuous monitoring systems must be required in *all* oil and gas fields throughout the state, with priority given to those fields in close proximity to frontline communities should CalGEM decide to provide a phase-in period.

As reiterated by CalGEM's own Scientific Advisory Panel, oil and gas sites are associated with health-damaging concentrations of multiple criteria air pollutants and toxic air contaminants.⁷² The Panel thus recommended the agency to specify that all regulations concerning "emission controls and associated monitoring approaches that lead to rapid leak detection and repair for new and existing wells and ancillary infrastructure" apply to wells and production facilities in fields statewide.⁷³ Similarly, vapor venting prevention and gas sampling and analysis regulations must apply statewide.

Leak prevention, detection, and response for dangerous chemicals present at oil and gas sites, like methane and hydrogen sulfide (H₂S), will create broader public health and climate benefits for residents across the state. Indeed, the U.S. Environmental Protection Agency (EPA) has now finalized similar leak-related regulations to sharply reduce methane emissions from new and existing oil and gas operations across the country.⁷⁴ CalGEM must not disregard the recommendations of its Scientific Advisory Panel and unnecessarily narrow the scope of these important protections.

According to Dr. Srebotnjak, hydrogen sulfide in particular, "albeit ubiquitously present at oil and gas production sites and detectable by its 'rotten egg' smell at concentrations as low as 0.0005 parts per million (ppm), can be a misleading warning indicator since its presence dulls the sense of smell and thus may be missed by human smell at higher concentrations."⁷⁵ Accordingly, "[c]ontinuous on-site monitoring for H₂S is necessary for this reason and due to its immediate danger to health and safety at ambient concentrations of 100 ppm."⁷⁶

⁷¹ Draft Public Health Regulations at Cal. Code Regs., tit. 14, § 1766(b)(2) and (c), 1766.3(a)(5). Continuous monitoring is also consistent with PSE's recommendations. Michanowicz at 8, 11, 14–15, 3–50, 3–81, 4–15, 5–20–5–21, 5–27.

⁷² Scientific Advisory Panel at 10–11 (The Panel "concludes with a high level of certainty that concentrations of health-damaging air pollutants, including criteria air pollutants and toxic air contaminants, are more concentrated near [oil and gas development] activities compared to further away" and that oil and gas development is "responsible for the majority of emissions of multiple toxic air contaminants including acetaldehyde, benzene, formaldehyde, hexane and hydrogen sulfide" in the already overburdened San Joaquin Valley.).

⁷³ Scientific Advisory Panel at 13.

⁷⁴ Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, 89 Fed. Reg. 16820 (Mar. 8, 2024).

⁷⁵ Srebotnjak Report at 4–5.

⁷⁶ *Id.* (citing National Institute for Occupational Safety and Health exposure limits of 10 minutes at 10 ppm and Occupational Safety and Health Administration exposure limits of 10 minutes at 20 ppm).

CalGEM’s current requirements for mitigation controls at wells and production facilities statewide illustrate why any new leak prevention and detection regulations must also apply to all fields. The California Code of Regulations already contains preexisting requirements concerning secondary containment (section 1773.1); tank construction and leak detection (section 1773.2); tank thickness and minimum wall thickness (section 1773.4); out-of-service production facilities (section 1773.5); pipeline inspection and testing (section 1774.1); maintenance and monitoring of production facilities, safety systems, and equipment (section 1777); cementing of casings (section 1722.4); management of drilling fluids (section 1722.6); and plugging and abandonment of wells (section 1723). The application of such rules to all wells and production facilities in fields across the state reflects CalGEM’s conclusion that they are necessary to its mandate of “prevent[ing], as far as possible, damage to life [and] health”⁷⁷ Accordingly, any enhancements or additions to existing leak prevention and detection regulations must likewise apply statewide.

While frontline communities closest to wells are the most overburdened by the effects of oil and gas drilling, area-wide air quality in oil-producing regions in California like Los Angeles County and Kern County is also very poor. The American Lung Association recently concluded that residents in Los Angeles and Kern counties are subjected to many other sources of air pollution, and already experience the nation’s worst air quality for criteria air pollutants.⁷⁸ Oil and gas development contributes to these harmful regional levels of ambient air pollution,⁷⁹ further necessitating strong leak prevention and detection regulations at fields across the state. In fact, “[c]arbon emissions from the oil extraction process remained steady in California from 2000 to 2015, even as overall oil production fell by 30 percent over that same period,” which means that the “carbon intensity”—and, thus, the health impact—of production has *increased*.⁸⁰

Applying any regulations to fields statewide is also consistent with State policy, which already reflects the need to address climate change’s “serious threat to the economic well-being, public health, natural resources, and the environment of California,” including “the exacerbation of air

⁷⁷ Pub. Resources Code, § 3106(a).

⁷⁸ Am. Lung Assn., *State of the Air* (2024), <https://www.lung.org/getmedia/dabac59e-963b-4e9b-bf0f-73615b07bfd8/State-of-the-Air-2024.pdf>.

⁷⁹ Seth Shonkoff & Lee Ann Hill, *Human Health and Oil and Gas Development: A Review of the Peer-Reviewed Literature and Assessment of Applicability to the City of Los Angeles* at 16 (2019), https://clkrep.lacity.org/onlinedocs/2017/17-0447_misc_46_07-29-2019.0001.pdf (collecting studies); see also David Gonzalez et al., *Upstream Oil and Gas Production and Ambient Air Pollution in California*, *Science of the Total Environment*, 806: 150298 (2021), <https://doi.org/10.1016/j.scitotenv.2021.150298> (Using data from the U.S. EPA Air Quality System, Gonzalez et al. observed significantly higher concentrations of particulate matter at the most exposed air monitors in months with more drilling activity, compared to months with less drilling.).

⁸⁰ Kelly Trout et al., *The Sky’s Limit California: Why the Paris Climate Goals Demand that California Lead in a Managed Decline of Oil Extraction* at 17 (May 2018), http://priceofoil.org/content/uploads/2018/05/Skys_Limit_California_Oil_Production_R2.pdf (emphasis added).

quality problems . . . and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.”⁸¹ As part of its amended legislative mandate, CalGEM has an explicit obligation to address “reduction and mitigation of greenhouse gas emissions associated with the development of hydrocarbon and geothermal resources.”⁸² As the Scientific Advisory Panel stated: “setbacks do not reduce harms from [oil and gas development] contributions to regional air pollutant levels, such as secondary particulate matter and ozone, or greenhouse gases, such as methane, which are nearly always co-mingled with health-damaging air pollutants.”⁸³ The Ninth Circuit has further confirmed: “failure to change existing [fossil fuel] policy may hasten an environmental apocalypse” and the responsibility to take action rests with “the political branches of government”⁸⁴ including executive agencies like CalGEM.

It is important to also note that oil and gas operators are increasingly proposing carbon capture and storage (CCS) projects at fields across the state, and that counties including Kern are actively planning toward a future based on repurposing the state’s oil and gas fields for CCS.⁸⁵ CCS in this setting poses serious public health and safety threats from toxic releases and catastrophic accidents that endanger nearby homes, schools, and other sensitive locations,⁸⁶ and there is a significant risk of leaks due to large numbers of existing wellbores in developed fields.⁸⁷ In light of these growing proposals, it is crucial for CalGEM to adopt strong leak prevention and detection regulations for all fields. Relatedly, any regulations must not contain any exemptions for underground gas storage projects or gas storage wells, since “[t]he massive Aliso Canyon methane gas leak and many leaks of smaller gas volumes have demonstrated that underground gas storage facilities can and do leak gases to the surface and can also communicate with groundwater sources used for drinking water.”⁸⁸

Lastly, just as CalGEM should apply these regulations to all fields, it should likewise move forward as expeditiously as possible to craft and implement regulations, adopting the Srebotnjak Report’s recommendation for a one-year phase-in period for operators to implement leak

⁸¹ Assembly Bill No. 32, Global Warming Solutions Act of 2006, approved by Governor, Sept. 27, 2006 (adding Division 25.5 to the Health and Safety Code); Health & Saf. Code, § 38501(a).

⁸² Pub. Resources Code, § 3011, added by Stats. 2019, ch. 771 (A.B.1057), § 9, eff. Jan. 1, 2020.

⁸³ Scientific Advisory Panel at 13.

⁸⁴ *Juliana v. United States* (9th Cir. 2020) 947 F.3d 1159, 1164–65.

⁸⁵ See, e.g., Cal. Resources Corp., *Carbon TerraVault, Vaults*, <https://www.crc.com/carbon-terravault/vaults/default.aspx> (accessed May 30, 2024); Kern County, *Envisioning a Carbon Management Business Park*, Technical Report (June 2023), <https://cmbp.kernplanning.com/wp-content/themes/kern/co--assets/general/CMBP-Report-2023.pdf>.

⁸⁶ See Dan Zegart, *The Gassing of Satartia*, Huffington Post, Aug. 26, 2021, https://www.huffpost.com/entry/gassing-satartia-mississippi-co2-pipeline_n_60ddea9fe4b0ddef8b0ddc8f.

⁸⁷ Dominic DiGiulio, *Understanding, Evaluating, and Remediating Leakage from Abandoned Oil and Gas Wells During Geological Storage of Carbon Dioxide* (Mar. 18, 2024), https://environmentalintegrity.org/wp-content/uploads/2024/03/20240318_DiGiulio_report_Final.pdf.

⁸⁸ Srebotnjak Report at 9.

detection systems, as “recogniz[ing] the importance and urgency of the issue while providing sufficient time for development.”⁸⁹

V. Robust leak prevention and detection standards are necessary.

A. CalGEM must require continuous monitoring for a broad range of constituents.

In addition to methane and hydrogen sulfide, continuously operating detection systems at drill sites must also account for the host of other hazardous and toxic air contaminants commonly present, “including toxic PM_{2.5}, carbon monoxide, nitrous oxide, ozone, and VOCs such as aromatic (cyclic and polycyclic) hydrocarbons like benzene,”⁹⁰ which are known to be persistent and mobile in the environment and widely recognized as harmful to most living organisms through carcinogenic and mutagenic effects.⁹¹ Other specific constituents include sulfur dioxide, formaldehyde, and ammonia.⁹² CalGEM must include all of these constituents and categories of constituents in the list of required analytes.

Release of contaminants into the ambient air and regional airshed is just one pathway by which chemicals associated with oil and gas production enter the environment, in addition to soil and water contamination. It is therefore critical for CalGEM to require comprehensive leak prevention and detection standards that address these other pathways.

The engineering controls related to water pollution in CalGEM’s Draft Public Health Regulations provide a promising starting point, though they must be further strengthened. For example, the list of analytes in section 1766.2, subdivision (d)(3)(A) of the Draft Regulations for water testing must include key per- and polyfluoroalkyl substances (PFAS), also known as forever chemicals for their persistence in the environment and bioaccumulation.⁹³ There is a known association between PFAS and drilling fluids.⁹⁴ While PFAS include a class of 10,000 compounds, CalGEM must require baseline testing, at a minimum, of perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). Both PFOS and PFOA are on the Prop 65 list due to developmental toxicity.⁹⁵ Likewise, CalEPA’s Office of Environmental Health Hazard

⁸⁹ *Id.* at 4.

⁹⁰ *Id.*

⁹¹ *See generally* Gonzalez; U.S. Dept. of Health & Human Services, Agency for Toxic Substances & Disease Registry, *Toxicological Profile for Polycyclic Aromatic Hydrocarbons* (Aug. 1995), <https://www.atsdr.cdc.gov/toxprofiles/tp69.pdf>.

⁹² Michanowicz at 6.

⁹³ Srebotnjak Report at 7.

⁹⁴ Hiroko Tabuchi, *E.P.A. Approved Toxic Chemicals for Fracking a Decade Ago, New Files Show*, NY Times, July 12, 2021, <https://www.nytimes.com/2021/07/12/climate/epa-pfas-fracking-forever-chemicals.html>.

⁹⁵ CalEPA, Office of Environmental Health Hazard Assessment, *Safe Drinking Water and Toxic Enforcement Act of 1986 Chemicals Known to the State to Cause Cancer or Reproductive Toxicity* at 18 (Mar. 19, 2021), <https://oehha.ca.gov/media/downloads/proposition-65/p65chemicalslistsingletable2021p.pdf>.

Assessment (OEHHA) recently set public health goals for PFOS and PFOA to inform drinking water standards.⁹⁶ Federal regulation has followed closely behind, with EPA’s final rules set to go into effect in June and July 2024.⁹⁷

B. Any methodologies used by CalGEM must reflect the range of potential threats to public health and the environment at oil and gas sites.

CalGEM should employ representative emissions factors and fully explain how and why each emissions factor was chosen. The fact that “standard” models may incorporate emissions factors for various pollutants and for various types of equipment and activities at oil and gas sites does not mean that those emissions factors do, in fact, accurately or conservatively represent the emissions of the respective pollutants from specific equipment and specific activities at these sites. In addition to carefully selecting emissions factors that describe typical, problem-free drilling and operations, CalGEM should also account for leaks and upset conditions that are both common at oil and gas wells and significantly increase emissions and adverse health consequences.

Indeed, recent research further reveals a high degree of variability among oil and gas well leaks, whereby some wells are “super-emitters” discharging many times more methane due to malfunctioning oilfield equipment.⁹⁸ In April 2024, CARB published the results of a multi-year study of airborne methane plumes across the state, including in Kern County.⁹⁹ The study found an alarming number of methane leaks, 40 percent of which were attributable to broken or malfunctioning equipment.¹⁰⁰ Emissions were “highly intermittent” and required repeated measurements to detect them despite the large volume.¹⁰¹

CalGEM must thus specify the gas sampling and analysis methodology in all leak prevention and detection regulations, including the number of samples required and their spatial extent, based on statistics and expert analysis.¹⁰² Because one sample might not be sufficient to characterize the field or geologic area’s produced gas, for a properly representative gas analysis, determination of

⁹⁶ CalEPA, Office of Environmental Health Hazard Assessment, *Public Health Goals: Perfluorooctanoic Acid and Perfluorooctane Sulfonic Acid in Drinking Water* (Mar. 2024), <https://oehha.ca.gov/media/downloads/air/public-health-goal-document/pfoapfosphgfinaldraft040524.pdf>.

⁹⁷ Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances, 89 Fed. Reg. 39124 (May 8, 2024); PFAS National Primary Drinking Water Regulation, 89 Fed. Reg. 32532 (Apr. 26, 2024).

⁹⁸ Carol Rasmussen, *Study Identifies Methane ‘Super-Emitters’ in Largest US Oilfield, NASA Jet Propulsion Laboratory* (June 2, 2021), <https://climate.nasa.gov/news/3087/study-identifies-methane-super-emitters-in-largest-us-oilfield/>.

⁹⁹ CARB, *Summary Report of the 2020, 2021, and 2023 Airborne Methane Plume Mapping Studies* (Apr. 2024), https://ww2.arb.ca.gov/sites/default/files/2024-04/2020-2021-2023%20Airborne%20Summary%20Report_FINAL.pdf.

¹⁰⁰ *Id.* at 4.

¹⁰¹ *Id.* at 6.

¹⁰² Srebotnjak Report at 8–9.

the sufficient number of gas samples that need to be taken with respect to time and spatial extent should be done with statistical and expert input, for example with EPA guidance on collection of ambient air samples.¹⁰³

CalGEM's measures related to water pollution must be similarly comprehensive. For example, while we appreciate the inclusion of baseline and post-drilling water testing in the Draft Public Health Regulations to provide communities with a point of comparison to measure the impacts of oil and gas drilling, this requirement currently would apply only to "freshwater or USDW [(underground sources of drinking water)]." As drafted, section 1766.2 of the Draft Regulations is unclear as to whether CalGEM intends to limit the testing requirement to "freshwater . . . sources of drinking water." Drinking water is not the only relevant metric, as frontline communities also graze livestock, conduct agriculture, fish, and recreate in waters near oil and gas drilling. Consuming contaminated meat, vegetables, and fish is a public health risk along with consuming contaminated drinking water. Accordingly, CalGEM must broaden the definition of waters subject to testing to "water that is, or may reasonably be, used for any beneficial use," which is a preexisting standard codified in section 3131 of the Public Resources Code.¹⁰⁴

We also endorse the water-related recommendations in the Srebotnjak Report regarding CalGEM's Draft Public Health Regulations, which include requiring the collection of many samples rather than a single data point "to give a complete understanding of the composition of produced water," and prohibiting commencement of drilling until samples have been analyzed by the laboratory.¹⁰⁵

C. CalGEM's thresholds to trigger action by operators must prioritize impacts to frontline communities, in line with the best available science.

Regarding hydrogen sulfide leak detection, CalGEM must employ an alarm trigger point of 2 ppm, consistent with Occupational Safety and Health Administration data and the Srebotnjak Report.¹⁰⁶ Any regulations must likewise ensure the limit for methane is low enough to avoid both flammability and explosive hazards.¹⁰⁷

Building on the Draft Public Health Regulations, CalGEM must also close the loophole in section 1766, subdivision (b)(2)(D) regarding leak detection, which would give the agency blanket discretion to approve higher alarm trigger points for the detection target chemical constituents "[i]f the operator is able to demonstrate background levels of the target constituents in the area covered by the plan."¹⁰⁸ The current wording could lead to claims that the trigger

¹⁰³ U.S. EPA, *Procedures for Collecting Ambient Air Samples* (Mar. 30, 2016), https://www.epa.gov/system/files/documents/2022-06/Ambient%20Air%20Sampling%28SESDPROC-303-R5%29_0.pdf.

¹⁰⁴ Srebotnjak Report at 7.

¹⁰⁵ *Id.* at 8–9.

¹⁰⁶ *Id.* at 5–6.

¹⁰⁷ *Id.*

¹⁰⁸ Draft Public Health Regulations at Cal. Code Regs., tit. 14, § 1766(b)(2)(D).

point should constantly be raised and lowered based on prevailing winds and seasonal shifts in air quality, which would not be a functional system. Moreover, air pollution from oil and gas production is especially problematic in areas already overburdened by poor air quality, and the dangers of oil and gas pollution are not lessened but rather exacerbated by higher ambient pollution.

Regardless of the degree of background methane, CalGEM must specify that the point at which ambient methane becomes a notifiable health hazard would stay the same based on the best available science.¹⁰⁹ Any incremental addition from an oil and gas operator that pushes the measurable level over the science-based threshold must trigger the alarm and notification requirements to the same extent as if the operator had contributed 100 percent of those emissions. CalGEM must “ensure that permissible alarm set points are fixed with respect to best available public health information, regardless of background concentrations.”¹¹⁰ In tandem with an audible alarm system that automatically alerts at the specified trigger level, CalGEM must further require operators to post permanent signage visible to community members warning of the danger of poison gas when the alarm sounds.

While EPA has finalized rules designed to reduce emissions of greenhouse gases, including methane, associated with oil and gas production, those regulations must not dissuade CalGEM from tackling methane emissions now, and should set a floor rather than a ceiling.¹¹¹ CalGEM must aim to promulgate the strongest possible methane standards necessary to protect human health in California.

We also endorse the water-related recommendations in the Srebotnjak Report, including reducing the reporting threshold for produced water spills from 10 barrels to 5 barrels.

D. CalGEM should consider leak detection approaches used in other states and at the federal level.

Colorado’s Project Canary can provide lessons for CalGEM concerning fenceline monitoring. The intention of Project Canary is to create a fenceline monitoring system for methane and VOCs.¹¹² Not only are VOCs the precursors to ozone, VOCs are also major risk drivers for local health impacts associated with living near higher densities of oil and gas extraction operations. While the Project Canary system has had issues, fenceline monitoring using sensitive monitors is one of the most important tools for keeping communities safe.¹¹³

¹⁰⁹ Srebotnjak Report at 5.

¹¹⁰ *Id.*

¹¹¹ 89 Fed. Reg. 16820.

¹¹² Project Canary, *A Quantitative Overview to Continuous Monitoring of Methane Emissions* (Sept. 24, 2021), <https://www.projectcanary.com/white-paper/a-quantitative-overview-to-continuous-monitoring-of-methane-emissions/>.

¹¹³ Earthworks, *Certified Disaster: How Project Canary and Gas Certification are Misleading Markets* (Apr. 14, 2023), <https://earthworks.org/wp-content/uploads/2023/04/CertifiedDisaster-FactSheet-Final-4-14-23-1.pdf>.

In addition, new rules by the U.S. EPA underscore the importance of robust monitoring at oil production sites. EPA's Methane Rule requires that facilities actually remove at least 95% of VOCs from the emissions streams,¹¹⁴ but pollution abatement devices such as combustors and flares often do not completely combust and destroy VOCs.¹¹⁵ California must require oil and gas extraction facilities to monitor emissions streams to guarantee that the combustion devices are operating at a minimum level of 95% efficiency. If it turns out that the flares and combustors are not working, operators must be required to find an alternative method to managing associated gases and exhaust emissions.

Along with continuous onsite monitoring, we also endorse placement of air quality sensors in all neighborhoods within 3,200 feet of oil and gas wells, for methane and VOC measurements. Colorado has adopted such community monitoring systems. A nongovernmental organization called Boulder AIR, directed by atmospheric chemist and NOAA-INSTAAR scientist, Detlev Helmig, utilizes the most accurate, low sensitivity ambient air monitors technologically available to monitor oil field pollutants such as low concentration VOCs.¹¹⁶ The organization has multiple monitoring sites on Colorado's Front Range, allowing the researchers to track plumes of benzene and other risk drivers across a large geography.¹¹⁷ CalGEM should be utilizing the same technology and partnering with the research organizations who are able to track releases of VOCs.

VI. Community data access and notification are paramount.

VISIÓN recently submitted a detailed letter to the Department of Conservation and CalGEM regarding specific actions the agency must take to improve its community engagement practices. That April 10, 2024 letter and its recommendations are incorporated into these comments, and should guide any action by CalGEM going forward to implement strong data access and notification measures. Moreover, VISIÓN's previous comments in CalGEM's public health rulemaking and SB 1137 emergency rulemaking referenced above provide additional feedback on transparency, data access, reporting, and notification, and are incorporated into these comments.

A. Data related to oil and gas development must be accessible via a transparent online portal for community members and the public.

As discussed in VISIÓN's previous comments, frontline communities have a moral prerogative to know when and where oil and gas drilling is occurring near their homes, schools, and

¹¹⁴ U.S. EPA, *EPA's Final Rule to Reduce Methane and Other Pollution from Oil and Natural Gas Operations Summary of Standards* (Dec. 2023), <https://www.epa.gov/system/files/documents/2023-12/summary-of-key-requirements-table.pdf>.

¹¹⁵ Michael Booth, *EPA Blocks Another Colorado Oil and Gas Air Pollution Permit, Demands Changes*, The Colorado Sun, Apr. 5, 2024, <https://coloradosun.com/2024/04/05/colorado-air-pollution-permits-oil-and-gas-epa-block/>.

¹¹⁶ See Boulder Atmosphere Innovation Research, *What We Do* (2020), <https://bouldair.com/>; Arctic Research Consortium of the U.S., Detlev Helmig, <https://www.arcus.org/researchers/38983/display> (accessed May 31, 2024).

¹¹⁷ See Boulder Atmosphere Innovation Research, *Current Air Monitoring Programs* (2020).

businesses, and to access records that provide information on drilling in their neighborhoods. Moreover, amidst growing concerns about worsening air quality problems and the devastating impacts of climate change, all California residents will significantly benefit from access to data on fossil fuel development in the state.

CalGEM must therefore ensure a transparent process for making *all* data associated with oil and gas drilling and development publicly available, not just data related to leak prevention and detection. This information includes but is not limited to details concerning fluid and emissions leaks from wells, tanks, pipelines, and other production facilities; contamination of water sources; the chemical composition of drilling fluids used near sensitive receptors; and enforcement data such as inspection reports, Notices of Violation, and penalty orders. Such regulations must also require data to be submitted to CalGEM, rather than only “upon request.”

CalGEM has a long history of responding to public records requests by broadly and vaguely directing the public to its website without first confirming whether such information is actually available on that website and without providing specific step-by-step instructions to enable requesters to locate the allegedly responsive records. At the same time, officials with CalGEM have agreed that it is easier to digitize and organize data prospectively rather than attempting to sift through unorganized records after the fact.

CalGEM must therefore create an online portal where staff promptly makes all data submitted by oil and gas operators under leak prevention and detection regulations—and related to the other operations discussed above—available for public access via a single website, whether through its WellSTAR application or at the very least a separate server the public can access and search. Required data should be submitted in electronic form with the records fully optimized to facilitate keyword searching via optical character recognition. Critically, in order to ensure the public is able to meaningfully engage with this information, the agency must ensure the data is organized and communicated clearly and provide resources and support for community members to review and understand the data. Simply uploading large volumes of data with no context or ability to easily review the information will not suffice.

Indeed, CalGEM’s current website does not provide simple or transparent access to data regarding drilling operations or even serious leaks and spills that impact communities. For example, its webpage for Notices of Violation provides a list of links to documents that can only be individually downloaded via separate email requests, and any leak, spill, or other accident data is buried within longer pdfs rather than highlighted in an easy-to-navigate format.¹¹⁸ The website’s file request system is poorly designed overall, requiring requesters to know near exact names of the documents being sought. CalGEM must provide a database map of nested folders and files at the very least for the public to understand what data is available.

The WellSTAR system has functionally reduced access to oil and gas data in the state. Because the system does not allow data to be exported, grassroots groups must rely on experts like FracTracker Alliance to aggregate and understand even basic permit data. Yet even experts face

¹¹⁸ Cal. Dept. of Conservation, *Orders Issued by the Geologic Energy Management Division*, https://www.conservation.ca.gov/calgem/Pages/Division_Orders.aspx (accessed May 30, 2024).

challenges accessing data because the agency fails to publish exportable datasets showing permit notices, Notices of Violation data, or leak detection and response results.¹¹⁹ FracTracker Alliance is currently conducting a systematic review of data transparency by oil and gas regulatory agencies across the major oil and gas producing states. Preliminary results show that California ranks near the bottom, below North Dakota, Texas, Ohio and other states.

B. CalGEM must require regular reporting of monitoring data and make that data publicly accessible.

Because self-policing by the oil and gas industry has failed for decades, CalGEM's regulations must require periodic reporting of monitoring data, including submission of daily reports that are publicly available through the online portal discussed above.¹²⁰ CalGEM must also include objective standards and metrics that community members and the public can use to interpret the monitoring data and measure compliance. Any failures to submit data must result in consequences that incentivize better reporting and data collection, including Notices of Violation with automatic penalties or the immediate pause of operations at the well site until the operator catches up and resumes submissions.

C. CalGEM must work collaboratively with communities to develop equitable and transparent notification practices.

Notification of community members "as soon as potential leaks and other hazards are detected" is "critically important."¹²¹ CalGEM should require notification no later than the first two-to-three hours after a leak cannot be stopped or within the first twelve hours if between 10:00pm and 7:00am, "depend[ing] on identification of the substances that are leaking and their toxicity to humans" especially at sensitive receptors with children, pregnant women, the elderly, and those with preexisting conditions.¹²² CalGEM must also require oil and gas operators to notify sensitive receptors within 3,200 feet of oil and gas drilling activities any time the "alarm trigger point" is reached for methane or hydrogen sulfide.¹²³

Likewise, CalGEM must require public notification prior to every instance where operators use acid for maintenance or enhanced oil recovery, rather than the current system of annual aggregated chemical reporting, due to the risk of acute harm in the event of leaks or spills. Tanker trucks currently arrive unannounced near frontline communities, loaded with thousands of gallons of acid, while workers covered head-to-toe in protective equipment operate

¹¹⁹ Cal. Dept. of Conservation, *WellSTAR Data Dashboard*, https://www.conservation.ca.gov/calgem/Online_Data/Pages/WellSTAR-Data-Dashboard.aspx (accessed May 30, 2024).

¹²⁰ For example, the Srebotnjak Report specifically addresses this issue in the context of pipelines. Srebotnjak Report at 10. CalGEM must also add a requirement for operators to keep records of each inspection and submit them periodically to CalGEM.

¹²¹ *Id.* at 5.

¹²² *Id.* at 6.

¹²³ Draft Public Health Regulations at Cal. Code Regs., tit. 14, § 1766(b)(2)(A).

equipment.¹²⁴ Our allies have documented chemical burns on plants downwind of drill sites due to acidic fumes.

VISIÓN's April 10, 2024 letter to the Department of Conservation and CalGEM provides a detailed list of community engagement best practices related to public health and safety emergencies, non-emergency onsite work, and long-term community education and engagement projects that CalGEM should immediately adopt. The letter also addresses the important need for CalGEM to develop linguistically appropriate materials, including translation and interpretation services for the significant number of monolingual Spanish speakers in frontline communities impacted by oil and gas production.

* * * * *

We appreciate CalGEM's commitment to addressing leaks from oil and gas operations in order to protect communities most impacted by this industry. If you have any questions about the foregoing comments, you may reach out to any of us directly or contact Elizabeth Fisher (efisher@earthjustice.org) and Michelle Ghafar (mghafar@earthjustice.org) at Earthjustice, who helped prepare this submission.

Respectfully submitted,

Kobi Naseck
Coalition Coordinator
**Voices in Solidarity Against Oil in
Neighborhoods (VISIÓN)**

Kayla Karimi
Staff Attorney
**Center on Race, Poverty, and the
Environment**

Tyler Earl
Senior Staff Attorney
**Communities for a Better
Environment**

Martha Dina Argüello
Executive Director
**Physicians for Social
Responsibility-Los Angeles**

Jasmine Vazin
Field Organizing Strategist
Sierra Club

Kyle Ferrar
Western Program Director
FracTracker Alliance

Meghan Sahli-Wells
California Director
**Elected Officials to Protect
America**

¹²⁴ John Schreiber, *Residents Allege Oil Site Brought Acid, Toxic Chemicals to South L.A. Neighborhood*, Apr. 23, 2015, <https://mynewsla.com/life/2015/04/23/residents-allege-oil-site-brought-acid-toxic-chemicals-to-south-l-a-neighborhood/>. See also State Impact Pennsylvania, *Hydrochloric Acid's Role in the Fracking Process*, NPR, July 6, 2012, <https://stateimpact.npr.org/pennsylvania/2012/07/06/hydrochloric-acids-role-in-the-fracking-process/> (documenting a spill of 4,700 gallons of hydrochloric acid at a drilling pad).