

August 31, 2026

Mr. Walter Ham
Chief, Monitoring and Laboratory Division
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Submitted electronically via [Informal Comment Docket](#)

Re: Comments on the Discussion Draft — Performance Standards for Continuously Operating Emissions Detection Systems (Proposed 17 CCR §§ 93500–93506)

Dear Mr. Ham:

The Termo Company submits these comments on the Discussion Draft regulation implementing Public Resources Code section 3283.

Termo is a California oil and gas producer headquartered in Long Beach. Every one of the 126 wells in our health protection zone portfolio is directly subject to this rulemaking. Rather than comment on the Discussion Draft in the abstract, we did the work the regulation would require of us — at two facilities deliberately chosen to span the range of California operating environments the Board's own workshop materials acknowledge, which observe that production facilities vary widely in "configuration, complexity, chemical composition of emissions, meteorology, topography, and distance to sensitive receptor(s)."

At the Olive Community lease — a compact three-well urban parcel at 640 East 35th Street in Long Beach, bounded on all four sides by sensitive receptors at tens of meters — we commissioned independent compositional source testing, identified the site-specific toxic of highest concern, derived the methane surrogate ratio, computed the alert threshold and minimum detection limit the regulation demands, and built a facility-level compliance cost model.

At our Aliso Canyon and Oat Mountain leases — a rural mountainous field along a roughly 2.5-mile linear ridge above 2,000 feet in the Santa Susana Mountains — we performed the same compositional characterization through a second independent laboratory, rebuilt the § 93504(e)(2)(B) exclusion arithmetic on the toxic air contaminant speciation profile the District already accepts from us, and analyzed twelve months of our own field records: 180 inspection records across 23 survey events, including the barometric pressure logged at the equipment on every visit. We state plainly that no sensitive receptor currently lies within 3,200 feet of these facilities, and we verified that status against CalGEM records and by field inspection. The data matters to this rulemaking because the facilities are representative of the mountainous terrain and meteorological conditions of California production settings that *are* inside health protection zones today — the terrain, flow regimes, and within-lease relief we measure there are the conditions the modeling and meteorological provisions of § 93504 must function under statewide.

Two findings frame everything that follows.

First, the defects we identify are CARB's to fix, because the architecture that produces them is CARB's construction, not the statute's. We have reviewed Public Resources Code section 3283 against the Discussion Draft line by line. The statute fixes the coverage zone, the duty of rapid detection "before emissions impact the surrounding communities," the alarm system, the meteorological system, and the 48-hour response and notification protocol. It never mentions reference exposure levels, OEHHA, or any numeric threshold basis. It affirmatively states that toxics of highest concern are those in the region *as identified by the State Air Resources Board or local air district*; that not all chemical species that may be found in the oilfield are required to be detection targets; and that "[m]ethane may serve as a surrogate for constituents that cannot be continuously monitored." Every revision we request in this letter sits inside the discretion the statute grants the Board — and several sit closer to the statutory text than the Discussion Draft does.

Second, the Discussion Draft's central problem is indeterminacy as much as stringency. At key decision points — what a "site" is, what equipment the EDS must monitor, what "representative" meteorology means, what demonstration establishes reduced leak potential, what "quantifiably resolved" requires, when the notification clock starts — the text supports multiple permissible readings, and the same facility faces order-of-magnitude different costs depending on which reading a reviewer applies. Every ambiguity the Board resolves is a cost the Board can control and reduce. Where the text is determinate, we show with our own laboratory data, field records, and arithmetic that it does not close: at Olive Community the required system's detection limit falls at or below the ambient concentration of the analyte it measures, and no demonstration under § 93504(e)(3)(F) can be made; the Discussion Draft provides no alternative pathway, no petition mechanism, and no relief — only the suspension of production and injection required by § 93503(c).

We also identify two errors in Table 1. Of the seven health values the Discussion Draft publishes, two do not match the values in CARB's own *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values*. One of them — n-hexane — is a **chronic** reference exposure level imported into a framework the regulation defines three separate times as **acute**. These are not editorial matters. Table 1 is the input to Equation 1, which determines the toxic of highest concern, which determines the methane ratio, which determines the alert threshold, which determines the entire system design and its cost.

We raise these points as an operator that intends to comply and cannot presently see how. The comments below identify each defect specifically, show the arithmetic, and propose a correction. Section XII organizes our requested actions by priority, distinguishing those essential to the regulation's workability from those that are improvements at the margin.

I. Summary of Principal Comments

We present seven principal comments. Each is evidenced by Termo data or by the regulatory text itself, each carries a specific requested revision, and each would reduce cost or increase workability if granted.

1. The alert thresholds must be measurable, and neither permitted way of setting them produces a measurable standard. Two of the seven Table 1 values are wrong — one a chronic value in an acute framework. An acute REL is a one-hour receptor exposure benchmark repurposed as a continuous instrument setpoint, a category error the statute nowhere compels. Section 93504(e)(3)(B) then offers two threshold elections. The one an operator can execute at plan submission — the threshold set *at* the acute REL — yields, at Olive Community on the methane-surrogate pathway, roughly 6.8 ppmv against a global

ambient floor of 1.92 ppmv, with a required detection limit 0.35 ppmv. The sounder election — a threshold set to detect the REL-level leak rate, which properly rides *above* the site baseline rather than inside it — cannot be executed, because the baseline it requires does not exist until twelve months *after* the full system is purchased and installed, and the text never states its mechanics. And no election escapes a third defect: every instrument specification in § 93504(d) is keyed to the absolute threshold rather than to the leak increment the system must resolve, so the specifications loosen precisely as the detection task hardens. *(Section II)*

2. One undifferentiated monitoring architecture spans 40 feet to 3,200 feet and every facility geometry, and it fails at both ends. The statute set the coverage zone; the Board chose the uniformity. At Olive Community the threshold sits inside ambient variability. At Aliso Canyon and Oat Mountain, a hypothetical receptor at the 3,200-foot boundary would face a source whose entire uncontrolled tank inventory emits benzene at roughly one two-hundred-thirtieth of the REL-level rate — while the undefined 90-percent capture requirement drives sensor counts without bound along 2.5 miles of terrain-steered ridge. *(Section III)*

3. The § 93504(e)(2)(B) exclusion — the regulation's principal cost-relief mechanism — has no standardized methodology and cannot be used. The demonstration requires the full modeling package it would relieve, no accepted calculation method exists, and the only established estimation framework answers a different question than the rule asks. The absence of the methodology is itself the defect. *(Section IV)*

4. The meteorological and modeling provisions presume a representativeness that our own compliance records disprove. Twelve months of field barometry — 180 readings across 23 survey events — show the referenced meteorological dataset is off by 11.5 percent at the equipment, and a persistent within-lease pressure gradient defeats the single-station presumption of § 93504(i) inside a single facility. AERMOD is mandated in complex terrain with no alternative-model pathway of the kind EPA's own Guideline provides. *(Section V)*

5. The regulation never defines what the EDS must monitor. "Site" is undefined, "production facility" and "production equipment" are used interchangeably, and flowline scope across a 2.5-mile field is the difference between one system and many. This is the largest single indeterminacy in the Discussion Draft, and the cost estimate cannot be verified without resolving it. *(Section VI)*

6. A scheduled third-party takeaway curtailment or production interruption reads under the draft as a leak, and it is not. An annual, pre-noticed, District-reported, Variance granted, maintenance event at our Aliso Canyon and Oat Mountain facilities would read as a continuous multi-week alarm that cannot be "repaired," ending in community notification and suspension exposure for an event the operator does not control. *(Section VII)*

7. The cost structure does not scale to marginal-well economics, and the Board's estimate cannot be verified. A percentage of Termo's HPZ wells produce under 5 barrels of oil per day; at those facilities compliance cost exceeds gross revenue. CARB's preliminary estimate diverges from our site-level actuals by a factor of six to twenty-six depending on configuration and cost basis — and even the most conservative floor case we can construct, built on a current vendor quotation for the minimum lawful configuration, diverges six-fold — and the divergence cannot be reconciled because the per-site denominator does not exist. The Board's own request for alternatives solicits exactly the cost reconciliation we ask for here. *(Section VIII)*

Three further sections support these: the duplication between the EDS and the district LDAR programs that already found and same-day-repaired every leak at our facilities (*Section IX*); five undefined operative terms in the alert-response pathway, each resolvable with a sentence of regulatory text (*Section X*); and a set of narrower technical corrections (*Section XI*).

II. The Threshold-Setting Mechanism Does Not Produce a Measurable Standard

This section is the core of our comment. It proceeds in eight steps: the published health values contain errors; those values are being used for a purpose they were not derived for and that the statute does not compel; the derivation compounds four worst-case assumptions in sequence; the result at a real site is a threshold the instrument cannot resolve; the two measurement pathways the rule offers differ eight-fold in measurability and the rule never examines the difference; the consequence is a system that alarms on the airshed rather than the facility; the demonstration that would catch all of this is due before the data that could support it can exist; and there is no off-ramp when it fails.

A. Two of the seven values in Table 1 do not match CARB's own published health values

Section 93504(b)(2)(D) instructs operators to reference the "OEHHA Acute, 8-hour and Chronic Reference Exposure Level (REL) Summary" to identify the most recent adopted values. Section 93504(b)(2)(B)(c) defines the REL input to Equation 1 as the OEHHA inhalation risk factor "for **acute** exposure." Section 93504(e) requires detection before the toxic of highest concern exceeds "the **acute REL** at any sensitive receptor."

We compared each Table 1 entry against CARB's *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* (last updated September 8, 2022), Table 2 of which lists approved acute RELs.

Table 1 species	Table 1 value ($\mu\text{g}/\text{m}^3$)	CARB Consolidated Table, acute REL	Agreement
Benzene	27	27 (reviewed 6/14)	✓
Toluene	5,500	5,000 (reviewed 8/20)	✗
o-, m-, p-Xylene	22,000	22,000 (reviewed 4/99)	✓
n-Hexane	7,000	Not listed — no acute REL exists	✗
Hydrogen sulfide	42	42 (reviewed 4/99)	✓

n-Hexane. n-Hexane does not appear in CARB's acute REL table at all. It appears in Table 4 — the **chronic** table — at $7.0 \times 10^3 \mu\text{g}/\text{m}^3$, reviewed April 2000, nervous system endpoint. That is the value reproduced in Table 1. The Discussion Draft has taken CARB's own published chronic reference exposure level and inserted it into a framework the regulation defines three separate times as acute.

This is consequential because under Equation 1 the acute risk factor is mass percentage divided by the REL. A chronic REL is lower than an acute REL for the same compound, because it is referenced to continuous lifetime exposure rather than a single hour. Substituting the chronic value therefore **inflates n-hexane's**

computed risk factor — potentially by an order of magnitude or more. In gas streams with meaningful hexane fractions, this can distort and may invert the site-specific toxic of highest concern determination, and with it the methane surrogate ratio, the alert threshold, the sensor selection, and the capital cost of the entire system.

An operator following § 93504(b)(2)(D) to the source the regulation directs them to will not find an acute value for n-hexane. The regulation gives them no instruction on what to do next.

Requested correction: Remove n-hexane from Table 1 unless and until OEHHA adopts an acute REL for it. In either case, add an express provision specifying how operators are to treat a Table 1 species for which no acute REL exists.

Toluene. Table 1 lists $5.50 \times 10^3 \mu\text{g}/\text{m}^3$. CARB's Consolidated Table lists $5.0 \times 10^3 \mu\text{g}/\text{m}^3$, reviewed August 2020 following OEHHA's adoption of revised toluene RELs on August 20, 2020. The value that revision replaced was $37,000 \mu\text{g}/\text{m}^3$. **The Table 1 figure matches neither the current value nor its predecessor.** We are unable to identify its provenance.

Requested correction: Reconcile the value. More durably, **delete the numerical column from Table 1 and incorporate the OEHHA REL Summary by reference**, as § 93504(b)(2)(D) already does, with a stated update mechanism. Health values frozen into regulatory text will be wrong the first time OEHHA revises one — which for toluene has already happened. Incorporation by reference eliminates both the maintenance burden on the Board and the conflict operators face when two CARB documents state different numbers.

We note the broader implication. Five of seven values are correct and two are not, one of them through a category substitution. Table 1 is the first input to every downstream calculation in § 93504.

B. An acute REL was not derived to serve as an instrument setpoint — and the statute does not require one to

The errors above are correctable. The more fundamental problem is what the Discussion Draft asks the corrected values to do.

An OEHHA acute reference exposure level is a concentration at or below which adverse non-cancer health effects are not anticipated in the general population, including sensitive subpopulations, **for an infrequent one-hour inhalation exposure**. It is derived from toxicological endpoints, applied to a breathing person, over a defined averaging period.

The Discussion Draft uses that number for something different. Under § 93504(e)(3)(B)(2), the acute REL becomes an **alert threshold at a fence-line monitor**, evaluated on a continuous basis at averaging intervals of one hour or less, at a location that is not where any person is breathing, converted through a methane surrogate ratio into a setpoint for an instrument that is not measuring the toxic at all.

Four things change in that translation, and none of them are acknowledged in the Discussion Draft:

1. **The averaging period changes.** The REL is a one-hour exposure metric. Section 93504(c)(1) permits time-resolved data at intervals of one hour *or less*, and § 93504(e)(3) contemplates alerting on those shorter intervals. A sub-hourly excursion is not a one-hour exposure, and OEHHA's derivation does not speak to it.

2. **The location changes.** The REL applies where a person is. The alert threshold applies at the monitor. These are different concentrations at different points in a dispersing plume, and the relationship between them depends on meteorology that varies hour to hour.
3. **The analyte changes.** Under the methane surrogate pathway the instrument measures methane, not the toxic. The threshold is a health value twice removed — through a ratio derived from a small number of grab samples, at a single point in time, applied continuously thereafter.
4. **The population changes.** The REL protects a general population including sensitive subpopulations. An instrument setpoint protects nothing on its own; it triggers an investigation. The health logic of the REL does not transfer to the operational logic of an alarm.

We do not raise this to dispute OEHHA's toxicology, which is not our field and not our argument. We raise it because **using a health benchmark as an engineering setpoint is a category substitution, and it is the source of the measurement failure described below.** OEHHA derived the acute REL to answer whether a one-hour exposure is safe. The Discussion Draft uses it to answer whether an instrument should alarm. Those are different questions, and the number that answers the first does not answer the second.

The Board is free to correct this, because the choice was the Board's. Public Resources Code section 3283 requires rapid detection of leaks "before emissions impact the surrounding communities," an alarm system, and a response protocol. It does not mention reference exposure levels, OEHHA, or any numeric basis for the alert threshold. Nothing in the statute constrains the Board from grounding thresholds in what an instrument can measure at a real fence line.

Requested action: Ground the alert threshold in **detection capability and source characterization** rather than in a health benchmark repurposed as a setpoint. Section 93504(e)(3)(B)(1) already contemplates an alternative — a threshold set to detect the REL-level leak rate. That formulation is defensible because it asks an engineering question. The (B)(2) option, which sets the threshold *at* the acute REL, should be removed or made expressly subordinate to (B)(1).

C. Four worst-case assumptions compound in sequence

The Discussion Draft applies conservatism at four consecutive steps. Each is individually defensible. The product is not.

Step	Provision	Effect on the threshold
1. Smallest methane-to-toxic ratio across all monitored categories governs the whole site	§ 93504(b)(3)	Drives threshold down — the single richest stream sets the standard for leaner equipment
2. Threshold set at the acute REL rather than at the REL-level leak rate	§ 93504(e)(3)(B)(2)	Drives threshold down
3. REL-level leak rate evaluated at the nearest sensitive receptor	§ 93504(e)	Drives threshold down
4. Minimum detection limit required at three times below	§ 93504(d)(1)	Drives required instrument sensitivity down by a further

Step	Provision	Effect on the threshold
the threshold		factor of three

This results in an unquantified multiplication of safety factors whose combined stringency no one has calculated — including, we believe, the Board. The Discussion Draft nowhere states the intended aggregate margin, and there is no step at which the accumulated conservatism is checked against physical measurability.

Step 2, we acknowledge, is an election between two permitted options rather than a command. Section II.D examines both and shows why the election that can actually be executed at plan submission is this one.

Step 1 deserves particular note. Section 93504(b)(3) requires the **smallest** methane-to-toxic ratio across any monitored production process category to govern the site-wide threshold. Because a smaller ratio means more toxic per unit of methane, it produces a **lower** methane alert threshold. At Olive Community the vapor recovery stream — the single most benzene-rich stream on the lease — therefore sets the threshold for wellheads and tankage whose gas is materially leaner. The regulation offers no reasoning for this choice, and CARB's workshop materials do not address it.

The ratios are also site facts, not constants. The controlling ratio at Olive Community is approximately 806:1; at our Oat Mountain heater treater it is approximately 1,879:1 — a 2.3-fold difference between two fields under one operator. A single sampling campaign freezes one of these numbers into the threshold for the life of the plan.

Requested action: Permit a category-weighted ratio, or category-specific thresholds for spatially separable equipment groups, rather than a single site-worst value; permit the ratio to be established or updated from representative existing compositional data. Separately, state the intended aggregate detection margin explicitly and verify that the four steps above do not compound past physical measurability.

D. The result at a real site: one threshold election cannot be measured, and the other cannot be executed

Termo commissioned independent compositional source testing at Olive Community through Strata-Analysts Group, with laboratory analysis by Eurofins Calscience (TO-15 for BTEX and n-hexane; SCAQMD Method 307-91 for reduced sulfur species; ASTM D1945 for bulk composition). We then executed the § 93504 derivation as written — under **both** of the threshold-setting elections § 93504(e)(3)(B) permits, because the two behave entirely differently at this site, and the difference is the finding.

The site. Olive Community is a three-well producing lease on a compact urban parcel in Long Beach, bounded on all four sides by residential receptors at distances of tens of meters, within a dense street grid, adjacent to major arterials, in a port-influenced airshed. Total lease gas production is approximately 5.4 Mcf per day across all three wells.

The common steps.

Step	Provision	Result
Site-specific toxic of highest concern	§ 93504(b)(2)	Benzene — greater than 99% of weighted acute risk contribution across both monitored process

Step	Provision	Result
		categories
Governing methane-to-benzene ratio (smallest across categories)	§ 93504(b)(3)	≈ 806 : 1 (molar) — vapor recovery category controlling

Election (B)(2): a threshold the instrument cannot resolve. Section 93504(e)(3)(B)(2) permits the alert threshold to be set at the acute REL of the toxic of highest concern — an absolute concentration, indifferent to what the air at the fence line already contains. It is also the only election whose number can be produced at plan submission, because it requires no knowledge of the site baseline; we return to that below. Executed at Olive Community:

Step	Provision	Result
Alert threshold set at the acute REL	§ 93504(e)(3)(B)(2)	27 µg/m ³ benzene ≈ 8.5 ppbv
Methane-equivalent alert threshold	§ 93504(e)(3)(E)	≈ 6.8 ppmv methane
Required minimum detection limit	§ 93504(d)(1)	≤ ≈ 2.3 ppmv methane
Required precision at the threshold	§ 93504(d)(2)	± 15% ≈ ± 1.0 ppmv methane

Now compare to the air. NOAA's Global Monitoring Laboratory reports a globally averaged marine surface methane abundance of **1,921.79 ppb — 1.92 ppmv — for 2024**. NOAA states expressly that this global mean is derived from clean marine boundary layer air and does **not** represent continental concentrations, which are subject to nearby sources. It is a floor, not an urban value.

Against that floor:

- The required **minimum detection limit of 2.3 ppmv sits approximately 0.35 ppmv above the cleanest air on Earth.**
- The required **precision of ± 1.0 ppmv is roughly three times that margin.**
- The **alert threshold of 6.8 ppmv is roughly 4.9 ppmv above the global floor** — a margin that urban methane variability from natural gas distribution infrastructure, sewer venting, and traffic can traverse in transient plumes, and that a monitor cannot attribute.

An operator electing (B)(2) on the surrogate pathway must therefore field an instrument whose detection limit lies at the ambient concentration of the analyte it is measuring, with a precision band wider than its margin above background. Section 93504(e)(3)(F) requires that alert thresholds "be quantifiably resolved from temporal variation in the baseline concentration of the detection target." On these values, at this site, we do not see how that demonstration can be made.

Election (B)(1): the sound formulation — which cannot be executed when the plan is due. Section 93504(e)(3)(B)(1) permits the threshold to be set "to achieve detection of leaks exceeding REL-level leak rates from production equipment monitored by the EDS." That is a performance instruction rather than a number, and we want to state plainly what it implies, because it reflects the correct engineering instinct: under (B)(1), the threshold sits at the site baseline **plus** the modeled increment a REL-level leak adds at the sensor. Elevated background ceases to be an obstacle and becomes an input — a site with a higher baseline takes a proportionately higher threshold, and the threshold rides above the local air rather than inside it. The Board's July 16, 2026 workshop materials describe exactly this construction: "concentration-based alert thresholds using air dispersion modeling and baseline results."

Three defects keep the (B)(1) election from functioning:

1. **The baseline it requires does not exist until after the system is purchased.** A (B)(1) threshold is baseline plus increment, but § 93504(g)(1) admits only one source of baseline data: twelve months of valid hourly measurements *from the installed EDS*. The election that could produce a measurable threshold therefore cannot be demonstrated at plan submission in July 2028 — the circular sequencing addressed in Section II.G. (Strictly, neither election can complete the § 93504(e)(3)(F) resolvability showing before a baseline exists; but only (B)(1) needs the baseline to state the threshold at all.)
2. **The mechanics are nowhere stated.** The regulatory text never says how the baseline enters a (B)(1) threshold, whether a baseline-plus-modeled-increment construction satisfies § 93504(e)(3)(F), or what demonstration establishes that a chosen value "achieves detection." The workshop deck's formulation appears in no regulatory sentence. An operator electing (B)(1) is guessing at the showing CalGEM will require.
3. **The controlling increment is undefined — and the capture standard drives it toward zero.** The increment a REL-level leak adds at a sensor depends on which equipment leaks and where the plume travels. The text never states which leak-and-meteorology combinations the (B)(1) demonstration must capture; under the 90-percent hourly capture requirement of § 93504(e)(2)(A)(2), the *least-detectable* combinations control, and for a plume directed at a receptor rather than at a sensor, the increment at the sensor shrinks toward nothing and the (B)(1) threshold goes back into the baseline — the resolvability problem returns through the geometry. (*Section III.B.*)

An operator at plan submission therefore chooses between an election it can execute that produces an unmeasurable standard, and an election that could produce a measurable standard but that the text gives it no way to execute, demonstrate, or defend.

What no election escapes: every instrument specification is keyed to the wrong quantity. Sections 93504(d)(1) through (d)(3) key the minimum detection limit (three times below the threshold), the manufacturer-documented precision (± 15 percent at the threshold), and the quarterly field verification (± 25 percent at the threshold) to the **absolute alert threshold concentration** — which § 93504(e)(3)(A) requires to be "defined in terms of measured concentration." But the physical task is never to measure the threshold. It is to resolve the **increment** a leak adds above the baseline. Because a (B)(1) threshold rises with background, every specification loosens exactly as the detection task gets harder.

An illustration with round numbers, holding the leak signal fixed:

	Low-background site	High-background site
Baseline methane	2.0 ppmv	5.0 ppmv
Increment a REL-level leak adds at the sensor	2.0 ppmv	2.0 ppmv
(B)(1) threshold — baseline + increment	4.0 ppmv	7.0 ppmv
Required minimum detection limit — § 93504(d)(1)	≤ 1.3 ppmv	≤ 2.3 ppmv — <i>looser</i>
Permitted instrument error — § 93504(d)(2)	± 0.6 ppmv	± 1.05 ppmv — <i>looser</i>
Permitted field-verification error — § 93504(d)(3)	± 1.0 ppmv	± 1.75 ppmv — <i>looser</i>
Permitted verification error as a share of the leak signal	50%	88%

At the high-background site, an instrument can pass its quarterly field verification with an error of ± 1.75 ppmv — 88 percent of the entire 2.0 ppmv signal the system exists to detect — while satisfying every specification in § 93504(d). **The specifications certify compliance with a number; they do not certify detection of a leak.** And § 93504(e)(3)(D) — the EDS "shall account for uncertainty in measured values in determining if an alert threshold has been exceeded" — becomes the provision on which everything turns, because where the permitted error band approaches the size of the signal, the undefined uncertainty adjustment decides whether the system alarms continuously or never. The rule supplies no method for it.

Requested revisions: (i) Key the § 93504(d) detection-limit, precision, and field-verification specifications to the **increment between the alert threshold and the established site baseline**, not to the absolute threshold concentration, with a stated floor for low-background sites. (ii) State expressly how the baseline enters a § 93504(e)(3)(B)(1) threshold and that a baseline-plus-modeled-increment construction satisfies § 93504(e)(3)(F) — codifying the reading the Board's own workshop materials already describe, and the pathway requested in Section II.H. (iii) Permit the (B)(1) election to be supported by pre-installation baseline characterization, as requested in Section II.G. (iv) Define the method by which measurement uncertainty is applied under § 93504(e)(3)(D).

Termo is conducting ambient benzene and methane monitoring at the Olive Community fence line under documented no-leak conditions and will supplement this letter with measured results. We invite the Board to identify any error in either derivation above; the calculations and laboratory reports are available on request.

E. The two pathways differ eight-fold in measurability, and the rule never examines the difference

Distinct from the threshold election in Section II.D, the Discussion Draft offers two measurement pathways — direct measurement of the toxic of highest concern, or methane as a surrogate — and treats them as interchangeable. At Olive Community they are not. (The figures below use the REL-anchored (B)(2) values,

which permit the direct comparison; the asymmetry itself is structural to the surrogate election and persists under either threshold option.)

The South Coast AQMD's MATES V study reports annual average ambient benzene across seven Basin monitoring stations, including Long Beach and West Long Beach, of approximately 0.22 ppb (Burbank) to 0.38 ppb (Compton), averaging roughly 0.29 ppb, with the highest modeled annual value of approximately 0.46 ppb. Against those figures:

- **Direct pathway:** the 27 $\mu\text{g}/\text{m}^3$ benzene threshold (≈ 8.5 ppbv) clears the measured ambient band by a factor of roughly **29**.
- **Surrogate pathway:** the 6.8 ppmv methane threshold clears the 1.92 ppmv ambient floor by a factor of roughly **3.5** — before urban enhancement narrows it further.

The methane surrogate converts the signal but not the background. The conversion ratio applies to the facility's emissions; the ambient methane field against which those emissions must be resolved is the airshed's, and it is four orders of magnitude higher than ambient benzene in relative terms. Under the (B)(2) election the asymmetry appears as lost resolvability; under (B)(1) it appears as a background-inflated threshold and, through the § 93504(d) specifications keyed to that threshold, a proportionately inflated permitted instrument error (*Section II.D*). The result is an approximately **eight-fold loss of measurability** in the act of electing the pathway — the pathway the statute expressly authorizes for constituents that cannot be continuously monitored, and the only pathway practically available to a small operator, because continuous single-digit-ppb benzene measurement with quarterly NIST-traceable verification at the threshold (§ 93504(d)(3)) is not a routine field capability at any cost we have been able to establish.

The Discussion Draft requires no background-resolvability check at pathway election, states no criteria for one, and provides no mechanism to discover the problem before the capital is spent.

Requested action: Require — and define — a background-resolvability check at pathway election, using representative ambient data for the detection target actually measured. Where the surrogate pathway is not resolvable and the direct pathway is not practicable, the alternative threshold pathway requested in Section II.H must be available.

F. The consequence: a system that alarms on the airshed rather than the facility

Olive Community sits in a diffuse, unattributable methane field: natural gas distribution mains and residential service lines beneath every surrounding street, sanitary sewer and storm drain venting, vehicle traffic on the Cherry Avenue and Long Beach Boulevard corridors, regional transport from the San Pedro Bay port complex — the largest container-port complex in the nation, a few miles from the site — and from the surrounding refineries, and natural seepage from the Long Beach–Wilmington structure. **None of it is attributable to Termo, none of it is controllable by Termo, and none of it can be excluded from a fence-line measurement.**

An EDS whose threshold sits in or near that band — as the (B)(2) election places it at this site, and as a (B)(1) threshold collapses toward wherever the controlling increment is small (*Section II.D*) — would generate alerts driven predominantly by sources the operator neither owns nor can repair. Each alert triggers the response protocol. Where an alert indicates that a toxic of highest concern may impact a sensitive receptor, it may trigger community notification.

G. The demonstration is due before the data that could support it can exist

Section 93504(e)(3)(F) requires the resolvability showing. Section 93504(g)(1) establishes the baseline from **12 months of valid hourly measurements collected by the installed EDS** — that is, after the LDRP is approved and the system is operating. An operator cannot make the (e)(3)(F) showing when the LDRP is submitted, because the baseline does not yet exist. Yet § 93503(a) requires submission by July 1, 2028 and § 93503(c) imposes suspension of operations if the plan is not fully implemented by July 1, 2030.

The operator must buy the full system to learn whether it can work. If the baseline — collected in 2030 and 2031, after the full capital investment has been made — then demonstrates that the threshold is not resolvable, the regulation provides no remedy at all.

Two further defects compound the circularity:

The baseline excludes what only the EDS can identify. Section 93504(g)(1)(A) requires that periods when leaks occur be excluded from baseline conditions. But the EDS is the instrument by which leaks are identified. Establishing the baseline therefore requires knowing, in advance of having a baseline, which hours contained leaks.

The baseline has no variability metric. Section 93504(g)(4) defines the baseline concentration as an **arithmetic mean** of the hourly measurements. Yet § 93504(e)(3)(F) asks whether the threshold is resolved from *temporal variation* in that baseline. The regulation never defines how variability is to be characterized nor what "quantifiably resolved" means numerically, nor what data-validity criteria apply to hours collected under extreme meteorology. Two operators applying identical data can reach opposite conclusions in good faith, and CalGEM has no standard against which to review either one.

We believe that pre-installation characterization is the right concept — but the regulatory text forecloses it, because § 93504(g)(1) admits only post-installation EDS data. The text should be conformed to the evident intent.

Requested revisions: (i) Permit pre-installation baseline characterization by defined alternative methods — multi-week canister or sorbent campaigns, temporary continuous monitors, or representative regional network data — sufficient to support the § 93504(e)(3)(F) showing at plan submission. **(ii)** Define the resolvability test with a stated statistical basis — for example, threshold $\geq$ baseline mean + $k \cdot \sigma$, or a specified upper percentile of the hourly distribution — together with data-validity criteria for records collected under high-wind or complex-terrain conditions. **(iii)** Specify how leak-period exclusion under § 93504(g)(1)(A) is performed in practice. **(iv)** Provide an **explicit reopener** where post-installation baseline data demonstrates non-resolvability, linked to the alternative pathway requested below.

H. There is no off-ramp — and the fix is straightforward

The Discussion Draft contains no provision addressing what an operator does when the § 93504(e)(3)(F) demonstration fails. There is no alternative compliance pathway, no mechanism to petition for a revised threshold, and no acknowledgment anywhere in the regulatory text that at some sites the REL-derived value may be unresolvable from background. Meanwhile § 93503(c) suspends all production and injection in the health protection zone if an approved LDRP is not fully implemented by July 1, 2030.

An operator in Termo's position is therefore directed to install a system that cannot meet the regulation's own performance requirement, at a cost we quantify in Section VIII, and to face suspension of operations when it does not.

Requested addition — we regard this as the single most important change in this letter: Provide an express background-resolvability pathway. Where an operator demonstrates through measurement

that the REL-derived alert threshold cannot be quantifiably resolved from local ambient variability, permit either:

(i) an alert threshold expressed as a **defined increment above the established site baseline** rather than as an absolute concentration; or

(ii) an alternative compliance demonstration through enhanced component-level leak detection and repair at a specified frequency.

Either option preserves the protective objective. Option (i) in particular is more protective than the current construction, because a threshold indexed to the local baseline responds to *the facility's* contribution rather than to the regional airshed. Nor is it an innovation: it is the construction § 93504(e)(3)(B)(1) already implies and the Board's own workshop materials already describe — "concentration-based alert thresholds using air dispersion modeling and baseline results." The request is to state those mechanics in regulatory text (*Section II.D*). And nothing in Public Resources Code section 3283 — which never mentions RELs or any numeric threshold basis — constrains the Board from adopting it.

I. The source-testing campaign re-derives a foregone conclusion at real cost

Having executed the § 93504(b) characterization at five sampling points across two fields through two independent laboratories, we can report what the campaign produces: **the same answer every time.**

- Olive Community vapor recovery and casing gas (Eurofins Calscience, batch 260819): benzene is the toxic of highest concern, at greater than 99 percent of weighted acute risk in each stream.
- Aliso Canyon and Oat Mountain casing and heater-treater gas (Zalco Laboratories, work orders 2606488/2606489, sampled June 25, 2026): benzene, at approximately 99 percent, at every sampling point.
- The crude-oil toxic air contaminant speciation profile Termo already submits to the South Coast AQMD for emission reporting (benzene at 0.0271 lb per lb VOC): benzene, at approximately 99 percent, from a liquid-phase matrix.

The reason is structural, not coincidental: benzene's 27 µg/m³ acute REL sits two to three orders of magnitude below every other Table 1 value, so composition barely moves the outcome. For crude-associated gas, Table 1 is functionally a benzene determination, and § 93504(b)'s three-samples-per-category, independent-third-party campaign — repeated at every LDRP update — re-derives that conclusion at a cost of tens of thousands of dollars per facility.

The statute points toward a simpler design. Public Resources Code section 3283(a)(1) describes the toxics of highest concern as those in the region **as identified by the State Air Resources Board or local air district** — a regional, agency-performed identification — and states that not all chemical species found in the oilfield are required to be detection targets. The per-facility source-testing campaign is the Discussion Draft's addition, not the statute's requirement.

Requested revisions: **(i)** Establish a deemed-toxic-of-highest-concern default — benzene presumed for crude-associated gas, with operator certification. **(ii)** Accept existing representative compositional data (ASTM D1945, TO-15, district-accepted speciation profiles, AP-42 submittals) in lieu of new source testing. **(iii)** Require re-testing only upon a defined process change. **(iv)** Preserve an opt-out demonstration where hydrogen sulfide or another compound could control at a particular facility.

Where source testing is performed, the method specification also needs correction. Method TO-15A is an ambient air method; its application to pressurized production gas is not established, and our own campaign surfaced the consequences: Tedlar bag sampling drew "estimated" data qualifiers from the laboratory, dilution on the order of 50,000-fold was required to bring raw gas into the ambient calibration range, and the regulation never states how non-detects are treated in Equation 1 — zero, half the reporting limit, or the full reporting limit, each of which yields a different toxic-of-highest-concern arithmetic. Duplicate relative percent differences in our data (benzene 6.2 percent, toluene 12.3 percent, heptane 11.0 percent) show the analysis is achievable; the sampling interface and the non-detect convention are what the text leaves undefined.

Requested corrections: Specify acceptable sample containers and media for pressurized source gas; permit established source-gas methods (EPA Method 18, ASTM D1945, ASTM D5504) alongside TO-15A; and define the non-detect convention for Equation 1.

III. One Monitoring Architecture Spans 40 Feet to 3,200 Feet and Every Facility Geometry. It Fails at Both Ends.

A. The statute set the zone; the Board chose the uniformity

Section 3283 directs CARB to develop performance standards; it does not direct the Board to apply a single undifferentiated standard across the entire covered population. That choice was made in the Discussion Draft, and the Board's own workshop materials describe the fact that argues against it: California production facilities vary widely in configuration, complexity, emission composition, meteorology, topography, and receptor distance. The Discussion Draft acknowledges the variability on one slide and prescribes uniformity in the text.

The 3,200-foot figure is a jurisdictional line. It is not a dispersion result. Nothing in the statute, and nothing in CARB's workshop materials, holds that the concentration of a hydrocarbon leak is materially the same at 40 feet and at 3,100 feet. It plainly is not — dispersion over that range spans roughly two orders of magnitude, and the Discussion Draft's own reliance on AERMOD in § 93504(h) concedes the point.

Yet the Discussion Draft imposes essentially the same obligation across the entire span. The same source testing. The same dispersion modeling. The same threshold derivation. The same continuous monitoring, meteorological station, quarterly verification, and audit requirements. The relief pathway at § 93504(e)(2)(B) is not distance-based; it is potential-to-leak-based, and as Section IV shows, it requires the full modeling package to access and has no methodology by which to make the showing.

Our two case studies demonstrate the failure at both ends, for independent reasons.

At Olive Community, receptors on all four sides at tens of meters produce the most stringent possible derivation — and Section II shows the resulting threshold cannot be resolved from the urban ambient band. The rule is unachievable at exactly the facility class the statute targets most directly.

At Aliso Canyon and Oat Mountain, the same derivation is resolvable in concentration terms — the controlling 1,879:1 ratio yields an illustrative methane threshold of roughly 15.9 ppmv, well clear of a rural ridgeline baseline — but the obligation it triggers is out of all proportion to the source. Using the toxic air contaminant speciation profile the District already accepts from us, the **entire uncontrolled tank inventory at both facilities — every tank, all vapor control off — emits benzene at 2.48×10^{-4} g/s, roughly one two-hundred-thirtieth of the rate required to reach the acute REL at the 3,200-foot health protection zone**

boundary, and roughly three times below the REL-level rate even at 100 meters, closer than any receptor at either facility. (These are illustrative Gaussian screening figures; § 93504(h)(1) mandates AERMOD, which is itself a defect we address in Section V.) A hypothetical receptor at the zone boundary would face a source physically incapable of producing an REL exceedance there — and the facility would nonetheless carry the full source-testing, modeling, monitoring, meteorological, verification, and audit obligation.

Neither facility is well served by the uniform standard, and neither is the community.

Requested action: Tier monitoring stringency within the health protection zone by **actual nearest-receptor distance and screened leak potential**. At minimum, provide a distance-based screening pathway into the § 93504(e)(2)(B) reduced configuration that does not require site-specific AERMOD to access. A facility at 2,500 feet with a lean gas stream and low throughput should not carry the same obligation as a facility at 50 feet, and the regulation should say so on its face rather than requiring each operator to model their way to that conclusion at their own expense.

B. The 90-percent capture requirement is undefined as a demonstration and unbounded as a design driver

Section 93504(e)(2)(A)(2) requires the EDS to detect 90 percent of REL-level leaks "transported toward" sensitive receptors within one hour. The regulation never states how that capture fraction is demonstrated — measured how, modeled how, over what wind population, against what probability-of-detection basis. Undefined, it becomes a sensor-count generator, and it generates in opposite directions at our two facilities:

- **At Olive Community, the driver is geometry.** Receptors surround the parcel; every wind direction is "toward" a receptor; the requirement is effectively 360-degree coverage. Yet § 93504(e)(2)(B)(1) prescribes the relief configuration as "at least one sensor located in a predominant upwind location and at least one sensor located in a predominant downwind location" — a construct with no geometric meaning at a surrounded site. The performance requirement and the prescribed relief configuration are incompatible at exactly the sites the statute targets most directly.
- **At Aliso Canyon and Oat Mountain, the driver is extent.** Monitored equipment is distributed along roughly 2.5 miles of ridge — 21 tagged vessels at Oat Mountain and approximately 29 at Aliso Canyon — under diurnally reversing upslope and downslope canyon flows that steer any plume along terrain rather than along a prevailing vector. Read literally, hourly 90-percent capture of any REL-level leak from any point on that line, in any wind, forces sensor counts that grow with the geometry and never converge on a defensible number, because the demonstration that would bound them is undefined.

Requested action: Define the capture demonstration — a modeled probability-of-detection analysis over the site wind rose should expressly suffice — and permit **receptor-side or community-boundary monitoring, or directional coverage**, where receptors lie in a limited arc or where the equipment layout is linear. We will provide a landscape-scale facility map with our technical supplement so that staff can evaluate the coverage geometry directly.

IV. The Exclusion Screen Is the Regulation's Principal Relief Mechanism, and It Cannot Be Used

Section 93504(e)(2)(B) provides relief — a reduced EDS configuration of one upwind and one downwind sensor — where monitored equipment "does not have the potential to leak at the REL-level leak rate." For multi-well leases it is the highest-leverage cost provision in the rule. It fails for three reasons, each independently sufficient.

First, the demonstration requires the full cost of the thing it relieves. To establish reduced leak potential, § 93504(f)(1)(A) requires calculations against REL-level leak rates. Those rates must, under § 93504(e)(1), be derived from § 93504(h) air dispersion modeling. That modeling requires the § 93504(b) source testing and, on the methane pathway, the compositional ratios. An operator must therefore complete the entire characterization and modeling package — the most expensive one-time cost elements in the regulation — before learning whether the lighter configuration applies. There is no screening tier, no de minimis threshold, and no default-emission-factor pathway. This falls hardest on the smallest facilities, where the modeling cost is least justifiable and the exclusion is most likely to apply.

Second, no standardized methodology exists, so no operator can know what demonstration will be accepted. Section 93504(f)(1)(A) permits the showing "by calculations" and specifies nothing further: no accepted emission-estimation methods, no accepted speciation sources, no screening dispersion approach, no format, no review standard. Our own records illustrate the problem concretely. The only established estimation framework for storage tanks — AP-42 Chapter 7 — returns a standing loss of exactly zero for an insulated tank, because the vapor-space temperature range is taken as zero. The calculation is not wrong; it is correct for what it estimates, which is breathing and standing loss under normal operation. But it answers a different question than the one the regulation asks — *potential to leak at the REL-level rate* — and no methodology exists for that question. An operator cannot know what showing CARB or CalGEM would accept, and the agencies have given themselves no standard against which to evaluate one.

Third, where the arithmetic can be done, it shows the exclusion should be routine — which makes its inaccessibility the more costly. Section III.A sets out the result at Aliso Canyon and Oat Mountain: the entire uncontrolled tank inventory sits 234-fold below the REL-level benzene rate at the zone boundary on the District-accepted speciation profile. Even the facility's wash tank — which carries 17,000 µg/L benzene in the liquid phase — has a calculated total standing loss of 2.67×10^{-4} g/s, two orders of magnitude below the REL-level rate at any receptor beyond roughly 200 meters before speciation is even applied. And there is a simpler physical bound available at small facilities: Olive Community produces approximately 5.4 Mcf of gas per day across the entire lease. **Where total facility throughput physically constrains the maximum credible leak rate, that constraint is a sound basis for exclusion and requires no dispersion modeling to establish.**

Requested actions: (i) Publish a **standardized exclusion-screening methodology** — default emission factors, accepted speciation sources (including district-accepted profiles), a defined screening dispersion approach, and a defined demonstration format — with **binding effect at plan review**, so that a conforming demonstration must be accepted. (ii) Add a screening-level pathway that does not require site-specific AERMOD, based on gas throughput, monitored component count, operating pressure, receptor distance, or published emission factors. (iii) State expressly how equipment whose only established calculated emission rate is zero is to be evaluated.

V. The Meteorological and Modeling Provisions Presume a Representativeness Our Own Compliance Records Disprove

Section 93504(h)(1) mandates AERMOD. Section 93504(i) requires meteorological monitoring "representative" of the facility, cited to EPA QA Handbook Volume IV criteria "to the extent site-specific conditions allow." The Discussion Draft defines none of the operative terms, provides no alternative-model pathway, and establishes no approval mechanism for the qualifier. At a mountainous facility, these provisions are not conservative; they are indeterminate, and every downstream product — the REL-level leak rate, the sensor network, the alert threshold — inherits the indeterminacy.

This section is empirical. It is built from records Termo already generates in the ordinary course of district compliance, and to our knowledge no other commenter has presented measurements of this kind.

A. The referenced meteorological dataset is off by 11.5 percent at the equipment

The emission calculations these facilities submit to the District today rest on AP-42 Table 7.1-7, "Los Angeles AP, Annual" — atmospheric pressure 14.63 psia, a sea-level station roughly 30 miles from a ridgeline field. Every OGI and Method 21 survey record in our LDAR database logs the ambient barometric pressure at the equipment at the time of inspection. Across **180 records, 23 survey events, and twelve months at both facilities**:

Statistic	hPa	psia
Mean	904.9	13.12
Median	905	13.13
Minimum	891	12.92
Maximum	921	13.36
AP-42 reference (LAX annual)	1,008.7	14.63

The referenced input is 11.5 percent high relative to twelve months of measurement at the equipment — on the single parameter the vapor-space expansion calculation is most sensitive to. In an emission inventory, that is a modest error. Under §§ 93504(h) and (i), the same representativeness gap stops being an inventory error and becomes the foundation of an AERMOD run that sets a REL-level leak rate, a sensor network, and an alert threshold — with no definition of "representative," no alternative-model pathway, and no approval mechanism for the site-specific-conditions qualifier.

B. The single-station presumption fails inside a single lease — and we can measure it

Section 93504(i) presumes that one meteorological system can be representative "at the facility." Our paired same-day survey records show the presumption failing within a single lease:

- **Del Aliso.** Two well groups, surveyed the same day by the same crew with the same instrument, return a **persistent barometric offset of 7.0 hPa (standard deviation 1.3) across seven independent survey dates** spanning July 2025 to March 2026 — approximately 190 feet of relief between two well groups on one lease. Because the observations are paired, synoptic weather cancels out. This is terrain, not noise.

- **Oat Mountain.** The same pattern at larger magnitude: a low group — including the tank battery — reads 10 to 14 hPa below the ridge wells on the same dates, approximately 280 to 390 feet of relief. The equipment with the largest vapor inventories sits several hundred feet below the wells the ridge-top station would represent.

A single meteorological station cannot be representative of this facility, and the operator can demonstrate it with its own routine inspection records. Section 93504(i) does not say how many stations are required, does not define "representative," and provides no mechanism for an operator to establish that no single station can satisfy the requirement. The EPA QA Handbook Volume IV siting criteria the section invokes — a 10-meter tower on level terrain with obstruction clearance at ten times obstacle height — are largely unachievable on brush-covered ridgeline, and the Discussion Draft supplies no consequence for that fact other than the undefined qualifier.

C. AERMOD is mandated with no alternative-model pathway

AERMOD is a steady-state Gaussian plume model. Its core assumptions — horizontal homogeneity and a single representative wind field across the modeling domain — are the assumptions the terrain above defeats: diurnally reversing upslope and downslope flows, drainage winds, and several hundred feet of relief inside a single lease. EPA's own *Guideline on Air Quality Models* recognizes exactly this situation and provides, at section 3.2, an established pathway for approving alternative models where the preferred model's assumptions are unmet. The Discussion Draft adopts the model mandate without the escape valve: no alternative-model provision, no petition process, no Executive Officer discretion.

The consequence is not merely a modeling-accuracy dispute. Thresholds, REL-level leak rates, and sensor placements built on an invalid wind field will be wrong in ways no one can quantify, and the re-modeling churn that follows plan review will consume both operator and agency resources that a defined alternative-model pathway would avoid.

Requested actions: (i) Define representativeness criteria for meteorological data, including when multiple stations are required and when no on-site station can satisfy the criteria. (ii) Permit prognostic or modeled meteorological data (e.g., WRF-derived datasets) where site measurement is unrepresentative or siting criteria cannot be met. (iii) Codify an approval mechanism giving effect to the "to the extent site-specific conditions allow" qualifier in § 93504(i)(1). (iv) Incorporate an alternative-model approval pathway mirroring EPA *Guideline on Air Quality Models* § 3.2. (v) Permit representative nearby or off-site meteorological data; at Olive Community, a one-to-two-acre urban parcel bounded by two-story residences, no location satisfies standard fetch requirements at all.

VI. The Regulation Never Defines What the EDS Must Monitor

A. "Site" is undefined, and the monitored-equipment scope is indeterminate

The Discussion Draft uses "site-specific" throughout § 93504 and **nowhere defines "site."** Section 93502(a) defines "production facility," but in terms that conflate it with "production equipment," and broadly enough to encompass underground pipelines — which an ambient detection system cannot monitor by any physical mechanism — and water injection wells, which produce no fugitive hydrocarbon emissions.

The consequence is not abstract. At Aliso Canyon and Oat Mountain, monitored equipment is distributed along roughly 2.5 miles of ridge connected by flowlines and gathering lines. Whether those lines are

"production equipment" the EDS must cover is the difference between one monitoring system and many — an order-of-magnitude cost swing at a single field, resting entirely on which permissible reading a plan reviewer applies. At Olive Community, the question is whether the "site" is the parcel, the lease, or each wellhead. The lean reading and the broad reading of the same text produce compliance programs that differ by multiples, and nothing in the Discussion Draft tells the operator or CalGEM which program the rule requires.

This is the largest single indeterminacy in the Discussion Draft. Section VIII shows that it also makes the Board's cost estimate unverifiable, because the per-site denominator does not exist.

Requested actions: Define "site" for purposes of LDRP scope and EDS coverage. Define the monitored-equipment scope, narrowing "production equipment" to above-ground equipment and expressly excluding water injection wells and underground pipelines. State expressly whether and how flowlines and gathering lines are covered.

B. Facility-boundary aggregation is unresolved

Section 93504(m)(2)(E) contemplates facility-level plan elements without stating how contiguous leases under common operation are treated. Aliso Canyon and Oat Mountain are contiguous leases sharing flowlines, access, and operations, with no fence line between them. Whether they constitute one facility with one EDS, or multiple facilities each carrying the full source-testing, modeling, meteorological, and audit stack, is unstated — another order-of-magnitude cost difference resting on an unwritten definition.

Requested action: Establish aggregation rules, and permit an operator-designated contiguous-lease facility where leases share operations and infrastructure.

VII. Planned Third-Party Curtailments Read as Leaks, and They Are Not

Aliso Canyon and Oat Mountain gas is sold into the SoCalGas system. SoCalGas regularly shuts its inbound stream for approximately two weeks of maintenance. The shutdown is scheduled by SoCalGas, noticed in advance, and outside Termo's control. Its operational consequence is mechanical: with no takeaway, production is shut in and the tank vapor recovery units — which require the sales line — cannot operate. The resulting tank standing losses during the outage are quantified and reported to the South Coast AQMD as excess emissions. The 2025 event ran 17 days, April 28 through May 15, and is documented in SCAQMD Cases 3014-23 and 3014-24.

Under the Discussion Draft, this scheduled, unavoidable, pre-reported event reads as a leak. Elevated readings may exist at the monitors for two weeks. Each exceedance initiates the alert-response obligations of § 93504(e)(3) and the automated alerting of § 93504(j). The condition cannot be "repaired," because there is nothing broken — the operator does not control SoCalGas's maintenance schedule — so the 48-hour repair window contemplated by Public Resources Code section 3283 lapses by design, community notification follows, and the facility accrues suspension exposure under § 93503(c). The statute's response protocol targets *leaks*; a noticed curtailment with no equipment failure is not one. The Discussion Draft would convert an regular, District-documented maintenance event into an annual forced notification-and-enforcement cycle, and would do so for every operator whose takeaway counterparty performs scheduled maintenance.

The 2025 event also offers the Board a compact illustration of a structural point that recurs in Section VIII. The entire seventeen-day uncontrolled standing-loss release across both tank batteries produced 0.80

pounds of benzene, and the benzene-mass component of the resulting District fees was roughly half a cent — while the administrative daily-minimum fee produced \$7,958 across the two facilities. Fixed compliance cost detached from emission mass by a factor of more than a million is the same phenomenon, at small scale, that the marginal-well economics present at large scale.

Requested addition: A planned-event provision: advance notice to CalGEM and CARB of a scheduled outage substitutes for the alarm-response and 48-hour notification obligations for the noticed period, and a curtailment or interruption with no equipment failure is expressly not a "leak" for purposes of the response protocol or § 93503(c).

VIII. The Cost Structure Does Not Scale, and the Board's Estimate Cannot Be Verified

A. Termo's HPZ portfolio

Termo analyzed production for its wells located within health protection zones over the period January 1, 2025, through May 31, 2026. A significant percentage of those produce 5 BOPD or less. It is the shape of the portfolio the regulation reaches. We expect it is broadly representative of legacy urban production statewide, which is precisely the population inside health protection zones — a population the Board's own workshop scoping places at 21,000 wells and 7,300 tanks across roughly 200 operators, accounting for 23 percent of the state's oil production and 7 percent of its gas production.

B. The dominant costs are invariant to production

The dominant cost elements of the Discussion Draft — third-party source testing under § 93504(b)(1), AERMOD modeling under § 93504(h), siting and threshold analysis under § 93504(f), LDRP and QAPP preparation, capital equipment, meteorological instrumentation under § 93504(i), quarterly performance testing under § 93504(d)(3), and independent audits under § 93504(n) — are **essentially invariant to production rate**. A facility producing one barrel per day carries substantially the same obligation as one producing one hundred.

At Olive Community, Termo's cost modeling spans a range depending on configuration and procurement basis. On a conservative floor case — a leased minimum two-sensor configuration priced from a current vendor quotation, with every § 93504 obligation the quotation excludes added at low-end unit costs — the facility runs approximately **\$50,000 upfront, \$79,000 in first-year all-in cost, \$24,000 in annual steady-state cost, and \$172,000 over five years**. On a purchase-basis central case reflecting the denser network the surrounded-receptor geometry is likely to require, the same facility runs approximately **\$249,000 upfront, \$348,000 first-year, \$96,500 annually, and \$737,500 over five years**. Both are set against gross oil revenue on the order of \$630,000 per year at a \$75 per barrel reference price. Olive Community is a three-well lease and is among the **better**-producing facilities in the portfolio above.

The economic outcome at some low producing facilities is not reduced margin. It is shut-in. We say that as a statement of arithmetic, not as an advocacy position: there is no operating decision available that makes those wells viable under the Discussion Draft as written. The statute does not compel this outcome; tiered stringency is squarely within the Board's discretion, and Sections III and IV describe the mechanisms — distance tiers and a usable exclusion screen — through which a low-production tier can be delivered without reducing protection at the facilities where receptors are actually close.

Requested action: Establish a low-production and small-operator tier with scaled requirements, built on the distance and screened-leak-potential mechanisms requested in Sections III and IV.

C. The Board's estimate diverges from worked site-level actuals by a factor of six to twenty-six — and cannot be checked

The July 16, 2026 workshop presented preliminary implementation costs across 2028–2033: \$13 million for source testing, \$27 million for monitoring plan preparation, \$56 million for equipment and installation, and \$101 million over five years for ongoing data management, QA/QC, third-party audits, and maintenance — approximately **\$197 million** in total, against the stated scope of 200 operators, 21,000 wells, and 7,300 tanks.

On a per-well basis that implies roughly **\$9,400 per well** across the period. Termo's site-level modeling for Olive Community — a three-well lease — ranges from approximately **\$57,000 per well** on a deliberately conservative floor case (a leased minimum two-sensor configuration priced from a current vendor quotation, with every obligation the quotation excludes added at low-end unit costs) to approximately **\$245,800 per well** on a purchase-basis central case — **a divergence of six- to twenty-six-fold, at every point in the range**. The bare vendor quotation for the minimum lawful two-sensor configuration, before a single excluded obligation is added, is already roughly double the Board's implied cost for a three-well facility. And because the dominant costs attach to the facility rather than the well, at a single-well lease the floor case alone runs roughly eighteen times the Board's per-well figure. On a per-operator basis, CARB's figure implies approximately \$985,000 per operator across the period; on the central case, Olive Community alone — one facility among many Termo operates could account for up to 75 percent of that.

The more fundamental problem is that the most meaningful comparison — cost per site — cannot be computed at all, because "site" is undefined (Section VI). Because the unit of analysis is undefined, neither the Board nor any operator can determine how many sites the regulation reaches, and therefore neither can verify the per-site cost that will drive the Standardized Regulatory Impact Assessment. An economic impact analysis whose unit of analysis is undefined cannot support the findings the Administrative Procedure Act requires.

There is also no stated standard against which the program's cost is to be judged. Neither the Discussion Draft nor the workshop materials identify the cost metric: an AB 32 cost-effectiveness evaluation, district BACT/BARCT guidance, an airborne toxic control measure analysis, or some other benchmark. If there is a threshold at which this regulation would be judged too costly relative to its benefit, the SRIA should state it; if there is none, that determination should be stated plainly, because it is itself a finding the public is entitled to comment on.

We note that the Board asked for exactly this input. The workshop's request for alternatives solicits submissions that include cost and benefit information, data sources enabling comparison of economic impacts, and a clear description of the basis for cost calculations. Our Olive Community model provides that: a worked, site-level, assumption-explicit cost derivation spanning the floor and central cases, offered in editable form so that staff may test it directly.

Requested actions: Publish the site definition and the unit-cost basis underlying the preliminary estimate; publish the site count; state the cost-effectiveness standard against which the program is evaluated; and reconcile the estimate against submitted operator site-level data before the SRIA is finalized.

D. There is no technology-feasibility floor and no capacity analysis

Nothing in § 93504 prevents a derived threshold from falling below what commercially available instruments resolve at the required distances — Section II demonstrates a site where it does. And the quarterly field-verification obligation of § 93504(d)(3), applied across 21,000 wells and 7,300 tanks simultaneously, assumes an instrument-vendor, laboratory, and qualified-technician capacity that we do not believe exists in the state today. The Discussion Draft contains no phase-in of verification frequency and no technology-review provision.

Requested actions: Codify a detection-limit and probability-of-detection floor beneath which no threshold may be set; phase the verification frequency; and add a technology-review and pilot provision.

E. The program has no true-up

Given the cost divergence above and an architecture without operational precedent at this scale, the regulation should not run open-loop. A mandatory implementation review after the first compliance cycle that allows for reconciling actual costs against the SRIA and auditing threshold performance, false-alert rates, and detection outcomes would institutionalize the correction of everything this letter identifies, at essentially no cost to the Board.

IX. The EDS Duplicates District LDAR Programs That Already Find and Fix Every Leak

Termo's facilities in the South Coast Air Basin operate under SCAQMD Rules 1148.1 and 1173 — component-level leak detection and repair with quarterly inspection and reporting. Those programs work, and we can document it at both case-study facilities.

Olive Community, first quarter 2026: 561 components inspected across valves, fittings, flanges, compressor seals, hatches, sight glasses, and meters. Three components exceeded the leak standard; none exceeded 10,000 ppm. Every leak was repaired the same day or the following business day, with post-repair verification readings — 161 ppm reduced to 85.6, 1,873 to 97.2, 2,293 to 1.8.

Aliso Canyon and Oat Mountain, twelve months (July 2025 – June 2026): 180 inspection records across 23 survey events found 32 leaks. **All 32 were repaired the same day**, verified by OGI or Method 21 re-screen (Method 21 initial readings of 277 to 9,597 ppm reduced to 1.9 to 68 ppm after repair), with zero quantified fugitive VOC recorded.

Three conclusions follow.

First, the EDS pays twice for the same detection function — and the second payment buys less. The leak population at these facilities is 59 percent stuffing-box (rod packing) leaks: small, recurring, wear-driven emissions at wellheads, plus tank hatch seals and threaded connections. This is precisely what OGI and Method 21 at the component detect well, and what a perimeter concentration monitor detects poorly and localizes not at all. A Method 21 probe reading of 2,293 ppm at a fitting is undetectable meters away. The Discussion Draft layers a continuous perimeter network over a program already detecting and repairing at the component, and its cost-benefit analysis should not assume the perimeter system finds what the component program finds. Yet the Discussion Draft provides no pathway to recognize a district program of comparable or greater stringency as satisfying any portion of the obligation.

Second, the recurrence pattern is the false-positive engine for the undefined terms in Section X. One Del Aliso well recorded four stuffing-box leaks in twelve months; another wellhead recorded three; two more

recorded two each. Rod packing wears and leaks again — normal, expected, and corrected the same day under the district program. Under the Discussion Draft, each recurrence plausibly initiates an alert, an investigation, an LDRP record, and potentially a 48-hour community notification, for a condition the existing program resolves before the notification clock would run.

Third, the frameworks conflict on timing. Rule 1173 permits no leaks and requires repair within one day. The 48-hour community notification contemplated by PRC § 3283(a)(3) is largely inoperative against a one-day repair obligation, and the requirement to model predicted leaks sits awkwardly against a district rule that permits none.

Requested additions: An equivalency provision crediting district LDAR programs of comparable or greater stringency against the corresponding elements of the EDS obligation; and reconciliation of the 48-hour notification framework with one-day district repair requirements.

X. Five Operative Terms in the Alert-Response Pathway Are Undefined

The Discussion Draft establishes an alert-driven response framework but leaves five operative terms undefined. Each will produce inconsistent LDRPs, inconsistent review by CalGEM, and unresolvable disputes in enforcement. The recurrence data in Section IX shows the stakes are concrete, not hypothetical: at facilities where wear-driven component leaks recur by design, the undefined terms below determine whether the community hears about a same-day-repaired stuffing box once, annually, or every time.

Undefined term	Consequence	Proposed resolution
Investigation clock — how quickly after an alert must the operator inspect	Each LDRP sets its own interval; no basis for staffing or contractor coverage; inconsistent enforcement across operators	Specify a maximum interval from alert to commencement of inspection, with a longer interval permitted overnight and on weekends
Leak-confirmation criteria — what evidence confirms or refutes a leak	Operator carries an open-ended burden of disproof against an alert that may have no facility source	Specify that a documented Method 21 survey of monitored equipment showing no exceedance constitutes refutation
False-positive disposition — how an alert attributed to an off-site source is closed	No closure mechanism; records accumulate with no defined resolution	Establish a documented disposition category for alerts not attributable to monitored equipment
48-hour notification trigger — whether the clock starts at alert, at inspection, at leak confirmation, or at failed repair	Determines whether the community is notified on unconfirmed alerts. At sites where the threshold sits within ambient variability, this is the difference between occasional and routine notification	Specify that the clock runs from leak confirmation , not from alert

Undefined term	Consequence	Proposed resolution
"Quantifiably resolved" (§ 93504(e)(3)(F)) — the statistical basis	Two operators applying identical data can reach opposite conclusions in good faith; CalGEM has no review standard	Specify a variability metric and a numerical resolution criterion (<i>Section II.G</i>)

A sixth, related gap belongs with these: **no source-attribution or interference protocol exists** for the alert pathway. Aliso Canyon adjoins the SoCalGas underground storage field; Olive Community sits in the diffuse urban methane field described in Section II.F, in an airshed shaped by the San Pedro Bay port complex a few miles away — whose marine, rail, and drayage activity contributes combustion and fugitive signals no fence-line monitor can attribute; and regional interference sources — landfills, seeps, satellite-detected plumes of foreign origin — are documented throughout this docket. Our own twelve-month LDAR record at Aliso Canyon and Oat Mountain — 32 leaks, all same-day repairs, zero quantified fugitive VOC — establishes a near-zero facility source term; a sustained elevated reading at that facility is far more likely to be someone else's signal than ours, and the rule provides no process for saying so. A monitoring program should not alarm on a neighbor.

Requested actions: Define each term as proposed above and establish a source-attribution and interference protocol that must be exhausted before notification obligations attach. We regard these as the most readily addressed items in this letter. None requires the Board to revisit any policy judgment, and each can be resolved with a sentence of regulatory text.

XI. Additional Technical Corrections

A. The downtime standard tightens as sensor count increases. Section 93504(c)(2)(A) caps rolling 12-month operational downtime at 10 percent, and § 93504(c)(2)(B) defines downtime to include any period in which **any** sensor or monitor fails to collect or transmit data or is out of control. Because any single device's failure counts against the whole system's budget, unplanned failures are additive across the network: the more sensors a site must field, the more ways the system can be "down," and a single chronically failing device — theft, vandalism, power, or telemetry, all realistic at an unfenced urban parcel — can consume the entire annual allowance by itself. **The regulation requires denser networks at receptor-proximate sites and then applies a proportionally tighter availability standard to them.** We do not believe this is intended. *Requested correction: express the downtime standard on a per-sensor or coverage-weighted basis.*

B. Quarterly verification at the alert threshold is impractical for direct toxic measurement. Section 93504(d)(3) requires quarterly performance testing using a NIST-traceable standard at concentrations equal to the alert threshold, and § 93504(d)(3)(B) requires that for systems measuring the toxic of highest concern directly, testing methods "prevent any emission of the detection target." For benzene at single-digit ppb, at an urban site, on a quarterly cadence, with zero permitted release, this is not a routine field procedure. There is federal precedent for a lighter approach: U.S. EPA, in approving continuous emissions detection systems as alternative test methods under 40 CFR Part 60, Subparts OOOOb and OOOOc, has not required quarterly challenge testing where an approved quality management plan governs the system. *Requested correction: broaden the § 93504(d)(3)(C) automated-verification exemption, consistent with EPA's alternative-test-method practice.*

C. Audit interval. Section 93504(n) requires independent audit every 36 months while § 93503(d) requires LDRP review every five years. *Requested correction: align both to five years; the reduction in cost carries no reduction in rigor.*

D. Submission-backlog protection and safe harbors. Roughly 200 operators will submit bespoke, site-specific plans simultaneously for review by CalGEM in consultation with and with the concurrence of CARB, against a one-year review window (§ 93503(b)). Every plan will be custom, because no safe-harbor design or template exists. An operator that submits a complete and timely plan and is then caught in a review backlog faces mandatory shut-in through no fault of its own. *Requested additions: a provision permitting continued operation where a complete LDRP was timely submitted and agency review is pending; and publication of safe-harbor EDS designs well in advance of July 2028, so that a substantial share of plans can be reviewed against a known standard rather than individually engineered and individually litigated.*

XII. Requested Actions, in Order of Priority

We have organized these by our assessment of what is essential to the regulation's workability, as distinct from what would improve it. Nothing in this list asks the Board to exceed its statutory mandate; several items ask the Board to return to it.

Tier 1 — Necessary for the regulation to function as written

1. **Add a background-resolvability pathway and re-key the instrument specifications:** an alert threshold expressed as a defined increment above the established site baseline — codifying the construction § 93504(e)(3)(B)(1) already implies — or an alternative compliance demonstration, where a REL-derived threshold cannot be resolved from local ambient variability; key the § 93504(d) detection-limit, precision, and field-verification specifications to the increment above baseline rather than to the absolute threshold; define the § 93504(e)(3)(D) uncertainty method; and require a defined resolvability check at measurement-pathway election. (*§§ II.D, II.E, II.H*)
2. **Correct Table 1.** Remove n-hexane or defer its inclusion pending an OEHHA acute REL; reconcile the toluene value; specify treatment of species lacking an acute REL; replace the numerical column with incorporation by reference to the OEHHA REL Summary, version-locked with an update mechanism. (*§ II.A*)
3. **Ground the alert threshold in detection capability rather than a health benchmark repurposed as a setpoint:** remove or expressly subordinate the § 93504(e)(3)(B)(2) concentration-at-REL option to the (B)(1) REL-level-leak-rate formulation. (*§ II.B*)
4. **Permit pre-installation baseline characterization by defined alternative methods,** define the statistical resolvability test and data-validity criteria, and add an express reopener on demonstrated non-resolvability. (*§ II.G*)
5. **Tier monitoring stringency within the health protection zone** by actual nearest-receptor distance and screened leak potential. (*§ III.A*)

6. **Publish a standardized § 93504(e)(2)(B) exclusion-screening methodology** — default factors, accepted speciation sources, screening dispersion approach — with binding effect at plan review, plus a screening pathway that does not require site-specific AERMOD. (§ IV)
7. **Define meteorological representativeness and add an alternative-model pathway:** representativeness criteria, permitted prognostic data, an approval mechanism for the § 93504(i)(1) qualifier, and an AERMOD alternative-model provision mirroring EPA Guideline § 3.2. (§ V)
8. **Define "site" and the monitored-equipment scope;** narrow "production equipment" to above-ground equipment; exclude water injection wells and underground pipelines; state flowline treatment; establish contiguous-lease aggregation rules. (§ VI)
9. **Add a planned-event provision for scheduled third-party takeaway curtailments or production interruptions:** advance notice substitutes for alarm-response and notification obligations, and a pre-reported curtailment is not a "leak." (§ VII)
10. **Establish a low-production and small-operator tier** with scaled requirements. (§ VIII.B)

Tier 2 — Necessary for consistent implementation and review

11. **Adopt a deemed-toxic-of-highest-concern default** for crude-associated gas with operator certification; accept existing representative compositional data in lieu of new source testing; require re-testing only on process change; preserve an opt-out demonstration. (§ II.I)
12. **Define the § 93504(e)(2)(A)(2) capture demonstration** (modeled probability-of-detection expressly sufficient) and permit receptor-side or directional coverage. (§ III.B)
13. **Define the five operative alert-response terms** — investigation clock, leak-confirmation criteria, false-positive disposition, the 48-hour trigger running from leak confirmation, and "quantifiably resolved" — and establish a source-attribution and interference protocol. (§ X)
14. **Publish the SRIA site definition, site count, and unit-cost basis; state the cost-effectiveness standard against which the program is evaluated; and reconcile against submitted operator data** before the SRIA is finalized. (§ VIII.C)
15. **Add an equivalency provision** for district LDAR programs of comparable or greater stringency, and reconcile the 48-hour notification framework with one-day district repair obligations. (§ IX)
16. **Codify a detection-limit and probability-of-detection floor** beneath which no threshold may be set; phase verification frequency; add a technology-review and pilot clause. (§ VIII.D)
17. **Add submission-backlog protection and publish safe-harbor EDS designs.** (§ XI.D)

Tier 3 — Corrections that reduce cost without reducing protection

18. Express the operational downtime standard on a per-sensor or coverage-weighted basis. (§ XI.A)
19. Permit a category-weighted rather than site-worst methane ratio, and permit ratios established from representative existing data. (§ II.C)

20. Broaden the § 93504(d)(3)(C) automated-verification exemption, consistent with EPA's alternative-test-method practice under Subparts OOOOb/c. (*§ XI.B*)
21. Permit representative off-site meteorological data where on-site siting criteria cannot be met. (*§ V*)
22. Specify sample containers and media for pressurized source gas; permit established source-gas analytical methods; define the Equation 1 non-detect convention. (*§ II.I*)
23. Align the § 93504(n) audit interval with the five-year LDRP cycle. (*§ XI.C*)
24. Add a mandatory implementation review after the first compliance cycle, with cost reconciliation and a threshold-performance audit. (*§ VIII.E*)

XIII. Conclusion

Termo did not set out to oppose this regulation. We set out to comply with it. We undertook this analysis and commissioned the source testing at two facilities spanning the full range of California operating environments, ran the derivation, built the cost model, and analyzed twelve months of our own compliance records — and found that the rule as drafted fails at both ends of the range it covers, for independent reasons.

At our most receptor-proximate facility, the regulation requires an instrument whose detection limit sits at the ambient concentration of the analyte it measures, to satisfy a demonstration the regulation defers until after the capital is spent, on a schedule that ends in suspension of operations. At our most remote facility, the regulation mandates a dispersion model whose assumptions the terrain defeats, on meteorological inputs our own field barometry shows are off by 11.5 percent, presuming a single representative station our paired survey records disprove within a single lease — to monitor a source whose entire uncontrolled tank inventory sits more than two hundred times below the REL-level rate at the zone boundary.

Our central findings are these. **The threshold architecture is the Board's construction, not the statute's** — Public Resources Code section 3283 never mentions reference exposure levels, expressly contemplates regional agency identification of the toxics of concern, and authorizes the methane surrogate — **and as constructed it repurposes a one-hour health benchmark as a continuous instrument setpoint, publishes two erroneous values among its seven inputs, and compounds four worst-case assumptions into thresholds that at real sites cannot be resolved from the air the community already breathes.** A detection system that cannot distinguish a facility's emissions from the airshed cannot deliver the protection section 3283 was enacted to provide. And where the text is not unachievable, it is indeterminate — the site denominator, the monitored-equipment scope, the exclusion methodology, the representativeness standard, the resolvability test, the notification trigger — and each indeterminacy is an order-of-magnitude cost variable that the Board, not the operator, controls.

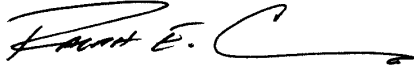
The remaining defects — the absent planned-event pathway, the circular sequencing, the undefined operational terms, the downtime metric that tightens as networks grow — are drafting and structural problems. They are individually fixable, we have proposed language or a mechanism for each, and none requires the Board to compromise the statute's protective objective. Several of the fixes would deliver more actual leak detection, at more facilities, at less cost than the current construction.

We would welcome the opportunity to walk Board staff through both case studies in detail — the compositional testing, the threshold and detection-limit derivations, the exclusion-screen arithmetic, the field barometry, and the cost model. **All underlying data, laboratory reports, and workbooks are available**

to the Board on request. If requested, we can supplement this letter with measured ambient benzene and methane results from the Olive Community fence line, a landscape-scale facility map supporting the coverage-geometry analysis in Section III.B, and sensor-count and probability-of-detection arithmetic for the Aliso Canyon and Oat Mountain field.

Thank you for your consideration.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Ralph E. Combs", with a long horizontal flourish extending to the right.

Ralph E. Combs

VP, Regulatory, Community & Government Affairs

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