Bay Area Air District

CONCEPT PAPER

Exploring an Indirect Source Rule for Warehouses in the Bay Area

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1. Background

Over the past 18 months, Air District staff has been evaluating the potential of a warehouse Indirect Source Rule (ISR) to reduce pollution and exposure associated with emissions from warehouse operations. This work has included reviews of indirect source programs adopted by other air districts, analysis of emissions from sources associated with warehouses, such as trucks and on-site equipment, and several updates to the Stationary Source Committee in 2024 and 2025.[1]

Staff has reviewed existing programs in the South Coast and San Joaquin Valley air districts, such as South Coast Air Quality Management District (SCAQMD) Rule 2306, Freight Rail Yards, and San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 9510, Indirect Source Review. A special focus has been given to SCAQMD Rule 2305, Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program. Staff's review of existing programs reveals different approaches to structuring facility-level requirements, reporting, and flexible compliance options—and highlights implementation and enforcement challenges that may inform a Bay Area approach.

This concept paper reflects the Air District's early thinking related to a potential warehouse ISR and builds on the direction discussed publicly in March 2025. The concepts presented here represent an iterative refinement of that earlier direction, incorporating lessons learned from the South Coast's implementation experience, technical analysis, and internal programmatic alignment. It summarizes preliminary ideas, identifies areas where additional analysis is needed, and initiates an open dialogue with communities, industry, labor, local governments, and other stakeholders. The paper is intended to serve as a foundation for that discussion by explaining the concepts under consideration and providing an opportunity for stakeholders to help shape the development of any future rule. The concepts outlined here include possible applicability thresholds, phased implementation approaches, menu-based or target-based compliance structures, reporting requirements, and methods to address localized health risks. Together, these ideas illustrate a broad range of options for how a Bay Area warehouse ISR could be designed and refined over time, informed by additional analysis and experience from other ISR programs.

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[1] Bay Area Air District, *Stationary Source Committee* webpage; see meeting agendas, presentation materials, and approved minutes from March 13, 2024; September 11, 2024; November 13, 2024; and March 12, 2025, which include updates and briefings related to indirect sources and Indirect Source Rule (ISR) concepts, https://www.baaqmd.gov/about-the-air-district/board-of-directors/resolutionsagendasminutes (accessed December 16, 2025).

The Air District is monitoring State actions that may affect warehouse siting and permitting, such as the recent adoption of requirements for new and expanded warehouses under Assembly Bill (AB) 98. However, the ISR concepts discussed here focus on operational emissions and exposure impacts, consistent with the Air District's authority, and do not entail new land-use or permitting requirements.

2. Purpose

A warehouse ISR development effort is being considered to facilitate attainment and maintenance of the ambient air quality standards as well as in response to community concerns about local impacts from diesel truck emissions associated with warehouse operations, particularly in communities that are already bearing a disproportionate level of health risk from air pollution ('impacted communities') and AB 617 communities. Warehouses attract substantial heavy-duty truck traffic, contributing to particulate matter (PM), diesel PM (DPM), and nitrogen oxide (NOx) pollution. These pollutants have well-documented health effects, which disproportionately impact nearby residents.

The Air District's initial focus is on concepts that could apply more stringent requirements to facilities in impacted communities. Any final approach would depend on further data collection, legal review, technical analysis, and extensive public engagement.

3. Regulatory Context

Legal Framework and Regulatory Authority

The California Health and Safety Code (HSC) provides air districts with authority to adopt a warehouse ISR designed to maintain attainment of the ambient air quality standards and prevent localized air quality deterioration in impacted communities.[2] The Federal Clean Air Act expressly recognizes that states may use such authority to adopt "any indirect source review program" as part of a State Implementation Plan to attain National Ambient Air Quality Standards, and defines an indirect source as a "facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution."[3]

In 2023, a federal district court upheld SCAQMD's WAIRE Program. The Central District of California held that the WAIRE Program is not preempted by federal law because it directly

[2] HSC Sections 40716, 40000, 40702, 39002, and 40230.
[3] Clean Air Act Section 110(a)(5).

regulates warehouses, rather than trucks or carriers.[4] The plaintiffs did not appeal the district court's order.

The U.S. Environmental Protection Agency (EPA) subsequently approved the WAIRE Program's inclusion into California's federally enforceable[5] State Implementation Plan in 2024. In doing so it affirmed that SCAQMD had authority to adopt and implement the program.[6]

The regulatory context has also shifted in ways that make local action more urgent. Communities and air districts across California had expected CARB's Advanced Clean Fleets regulation to drive significant reductions in heavy-duty vehicle emissions. In January 2025, CARB withdrew its request for a federal Clean Air Act waiver needed to implement certain portions of the regulation, citing uncertainty about the incoming federal administration's stance on the regulation.[7,8] Without the waiver, CARB cannot enforce the high-priority fleet and drayage fleet electrification requirements.[9] CARB also withdrew waiver requests for its in-use locomotive standards and portions of its commercial harbor craft rule at the same time.[10,11] Together, these withdrawals represent a significant decrease in the emission reductions that would have significantly improved air quality throughout the airshed, especially in communities near warehouses and freight corridors.

On the federal side, EPA finalized a more stringent annual $PM_{2.5}$ standard in 2024, lowering it from 12.0 to 9.0 micrograms per cubic meter.[13] In 2025, EPA filed a motion asking the D.C. Circuit Court of Appeals to vacate the new, lower standard, which the court has not ruled on to date.[14] In a press release, EPA also indicated its intent to reconsider the more stringent standard, along with dozens of other rules, but it remains in effect at this time.[15] EPA has not

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[4] California Trucking Association, et al. v. South Coast Air Quality Management District, et al., No. 2:21-cv-06341 (C.D. Cal.), Order on Motion for Summary Judgment (Dec. 14, 2023). In 2009, a California court of appeal upheld the San Joaquin Valley Air Pollution Control District's authority under state law to adopt its ISR, discussed further below. California Building Industry Association v. San Joaquin Valley Air Pollution Control District, 178 Cal. App. 4th 120 (2009). The Ninth Circuit also upheld it against a preemption challenge. National Association of Home Builders v. San Joaquin Valley Unified Air Pollution Control District, 627 F.3d 730 (9th Cir. 2010).

[5] A rule becomes federally enforceable once EPA approves it into the State Implementation Plan (SIP). This means the rule can be enforced not only by the local air district, but also by EPA, the State of California, and members of the public under federal law.

[6] 89 Fed. Reg. 73,533 (Sept. 11, 2024) (EPA approval of WAIRE Program into California SIP). https://www.federalregister.gov/documents/2024/09/11/2024-20349/air-plan-approval-california-south-coast-air-quality-management-district

[7] https://www.epa.gov/system/files/documents/2025-01/ca-acf-carb-withdrawal-ltr-2025-1-13.pdf

[8] https://www.act-news.com/news/carb-withdraws-acf-waiver-request/

[9] https://www.mofo.com/resources/insights/250225-advanced-clean-fleets-regulations-no-longer-in-force

[10] https://www.epa.gov/system/files/documents/2025-01/ca-loco-carb-withdrawal-loco-ltr-2025-1-13.pdf

[11] https://www.epa.gov/system/files/documents/2025-01/ca-chc-carb-withdrawal-ltr-2025-1-13.pdf

made a determination of attainment with regards to the new $PM_{2.5}$ standard in the Bay Area. Standards notwithstanding, diesel particulate matter remains a primary driver of health risk in communities near warehouses, and the Air District's own goals for emissions and health-risk reduction in impacted communities provide an independent and durable basis for prioritizing PM and DPM reductions under a Bay Area warehouse ISR.

Indirect Source Rules in Other Air Districts

Air districts in California have taken a variety of different approaches to regulating indirect sources—facilities whose operations attract significant mobile-source emissions. This paper is focused on concepts that would apply to warehouses specifically.

SCAQMD's WAIRE Program requires warehouses with a floor area of 100,000 square feet and larger to earn points each year by taking certain actions that reduce emissions or improve local air quality.[12] Under the WAIRE Program, warehouse owners and operators earn points by selecting actions from an approved compliance menu, with points assigned based on factors such as cost, regional emissions reductions, and local emissions reductions. Each facility's annual compliance obligation is calculated using the number of Weighted Annual Truck Trips associated with the site, multiplied by a stringency factor and an annual variable that phases in requirements over time. The rule includes compliance and reporting requirements for warehouse owners and operators and applies to emissions from warehouses, including mobile sources serving warehouse operations. It offers menu-based compliance options, mitigation fees, and a structured reporting system.

San Joaquin Valley Air Pollution Control District Rule 9510[13] (known as the Indirect Source Review Rule) applies to new development projects at the construction and operation phases. It focuses on achieving specific emissions reductions through on-site mitigation measures or mitigation fees that fund off-site projects. A development project is generally subject to the rule if it meets or exceeds certain size thresholds defined in the rule, including at a minimum: (1) 50 residential units (or 250 units for large projects with non-discretionary approval), (2) 2,000 square feet of commercial space (or 10,000 sq ft for large projects), or (3) 25,000 square feet of light industrial space (or 125,000 sq ft for large projects). Transportation projects are subject to the rule if their construction exhaust emissions exceed two tons of NOx or PM_{10} combined per year.

SCAQMD Rule 2306 (Freight Rail Yards) establishes facility-specific emissions reduction targets with defined milestone years, rather than an annual activity-based compliance obligation, to ensure the SCAQMD region achieves a proportional share of statewide

[12] https://www.aqmd.gov/docs/default-source/rule-book/reg-xxiii/r2305.pdf?sfvrsn=15
[13] https://ww2.valleyair.org/media/cjlnn0u1/r9510-a.pdf

emission reductions from related California Air Resources Board (CARB) regulations.[14] The rule applies to emissions from locomotives, cargo-handling equipment, and on-road Transport Refrigeration Units (TRU) and drayage trucks serving rail yard operations. Applicability is determined by facility type and activity level, offering an example of a target-based ISR framework.

More information on the ISR rules that staff reviewed, including details on their design and implementation, can be found in previous Stationary Source Committee materials from 2024 and 2025.

Together, these rules illustrate two possible broad regulatory pathways:

1. **Program-wide target → activity-based allocation (WAIRE-style)**: A program-wide obligation translated into facility-level requirements, where regional or basin-wide emissions reduction goals are used to establish an annual compliance obligation that is then allocated across facilities using an activity-based surrogate, such as truck activity. Under this approach, facilities satisfy their obligation by taking actions from an approved menu or paying a mitigation fee, rather than by meeting a facility-specific emissions reduction target.
2. **Facility baseline → facility-specific target (SCAQMD Rule 2306/SJVAPCD Rule 9510-style)**: A facility-specific obligation based on emissions reduction targets, where each covered facility is assigned a defined emissions reduction requirement, typically expressed as a reduction from a facility-specific baseline by a target year, with interim milestones. This approach establishes obligations based on each facility's emissions profile, while allowing flexibility in how those reductions are achieved.

These two pathways differ primarily in whether compliance obligations are derived from region-wide reduction goals using standardized activity measures such as daily average truck trips, or from facility-specific emissions baselines and targets. A WAIRE-style approach may be administratively simpler to implement, as it avoids the need to establish and maintain emissions baselines for each individual facility, while a facility-specific target approach may offer greater transparency and tailoring to site-specific conditions.

SCAQMD's WAIRE Program, which the EPA approved for inclusion in California's State Implementation Plan in 2024, stands as a notable precedent and can inform a future program in the Bay Area. The Air District is also monitoring the California Air Resources

[14] https://www.aqmd.gov/docs/default-source/rule-book/reg-xxiii/rule-2306-freight-rail-yards.pdf

Board's (CARB) ongoing regulatory activity and legal developments, including introduced legislation such as AB 1777, and other statewide measures affecting heavy-duty fleets.[15,16,17]

The goal of this document is to discuss potential concepts for addressing emissions from existing warehouse operations. However, the siting of new warehouse facilities in impacted communities is noted as an important related issue and may be considered in coordination with other planning, environmental review, and state-level processes.

Air District staff intends for any recommended Bay Area approach to address warehouse emissions and consider local needs, particularly regional PM attainment requirements, health-risk drivers, and AB 617 commitments.

4. Rule Concepts

4.1 Applicability and Scope

An initial concept under consideration is to limit a potential rule to warehouses of a floor area of 100,000 square feet or larger, consistent with the SCAQMD WAIRE Program. Staff obtained information from a commercial real estate analytics firm to identify the number, size, and location of existing warehouses in the Bay Area.[18] The analysis indicates this threshold would capture approximately 1,025 warehouse sites, representing about 6.4 percent of all warehouse sites (due to a large number of very small sites within the District) and roughly 42 percent of regional warehouse floor area. This threshold was selected as an initial concept because it aligns with the WAIRE Program and avoids a scope that could be challenging to administer and enforce, given there are more than 2,290 sites above a 50,000 square-foot threshold. In addition, smaller facilities are less likely to function as major truck-traffic generators, or "truck magnets," relative to larger distribution and logistics centers.

To support discussion of alternative thresholds, staff evaluated broader and narrower applicability options:

- ≥ 50,000 square feet: ~2,290 sites (60 percent of regional warehouse floor area)
- ≥ 100,000 square feet: ~1,025 sites (42 percent of regional warehouse floor area)
- ≥ 150,000 square feet: ~504 sites (29 percent of regional warehouse floor area)

[15] https://www.epa.gov/state-and-local-transportation/vehicle-emissions-california-waivers-and-authorizations
[16] https://ww2.arb.ca.gov/rulemaking/2025/emergencyvehemissions
[17] https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202520260AB914
[18] The Bay Area warehouse inventory is based on information provided by CoStar Realty Information Inc. and includes buildings both existing and under renovation classified as property type industrial or flex and as secondary type warehouse, distribution, light distribution, manufacturing, light manufacturing, refrigeration/cold storage, or truck terminal. Data was extracted from the CoStar database in December 2024.

These ranges provide a sensitivity analysis to help stakeholders understand how different thresholds may affect the program's scope and emissions impact.

Table 1 summarizes the distribution of Bay Area warehouses by floor area and location, showing that a substantial share of both warehouse floor area and facilities are located within Overburdened Communities (OBCs). For the purposes of this analysis, "Overburdened Communities (OBCs)" are defined using the same geographic criteria applied in prior Air District rulemakings to evaluate the distribution of warehouse facilities and floor area.[19] This definition is used for analytical consistency only. Any future rule may use a broader or different approach to identify impacted communities, including consideration of CalEnviroScreen scores, diesel PM burden, or other indicators of cumulative warehouse activity burden.

Table 1 shows that warehouses between 50,000 and 250,000 square feet account for the largest number of facilities and include more than 750 sites located in OBCs, representing 43 percent of total regional warehouse floor area. Larger facilities above 250,000 square feet, while fewer in number, also represent a meaningful portion of total floor area and show a high proportion of floor space located in OBCs. Taken together, these data indicate that warehouses of multiple sizes operate in overburdened areas, suggesting that both facility size and location are important considerations when evaluating potential applicability thresholds, compliance timelines, and program design. At this stage, warehouse floor area is used as a screening-level indicator to broadly understand where larger warehouse facilities are located across the region and within overburdened communities, recognizing that floor area is a proxy for activity rather than a direct measure of emissions or health risk.

Table 1. Warehouse population for warehouses with more than 50,000 square feet of warehousing floor area in the Bay Area.

Warehouse Floor Area Category (square feet)	Number of Warehouses	Total Floor Area (square feet)	Number of Warehouses in Overburdened Communities (OBCs)	Percent of Total Warehousing Floor Area	Percent Floor Area in OBCs
450k+	50	38,865,787	15	8%	30%
350k–450k	36	14,167,491	12	3%	33%
250k–350k	121	34,819,276	46	7%	38%
150k–250k	297	57,399,770	119	12%	40%
100k–150k	521	62,061,949	194	13%	37%
50k–100k	1,268	88,539,393	442	18%	35%

[19] Overburdened Community is defined in Air District Regulation 2-1-243 as "an area located (i) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0, as having an overall CalEnviroScreen score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract."

As an alternative to a single, regionwide size threshold, staff is also considering whether applicability could vary based on location, particularly for facilities located in or affecting impacted communities and/or communities enduring high levels of total diesel pollution.

Under this concept, a potential ISR could apply to smaller warehouses in impacted communities than in other areas, recognizing that these communities already experience higher air pollution burdens. For example, applicability could be structured using different size thresholds inside and outside impacted communities, such as applying the rule to warehouses 100,000 square feet and larger in impacted communities and 250,000 square feet and larger elsewhere. This approach would result in an estimated 520 facilities being subject to the rule, capturing approximately 27 percent of regional warehouse floor area. Alternatively, a lower cutoff in impacted communities could be considered, such as 50,000 square feet, which would include approximately 962 facilities and capture about 33 percent of regional warehouse floor area. Together, these examples show that lowering the size threshold in impacted communities would substantially increase the number of facilities covered while resulting in a comparatively smaller increase in the share of regional warehouse floor area captured.

This approach also recognizes that clusters of smaller warehouses in some impacted areas, whether multiple facilities located in close proximity or co-located as part of a larger site or campus, may collectively attract substantial mobile-source activity, even when individual facilities are relatively small. By limiting expanded applicability to impacted communities, this concept could help address impacts in overburdened areas while avoiding a regionwide increase in the number of regulated facilities that could raise administrative and enforcement challenges. This concept is presented for stakeholder discussion and has not been selected as a preferred option.

The rule's compliance obligations would apply to warehouse owners and operators, who are responsible for facility operations and logistics decisions. Compliance would be achieved through various measures, some of which involve trucks, but compliance would not require truck ownership or control. For example, compliance could be achieved through operational measures (e.g., contracting requirements with trucking companies, scheduling practices, on-site infrastructure, or participation in incentive programs), purchase or use of zero-emission mobile sources used on-site (e.g., yard trucks and cargo-handling equipment), purchase or use of other emissions-reducing infrastructure such as electric charging, or other actions that would mitigate emissions.

Warehouse operations in the Bay Area vary widely. Some companies own their facilities and their vehicle fleets, while others lease space or rely on third-party logistics providers. As a

result, any rule should apply to both warehouse facility owners and operators, with special consideration for multi-tenant and subleased facilities. Because warehouse facilities are responsible for attracting mobile sources and their associated emissions, it would be the facility owners and operators, not the vehicle owners, that will ultimately drive the achievement of emission reduction measures and benefits.

The concepts described below reflect the Air District staff's current thinking on scope, design, and implementation.

4.2 Phased, Adaptive Implementation

Staff is exploring a phased rule structure to allow time for data collection, public input, and refinement. Phasing would allow for course corrections and adjustments over time. A location-based applicability approach—such as applying lower size thresholds in OBCs—could also be implemented through a phased structure. The phases currently under consideration are as follows:

- **Phase 1**: Establish reporting requirements and a flexible compliance menu. (Potential compliance obligations are discussed in Section 4.3 below.) This phase would focus on collecting mobile source fleet and operational data while allowing facilities to take actions that reduce emissions or improve local air quality.
- **Phase 2:** Add more targeted requirements based on health risk or operational characteristics, informed by data collected during Phase 1 and focused on reducing localized exposure and health risk, particularly in impacted and AB 617 communities.

Phase 1 is intended not only to establish the robust reporting needed to support a more health-based approach in Phase 2, but also to achieve near-term emissions benefits through a flexible, WAIRE-style compliance structure while additional data are collected. This approach is intended to ensure that meaningful air quality benefits begin early in the program, rather than being deferred to later phases. Phase 1 requirements are also envisioned to be straightforward and accessible, allowing facilities to take one or more actions from a defined list, without the need for emissions modeling or consultant support.

Implementation could be phased similar to the WAIRE Program. Potential approach options include: a three-year WAIRE-style phase-in; phasing by facility size; or phasing by location (e.g., within impacted communities first). Staff may also consider a baseline-and-target structure (e.g., a 10-year reduction target with mid-course evaluation), which would allow obligations to be refined once more site-specific operational and health-risk data are collected.

4.3 Compliance Obligation Concepts

Staff is evaluating several approaches for determining how much each facility would need to reduce emissions (i.e. their compliance obligation). Options include:

- A WAIRE-style annual obligation derived from truck activity (as a proxy for overall emissions associated with warehouse facilities) but aligned with Bay Area goals, such as a targeted reduction specific to exposure disparities in impacted communities.
- A per-facility emissions reduction requirement (e.g., percent reduction from a baseline by a target year), with the possibility of more stringent or accelerated targets for facilities in impacted communities.
- A simplified, screening-based approach: A facility's compliance obligation could be determined using straightforward criteria (such as facility size, location, number of loading docks, or other indicators), placing facilities into a tiered level of obligation without requiring detailed truck activity data. Facilities could have the option to refine their obligation using more detailed operational data.
- A two-stage approach – setting an initial obligation with refinement after additional data or health-risk assessments are completed.

All approaches remain open for discussion and will be refined with technical analysis and stakeholder input.

4.4 Menu-Based Compliance

A menu-based compliance structure, similar to WAIRE, remains an attractive option given the complexity of establishing quantitative baseline and emissions targets for individual facilities. Facilities could earn points or emissions-reduction credit through actions such as:

- Utilizing zero-emission (ZE) or near-zero-emission (NZE) trucks
- Acquiring or using ZE or NZE equipment such as yard hostlers, forklifts, or landscaping equipment, thereby retiring any equipment being replaced
- Electrifying Transport Refrigeration Units[20]
- Installing cleaner forms of emergency power generation
- Increasing electric vehicle charging capacity or hydrogen fueling infrastructure
- Installing anti-idling technology such as zero-emission auxiliary power systems[21]

[20] Facilities could count only Electric Transport Refrigeration Units deployed beyond the requirements under CARB's Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate.

[21] Facilities could count only anti-idling technologies that go beyond CARB's Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling.

- Increasing operational efficiency (e.g., decreasing the number of truck trips) to reduce emissions
- Installing exposure-reduction measures, like indoor air filters, at nearby locations where people sensitive to air pollution spend time
- Paying a mitigation fee

As a concept, staff is also considering how any potential mitigation fee could be structured to support locally focused incentive or emissions reduction programs, particularly in communities experiencing higher cumulative pollution impacts. This could include drawing on lessons learned from the Air District's recently established Local Community Benefits Fund and considering alignment with the Air District's Local Community Investment Fund Guidelines, where appropriate.[22]

The Air District is also evaluating:

Custom compliance plans: SCAQMD has reported that some operators utilize custom compliance plans tailored to unique operational profiles.[23] Staff is exploring whether a similar option should be available in the Bay Area. For facilities with more complex operations or greater operational scale (e.g. complex site operations or higher levels of warehouse activity), custom or alternative compliance pathways could also provide an early opportunity to implement more tailored, data-driven approaches that are conceptually aligned with the types of requirements that may be considered in a later phase of the program.

Limitations on point transfers: Because local PM exposure is a key concern, staff is evaluating whether WAIRE-style point banking and transfers would be appropriate for a Bay Area ISR. WAIRE allows banking for three years and transfer between sites under the same operator.

Compliance structure options: Staff is evaluating whether to establish a points framework or shift toward directly quantifying emissions reductions using established emissions quantification methodologies (such as those used in incentive programs).
Staff is also exploring a simpler menu-based approach for early implementation that would not rely on a points framework or direct emissions calculations. Under this simpler concept, facilities could implement a combination of predefined actions (for example, selecting from high-, medium-, or lower-impact options). The number or type of actions could vary based on the facility's level of compliance obligation, allowing for a straightforward tiered structure

[22] https://www.baaqmd.gov/en/community-health/community-investments-office
[23] https://www.aqmd.gov/home/rules-compliance/compliance/waire-program/custom-waire-plans

(for example, higher-obligation facilities completing more or higher-impact actions). This approach could simplify reporting and administration, allowing for more rapid implementation and easier enforcement. The menu would need to include a sufficient range of feasible options for different types of warehouse operations.

Multiple compliance pathways are intended to avoid placing undue burden on small warehouse owners and operators while still achieving exposure and emissions reductions.

4.5 Emphasis on PM Reductions

SCAQMD's WAIRE program is designed primarily as a NOx-focused rule, targeting reductions in nitrogen oxides that contribute to regional ozone and secondary fine particulate matter ($PM_{2.5}$) formation. The Air District is exploring an ISR that serves the dual purposes of 1) attaining and maintaining the regional ambient air quality standards for PM and ozone through direct PM an NOx reduction; and 2) protecting nearby communities by placing a strong emphasis on local reduction of particulate matter emissions associated with warehouse facilities, particularly carcinogenic diesel PM that can cause elevated cancer risk.

To advance these objectives, staff is exploring two complementary approaches to prioritizing PM reductions. First, drawing on established frameworks such as the Carl Moyer Program, which assigns greater cost-effectiveness weight to PM reductions compared to NOx,[24] a Bay Area ISR could weight emissions mitigation strategies that directly target localized PM exposure more heavily within any compliance menu or emissions reduction framework. This concept recognizes that addressing PM in impacted communities yields significant public health benefits beyond regional ozone and $PM_{2.5}$ attainment goals.

Second, facilities located in impacted communities could be subject to higher compliance requirements or increased stringency factors in recognition of elevated local health risks and cumulative impacts. This concept parallels recent amendments adopted by the Air District in December 2021 to its permitting rules (Regulation 2, Rules 1 and 5), which introduced more stringent health risk limits and enhanced protective provisions for industrial facilities in OBCs. Any future warehouse ISR rule may use a broader or different approach to identify impacted communities, including consideration of CalEnviroScreen scores, diesel PM burden, or other indicators of cumulative warehouse activity burden. Any PM-focused obligation would be designed to reduce exposure where health impacts are greatest while still allowing facilities the flexibility in how reductions are achieved.

[24] https://ww2.arb.ca.gov/sites/default/files/2024-11/AppendixCCostEffectivenessCalculations.pdf

4.6 Reporting

Robust and consistent reporting will be essential for implementation, enforcement, and future refinement of a rule. SCAQMD's WAIRE implementation demonstrated that incomplete data limits enforcement potential and evaluation efforts,[25] underscoring the importance of prioritized, ongoing reporting requirements from both owners and operators. As of the 3rd Annual Report for the WAIRE Program released in January 2025, approximately 63 percent of warehouses subject to the rule had submitted a Warehouse Operation Notification that was due in September 2021. As of August 31, 2025, SCAQMD has issued 702 Notices of Violation.[26]

The following WAIRE-style approach is under consideration:

- At the start of the compliance period, warehouse facility owners would be required to submit the following: A one-time Warehouse Operations Notification (WON), providing facility details such as warehouse area, tenant occupancy, and contact information.
- To establish precise applicability and tailor future reporting, operators would submit an Initial Site Information Report, capturing fleet composition, truck trip data, onsite infrastructure, and planned compliance actions.
- Annual reporting would include updates on truck trips, fleet changes, and compliance activities, with timely updates required for tenant or operational changes. This approach ensures transparent tracking of compliance progress and supports program evaluation.

While staff is considering reporting elements that go beyond those used in the WAIRE Program, such as information related to fleet ownership versus contracted fleets and transport refrigeration units, any reporting framework would be designed to balance data needs for a more health-focused approach with the need to remain accessible for owners and operators who may not have previously engaged with the Air District or worked with this type of information.

This balance is intended to minimize unnecessary complexity or burden and to support meaningful participation and compliance with program requirements. Consistent with this

[25] Information on the implementation and reporting under the WAIRE Program can be found in the WAIRE Annual Report. As of March 2026, three Annual Reports have been published, found here: https://www.aqmd.gov/home/rules-compliance/compliance/waire-program/annual-reports

[26] 3rd Annual Report for WAIRE Program, found here: https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/3rd-annual-report-for-the-waire-program.pdf?sfvrsn=1526a7e_2

approach, staff is evaluating a limited set of refined reporting elements that could improve characterization of emissions without requiring detailed analysis by facility operators.

Because operational and fleet data are crucial for understanding emissions and exposure impacts, staff is considering more refined reporting categories than those that are in WAIRE, such as:

- More detailed information on truck classes;
- Yes/no questions identifying whether sensitive receptors like schools are within a set buffer distance (e.g., 1,000 feet), to help screen facilities for potential elevated exposure risk from emissions.

Ownership and operational fragmentation (particularly in subleased or multi-tenant warehouses) pose significant challenges for both reporting and enforcement. These challenges were well documented in South Coast's implementation experience[27] and underscore the importance of clear operator identification and accountability mechanisms in a Bay Area rule.

5. Emissions Benefits

Staff's March 2025 screening-level analysis modeled a WAIRE-style rule for ~1,000 Bay Area warehouses and showed preliminary estimates of up to 280 tons per year of NOx reduction and up to 1.3 tons per year of PM_{10} (i.e., particulate matter 10 microns or less in diameter) reduction (primarily diesel PM). These reductions represent smaller total emission benefits compared to other recent rulemakings. However, diesel particulate matter is a primary driver of cancer risk in impacted communities, and reductions in emissions associated with warehouse operations have the potential to provide substantial localized health benefits. As regulatory concepts are further developed, staff may also evaluate these benefits using emerging approaches, such as the Air District's Proposed Methodology for Determining Local Health Risks from Fine Particulate Matter, to better characterize exposure reductions at the community scale.

6. Next Steps and Engagement Timeline

The Air District staff will use this concept paper as the basis for stakeholder engagement. Upon release, the Air District will accept public comment on the concept paper, and staff will summarize comments received and report back to the Air District's Stationary Source Committee.

[27] SCAQMD staff presentation, *Implementation Update on Rule 2305 Warehouse ISR*, August 2024

Starting in summer 2026, staff will hold a series of public workshops and targeted meetings with community-based organizations, industry, labor, local governments, and other interested parties. Following these engagements, staff will report back to the Air District's Stationary Source Committee with a summary of public feedback and recommendations for refining the concepts presented here.

The Air District welcomes input on all aspects of these concepts.