San Diego County
Air Pollution
Control District

Warehouse Indirect Source Rule (ISR) Framework Supplement

APRIL 2025

SAN DIEGO COUNTY
AIR POLLUTION CONTROL DISTRICT
10124 Old Grove Road
San Diego, CA 92131

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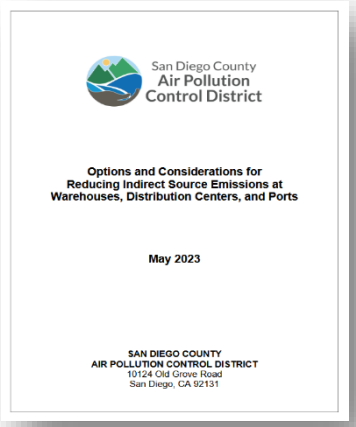
EXECUTIVE SUMMARY

Introduction

This "Warehouse Indirect Source Rule (ISR) Framework Supplement" (or Supplement) presents staff's findings to date and provides an opportunity to gain public input and direction from the Governing Board on the preferred nature and scope of any potential District rule or program. Note that this Supplement provides an informational update only and does not present the District's recommendations to the Governing Board regarding a potential warehouse ISR for San Diego County.

Background



Starting in November 2021, the San Diego County Air Pollution Control District (SDAPCD or District) staff began work pursuant to California Assembly Bill (AB) 423 (Gloria, 2019) to evaluate the feasibility of various actions to address indirect sources of pollution, particularly warehouses and distribution centers. More specifically, AB 423 required the District to "***consider*** adopting an indirect source rule to address pollution from mobile sources that is associated with stationary sources, such as ports, warehouses, and distribution centers." In May 2023, District staff prepared a report titled "Options and Considerations for Reducing Indirect Source Emissions at Warehouses, Distribution Centers, and Ports," also referred to as the "ISR Framework" (Attachment A), and presented the preliminary findings at the June 2023 Governing Board meeting.

This "Warehouse Indirect Source Rule (ISR) Framework Supplement" (or Supplement) presents an update to pertinent sections found in the initial ISR Framework for warehouses and distribution centers. This Supplement also provides new or updated information through analysis that was either directed by the Governing Board, Planning and Policy Committee, and/or discussed through the Warehouse Working Group (WWG). Consequently, staff believes that the Governing Board's consideration and acceptance of this Supplement, together with the initial ISR Framework and WWG meeting series, will fulfill the requirement set forth by AB 423 to consider an ISR for warehouse and distribution centers.

Comments

Comments regarding this Supplement may be submitted in writing no later than **May 15, 2025**. Please submit all written comments to APCDRules@sdapcd.org.

Warehouse Working Group (WWG) Meetings and Activities

As directed by the Governing Board, between September 2023 and October 2024, staff conducted 10 virtual public meetings with WWG participants, comprising almost 20 hours of in-depth, technical conversations about indirect source emissions. Over 90 stakeholders were invited, comprising of key local community, environmental, industrial, and government


WHAT'S DRIVING AROUND WAREHOUSES?

Taking a closer look at the Air Quality Impacts on Communities & the San Diego County Region

As the demand for e-commerce continues to grow, it raises concerns of the impacts of increased truck traffic on air pollution.

Warehouses and distribution centers are an important transportation component of the supply chain and contribute to our economy. However, these cargo-handling facilities generate air pollution through heavy diesel truck traffic and equipment use. The air pollution in turn affects the health of the region, with communities in close proximity to these warehouses and roadways being traveled by heavy-duty trucks being most impacted.

Indirect Sources of Air Pollution

An indirect source is a facility, building, structure, or installation, or combination thereof, that generates or attracts activity that results in emissions that affect air quality.

Indirect sources affect air quality through emissions from:

- Diesel-fueled trucks
- Cargo-handling equipment
- Refrigeration systems

Emissions from these sources contributes to regional air pollution that has been shown to cause negative health effects.

Disproportionate Impacts on Surrounding Communities

Emissions from indirect sources is not spread equally across the region. Residents living near these businesses, as well as the roads and freeways are most affected by the emissions.

The residents most affected are low-income and other under-resourced communities that are disproportionately at risk of negative health impacts, such as asthma, heart and lung disease, and various types of cancer, due to their proximity to these emission sources.

stakeholders, to collect varying perspectives from a wide variety of stakeholders. The group was not typically able to reach a consensus on most topics. While such agreements were not anticipated, the WWG nonetheless continually provided thoughtful and meaningful information for the District's consideration.

One area of general agreement was for a non-regulatory incentive option(s) to be available in some capacity. Staff presented a possible three-tiered strategy for such incentive opportunities to the WWG, and feedback was generally well-received by industry, environmental groups, and trucking and logistics companies.

From industry's perspective, several topics were frequently elevated for further analysis including: (1) better evaluating the impacts and emission reductions associated with CARB mobile source regulations, (2) concerns whether identified warehouses were actually engaging in goods movement activity, (3) Zero-Emission Vehicle (ZEV) truck and infrastructure availability issues, (4) difficulty in tracking truck activity at potentially subject facilities, and (5) noting the unique circumstances of warehousing activity along the international border.

From the environmental perspective, comments included: (1) ensuring that Community Emissions Reduction Plan (CERP) goals are prioritized to further improve the health and wellness of residents in disadvantaged communities, (2) consider the possible cumulative impact of many smaller warehouses clustered around sensitive receptors, and (3) developing an ISR (as opposed to a voluntary incentive program) could potentially provide more certainty for achieving emission reductions if framed in a way that could target such facilities in disadvantaged communities.

From an implementation perspective, the District highlighted several topics throughout the WWG meeting series including the following: (1) the importance and difficulty of achieving regionwide emission reductions in a manner that does not run afoul of federal preemption issues while achieving localized emission reductions, and (2) continued following of the SCAQMD's implementation of their Rule 2305 to prepare for future challenges if a rulemaking is locally pursued (Section 2.1).

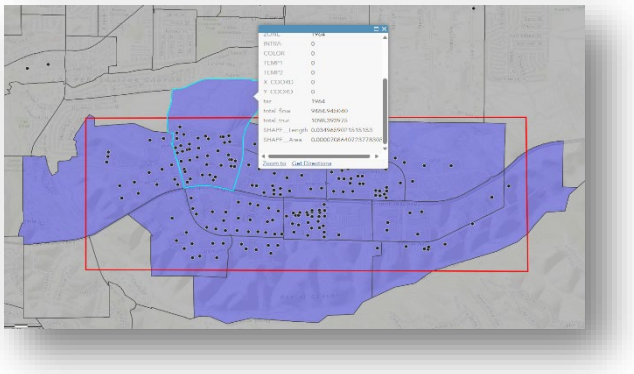
Stakeholder Comments for District Consideration

Stakeholders were engaged throughout the WWG process. Though the District received much feedback, four alternative concepts/comments were received for consideration as alternatives to, or in modification of, a possible warehouse ISR in San Diego County. These four concepts along with summarized responses are listed in the table below, with more detailed descriptions included in this Supplement (Section 2.1.5).

Comment/Concept	District Response (summarized)
Appointment System at Otay Mesa Port of Entry *(An appointment system at the International Border could provide more emission reduction benefits from reduced idling times at the ports of entry.)*	"Induced Demand" needs further evaluation. Further assessment of pilot project in Calexico is necessary to determine extent of benefits/feasibility of expansion to other areas.
Industry Warehouse Analysis *(Truck volumes in SD County areas with warehouses are not higher than other high traffic areas affected by diesel particulate matter; other disadvantaged communities in SD County could benefit most by electrification.)*	Freeway truck counts being used as the basis for analysis is a concern. Utilizing "normal" traffic data in place of "truck" traffic data may not be appropriate.
ISR vs. Incentive Analysis *(An incentive program aimed at electrifying light commercial vehicles instead of an ISR could provide a better overall reduction in NOx and PM2.5.)*	Targeted incentive programs within certain communities could achieve similar emission reductions as a possible ISR, but at a greater capital cost, and primarily subsidized by District grant programs. Number of vehicles needed to achieve equivalent emission reductions, as well as funding availability, are also significant barriers.
Focus on Localized Sensitive Receptor Impacts *(An ISR should regulate warehouses 100k sq ft or more countywide, and all warehouses in disadvantaged communities of any size operating within 1,000 ft of a sensitive receptor.)*	Regulating warehouses smaller than 100,000 sq ft poses significant logistical and legal challenges to implementation. Compliance options may be severely limited with smaller warehouses being encompassed. Uncertainty regarding land-use changes in a neighborhood, as well as whether smaller warehouses are truly goods-movement related activities, are also a complicating factor.

Truck Trip Rate Analysis

In response to Governing Board direction, staff developed a novel truck trip rate analysis using truck trip data specific to San Diego County to estimate truck trip rates for warehouses of different sizes. Truck trip rates are critical for estimating baseline emissions from warehousing activities. Using baseline emissions, other estimates including emission reductions, cost-effectiveness, and public health benefits of proposed strategies can be calculated.



Staff estimated truck trip rates for various sizes of warehouses and truck classes. To do this, a map was developed with known potential warehouse locations based on data acquired from commercial real estate analytics firm CoStar. Transportation analysis zones (TAZs), with San Diego Association of Governments (SANDAG) modeled truck activity data that was used to support the most recently adopted 2021 Regional Plan, were also included. For TAZs that included one or more warehouse buildings in that zone, total truck volumes, number of warehouses, warehouse square footage, and average warehouse size were tabulated. This was done for 10 specific warehouse clusters found throughout San Diego County and was statistically evaluated (via correlation coefficients) to determine the strength of the relationship between warehouse floor area and total truck volume. The results of the analysis showed a strong positive correlation, i.e., as warehouse square footage increases truck volume also proportionately increases. Conversely, the opposite is also true, that as warehouse square footage decreases, the truck volume also proportionally decreases.

Staff differentiated the total daily truck volumes into various truck classes (light-heavy, medium-heavy, and heavy-heavy duty) using modeled truck volume data along street segments in the San Diego region. Additionally, adjustment factors were developed to account for uncertainties in the datasets including: (1) facilities potentially not conducting warehousing activities, and (2) the total truck volumes servicing warehouses as opposed to trucks used for other purposes.

From the analysis, staff estimated the countywide average daily truck trip rates per 1,000 sq ft for various warehouse sizes as shown in the table below.[1]

Warehouse Floor Area (sq ft)	Class 2B to 5 Daily Truck Trip Rate (per 1,000 sq ft)	Class 6 to 7 Daily Truck Trip Rate (per 1,000 sq ft)	Class 8 Daily Truck Trip Rate (per 1,000 sq ft)
100k and greater	0.05	0.02	0.08
50k to <100k	0.09	0.03	0.14
25k to <50k	0.12	0.04	0.19
12.5k to <25k	0.15	0.05	0.23
<12.5k	0.31	0.09	0.48
County average (all sizes)	**0.14**	**0.04**	**0.22**

The results indicate that for each truck class the daily truck trip rates increase as warehouse floor area decrease. However, this does **not** mean that smaller warehouses generally receive more truck visits than larger warehouses. This is because the estimated number of truck trips are calculated with floor area and the applicable truck trip rate for a specific warehouse size category.[2]

Staff then compared these truck trip rates to the rates estimated by the South Coast Air Quality Management District (SCAQMD) when they developed their warehouse Rule 2305. The SCAQMD rates range from 0.12 to 0.75 trucks per 1,000 sq ft. All the estimated truck trip rates derived in this analysis are less than 1.0 trips per 1,000 sq ft for each warehouse size category.

[1] Preliminary estimates subject to change.

[2] See Table 6, Section 2.3.6 – Truck Trip Rate Analysis Results.

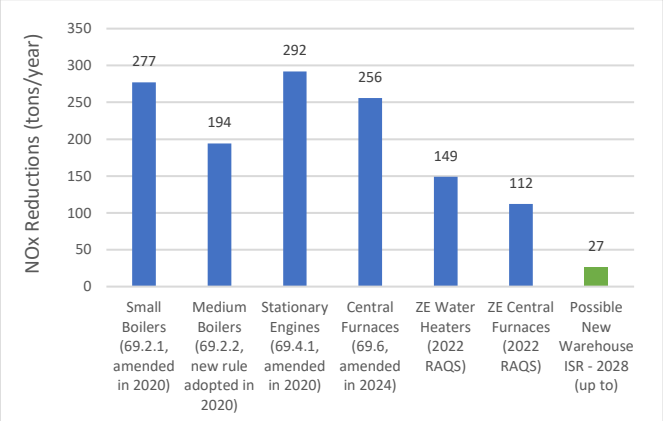
This is significant because the trip rates derived from the District's analysis using San Diego County-specific traffic data are within the range of the trip rates developed by the SCAQMD and other references. Taken together with other considerations, staff determined that it was reasonable and appropriate to use the truck trip rates calculated using the methodology explained in this Supplement (Section 2.3) to estimate baseline emissions from warehousing activities in the San Diego region.

Air Quality and Health Benefits

Using the estimated truck trip rates listed in the table above, SANDAG Vehicle Miles Traveled data, building floor area, and composite truck emission factors developed using data from the California Air Resources Board (CARB), staff estimated baseline emissions for nitrogen oxide (NOx) and particulate matter (PM2.5) for the baseline year scenarios of 2028 and 2032. These years reflect the anticipated implementation start date if a proposed ISR would be first implemented (2028), and when all subject facilities would be fully phased in (2032). To account for CARB mobile source regulations already in effect, staff incorporated scaling factors from CARB. Baseline emissions from warehouses in San Diego County subject to a possible ISR are estimated to be 17 - 36 tons per year of NOx, and 0.3 - 0.7 tons per year of PM2.5, depending on the applicability threshold used.[3]

Staff also conservatively calculated the possible emission reductions a warehouse ISR may achieve if developed for San Diego County. In line with Governing Board direction, staff evaluated applicability thresholds for two size ranges: warehouses with floor area of 100,000 sq. ft. or more, and warehouses with floor area of 50,000 sq. ft. or more. For each applicability threshold, staff evaluated three best-case emission reductions scenarios, which comprise of: (1) Scenario 1, where all facilities select the Low-NOx truck option to comply; (2) Scenario 2, where all facilities select the ZEV truck option to comply; and (3) Scenario 3, where facilities select a combination of options such as Low-NOx trucks, ZEV trucks, or other compliance options (e.g., solar panels, air filters, mitigation fee) that are consistent with how facilities are complying with Rule 2305 in the SCAQMD. Because Scenarios 1 and 2 limit compliance options, which would be critical components to include in a potential warehouse ISR to avoid federal preemption issues, staff evaluated possible emission reductions based on the more "realistic" Scenario 3.

Possible NOx emission reduction estimates compared to those achieved by other regulations recently adopted by the District are included in the graph to the right. Estimated emission reductions from warehouses in San Diego County subject to a potential ISR are between 13 - 27 tons per year of NOx, and 0.1 - 0.3 tons per year of PM2.5, depending on the applicability threshold used (Section 2.4.3). It's important to note that this analysis assumes that all the facilities identified in the various size



[3] Approximately 0.15% of the regionwide NOx emission inventory (23,587 tons/year), and 0.01% of the regionwide PM2.5 emission inventory (7,531 tons/year), per CARB CEPAM2019v1.04.

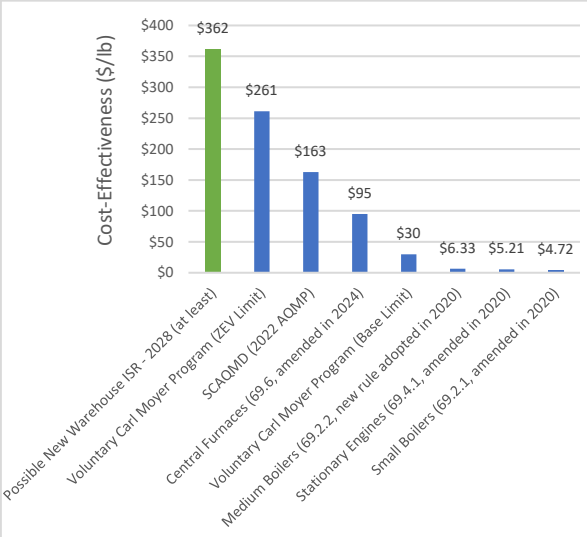
categories conduct warehousing activities and would be subject to a potential warehouse ISR. However, a portion of these facilities may likely be conducting non-warehousing activities (e.g., retail, office, or other light commercial use) in buildings classified as warehouses, and thus would not be subject to a potential warehouse ISR. Therefore, the baseline emissions, and consequently emission reductions, are likely to be ***less in practice*** than the estimated values, and should be considered best-case estimates.

Possible health benefits associated with a potential warehouse ISR, based on the estimated emission reductions presented above, were tabulated using the EPA CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA). Implementation of a potential warehouse ISR could result in avoiding between 25 and 68 health-related incidences per year, and a potential savings of $313k to $1.1 million per year in associated healthcare costs, depending on the applicability threshold used and baseline year evaluated (Section 2.4.4).

Compliance Costs and Cost-Effectiveness

Total annual compliance costs were derived from SCAQMD information on average costs and WAIRE menu items implemented to comply with their Rule 2305. Average annual compliance costs that would be incurred by each local warehouse subject to a possible ISR are estimated to be between $29,000 and $49,000 per year.

State law requires air districts to evaluate cost-effectiveness of proposed rules, which is typically expressed in terms of total compliance costs (dollars) per units of emissions reduced (tons or pounds). Cost-effectiveness values were estimated using the total annual compliance costs and the estimated emission reductions listed above. Preliminary cost-effectiveness estimates for a potential warehouse ISR in San Diego County currently range between $362 to $464/lb of NOx reduced in 2028. The cost-effectiveness values are estimated to increase to a range between $485 and $622/lb in 2032 as NOx emission reductions are anticipated to decrease each year due to increasing emission benefits from various CARB mobile source regulations. The estimated cost-effectiveness for a possible ISR now far exceeds the cost-effectiveness values estimated for recent District rulemakings, as well as for incentive-based projects within the Carl Moyer program, which are generally recognized as some of the highest cost-effectiveness values for achieving emission reductions (Section 2.5).



District Costs for Rule Development and Administration

Staff re-evaluated potential costs associated with Rule Development, implementation, and administration of a possible warehouse ISR in San Diego County, including ongoing rule administration, outreach, possible litigation defense, and enforcement activities (Section 2.6). Such costs include the items listed below, which are subject to revision during a possible future rulemaking process. While "direct" costs associated with implementation of the program could be recouped through District fees, other "one-time" costs would likely not be recoupable.

- Approximately $250,000 (one-time) to prepare required CEQA documentation.
- Approximately $250,000 (one-time) to prepare required socioeconomic impact assessment documentation.
- Up to $900,000 per year (ongoing) for additional staff to administer the program (e.g., report evaluation, compliance, outreach activities).
- Approximately $200,000 (one-time) to develop a new District web portal.
- Approximately $25,000 per year (ongoing) to annually maintain the District web portal.
- Approximately $135,000 (one-time) for District/County legal costs to defend a possible ISR if litigated.
- Unknown outside legal counsel costs if a possible ISR is litigated (if necessary).
- Approximately $75,000 per year (ongoing) for enhanced enforcement-related actions (if necessary).

Staff believes ongoing staff costs associated with the direct implementation of the program (e.g., costs associated with reviewing, evaluating, and enforcing standard rule provisions) could be recouped by District fees. However, costs associated with CEQA document development, socioeconomic impact assessment development, web portal development, internal/external legal counsel, and enhanced enforcement activities may not be recouped through fees alone, though legal judgements and enforcement agreements could potentially recoup some costs incurred.

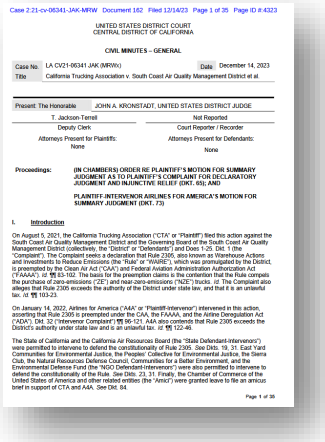
Additional Considerations

Since the ISR Framework was prepared, several additional considerations in relation to a possible warehouse ISR in San Diego County have developed (Section 2.7). They include the following:

- **Litigation involving SCAQMD Rule 2305** – Courts granted summary judgement to the SCAQMD and denied plaintiffs' claims. To date, no other appeals have been filed.

- **EPA approval of Rule 2305** – While the EPA approved the rule as a measure strengthening the State Implementation Plan (SIP), full approval was not granted due to specific deficiencies. Thus, the EPA cannot assign emission credit in the SIP until such deficiencies are resolved.

- **WAIRE Program Implementation Update** – In October 2024, SCAQMD released results of the 2nd year of Rule 2305 implementation. Highlights include: warehouses are earning more WAIRE points than required; the WAIRE Program is reducing emissions and facilitating new actions/business



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UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

CIVIL MINUTES – GENERAL

Case No. LA CV21-06341 JAK (MRWx) Date December 14, 2023
Title California Trucking Association v. South Coast Air Quality Management District et al.

Present: The Honorable JOHN A. KRONSTADT, UNITED STATES DISTRICT JUDGE

T. Jackson-Terrell — Deputy Clerk
Not Reported — Court Reporter / Recorder
Attorneys Present for Plaintiffs: None
Attorneys Present for Defendants: None

Proceedings: (IN CHAMBERS) ORDER RE PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT AS TO PLAINTIFF'S COMPLAINT FOR DECLARATORY JUDGMENT AND INJUNCTIVE RELIEF (DKT. 69); AND

PLAINTIFF-INTERVENOR AIRLINES FOR AMERICA'S MOTION FOR SUMMARY JUDGMENT (DKT. 73)

I. Introduction

On August 5, 2021, the California Trucking Association ("CTA" or "Plaintiff") filed this action against the South Coast Air Quality Management District and the Governing Board of the South Coast Air Quality Management District (collectively, the "District" or "Defendants") and Does 1-25. Dkt. 1 (the "Complaint"). The Complaint seeks a declaration that Rule 2305, also known as Warehouse Actions and Investments to Reduce Emissions (the "Rule" or "WAIRE"), which was promulgated by the District, is preempted by the Clean Air Act ("CAA") and Federal Aviation Administration Authorization Act ("FAAAA"). Id. ¶¶ 63-102. The basis for the preemption claims is the contention that the Rule compels the purchase of zero-emissions ("ZE") and near-zero-emissions ("NZE") trucks. Id. The Complaint also alleges that Rule 2305 exceeds the authority of the District under state law, and that it is an unlawful tax. Id. ¶¶ 103-23.

On January 14, 2022, Airlines for America ("A4A" or "Plaintiff-Intervenor") intervened in this action, asserting that Rule 2305 is preempted under the CAA, the FAAAA, and the Airline Deregulation Act ("ADA"). Dkt. 32 ("Intervenor Complaint") ¶¶ 86-121. A4A also contends that Rule 2305 exceeds the District's authority under state law and is an unlawful tax. Id. ¶¶ 122-46.

The State of California and the California Air Resources Board (the "State Defendant-Intervenors") were permitted to intervene to defend the constitutionality of Rule 2305. See Dkts. 19, 31. East Yard Communities for Environmental Justice, the Peoples' Collective for Environmental Justice, the Sierra Club, the Natural Resources Defense Council, Communities for a Better Environment, and the Environmental Defense Fund (the "NGO Defendant-Intervenors") were also permitted to intervene to defend the constitutionality of the Rule. See Dkts. 23, 31. Finally, the Chamber of Commerce of the United States of America and other related entities (the "Amici") were granted leave to file an amicus brief in support of CTA and A4A. See Dkt. 84.

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models to support zero-emissions technologies; significant staff efforts required for program implementation; most common compliance options utilized are ZE hostlers and near-zero emission truck visits; and significant outreach and compliance/enforcement activities have been required.

- **CARB Mobile Source Regulations** – CARB has adopted many mobile source regulations, and three in particular (Advanced Clean Trucks, Advanced Clean Fleets, and a possible future ZE Truck Measure) could all reduce emissions at indirect sources such as warehouses if implemented.[4] The Supplement provides information and updates as to the status of these three regulatory actions.

- **Assembly Bill (AB) 98** – In September 2024, AB 98 was enacted in California to apply to new and expanded warehouses that are proposed for any floor size, though more requirements apply to proposed facilities over 250,000 sq. ft. in size. Such requirements include but are not limited to: (1) requiring minimum standards to minimize impacts to sensitive receptors, and (2) prohibiting local agencies from approving such facilities without such standards incorporated. While existing warehouses may not be directly impacted, its impact on the warehouse industry statewide is still unclear.

- **District Study of Warehouse facilities in Portside community** – In December 2024, staff conducted an informal case study of warehouses in the Portside Community located in the vicinity of a specific sensitive receptor. In all, staff researched 70 buildings classified in the CoStar inventory as a "warehouse" to better determine how many facilities may be conducting goods-movement related activities that may be subject to a possible warehouse ISR. The findings concluded that: (1) many facilities did not appear to be doing prototypical goods-movement activities, (2) uncertainty whether smaller facilities would have adequate pathways to comply with a possible ISR similar in scope to SCAQMD Rule 2305, and (3) 14% of the 70 facilities researched may likely be conducting goods-movement related activities. If these results are extrapolated for the warehouse inventory countywide, then the possible ISR emission reduction estimates presented above may very likely be a best-case scenario.

Staff's Conclusions

Over the past 2 years, in response to Governing Board direction, staff has prepared the ISR Framework, convened a multi-stakeholder working group (WWG), and prepared this Supplement, among other activities. This work included development of a truck trip rate analysis specific to the San Diego region (Section 2.3), baseline emissions, potential emission reductions and public health benefits (Section 2.4), and cost-effectiveness values (Section 2.5). Together, these estimates help inform the District's evaluation of a potential warehouse ISR, the impacts for AB 617 communities and countywide, as well as challenges with implementation (EHC Comment Letter). Staff believes the Governing Board's consideration and acceptance of this Supplement, together with the initial ISR Framework and WWG meeting series, will fulfill the requirement set forth by AB 423 to consider an ISR for warehouse and distribution centers.

[4] By letter dated January 13, 2025, CARB withdrew their request for a waiver from the EPA for the Advanced Clean Fleets Regulation. https://www.epa.gov/system/files/documents/2025-01/ca-acf-carb-withdrawal-ltr-2025-1-13.pdf

In line with commitments made with the WWG, this Supplement will be released for public comment for 30 days. Following this public comment period, the District intends to present its findings to the Governing Board, including any feedback received from stakeholders during the public comment period.

1.0 INTRODUCTION

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1.1 BACKGROUND

Starting in November 2021, the San Diego County Air Pollution Control District (SDAPCD or District) staff began work pursuant to California Assembly Bill (AB) 423 (Gloria, 2019) to evaluate the feasibility of various actions to address indirect sources of pollution, particularly warehouses and distribution centers. More specifically, AB 423 required the District to "***consider*** adopting an indirect source rule to address pollution from mobile sources that is associated with stationary sources, such as ports, warehouses, and distribution centers." In May 2023, District staff prepared a report titled "Options and Considerations for Reducing Indirect Source Emissions at Warehouses, Distribution Centers, and Ports," also referred to as the "ISR Framework" (Attachment A), and presented the preliminary findings at the June 2023 Governing Board meeting.

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1.2 JUNE 2023 GOVERNING BOARD MEETING

On June 8, 2023, District staff provided an update to the Governing Board on potential strategies to reduce indirect source emissions from warehouses, distribution centers, and ports in San Diego County, considering relevant factors such as existing mobile source regulations and Federal Clean Air Act preemption limitations. Staff's findings presented in the ISR Framework suggested that a warehouse indirect source rule and associated administrative fees for facilities above 100,000 square feet in size, akin to South Coast Air Quality Management District (SCAQMD) Warehouse Rule 2305, are potentially feasible in San Diego County. A local rule could provide emission reductions from the freight sector, but only if facilities opted to utilize menu strategies such as purchasing new or using advanced technology vehicles. However, such a rule was predicted to be the costliest measure the District has ever considered in terms of the compliance costs per pound of reduced emissions, based strictly on a ratio of SCAQMD data for San Diego County at the time. Proceeding with a rule (i.e., the first option under consideration) would have required further technical analyses to be conducted, including socioeconomic and environmental

impact studies and public review, in accordance with State law to further assess and verify feasibility prior to rule adoption.

The second option the Governing Board considered was to direct staff to pursue rule development of a warehouse indirect source rule as outlined above and incorporate additional requirements for facilities between 50,000 and 100,000 square feet in size to also submit a one-time informational report to the District as part of a proposed rulemaking. Warehousing facilities under 100,000 square feet in size are not currently regulated by any air district, as they may not be able to sufficiently comply using the available menu of options. Consequently, it was determined that additional analysis would be necessary to determine if there are multiple viable compliance options that may be available to warehouses under 100,000 square feet – a significant determinant for ensuring an ISR is not a de-facto purchase mandate, which could be legally challenging at the local level to adopt.

The Board also considered a third option, to direct staff to continue with proactive engagement and convene a working group of community and industry stakeholders. This working group would consider and develop potential alternative regulatory and non-regulatory strategies that could further reduce indirect source emissions at the community level, including approaches for warehouses between 50,000 to 100,000 square feet in size. This approach would allow more conversations, analysis, and brainstorming with affected stakeholders on other possible methods for reducing indirect source emissions from warehousing facilities. This approach would also allow for continued implementation of various federal, State, and local measures including California Air Resources Board (CARB) mobile source regulations and District financial incentive programs to proceed. Additionally, it would allow additional time to evaluate pending litigation for a similar regulatory measure in the SCAQMD, and a corresponding pending approval of the same measure by the U.S. Environmental Protection Agency (EPA) at the federal level, to be resolved prior to SDAPCD pursuing local rulemaking activities.

The Board approved staff's recommendation to convene a working group, otherwise known as the Warehouse Working Group (WWG). As part of its direction, the Board instructed staff to (1) prioritize under-resourced communities, (2) consider smaller warehouses and warehouses near sensitive receptors (e.g., residences, hospitals, schools, etc.), and (3) return at the October 2023 Governing Board meeting with a timeline for action and proposed composition of the working group.

1.3 AUGUST 2023 PLANNING AND POLICY COMMITTEE MEETING

On August 2, 2023, District staff presented the draft timeline and potential composition of WWG participants, as well as a WWG Purpose Statement, to the SDAPCD Planning and Policy Committee. Feedback received by the Committee and stakeholders included requests to (1) expedite the projected timeline for possible regulatory action where feasible, (2) de-linking the timelines for possible regulatory and non-regulatory actions to accelerate implementation, (3) add representation to the list of possible working group participants, specifically from Tijuana-based organizations such as the Mexican Consulate and North/East San Diego County, and (4) begin developing proactive public messaging strategies on indirect sources and their corresponding emissions. Staff incorporated this feedback into attachments for the Board's consideration at the October Board meeting.

1.4 OCTOBER 2023 GOVERNING BOARD MEETING

On October 12, 2023, District staff presented an informational update to the Governing Board on the establishment of the WWG, potential working group participants, and a proposed tentative timeline for action as detailed in the Board letter attachment "Warehouse Working Group (WWG) Tentative Timeline and Possible Working Group Participants."[5] The proposed scope and goal of the working group were provided in the attachment "Warehouse Working Group Purpose Statement."[6] Feedback received from the Governing Board included adding representation from public health and/or physician groups to the working group participant list, a status update on the SCAQMD Rule 2305 litigation, and expanded outreach to communities impacted by warehousing activities.

[5] Attachment B: WWG Timeline And Working Group Participants
[6] Attachment C: Warehouse Working Group Purpose Statement

2.0 STAFF ACTIVITIES AND FINDINGS

To help inform the District's evaluation of a potential warehouse ISR, and as directed by the Governing Board, staff conducted the activities outlined in this Section.

2.1 WAREHOUSE WORKING GROUP (WWG) MEETINGS AND ACTIVITIES

As directed by the Governing Board, between September 2023 and October 2024, staff conducted 10 virtual public meetings with WWG participants, comprising almost 20 hours of in-depth, technical conversations about indirect source emissions.

2.1.1 WWG Participants

The WWG was composed of key local community, environmental, industrial, and government stakeholders interested in the freight and warehousing sectors, community health, and air quality. Participation in the WWG meetings included representatives from at least 90 different organizations, public agencies, or companies, as listed in Table 1.[7]

[7] Not all entities listed in the table participated in every WWG meeting.

Table 1 – WWG Meeting Participants

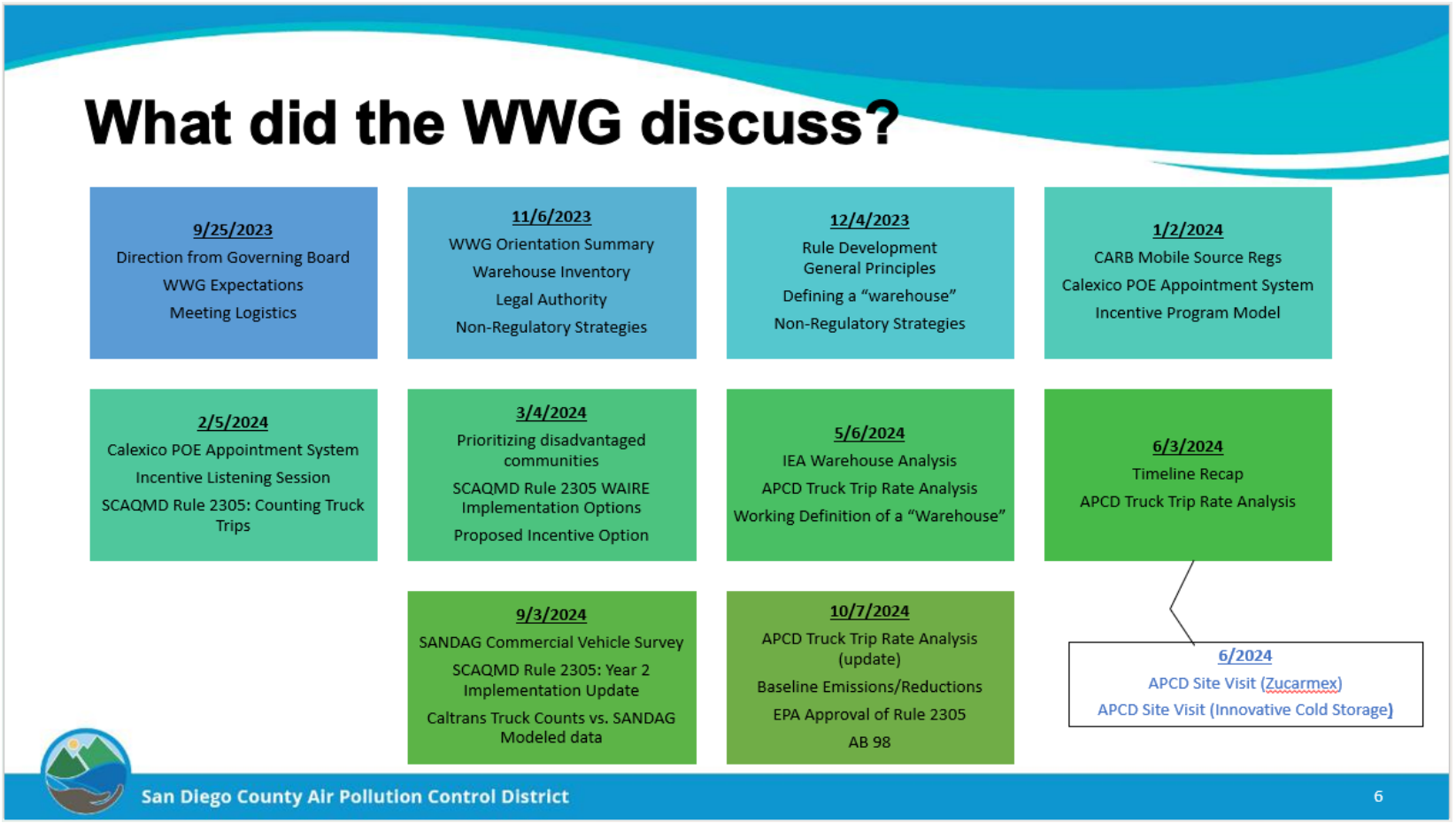
Company/Agency/Organization	Company/Agency/Organization	Company/Agency/Organization
1st Response Plumber	Fedex	Restoration Management Co.
AECOM	First Onsite	Rush Enterprises
Airlines for America	General Dynamics NASSCO	SA Recycling
Alliance Environmental Group, LLC	GSI Environmental	Same Day Restoration
AMW General Contracting, Inc.	Harborside Refrigerated Services	San Diego Chamber of Commerce
Ascent Environmental, Inc	High Standards Abatement	San Diego County Building and Construction Trades Council
BAE Systems	Hunter Properties	San Diego Gas & Electric
Beveridge & Diamond PC	IDS Real Estate Group	San Diego North Economic Development Council
Biocom California	Industrial Environmental Association	San Diego State University
California Air Resources Board	Innovative Cold Storage Enterprises	San Diego Working Waterfront
California Construction Superior	International Brotherhood of Electrical Workers - Local 569	SANDAG
California Department of Justice	International Warehouse Logistics Association	South Coast Air Quality Management District
California Environmental Justice Alliance	Kaiser Permanente	Scripps Health
Caltrans	M.S. Hatch Consulting	San Diego Working Waterfront
Casa Familiar	Majestic Realty Co.	ServiceMaster Restore
Center on Policy Initiatives	McCormick-JWC Construction & Consulting	Sierra Club
ChargePoint	Montrose Environmental	Sonoma Technology
Choice Management Solutions, Inc.	Murphy Development Co.	SSA Marine
City of La Mesa	NAIOP San Diego	Star Flood Restoration
City of National City	National Enterprises, Inc.	State of Baja
City of San Diego	NorthStar Contracting Group, Inc.	Strategic HOA
Climate Action Campaign	NV5 Global, Inc.	Suja Life, LLC
Coast to Coast Restoration	Otay Mesa Chamber of Commerce	Superior Abatement Services, Inc.
County of San Diego	P.W. Stephens Environmental, Inc	TRC Companies, Inc.
CVE Corp.	Pasha Automotive Services	U.S. Department of State
Dexcore Restoration	Pernicano Realty and Management, Inc.	U.S. Environmental Protection Agency
Dole Fresh Fruit	Port of San Diego	U.S. Navy
Earthjustice	Premier Restoration Services, Inc.	University of California, San Diego
Environmental Health Coalition	Prologis	US Foods, Inc.
ESQUER San Diego	Quality Lift Trucks	Vert Environmental

2.1.2 Overview of Topics Discussed

Figure 1 shows a timeline of the WWG meetings and discussion topics, which are discussed in more detail below.[8]

[8] The referenced slide is from an update presented at the District's Planning and Policy Committee (PPC) meeting held on October 10, 2024. A video of the PPC meeting can be viewed on the District's YouTube page, https://www.youtube.com/watch?v=eUgz5zcQf9c.

Figure 1 – WWG Meeting Topics



At the outset of the WWG, staff devoted significant time to providing baseline knowledge on the topic of an indirect source rule, including why the District was discussing the topic, the direction provided by the Governing Board, expectations for the group, and determining the logistics of meeting cadence.

- Baseline knowledge discussed included:
    - Background on the definition of an indirect source and discussion of types of pollution from those sources.
    - An overview of the inventory of warehouses in San Diego County that were identified using data from CoStar, which is a commercial real estate analytics firm.
    - Better understanding the legal authority and limitations that the District has for controlling indirect source emissions.
    - Potential non-regulatory strategies that could also result in emission reductions.
- Staff provided necessary background about how the District develops a rule, a complicated process that many participants were not already familiar with.

Subsequent meetings included topics such as:

- The definition of a "warehouse" was discussed frequently at meetings, culminating with staff providing a working definition of a warehouse for the purposes of the WWG and any subsequent analysis.
- Different non-regulatory strategies were also discussed at multiple meetings, such as unique incentive programs, or ways to amend existing programs to achieve emission reductions from the warehouse sector. This culminated with staff presenting a potential three-tiered incentive approach for reducing emissions at warehouses while prioritizing such actions for under-resourced communities (see Three-Tier Incentive Funding Plan section below).
- CARB staff presented information on how their statewide mobile source regulations will reduce emissions in the coming years regionwide as well.[9]
- In early 2024, an appointment system project in the conceptual phase for the Calexico East Port of Entry was discussed. Such a project was promoted as a potential strategy that could reduce emissions around the San Diego County border crossings by reducing idling and border wait times.
- Staff provided frequent updates to the WWG about how the SCAQMD warehouse ISR was proceeding, including legal updates, implementation, and approval status with the EPA. This included how SCAQMD counts truck visits for the purposes of their local rule, compliance options, and SCAQMD resources dedicated to implement the program.
- Staff convened a listening session with local trucking and logistics companies to better understand how and what incentive programs could best help stakeholders.
- With the assistance of the Otay Mesa Chamber of Commerce, staff conducted two site visits to warehouses in the Border area to better understand their operations, opportunities, and limitations.

[9] By letter dated January 13, 2025, CARB withdrew their request for a waiver from the EPA for the Advanced Clean Fleets Regulation, https://www.epa.gov/system/files/documents/2025-01/ca-acf-carb-withdrawal-ltr-2025-1-13.pdf.

- The WWG discussed an alternative warehouse analysis, completed and presented by representatives of the Industrial Environmental Association (IEA), on what a non-regulatory or regulatory strategy could achieve.
- In the final meetings of the WWG, staff discussed an analysis of what a possible regulatory approach in San Diego County might achieve. To do that, the WWG discussed more technical aspects that support such an analysis, which include:
    - Determining local truck trip rates for warehouses throughout the County (by size and by region), as well as baseline emissions and possible emission reductions that could be achieved from a potential rulemaking.
    - A recent survey of commercial vehicle activity in San Diego County by the San Diego Association of Governments (SANDAG) that provided the WWG with valuable information about the warehousing and transportation sector specific to the county.
- Finally, at the last WWG meeting held in October 2024, staff presented a preliminary high-level analysis of the truck trip rate and emission estimates, noted recent approvals by the EPA of SCAQMD's warehouse Rule 2305, and the passage and Governor's signature of Assembly Bill 98, which will require new or expanded warehouses of all sizes statewide to meet minimum requirements moving forward.

Three-Tier Incentive Funding Plan

On March 4, 2024, staff presented to the WWG a preliminary three-tiered incentive concept as the primary non-regulatory strategy to incentivize emission reductions from warehouses and distribution centers in a timely manner, as summarized below and in Figure 2.[10]

The first tier would incentivize new zero-emission vehicle (ZEV) truck purchases in under-resourced communities by expanding the existing Portside Short Haul Zero-Emission Truck Pilot program to areas outside of the Portside Community.[11] Amendments made to the program could expand funding opportunities to warehouse entities and trucking companies that serve warehouses that operate in under-resourced communities outside of Portside and allow them to purchase new ZEV trucks. In line with feedback received from stakeholders, the District could consider including additional requirements to this program, such as targeting only warehouse operations in disadvantaged communities that are located within 1,000 feet of a sensitive receptor. An amendment to the existing program would require approval by the AB617 Community Steering Committees (CSC) and CARB prior to implementation.

The second tier, which already exists today through the Clean Air for All Grant program, would continue to incentivize infrastructure purchases for new ZEV charging opportunities for warehouse and trucking companies. The program currently allows for grants of up to $5 million for the installation of infrastructure serving disadvantaged communities, and up to $1 million for all other infrastructure projects. This funding has no cost-effectiveness limits and has a sliding scale for the grant received. Infrastructure projects can receive 60-100% of the cost paid for depending on if it has solar/wind systems incorporated; is publicly accessible or installed by a public entity; serves a port, railyard, or freight facility; is near a sensitive receptor; serves public school bus charging/fueling; or supports communal heavy-duty truck charging opportunities. Like

[10] https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/030424/presentation-030424.pdf

[11] https://www.sdapcd.org/content/sdapcd/grants/grants-equipment/heavy-duty-trucks/zero-emission-truck-pilot-project.html

ZEV truck funding, in line with feedback received from stakeholders, the District could consider including additional requirements to this program, such as targeting only warehouse operations in disadvantaged communities that are located within 1,000 feet of a sensitive receptor.

Lastly, the third tier would be considered by the District if a warehouse ISR were to be developed, and mitigation fees were collected as a method of compliance. The third tier would expand the District's existing Zero Emission Truck Pilot Program to ensure warehouse entities and trucking companies operating outside of under-resourced communities would be eligible to apply for new ZEV trucks. Because no AB617 funding would be accrued or used in this tier, as the funding would be generated strictly from mitigation fees, CSC and CARB approval would likely not be necessary.

Figure 2 – Preliminary Incentive Strategy

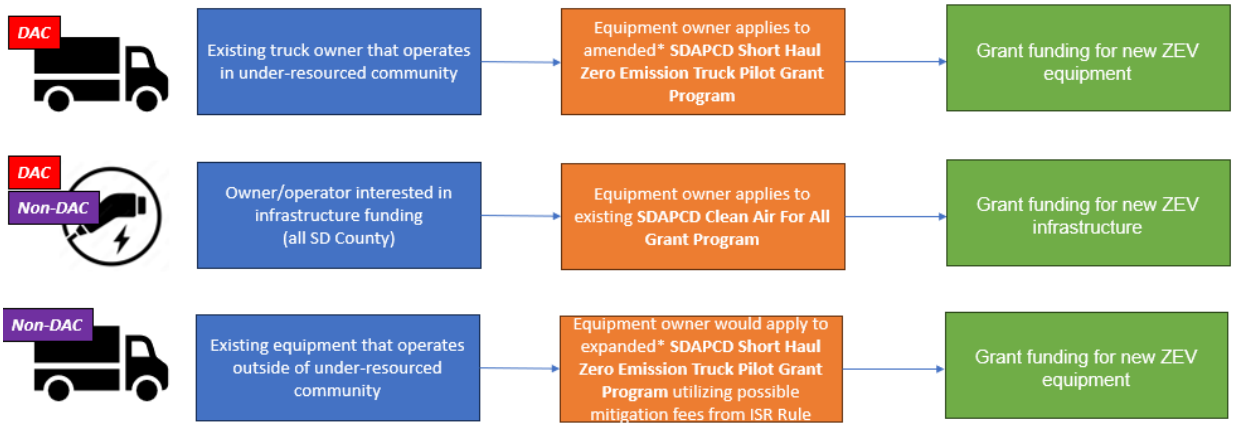


Figure 2 illustrates how this three-tiered approach may work. The top row represents the process for a warehouse owner or trucking company that has trucks operating in an under-resourced community in San Diego County. The entity would apply for the amended ZEV Truck Pilot Program and receive funding to make a ZEV truck purchase. The middle row represents the process for owners/operators wanting to install ZEV infrastructure. Owners/operators in or outside of an under-resourced community would apply to the existing Clean Air for All grant program and receive funding to install the necessary ZEV charging stations. The last row would represent the process of a warehouse owner or trucking company applying for ZEV trucks operating outside of an under-resourced community in the county. These fleets would need to apply for an expanded version of the ZEV pilot program, which could be expanded if a corresponding ISR was developed to collect mitigation fees. The fees collected would then incentivize the purchase of ZEV trucks that may not be subject to the same rule.

2.1.3 Summary of WWG Feedback

The WWG was convened by design to collect varying perspectives from a wide variety of stakeholders. As such, the group was not typically able to reach a consensus on most topics. While such agreements were not anticipated, the WWG nonetheless continually provided thoughtful and meaningful information for the District's consideration in a courteous and respectful manner. The District thanks all WWG participants for the considerable time and role in this effort.

One topic that had some general agreement was for the ability of a non-regulatory incentive option(s) to be available in some capacity. Staff presented the possible three-tiered strategy for such incentive opportunities referenced above to the WWG, and feedback was generally well-received by industry, environmental groups, and trucking and logistics companies.

From industry's perspective, several topics were frequently elevated for further analysis. These included better evaluating the impacts and emission reductions associated with CARB mobile source regulations, concerns whether warehouses identified in the CoStar data were actually engaging in goods movement activity, Zero-Emission Vehicle (ZEV) truck and infrastructure feasibility and availability issues, difficulty in tracking truck activity at potentially subject facilities, and noting the unique circumstances of warehousing activity along the international border.

From the environmental perspective, a comment was frequently elevated for the Community Emissions Reduction Plan (CERP) goals to be prioritized to further improve the health and wellness of residents in disadvantaged communities, and to consider the possible cumulative impact of many smaller warehouses clustered around sensitive receptors. It was also suggested that a rule (as opposed to a voluntary incentive program) could potentially provide more certainty for achieving emission reductions and could result in more localized emission reductions if framed in a way that could target such facilities in disadvantaged communities.

From an implementation perspective, the District highlighted the importance and difficulty of achieving regionwide emission reductions in a manner that does not run afoul of federal preemption issues while also achieving localized emission reductions. Staff continues to learn from SCAQMD's implementation of their Rule 2305 to prepare for future challenges if a rulemaking is pursued.

2.1.4 Key WWG Comments

The following are key comments received during the WWG meetings. For reference, all comments received, meeting documents, video recordings, and other materials are available on the District's WWG webpage.[12]

Potential ISR Requirements

The WWG discussions spent considerable time on how a potential ISR may work, including:

- Determining an appropriate definition of a "warehouse." This is important for warehouse operators because some warehouse facilities may be engaged in activities other than goods movement. For the purposes of WWG discussions, "warehouse" means a building that stores cargo, goods, or products on a short- or long-term basis for later distribution to businesses and/or retail customers.[13]
- The warehouse owner/operator may not directly control the truck fleets that serve the facility. Warehouse owners have expressed that there are many different models of how warehouse operations are controlled.
- The pollutants a potential ISR may regulate, including NO_X and Diesel Particulate Matter.

[12] https://www.sdapcd.org/content/sdapcd/rules/warehouse-work-group.html

[13] SCAQMD, Rule 2305, Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program, May 7, 2021, p. 2305-3, https://www.aqmd.gov/docs/default-source/rule-book/reg-xxiii/r2305.pdf?sfvrsn=21

- Consideration for smaller warehouses, including if there are viable (and/or different) compliance options available that differ from large warehouses, different timelines, and what is considered a "small" warehouse.
- Specific options for warehouses in under-resourced communities and/or near sensitive populations or receptors (e.g., schools, parks, etc.), if a possible rule could be more stringent in such areas, or if the menu of compliance options could differ.

ISR Implementation Challenges

The WWG also heard and discussed implementation challenges that are likely to be encountered if an ISR were to be developed, including but not limited to the following:

- Today, truck trips are generally not controlled by the owner or operator of the warehouse. Concerns from business and truck owners about technological feasibility, including zero-emission truck range, vehicle weight and load capacity, vehicle availability, and current lack of available and standardized charging infrastructure. While truck trips could potentially be controlled through new or amended contracts with servicing fleets requiring Near-Zero Emissions (NZE) or Zero-Emission Vehicle (ZEV) truck visits, these may not be possible for all facilities.
- Developing an ISR in a way that minimizes the chances of it being overturned in court if litigated. SCAQMD Rule 2305 is the only warehouse ISR to date that has been challenged and successfully defended in court, and diverging from its pathway could subject a local ISR to legal risk.
- Unexpectedly low reporting and compliance rates for SCAQMD Rule 2305 suggesting either SCAQMD overestimated the number of subject facilities or there are many warehouse operators that are not reporting.

Potential Benefits of an ISR

Throughout the WWG process, stakeholders considered several benefits of proceeding with an ISR, including but not limited to the following:

- Residents' desire to immediately reduce emissions from warehousing activities in under-resourced communities, as included in the two local AB 617 CERPs.
- Perceived regulatory certainty for regulating emissions from warehouses located near residences in a way that a voluntary incentive program may not be able to achieve.
- Potential regional benefits from reducing ozone precursors and particulate matter (PM), and how each could help achieve state and federal ozone and PM standards.
- Co-benefits of an ISR could further reduce greenhouse gas (GHG) emissions and diesel particulate matter (DPM). However, currently there is uncertainty if an ISR could legally directly regulate toxic or GHG emissions.

Uncertainties and Unknowns Relating to an ISR

The WWG also discussed many unknowns in relation to a possible ISR, including but not limited to the following:

- Difficulties identifying warehousing facilities that conduct warehousing activities and not other types of operations (e.g., manufacturing, retail, etc.).
- Truck destinations, total truck population, total vehicle miles traveled (VMT), truck trips, and overall emissions in San Diego County specifically.
- The difficulty of quantifying actions in an ISR into actual emission reductions and resulting health benefits for San Diego County.
- District costs to implement an ISR, considering system development, staffing, permitting, inspection, and other administrative costs that would be required, and how those costs would be recovered.
- Other additional resources needed to implement an ISR (e.g., website development, enhanced outreach to stakeholders, enforcement actions, potential litigation costs to defend an ISR, etc.).
- Whether large warehouse operators might opt to move into multiple smaller warehouses (and in greater quantities of warehouses) to circumvent becoming subject to a local ISR with a specific square footage applicability threshold.
- Consideration of whether an ISR specifically in San Diego County would result in tenants moving their operations out of the county or state, or into Mexico to avoid becoming subject to a local ISR. If operations were moved into Mexico or a neighboring county, those emissions may potentially continue to impact San Diego air quality.
- The uncertainty over the number and types of compliance menu options that would need to be included to ensure viability and avoid preemption issues. Also, some of the potential compliance options (e.g., installation of solar panels or charging infrastructure) may not result in immediate localized NOx and PM emission reductions.

Alternatives to an ISR

The WWG was asked to convey alternative concepts (both regulatory and non-regulatory) that could reduce indirect source emissions from warehouses and distribution centers in relation to comments considered by the Governing Board. Some of the concepts explored during the WWG include the following:

- Modification of current District incentive programs for trucks to include warehouse-visiting trucks regionwide and in under-resourced communities. The existing Zero-Emission truck pilot program, which currently only allows the purchase of trucks benefitting the Portside community, could be modified to include trucks that operate at the International Border and other under-resourced communities, to couple alongside other existing local, State, and federal incentives to replace diesel trucks and vehicle miles traveled with zero emission alternatives.
- Enhancement of the District's current enforcement efforts to reduce emissions from mobile sources through a revised Memorandum of Understanding with CARB to increase enforcement of existing mobile source regulations for trucks.
- Other actions taken by local agencies such as land use ordinances to restrict the location of warehouses. For example, the District does not have the regulatory authority to amend zoning or building codes for warehouses. However, the District could advocate and work alongside relevant public agencies, such as the City of San Diego, to adopt an ordinance that would apply specific zoning standards or building codes in the AB 617 Portside and International Border communities that would help to address existing and new warehousing activity impacts. While such efforts have been taken already at the State level with the passage of AB 98, a local ordinance could be more stringent in requiring

additional mandates for new and/or significantly renovated warehouses below 250,000 square feet in size, or in locations adjacent to sensitive receptors.
- Supporting/advocating for the development of a truck reservation system at the Otay Mesa ports of entry, which supporters contend could reduce truck idling emissions at the international border.

General Comments

The WWG discussed other general comments, including but not limited to the following:

- Concern about the costs of an ISR and the resulting increased costs of goods that could be passed onto consumers.
- Concern about the healthcare costs of affected residents if warehouse emissions continue at current rates and locations.

2.1.5 Stakeholder Comments for District Consideration

Appointment System at the Otay Mesa Port of Entry (POE)

A representative from the Otay Mesa Chamber of Commerce commented at various WWG meetings that the District should pursue/be the lead advocate for an appointment system at the Otay Mesa Port of Entry (POE), rather than pursuing development of a warehouse ISR. The idea being that such a system would result in greater emission reduction benefits due to the possibility of reduced idling times of trucks waiting in line to cross the border.

At the WWG meeting on February 5, 2024, Caltrans staff presented a proposed feasibility study concept to develop a joint operation system for the Calexico East POE.[14] If completed, the project would also debut the first land POE appointment system for commercial vehicles and potentially passenger vehicles. The project proposes to relay border conditions such as wait times and incident information to border crossers through a mobile application. In doing so, the traveling public will have access to traffic conditions and could plan their trips accordingly. Using current border conditions, the system is also envisioned to allow commercial vehicle border users to pay for a designated appointment window to cross the border. If successful, this pilot has the potential to be scalable by expanding to other POEs and is envisioned as a possible model that other POEs could utilize along the northern and southern borders in the United States. This system could also expand upon appointment systems that are currently being used at the nation's seaports and introduce proven technologies to land POEs. Caltrans is still in the preliminary stages of developing the feasibility study.

District staff believes that while the anticipated result of greater efficiency could be an improvement to air quality, the concept of induced demand may also need to be further evaluated if any pilot projects proceed locally or outside San Diego County. There is the potential that improved efficiency in the movement of freight crossing the POE may induce more truck or passenger vehicle travel in the binational region. Additional combustion-related activity could consequently negate some, if not all, of the emission reductions anticipated from an appointment system.

[14] https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/020524/Caltrans-presentation.pdf

Additionally, the appointment system in Calexico is in its early conceptual stages and is at least several years away from being designed, built, and fully implemented at the Calexico East POE. If the system is built and implemented, additional time would be needed to assess the effectiveness and feasibility of the pilot project, and to evaluate if the effectiveness could make it worthy of expansion to other POEs including those in the Otay Mesa region. Moving forward, the District will continue to monitor the progress of the Calexico pilot project in parallel to any strategies developed associated with reducing emissions from warehouses.

Industry Warehouse Analysis (IEA)

At the WWG meeting on May 6, 2024, an IEA representative presented a warehouse analysis they prepared to determine the relationship between warehousing activities, truck volume, and diesel particulate matter (DPM) in certain San Diego County census tracts.[15] The analysis methodology included a review of CalEnviroScreen census tract data (average DPM and traffic percentiles), identifying warehouse buildings using Google Earth, and a review of Caltrans annual average daily truck volumes (2016).[16]

The analysis came to several conclusions, including the following: truck volumes in San Diego County areas with warehouses do not appear to be higher than other high traffic/DPM affected areas in San Diego County; models show a steady "floor" for overall PM2.5 emissions as the transition to electric/zero-emission continues; and that the disadvantaged communities of El Cajon and Escondido would benefit most from electrification due to substantial NOx and ozone emission reductions.

District staff provided comments on the presentation slides and spreadsheet used for their analysis.[17] One comment was that the data used to support the conclusion that warehouses have little to no correlation to high levels of DPM in various communities was limited. The primary concern was that freeway truck counts were used as the basis for the analysis and not surface street truck activity data. Because the Caltrans truck counts are for specific junctions along the various freeways in the County, the destinations of these trucks cannot be determined.

Another District staff comment was that most general vehicle traffic is not powered with diesel fuel, and consequently, any comparisons of "normal" traffic data with "truck" traffic data as was done in the analysis may not be appropriate. A more focused comparison may be to analyze the level of truck activity in the same areas and determine the impact of DPM emissions from other emission sources (e.g., off-road, marine, cargo handling, etc.). Doing so may provide a better comparison as to the level of impact trucks are having in these same neighborhoods.

[15] https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/050624/IEA-presentation-050624.pptx

[16] https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/050624/IEA_Warehouse_Analysis_05.16.24.xlsx

[17] Attachment D: Industry Warehouse ISR Analysis

ISR vs Incentive Analysis (IEA)

An IEA member prepared an ISR vs Incentive Analysis and submitted it to the District via email on June 26, 2024.[18] The analysis was done referencing emissions data from EMFAC (modeled year 2022), SANDAG 2022 Commercial Vehicle survey data, GO-Biz data, CARB Advanced Clean Fleets estimate of affected vehicle classes, International Council on Clean Transportation, US Energy Information Association, and United States IRS (for commercial clean vehicle tax credit).

The analysis compares two scenarios for estimating mobile source emissions reductions (and associated costs) of NOx and PM2.5 from electrifying diesel/gasoline-powered commercial vehicles. The first scenario is an incentive-based program that offers to replace light commercial vehicles (<8,500 lbs GWR) for businesses recognized by the State of California as Construction, Wholesale, Manufacturer, and Transportation NAICS codes within the AB 617-recognized Portside and Border Communities, the Cities of El Cajon and Escondido, which according to CalEnviroScreen share similar socio-economic factors as other AB 617 communities as well as elevated ambient ozone levels. The second scenario is the current model of an ISR that matches the scope of vehicle classes (medium/heavy duty trucks) and stationary facilities as listed in SCAQMD Rule 2305.

The analysis suggests that an incentive program aimed at electrifying light commercial vehicles could provide a better overall reduction in NOx and PM2.5 as well a better reduction cost on a per ton basis than an ISR. The analysis also suggests that promulgating either solution would be at a substantial cost to the District and regulated community for a relatively marginal reduction in overall pollutants. The analysis concludes that a program aimed at providing financial assistance to small business owners operating within either of the communities listed would likely provide some material benefit to those who would not otherwise be able to electrify their fleets ahead of the timelines outlined by CARB regulations and the Portside Community CERP/MCAS.

The analysis notes that there are an estimated total number of 10,123 light commercial vehicles (<8,500 lbs GVWR) servicing the Construction, Wholesale, Manufacturing, and Transportation industries in the Portside and International Border Communities, and the cities of El Cajon and Escondido. The analysis further concludes that emissions of PM and NOx are estimated to be reduced by 0.6 and 34.2 tons per year respectively at a cost of $465 million to replace all these vehicles with ZE equipment. In comparison, under the ISR Scenario, there are an estimated total number of 930 medium and heavy vehicles (<8,500 lbs GVWR) servicing the Construction, Wholesale, Manufacturing, and Transportation industries in the same communities and cities. Emissions of PM and NOx are estimated to be reduced by 0.5 and 33.3 tons per year respectively at a cost of $432 million to replace all these vehicles with ZE equipment.

According to the analysis, while a targeted incentive program aimed at replacing light commercial vehicles in the Portside and International Border Communities, and El Cajon and Escondido may achieve similar emission reductions as a potential warehouse ISR, it would be achieved at a greater capital cost ($465 vs $432 million). These costs would be covered (at least partially) by District grant programs, whereas an ISR would focus more costs onto the affected facilities. In addition, the number of vehicles (10,123) that would need replacement under the Incentives Scenario is more than ten times the number of vehicles (930) that would need replacement under the ISR Scenario for a roughly equivalent emission reduction total. The scale of having to replace

[18] Attachment E: ISR vs Incentive Analysis

more than 10,000 vehicles under the proposed Incentives Scenario far exceeds the number of heavy-duty trucks funded in the District's current Incentives Program to date over a period of 20+ years. Incentivizing every truck owner to switch to ZE equipment, even at little to no capital costs, is likely to be a challenge based on recent trends in ZE applications received by the District. Another challenge would be that future AB 617 grant funds for at least 3-5 years would need to be reallocated completely to the Incentives Scenario to fund just the number of vehicles anticipated in one AB 617 community. Consequently, those funds would no longer be available for other clean air projects in the Portside and International Border communities, which would further delay efforts in realizing other CERP goals. For these reasons, staff does not consider the proposed Incentive Scenario to be feasible for the District to fully implement. However, staff are planning to further explore incentive opportunities for light-duty commercial vehicles that may be the most viable candidates to convert to ZE technology.

EHC Comment Letter

The Environmental Health Coalition (EHC) proposed in their September 27, 2024 comment letter to the District that a local warehouse ISR (if one is pursued) should regulate warehouse facilities county-wide with floor area of 100,000 sq ft or more, and all warehouse and distribution facilities (regardless of size) that are located in a disadvantaged community and operating within 1,000 feet of a sensitive receptor. The letter defines "sensitive receptor" as schools, parks & playgrounds, health clinics/hospitals, daycares, and senior nursing centers/housing.[19]

The letter notes that there are an estimated total of 701 warehouse and distribution facilities with 100,000 sq ft or more floor area and/or are located within 1,000 feet of a sensitive receptor located in disadvantaged communities. The letter shows two examples (Figures 1 and 3) of warehouses within 1,000 feet of a sensitive receptor located in disadvantaged communities. Figure 1 in the letter shows a circle with a 1,000-foot radius around the Barrio Senior Villas Affordable Senior Housing Complex in Barrio Logan. The size of the warehouses located within the designated circle range from 1,800 to 56,000 sq ft. Similarly, Figure 3 in the letter shows another 1,000-foot radius circle around Kimball Elementary School in National City. The size of the warehouses located within the designated circle range from 1,600 to 38,000 sq ft.

District staff believes that regulating warehouses smaller than 100,000 sq ft of floor space poses significant logistical and legal challenges that may not be adequately addressed within already federally approved ISRs. The SCAQMD Rule 2305 was developed with a menu of compliance options specifically for warehouse facilities with floor area of 100,000 sq ft or more due to the type of activities occurring at facilities of this size. However, those compliance menu options that would be needed in a potential ISR may not be feasible for smaller warehouse operators to implement. Options such as installing solar panels or charging infrastructure may not be feasible for smaller facilities where adequate space is not available. Additionally, such options may be prohibited if a warehouse tenant doesn't control property aspects for their own building and would require a landlord to agree to such improvements. In the case of smaller warehouses, such constraints are further exacerbated as warehouse size decreases and facilities get used for multiple purposes (e.g., manufacturing, storage, office space, etc.). Consequently, purchasing ZE equipment may also not be feasible if charging infrastructure cannot be installed onsite, or is not readily available for public use. The inability for a smaller facility to implement at least some of the compliance menu options could result in any potential warehouse ISR being considered a potential de-facto

[19] https://legistarweb-production.s3.amazonaws.com/uploads/attachment/pdf/2905225/Item_D3__Public_Comment_1.pdf

purchase mandate and raise federal preemption concerns. There are also concerns that land-use changes (such as new sensitive receptors moving into a neighborhood) interacting with such requirements could present a fluid/dynamic regulatory environment, which consequently may result in the scenario of previously exempt warehouses becoming subject to a possible ISR even if their operations have not changed.

Also, there is added uncertainty as to the inventory of warehouses smaller than 50,000 sq ft. Due to smaller floor area and less space for the storage of goods, smaller facilities may instead be used for conducting non-warehousing activities (e.g., retail, office, or other light commercial use) that would not be subject to a potential ISR. To further evaluate this, the District prepared a small case study of facilities classified as warehouses in the CoStar data that are located within the vicinity of the Barrio Senior Villas complex. The goal of the study was to better determine the types of operations occurring at these smaller facilities. A summary of that analysis is included in Section 2.7.4. Based on staff's observational assessment of the area researched, approximately 14% (10 out of 70) of the CoStar warehouse inventory in the sample area may be conducting prototypical warehouse operations. Additional information and analysis would be needed to determine the number of smaller facilities conducting warehousing activities in the county.

2.2 SITE VISITS AND STAKEHOLDER OUTREACH

In June 2024, staff coordinated with the Otay Mesa Chamber of Commerce to conduct site visits to two warehousing locations (Zucarmex and Innovative Cold Storage Enterprises) in the International Border region of San Diego County. Given the unique aspects of logistics operations in this area, these site visits were completed to help staff better understand how each facility in this area operates, how and what type of trucks visit the facilities, and other opportunities and/or constraints that such facilities may have in complying with a possible ISR and/or incentive program. The District appreciates both companies for their time, information shared, and willingness to accommodate staff to visit and learn more about their operations.

In addition to the WWG meetings and the aforementioned site visits, staff also conducted 79 meetings to date with various stakeholders, including community groups, the Portside and International Border Community Steering Committees, warehouse owners, other jurisdictions and other internal District divisions to facilitate public outreach and to elicit feedback to help inform the ISR evaluation process. The District thanks each stakeholder for their time and collaboration.

2.3 TRUCK TRIP RATE ANALYSIS

2.3.1 Introduction

The goals of the District's truck trip rate analysis were to address the Governing Board's direction to obtain truck trip data specific to San Diego County and estimate truck trip rates for warehouses of different sizes. Truck trip rates are critical for estimating baseline emissions from warehousing activities (Section 2.4.3). Using baseline emissions, other estimates including emission reductions (Section 2.4.3), cost-effectiveness (Section 2.5), and public health benefits (Sections 2.4.4) of proposed strategies can be calculated.

Within the SCAQMD, operators at warehouses with floor area of 100,000 square feet (sq ft) or more subject to Rule 2305 are required to track and report truck trip information to the air district. Operators in San Diego County are not similarly required to do so because there is no current

District rule that applies to warehousing operations. The District considered developing a survey to elicit information from warehouse operators voluntarily. However, due to the time and resources needed to develop and distribute the survey, and the uncertainty of receiving the minimum number of responses needed to establish a representative sample size of the warehouse population in the region, a survey was not pursued. A voluntary warehouse operator survey was developed and distributed in the SCAQMD region prior to the development of Rule 2305, and participation was low with a 16% response rate (63 of 400 surveys sent).[20] For these reasons, in addition to the unavailability of actual truck trip data, staff used modeling data based on existing traffic data to estimate truck trip rates specific to the San Diego region.

Staff estimated truck trip generation rates for various sizes of warehouses and truck classes. To do this, a map including warehouse locations and transportation analysis zones with SANDAG's modeled truck activity data was created. This data was analyzed as described in Sections 2.3.2 through 2.3.5 with the results discussed in Section 2.3.6.

2.3.2 Warehouse Inventory

As described in the ISR Framework, staff obtained information from CoStar, a commercial real estate analytics firm, to identify the number, size, and location of existing warehouse buildings in the San Diego region. According to the CoStar data, there are approximately 6,700 warehouse buildings throughout the region, ranging in size from less than 1,000 square feet (sq ft) to 3.3 million sq ft of indoor floor space. While the CoStar data classifies these buildings as warehouses, further investigation would be needed for each individual facility to determine if goods movement-related activity is being conducted at that location. A map of the locations of these warehouse buildings was then developed by GIS staff with the Planning and Development Services Department of the County of San Diego.[21]

2.3.3 Transportation Modeling Data

The truck trip rate analysis presented in this Supplement was based on transportation activity-based modeling (ABM) data obtained from the San Diego Association of Governments (SANDAG). ABM2+ is the most recent version of the SANDAG ABM designed for application in the 2021 Regional Plan with 2016 as the base year. The District acknowledges that ABM2+ is modeling data instead of actual truck counts and the data is several years old. Nonetheless, it is the most recent publicly available dataset that staff can utilize for a comprehensive truck trip rate analysis of the entire region and is consistent with the most recently adopted regional transportation plan. The District notes that the ABM2+ data presented within this document are being evaluated for proof-of-concept to understand truck activity with the best information currently available. Should the Governing Board direct staff to pursue an ISR, the District would work closely with SANDAG to procure Version ABM3 data when it is made available, and update the truck trip rates accordingly. Version ABM3, which will have updated data with a more recent base year than 2016, is currently under development to support the upcoming 2025 Regional Plan and is anticipated to be released in 2025.

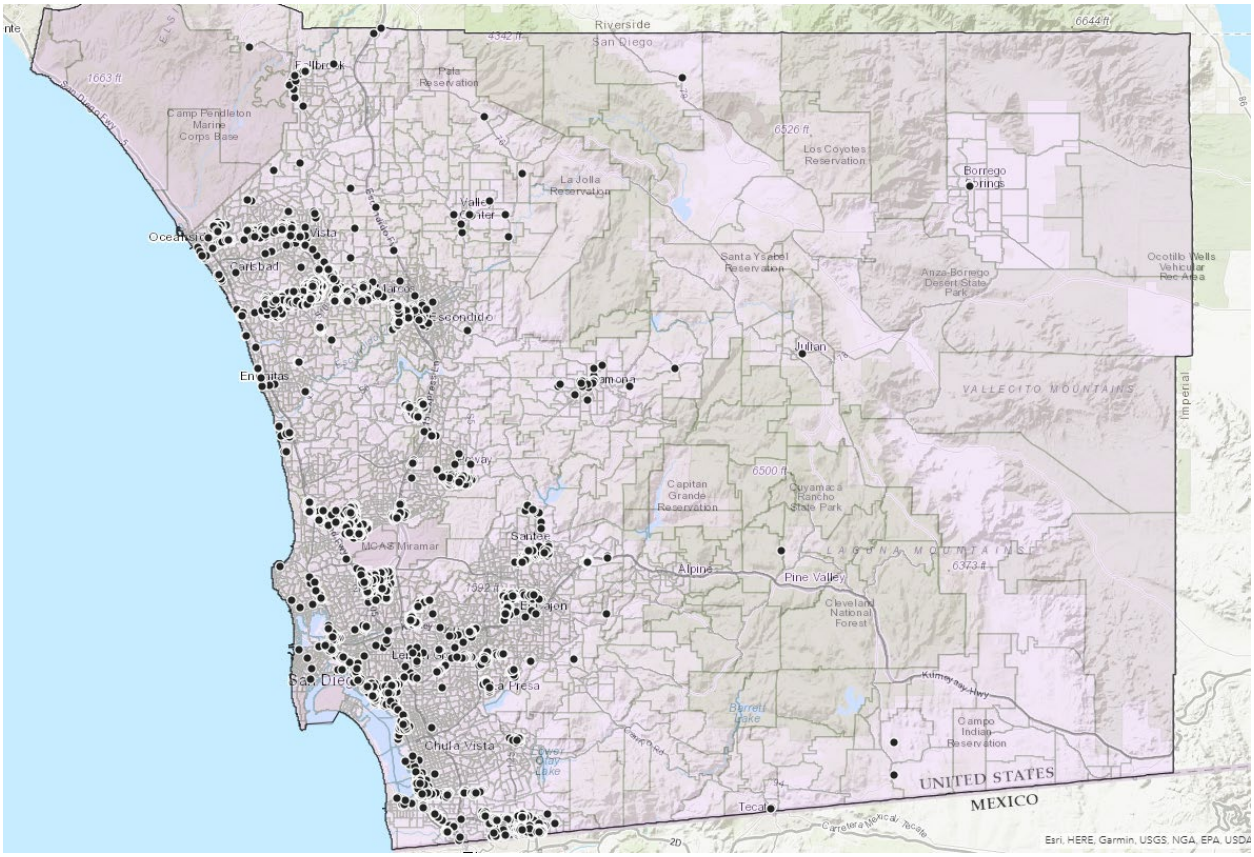
[20] SCAQMD High Cube Warehouse Truck Trip Study, White Paper Summary of Business Survey Results, p. 1, https://www.aqmd.gov/docs/default-source/ceqa/handbook/high-cube-warehouse-trip-rate-study-for-air-quality-analysis/business-survey-summary.pdf?sfvrsn=2

[21] ISR Framework, Figure 1, p. 6, Attachment A

Transportation Analysis Zones (TAZ)

During the WWG process, SANDAG staff recommended that the District utilize ABM2+ data in the form of Transportation Analysis Zones (TAZ) to evaluate truck activity within specific areas where warehouse buildings are located. The TAZ data was then incorporated into the District's warehouse map (Figure 3). Each TAZ is identified with a polygon shape on the map and contains the modeled total truck volume (using ABM2+ data) that are entering and exiting the TAZ on a typical day in San Diego County. The TAZ is the unit of geography most used in conventional transportation planning models. Zones are constructed by census block information. Most often the critical information is the number of automobiles per household, household income, and employment within these zones. This information helps to further the understanding of trips that are produced and attracted within the zone.[22]

Figure 3 – Map of TAZs Modeled for San Diego County in Relation to CoStar Warehouse Locations



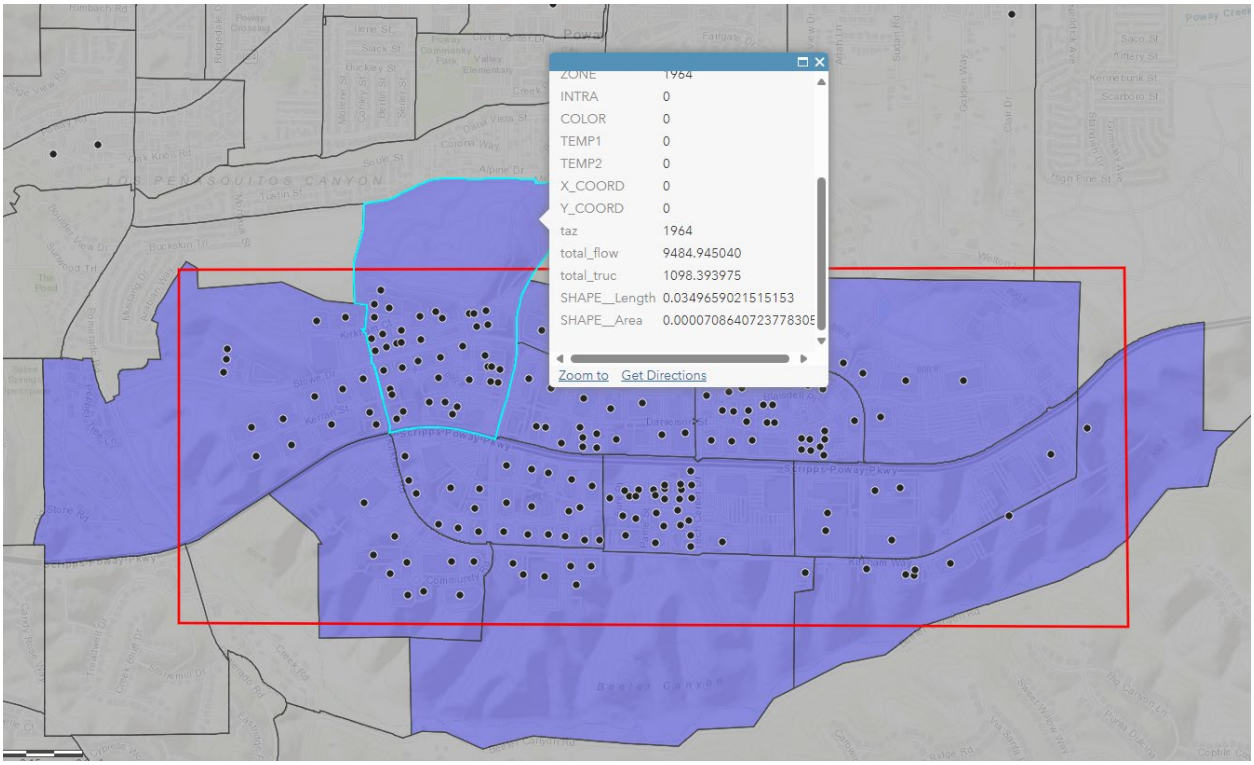
Of the approximately 5,000 TAZs modeled for the San Diego region, 819 zones containing one or more warehouse buildings were identified using the warehouse inventory compiled from the CoStar database.

Figure 4 shows a zoomed in map of the TAZs (shaded in purple) located in a part of the county where warehouses are clustered in the same area (denoted with a red box). In this example, the

[22] https://en.wikipedia.org/wiki/Traffic_analysis_zone

highlighted sample zone (TAZ #1964) has an adjacent information box listing the data for that specific zone. For this TAZ, the total truck volume entering and exiting the zone (labeled as "total_truc") is approximately 1,098 trucks per day. The total truck volume is the sum of all light-, medium-, and heavy-heavy duty trucks servicing warehousing and non-warehousing operations entering and exiting the TAZ.[23]

Figure 4 – Example TAZs

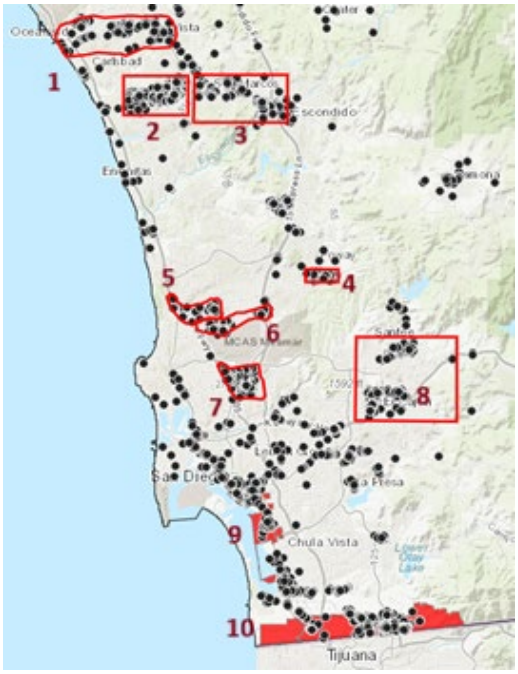


Warehouse Clusters

The TAZs were then grouped into 10 areas of the county where general warehouse clusters are located (Figure 5).

[23] The total truck volume only includes truck trips starting or ending in each TAZ and does not include passthrough trips. Freeway traffic would not be included in the total truck volume unless there is direct access from a TAZ to the freeway.

Figure 5 – Map of Warehouse Clusters in San Diego County



The warehouse clusters indicated in red on the map include the following areas: (1) Oceanside and Vista, (2) Carlsbad and Vista, (3) San Marcos and Escondido, (4) Poway, (5) Sorrento Valley, (6) Miramar, (7) Kearny Mesa, (8) Santee and El Cajon, (9) Portside Community (AB 617), and (10) International Border Community (AB 617).[24]

For each of the 819 TAZs identified with one or more warehouse buildings in the zone, the total truck volumes, number of warehouse buildings, and building square footage were tabulated, and the average warehouse building size for the TAZ was calculated. The TAZs were then grouped by average warehouse building size, and the total aggregate warehouse building square footage and truck volume for each warehouse size category were calculated. The process was completed for each of the 10 warehouse clusters with the results listed in Appendix A: Daily Truck Volumes For Each Warehouse Cluster.

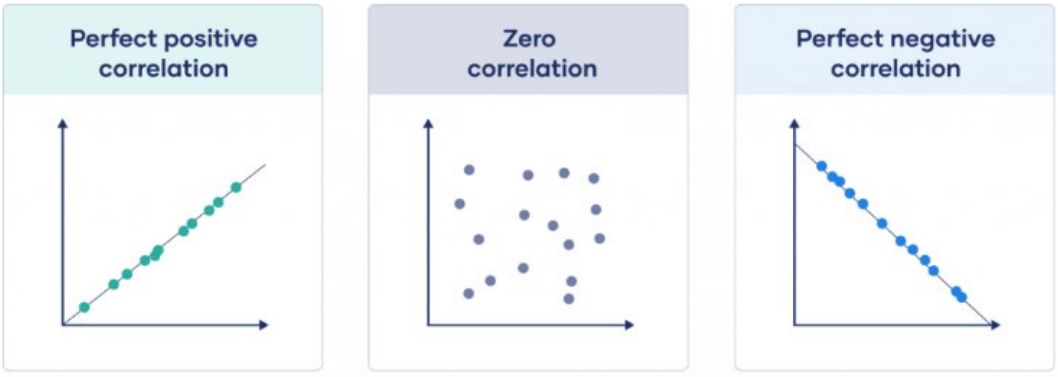
2.3.4 Correlation Coefficients

The correlation coefficients were calculated for each warehouse cluster to determine if there is a relationship between warehouse floor area and truck volumes, and how strong that relationship is, if any. A correlation coefficient is a number between -1 and 1 that indicates the strength and direction of a relationship between variables (Figure 6). In other words, it reflects how related two or more variables are within a dataset. A correlation coefficient of 1 indicates a perfect positive correlation, which means that when one variable changes, the other variable changes in the same direction. A correlation coefficient of 0 indicates that there is no relationship between the variables.

[24] The TAZs located within the AB617 Portside and International Border Communities were identified using the census tracts of both communities. The other warehouse clusters were designated using approximate boundaries to group warehouses located within the same city or area.

A correlation coefficient of -1 indicates a perfect negative correlation, which means that when one variable changes, the other variables change in the opposite direction.[25]

Figure 6 – Correlation Coefficient



As listed in Table 2, nine of the ten clusters in the analysis have correlation coefficient values that are 0.78 or greater. The overall trend is that warehouse floor area (square footage) and total truck volume have a strong positive correlation. This means that as warehouse square footage increases, the truck volume also proportionately increases. Conversely, the opposite would be true as well, that as warehouse square footage decreases, the truck volume also proportionally decreases. Due to this strong correlation between warehouse size and truck volume, staff determined that the methodology presented in this Supplement to estimate truck trip rates specific to the San Diego region is appropriate.

Table 2 – Correlation Coefficients

Cluster	Correlation Coefficient (Total Trucks vs Floor Area)
Oceanside and Vista	0.78
Carlsbad and Vista	0.97
San Marcos and Escondido	0.996
Poway	0.96
Sorrento Valley	0.80
Miramar	0.97
Kearny Mesa	0.96
Santee and El Cajon	0.61
Portside	0.82
International Border	0.84

[25] https://www.scribbr.co.uk/stats/correlation-coefficient-meaning/

2.3.5 Methodology for Estimating Truck Trip Rates

Light-, Medium-, and Heavy-Heavy Duty Truck Volumes

SANDAG ABM2+ data did not classify the types and classes of trucks entering and leaving each TAZ zone evaluated. Consequently, it was necessary to differentiate this truck activity for each TAZ zone to calculate emission estimates based on a fleet distribution consistent with the trucks operating within San Diego County. The aggregate total daily truck volumes for each warehouse size category were separated into light-heavy (LHD), medium-heavy (MHD), and heavy-heavy duty (HHD) truck volumes using the information summarized in Table 3. As listed, the daily LHD, MHD, and HHD truck volumes are 46.8%, 19.7% and 33.5% respectively of the total truck volumes tabulated in Section 2.3.3.[26]

Table 3 – Total Daily Trucks on Nearby Street Segments

Warehouse Floor Area	Total Daily LHD Trucks	Total Daily MHD Trucks	Total Daily HHD Trucks	Total Daily Trucks
100k and Greater Sq Ft	17,546	7,821	14,492	39,859
50k to 100k Sq Ft	32,130	14,036	22,356	68,522
25k to 50k Sq Ft	52,263	21,986	39,273	113,521
12.5k to 25k Sq Ft	79,975	33,617	58,394	171,986
Less Than 12.5k Sq Ft	87,810	36,139	58,366	182,315
Total	**269,723**	**113,599**	**192,880**	**576,203**
% of total	**46.8%**	**19.7%**	**33.5%**	**100.0%**

Adjustment Factors

With truck volume and warehouse floor area data, truck trip rates can then be calculated. However, due to the limitations of the CoStar and SANDAG datasets discussed below and to address concerns brought up by the WWG, it was necessary to account for certain data gaps by developing adjustment factors for this analysis.

Adjustment for Warehousing Activities

The CoStar data has information on approximately 6,700 buildings throughout San Diego County classified for warehousing type use. While these facilities may potentially be engaged in warehousing activities, additional information, which is currently not available to the District, would be needed to confirm the operations at each facility. Thus, some stakeholders in the WWG repeatedly noted that staff had yet to identify the specific facilities conducting warehousing activities as opposed to those conducting manufacturing, retail, or other non-warehousing activities. Staff acknowledges this and will work on refining the warehouse inventory by identifying the facilities used for warehousing activities if an ISR were pursued. Nonetheless, to account for this uncertainty within the CoStar warehouse inventory, an adjustment factor was developed to

[26] Derived from the SANDAG ABM2+ truck volumes along more than 2,000 local street segments located near warehouses in the San Diego region.

estimate the floor area being used for warehousing activities with the following information derived from the CoStar data:

- Buildings classified as warehouse, distribution, or refrigeration/cold storage, which collectively are 54.7% of the total warehouse building floor area in the county; and[27]
- Single tenant occupancies (3,270 warehouse buildings), which is 48.5% of the total warehouse buildings inventory (6,737 warehouse buildings). Multi-tenant occupancies may increase the likelihood of the building, or portions of the building being used for non-warehousing activities.

For calculating truck trip rates in this analysis, it is estimated that at least 26.5% (54.7% x 48.5%) of the aggregate building floor area in each TAZ is likely used for warehousing activities. It should be noted that staff considers this a conservative value since an even greater percentage of the identified warehouse buildings may not be conducting warehousing/goods movement-related operations and would thus not be subject to a possible ISR.[28] There is also the possibility that so few truck trips occur at these facilities that their activity would be considered de minimis and consequently would be exempt from possible ISR requirements.

Adjustment for Trucks Servicing Warehouses

The portion of the total truck volumes that visit warehouses cannot be determined with certainty unless individual reports or facility surveys were completed. To account for this uncertainty, adjustment factors were developed with data from the SANDAG 2022 Commercial Vehicle Survey (CVS) to estimate the composition of the fleets that potentially service warehouses in San Diego County.

SANDAG 2022 Commercial Vehicle Survey

Beginning in the spring of 2022 through January 2023, ETC Institute and a consultant RSG worked with SANDAG to conduct a multistep CVS in San Diego County. Two types of surveys were deployed. An establishment survey collected data about business operations that lead to truck movements. This survey collected information on business characteristics (e.g., industry, employment), shipping and receiving behavior, vehicle fleet composition, and the extent of commercial vehicle operations. A truck travel diary survey collected data about the vehicles' drivers, such as the types of businesses they are employed by and their daily travel. This survey featured multiple data retrieval options, including an app-based option installed on ETC Institute smart devices to collect data about truck driver behavior. The data included vehicle type, where vehicles start and end their day, and the details of each individual trip and stops made over the course of a day (e.g., activity at each stop, trip route, and stop duration).[29]

The comprehensive approach to data collection for the CVS generated a significant volume of valuable information about commercial vehicle and Transportation Network Company travel patterns. This, in turn, provides an in-depth understanding of travel behavior in the San Diego

[27] Floor area: warehouse = 69,448,402 sq ft; distribution = 17,707,003 sq ft; refrigeration/cold storage = 1,009,066 sq ft; total (entire CoStar inventory) = 161,242,760 sq ft.
[28] See Section 2.7.4.
[29] SANDAG 2022 Commercial Vehicle Survey, November, 22, 2023, p. 1, https://www.sandag.org/-/media/SANDAG/Documents/PDF/data-and-research/applied-research-and-performance-monitoring/surveys/commercial-vehicle-survey-report-2022.pdf

region, which will be crucial for future transportation planning and policy-making decisions, in particular for what the region plans to do about warehouses.[30] Utilizing localized data that is also built into SANDAG regional transportation plans and modeling is especially beneficial for the District.

Transportation and Warehousing Sector

The information for the "Transportation" industry group categorized in the CVS was used because that industry group includes the Transportation and Warehousing sector (NAICS codes 48 and 49).[31] The Transportation and Warehousing sector includes industries providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation.[32]

The percentages of the total truck volume entering and exiting each TAZ for the Light-Duty Commercial Vehicle (LCV), Single-Unit Truck (SUT), and Multiunit Truck (MUT) categories were then calculated using the CVS data as shown in Table 4. These categories are also referred to as light-, medium-, and heavy-heavy duty vehicles respectively. In comparison to the Transportation industry, other industry groups such as Construction, Education/Public/Other Services, and Info/FIRE/Professional Services account for higher portions of the MUTs surveyed. However, commercial vehicles operated in these industry groups would not be regulated by a local ISR applicable to warehouses and distribution centers.

Table 4 – Estimated Number of Commercial Vehicles in the San Diego Region[33]

Industry Group	LCV	SUT	MUT	LCV %	SUT %	MUT %
Agriculture/Mining	455	104	92	0.3%	0.2%	0.3%
Manufacturing	4,450	2,161	1,188	3.0%	3.3%	3.3%
Industrial/Utilities	934	213	197	0.6%	0.3%	0.6%
Retail	6,061	5,582	3,140	4.1%	8.5%	8.8%
Wholesale	6,171	2,447	1,975	4.2%	3.7%	5.5%
Construction	16,758	5,295	12,385	11.4%	8.1%	34.8%
Transportation	6,149	1,969	3,193	**4.2%**	**3.0%**	**9.0%**
Info/FIRE/Professional Services	34,584	20,801	5,019	23.5%	31.7%	14.1%
Education/Public/Other Services	41,254	20,641	8,122	28.0%	31.4%	22.8%
Medical/Health Services	21,652	5,159	132	14.7%	7.9%	0.4%
Leisure/Accommodations and Food	8,801	1,337	176	6.0%	2.0%	0.5%
Total	***147,269***	***65,709***	***35,619***	***100%***	***100%***	***100%***

Other Assumptions

In addition, and as referenced above, the number of trucks were assumed to be half of the total volume for a particular TAZ, meaning that the number of trucks entering a zone is the same as the number of trucks exiting that same zone. Also, two trips were assigned per truck, i.e., a truck entering the zone is one trip and then exiting is another trip.

[30] Commercial Vehicle Survey, p. 3
[31] Commercial Vehicle Survey, Table 2, p. 13
[32] https://www.census.gov/naics/?input=48&year=2022&details=48
[33] Adapted from the Commercial Vehicle Survey, Table 12, p.27.

Equations

Equations [1] through [3] were used to calculate the daily truck trip rates for light-heavy (Class 2B to 5), medium-heavy (Class 6 and 7), and heavy-heavy duty trucks (Class 8).

Equation [1]:[34]
Daily trip rate, light-heavy duty trucks (Class 2B to 5)
= [(0.5) x (total trucks) x (46.8%) x (4.2%) x (2 trips/truck)]
÷ [(floor area sq ft) x (26.5%) ÷ 1,000]

Equation [2]:[35]
Daily trip rate, medium-heavy duty trucks (Class 6 to 7)
= (0.5) x (total trucks) x (19.7%) x (3.0%) x (2 trips/truck)
÷ [(floor area sq ft) x (26.5%) ÷ 1,000]

Equation [3]:[36]
Daily trip rate, heavy-heavy duty trucks (Class 8)
= (0.5) x (total trucks) x (33.5%) x (9.0%) x (2 trips/truck)
÷ [(floor area sq ft) x (26.5%) ÷ 1,000]

2.3.6 Truck Trip Rate Analysis Results

Table 5 lists the estimated countywide average daily truck trip rates per 1,000 sq ft for various warehouse sizes. The average daily truck trip rates for each of the 10 warehouse clusters are listed in Appendix B: Warehouse Cluster Truck Trip Rates.

Table 5 – Average Daily Truck Trip Rates for San Diego County*

Warehouse Floor Area (sq ft)	Class 2B to 5 Daily Truck Trip Rate (per 1,000 sq ft)	Class 6 to 7 Daily Truck Trip Rate (per 1,000 sq ft)	Class 8 Daily Truck Trip Rate (per 1,000 sq ft)
100k and greater	0.05	0.02	0.08
50k to <100k	0.09	0.03	0.14
25k to <50k	0.12	0.04	0.19
12.5k to <25k	0.15	0.05	0.23
<12.5k	0.31	0.09	0.48
County average (all sizes)	**0.14**	**0.04**	**0.22**

*Preliminary estimates subject to change.

[34] Gross vehicle weight rating (GVWR) for light-heavy duty trucks: Class 2B - 8,501 to 10,000 lbs; Class 3 - 10,001 to 14,000 lbs; Class 4 - 14,001 to 16,000 lbs; and Class 5 - 16,001 to 19,500 lbs.
[35] GVWR for medium-heavy duty trucks: Class 6 - 19,501 to 26,000 lbs; and Class 7 - 26,001 to 33,000 lbs.
[36] GVWR for heavy-heavy duty trucks: Class 8 - greater than 33,000 lbs.

The trend in the results shows that for each truck class the daily truck trip rates increase as warehouse floor area decreases. This does **not** necessarily mean that smaller warehouses generally receive more truck visits compared to larger warehouses. The estimated truck trips are calculated with floor area and the applicable truck trip rate for a specific warehouse size category.

For example, using the trip rates listed in Table 5, a 166k sq ft warehouse, with a rate of 0.08 Class 8 truck trips per 1,000 sq ft, results in an estimated 14 (rounded) truck trips per day (166,181 x 0.08 / 1,000). In comparison, an 8.5k sq ft warehouse, with a rate of 0.48 Class 8 truck trips per 1,000 sq ft, results in an estimated 4 truck trips per day (8,550 x 0.48 / 1,000). In this example, an 8.5k sq ft warehouse with a truck trip rate six times greater than the rate for a 166k sq ft warehouse (0.48 vs 0.08 trips per 1,000 sq ft) results in fewer estimated daily Class 8 truck trips (4 vs 14 trips). As shown in Table 6, the estimated daily truck trips for each truck class decrease as warehouse building floor area decreases.

Table 6 – Average Daily Truck Trips for San Diego County*

Warehouse Floor Area (sq ft)	Average Warehouse Floor Area[37] (sq ft)	Class 2B to 5 Daily Truck Trips	Class 6 to 7 Daily Truck Trips	Class 8 Daily Truck Trips	Total Daily Truck Trips
100k and greater	166,181	8.9	2.7	13.7	**25.2**
50k to <100k	67,190	6.2	1.9	9.6	**17.7**
25k to <50k	33,762	4.2	1.3	6.4	**11.8**
12.5k to <25k	18,527	2.8	0.9	4.3	**8.0**
<12.5k	8,550	2.7	0.8	4.1	**7.6**

*Preliminary estimates subject to change.

For comparison, Table 7 lists the truck trip rates estimated by the SCAQMD when they developed their warehouse Rule 2305.[38] SCAQMD estimated trip rates for Class 4-7 and Class 8 trucks for 3 warehouse categories: those with floor area of 200k sq ft or more, warehouses between 100 and 200k sq ft, and cold storage facilities 100k sq ft or more. The estimated rates developed by the SCAQMD range from 0.12 to 0.75 daily truck trips per 1,000 sq ft.

[37] Average floor area for all warehouse buildings in each warehouse size category in San Diego County.

[38] SCAQMD, Rule 2305, Staff Report, Table 5, p. 47

Table 7 - SCAQMD R2305 Trip Rates

Category or Building Size	Class 4 - 7 (daily truck trips per 1,000 sq ft)	Class 8 (daily truck trips per 1,000 sq ft)
≥200k sq ft	0.12	0.33
≥100k to <200k sq ft	0.14	0.21
Cold storage (≥100k sq ft)	0.29	0.75

All the truck trip rates estimated in staff's analysis are less than 1.0 trips per 1,000 sq ft for each warehouse size category. This is significant because the trip rates derived from this analysis, which utilized San Diego County-specific traffic data as requested by the Governing Board, are within the range of the trip rates listed in other references.[39] Due to the proximity in scale with other referenced trip rates, the overall strong positive correlation between truck volume and building floor area, and the unavailability of reported truck trip rate information from warehouse operators, staff determined that it was reasonable and appropriate to use the truck trip rates calculated in the TAZ-based analysis (as described above) to estimate baseline emissions from warehousing activities in the San Diego region.

2.4 AIR QUALITY AND HEALTH BENEFITS

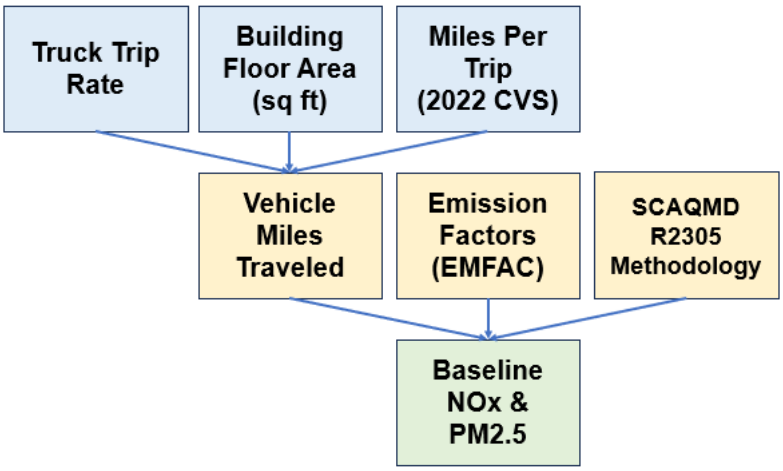
2.4.1 Methodology for Estimating Baseline Emissions

Figure 7 illustrates an overview of the methodology for estimating baseline emissions using the results from the truck trip rate analysis in the preceding section. Baseline emissions for nitrogen oxide (NOx) and particulate matter (PM2.5) were calculated with the methodology used by the SCAQMD during the development of their warehouse Rule 2305.[40]

[39] Appendix C: Other Referenced Truck Trip Rates

[40] SCAQMD, Rule 2305, Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program, Staff Report, May 2021, pp. 47-50, http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-May7-027.pdf?sfvrsn=10

Figure 7 – Baseline Emissions Methodology



Vehicle Miles Traveled (VMT)

The total vehicle miles traveled (VMT) were calculated with warehouse building floor area, the truck trip rates derived with the TAZ-based analysis, and the weighted average truck trip lengths per vehicle class referenced from the SANDAG CVS (light = 8.6 miles, medium = 7.0 miles, heavy = 14.0 miles).[41] The weighted average truck trip lengths account for the relative importance or frequency of some factors in the data collected in the survey. The weighted average truck trip lengths were used in this analysis because the values are slightly more conservative than the non-weighted average trip lengths.

Baseline Years 2028 and 2032

Because emission benefits are anticipated to occur from various CARB mobile source regulations, the baseline emissions from warehousing activities in San Diego County are forecasted to decrease over time even if a local warehouse ISR is not developed for the region. To account for baseline emissions that may decrease with each subsequent year and to determine the level of emission reductions a potential warehouse ISR may achieve in a future year, calendar year 2028 was evaluated as the first baseline emissions year. Baseline year 2028 was based on the scenario of the Governing Board directing the District in 2025 to proceed with the development of a warehouse ISR. This would be followed by 1.5 to 2 years for the rule development process to be completed with a projected rule adoption date in 2027. Using a similar three-year phased-in compliance schedule as provided in SCAQMD Rule 2305, the first initial compliance period for Phase 1 facilities subject to a potential ISR would be calendar year 2028. Baseline year 2032 was also evaluated as the year when all subject facilities would be fully phased into the ISR.[42]

[41] Commercial Vehicle Survey, Table 17, p. 45

[42] Phase 1 (largest facilities): phased-in compliance periods 2028 through 2030. Phase 2 (medium facilities): phased-in compliance periods 2029 through 2031. Phase 3 (smallest facilities): phased-in compliance periods 2030 to 2032. Calendar year 2032 also aligns with the region's current attainment deadline to attain the 2015 federal ozone standard of 70 parts per billion (ppb).

Emission Rates and Scaling Factors

Baseline composite truck emission rates (ER) were calculated for heavy-duty trucks (Class 2B-5, Class 6-7, and Class 8) for calendar years 2028 and 2032 using CARB's EMFAC2021.[43] EMFAC2021 provides activity and emission rates for all on-road vehicles that operate within California. However, the analysis presented here is limited to those categories most likely to deliver goods to and from warehouses.[44] Composite truck emission rates were calculated as the sum of each truck category's emissions rate multiplied by its corresponding VMT and then divided by the total sum of VMTs.[45]

In addition, and in response to WWG stakeholder concerns about the emission reductions from mobile source regulations with a possible ISR, scaling factors (SF) were provided by CARB staff in October 2024.[46] These scaling factors were used to adjust the estimated emission rates to account for the emission benefits forecasted to occur from CARB and federal regulations that are not included in EMFAC2021 (see Equation [5]). The additional CARB regulations accounted for in this analysis with the use of these scaling factors are the Clean Miles Standard Program (CMS), Advanced Clean Cars II (ACCII), and Clean Truck Check (also known as Heavy-Duty Inspection and Maintenance, HDIM). In addition, the Federal Clean Trucks Plan (CTP) is also accounted for in this analysis. Thus, the estimated baseline emissions are the net emissions after the state and federal regulations are in effect.

Note that the emission benefits that would have been anticipated from CARB's Advanced Clean Fleets Regulation (ACF) are not included in this Supplement due to CARB's withdrawal of their request for a waiver from the EPA. See section on the Advanced Clean Fleets Regulation (ACF).

Equations

Per the SCAQMD Rule 2305 methodology, Class 8 truck emissions were reduced by an adjustment factor of 22.2% to account for multi-stop trips made in between warehouses by trucks.[47] Also, the potential idling emissions associated with warehousing activities were estimated using idling emissions factors derived from EMFAC2021 and the ratio of warehouse truck VMT to the total VMT for these truck classes.[48] Using Equations [4] through [7] below, the daily NOx and PM2.5 running and idling exhaust emissions were calculated for calendar years 2028 and 2032. The total NOx and PM2.5 emissions were then converted from tons per day to tons per year using 312 operational days per year.[49]

Equation [4]:
VMT Associated with Warehouses = Warehouse size (ksf) x trip rates (trips/ksf) x miles/trip

[43] https://arb.ca.gov/emfac/
[44] SCAQMD, Rule 2305, Staff Report, Table 7, p. 48
[45] SCAQMD, Rule 2305, Staff Report, footnote 79, p. 48
[46] Appendix D: EMFAC2021 Off-Model Scaling Factors
[47] Derived from Southern California Association of Governments, Industrial Warehousing Study, Task 4. Understanding Facility Operations, April 2018, Table 3.4, p. 3-24, https://scag.ca.gov/sites/main/files/file-attachments/task4_understandingfacilityoperations.pdf.
[48] SCAQMD, Rule 2305, Staff Report, p. 49
[49] CARB, Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons, August 30, 2022, footnote 337, p. 148, https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf

Equation [5]:[50]

Composite Truck Emission Rate (ER)

$$= [ER_1 \times VMT_1 \times (SF_{CMS})_1 \times (SF_{ACCII})_1 \times (SF_{HDIM})_1 \times (SF_{CTP})_1 \times (SF_{ACF})_1 + \ldots$$
$$\ldots + ER_n \times VMT_n \times (SF_{CMS})_n \times (SF_{ACCII})_n \times (SF_{HDIM})_n \times (SF_{CTP})_n \times (SF_{ACF})_n]$$
$$\div [VMT_1 + \ldots + VMT_n]$$

Equation [6]:

Running Exhaust Emissions Associated with Warehouses

$$= ER_{Class\ 8} \times Warehouse\ VMT_{Class\ 8} \times (1\text{-}0.222)$$
$$+ ER_{Class\ 6\text{-}7} \times Warehouse\ VMT_{Class\ 6\text{-}7}$$
$$+ ER_{Class\ 2B\text{-}5} \times Warehouse\ VMT_{Class\ 2B\text{-}5}$$

Equation [7]:

Idling Exhaust Emissions Associated with Warehouses

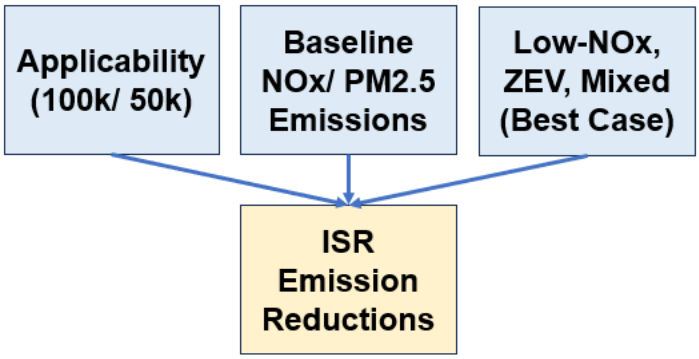
$$= (Warehouse\ VMT_{Class\ 8} \div Total\ VMT_{Class\ 8}) \times Idling\ ER_{Class\ 8} \times (1\text{-}0.222)$$
$$+ (Warehouse\ VMT_{Class\ 6\text{-}7} \div Total\ VMT_{Class\ 6\text{-}7}) \times Idling\ ER_{Class\ 6\text{-}7}$$
$$+ (Warehouse\ VMT_{Class\ 2B\text{-}5} \div Total\ VMT_{Class\ 2B\text{-}5}) \times Idling\ ER_{Class\ 2B\text{-}5}$$

A summary of the baseline emission estimates can be found in Section 2.4.3.

2.4.2 Methodology for Estimating Emission Reductions

Figure 8 illustrates an overview of the methodology for estimating NOx and PM2.5 emission reductions. With baseline emissions calculated, potential emission reductions were conservatively calculated that may be achieved if a warehouse ISR was developed for San Diego County.

Figure 8 – Emission Reductions Methodology



In line with the Governing Board's direction, the applicability threshold for a possible warehouse ISR was assessed for two size ranges: warehouses with floor area of 100k sq ft or more, and warehouses with floor area of 50k sq ft or more. For each applicability threshold (100k and 50k sq ft), three best-case emissions reduction scenarios were evaluated.

[50] The scaling factors for CARB's Advanced Clean Fleets (ACF) regulation were adjusted to 1.0 (i.e., no emission benefits) due to CARB's withdrawal for a waiver from the EPA.

- **Scenario 1** – 100% of subject facilities select the Low-NOx trucks option, which would result in a 90% NOx emissions reduction compared to standard diesel trucks operating today.[51]

- **Scenario 2** – 100% of subject facilities select the ZEV trucks option, which would result in 100% NOx and PM2.5 emissions reduction (no tailpipe NOx and PM2.5 emissions) compared to standard diesel trucks operating today.

- **Scenario 3** – Subject facilities select Low-NOx trucks, ZEV trucks, or other compliance options using the same compliance option implementation percentages reported per Rule 2305 for the SCAQMD region.[52] Near-Zero Emissions (NZE), also referred to as Low-NOx, truck visits account for 40% of the total earned WAIRE Points in SCAQMD for Phase 2 facilities (150k to <250k sq ft), compliance year 2023. Furthermore, zero-emission (ZE) yard hostler usage and ZE truck acquisitions and visits account for 38% of the total WAIRE points earned to date.[53]

Courts have concluded that providing a menu of compliance options similar to SCAQMD Rule 2305 is a critical aspect to avoiding federal preemption issues and de-facto purchase mandates. Consequently, any potential warehouse ISR that the District may develop would need to provide a menu of compliance options for facilities to choose from, including those which may not directly reduce NOx and PM emissions (e.g., installation of solar panels or charging infrastructure). Two of the control options evaluated are best-case scenarios that would result in direct emission reductions assuming all subject facilities select Scenario 1 (100% Low-NOx), or all select Scenario 2 (100% ZEV). Thus, Scenarios 1 and 2 would potentially result in the maximum level of emission reductions that a potential ISR could achieve. While these are presented for reference, the District believes these emission reduction estimates would not occur in practice based on the options that facilities are utilizing to comply with SCAQMD Rule 2305.

Scenario 3 (Low-NOx, ZEV, Other) was thus evaluated as a potential "achieved-in-practice," i.e., more realistic, scenario based on the reported implementation rates in the SCAQMD region of certain Low-NOx and ZE compliance options that would result in direct emission reductions at subject facilities. Scenario 3 also reflects the true cost of compliance because it accounts for facilities accruing WAIRE points through the "Other" category, which includes alternative options such as mitigation fees and air filtration installations. It's important to note that Scenario 3 is an approximation only and was based on the reported implementation rates in the SCAQMD region, which is the best information currently available. Due to multiple compliance options that would be available in a potential warehouse ISR that operators may select from, and other characteristics unique to the San Diego region (e.g., warehouse size distribution), staff cannot forecast the implementation rates that may occur for future years in the San Diego region.

[51] NOx standards for heavy-duty engines: EPA = 0.20 g/bhp-hr; CARB certified Optional Low-NOx = 0.02 g/bhp-hr. PM2.5 emission reductions are not credited under Scenario 1 because diesel and natural gas engines are certified to the same emissions standard, and thus there are no reductions to be claimed. However, significant reductions of diesel PM emissions, which are a subset of PM2.5 emissions, would be anticipated as a co-benefit from the transition of diesel fuel to natural gas combustion.

[52] Appendix F: Average Annual Compliance Costs, Figure F1, (Phase 2, 2023).

[53] The implementation of the other compliance options, including ZE infrastructure and usage, mitigation fee and air filters (collectively 22% of the total earned WAIRE Points), are not anticipated to result in direct emission reductions at subject facilities.

2.4.3 Emissions Analysis Results

Tables 8 and 9 list the estimated NOx and PM2.5 emission baselines for calendar years 2028 and 2032 respectively, and the corresponding estimated emission reductions for Scenario 1 (100% Low-NOx), Scenario 2 (100% ZEV), and Scenario 3 (Low-NOx, ZEV, Other) for those two baseline years.

As listed in Table 8, under Scenario 3 for the 2028 baseline year, a local warehouse ISR, if adopted, could be expected to reduce total NOx emissions by as much as 13 to 27 tons per year, and total PM2.5 emissions by as much as 0.1 to 0.3 tons per year in San Diego County.

As listed in Table 9, under Scenario 3 for the 2032 baseline year, the total NOx emission reductions are expected to be approximately 10 to 20 tons per year, and total PM2.5 emission reductions to be 0.1 to 0.2 tons per year in San Diego County.[54]

For the purposes of presenting emissions and reduction estimates in this Supplement, three areas were evaluated: Portside Community, International Border Community, and the rest of San Diego County.[55]

Best-Case Estimates

It's important to note there is a possibility that may likely decrease the estimated baseline emissions and reductions listed in Tables 8 and 9. This analysis assumes that all the facilities identified in the various size categories conduct warehousing activities and would be subject to a potential warehouse ISR. However, a portion of these facilities may likely be conducting non-warehousing activities (e.g., retail, office, or other light commercial use) in buildings classified as warehouses, and thus would not be subject to a potential warehouse ISR. While the District used a conservative adjustment factor to account for such non-warehousing activities when estimating truck trip rates (Adjustment Factors), a greater percentage of the warehouse inventory may not be conducting goods movement-related activities, and thus would not be subject to a potential ISR.[56]

Therefore, the baseline emissions, and consequently emission reductions, are likely to be ***less in practice*** than the estimated values listed in Tables 8 and 9. Consequently, the values in Tables 8 and 9 should be considered best-case estimates.

[54] NOx and PM2.5 emission reductions are anticipated to further decrease each year due to increasing emission benefits from various CARB mobile source regulations.
[55] If a warehouse ISR rulemaking is pursued, estimates for the 10 warehouse clusters would also be presented (see Section 2.3.3 on Warehouse Clusters).
[56] See Section 2.7.4 - District Study of Warehouse Facilities in the Portside Community.

Table 8 – 2028 Baseline Emissions and Reductions*

Region	ISR Applicability Threshold (sq ft)	Warehouse Count	Baseline Emissions		Scenario 1 (Low-NOx) Emission Reductions[57]		Scenario 2 (ZEV) Emission Reductions		Scenario 3 (Low-NOx, ZEV, Other) Emission Reductions	
			NOx (tons per year)	PM2.5 (tons per year)	NOx (tons per year)	PM2.5 (tons per year)	NOx (tons per year)	PM2.5 (tons per year)	NOx (tons per year)	PM2.5 (tons per year)
Portside	100k and greater	5	0.4	0.01	0.3	N/A	0.4	0.01	0.3	0.003
International Border	100k and greater	46	3.2	0.06	2.9	N/A	3.2	0.06	2.4	0.02
County w/o AB617	100k and greater	192	13.8	0.27	12.4	N/A	13.8	0.27	10.2	0.10
Total	**100k and greater**	**243**	**17.4**	**0.33**	15.6	N/A	17.4	0.33	**12.8**	**0.13**
Portside	50k and greater	29	1.4	0.03	1.2	N/A	1.4	0.03	1.0	0.01
International Border	50k and greater	102	5.7	0.11	5.2	N/A	5.7	0.11	4.2	0.04
County w/o AB617	50k and greater	526	29.0	0.56	26.1	N/A	29.0	0.56	21.4	0.21
Total	**50k and greater**	**657**	**36.1**	**0.69**	32.5	N/A	36.1	0.69	**26.7**	**0.26**

*Preliminary estimates subject to change.

[57] NOx standards for heavy-duty engines: EPA = 0.20 g/bhp-hr; CARB certified Optional Low-NOx = 0.02 g/bhp-hr. PM2.5 emission reductions are not credited under Scenario 1 because diesel and natural gas engines are certified to the same emissions standard, and thus there are no reductions to be claimed. However, significant reductions of diesel PM emissions, which are a subset of PM2.5 emissions, would be anticipated as a co-benefit from the transition of diesel fuel to natural gas combustion.

Table 9 – 2032 Baseline Emissions and Reductions*

Region	ISR Applicability Threshold (sq ft)	Warehouse Count	Baseline Emissions		Scenario 1 (Low-NOx) Emission Reductions[58]		Scenario 2 (ZEV) Emission Reductions		Scenario 3 (Low-NOx, ZEV, Other) Emission Reductions	
			NOx (tons per year)	PM2.5 (tons per year)	NOx (tons per year)	PM2.5 (tons per year)	NOx (tons per year)	PM2.5 (tons per year)	NOx (tons per year)	PM2.5 (tons per year)
Portside	100k and greater	5	0.3	0.01	0.2	N/A	0.3	0.01	0.2	0.002
International Border	100k and greater	46	2.4	0.06	2.2	N/A	2.4	0.06	1.8	0.02
County w/o AB617	100k and greater	192	10.3	0.25	9.3	N/A	10.3	0.25	7.6	0.09
Total	**100k and greater**	**243**	**13.0**	**0.31**	11.7	N/A	13.0	0.31	**9.6**	**0.12**
Portside	50k and greater	29	1.0	0.02	0.9	N/A	1.0	0.02	0.8	0.009
International Border	50k and greater	102	4.3	0.10	3.9	N/A	4.3	0.10	3.2	0.04
County w/o AB617	50k and greater	526	21.6	0.52	19.5	N/A	21.6	0.52	16.0	0.20
Total	**50k and greater**	**657**	**26.9**	**0.64**	24.2	N/A	26.9	0.64	**19.9**	**0.24**

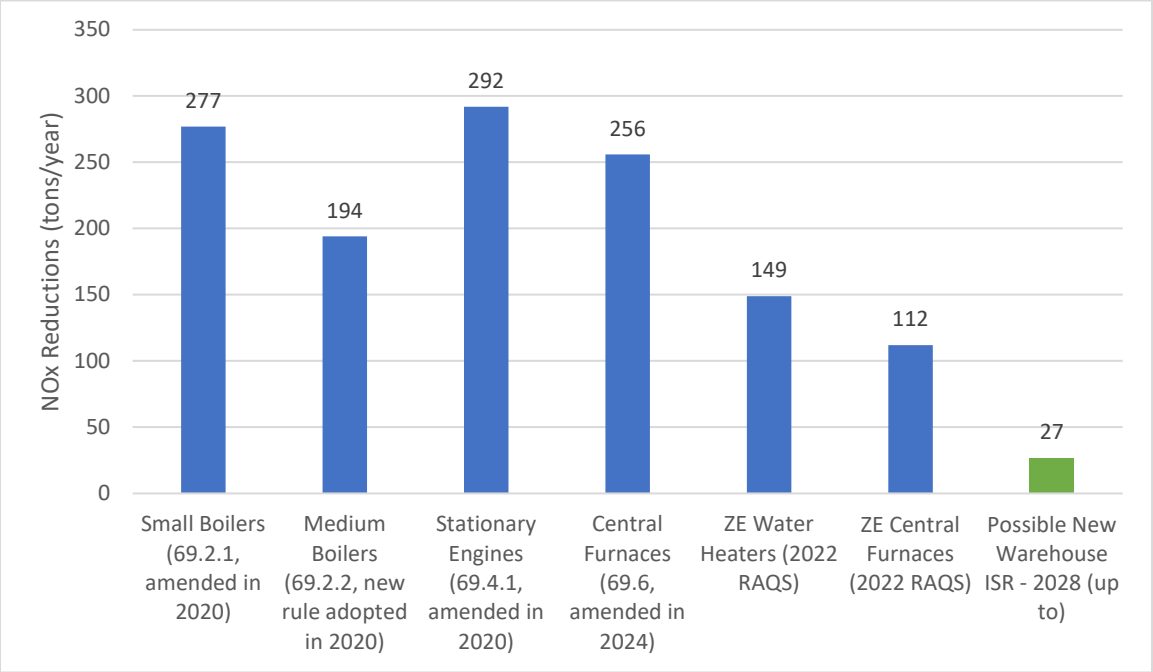
*Preliminary estimates subject to change.

Recent and Possible Rulemakings

For contextual reference, Figure 9 below illustrates the emission reduction benefits from recent and possible future stationary source rulemakings compared to potential reductions estimated from a possible new warehouse ISR. In July 2020, the District adopted rules that are estimated to reduce NOx emissions upon full rule implementation from small boilers (Rule 69.2.1) by 277 tons per year, medium boilers (Rule 69.2.2) by 194 tons per year, and stationary engines (Rule 69.4.1) by 292 tons per year. Also, in November 2024 the District adopted amendments to its central furnace rule (Rule 69.6) that are estimated to reduce NOx emissions by 256 tons per year upon full rule implementation.

[58] NOx standards for heavy-duty engines: EPA = 0.20 g/bhp-hr; CARB certified Optional Low-NOx = 0.02 g/bhp-hr. PM2.5 emission reductions are not credited under Scenario 1 because diesel and natural gas engines are certified to the same emissions standard, and thus there are no reductions to be claimed. However, significant reductions of diesel PM emissions, which are a subset of PM2.5 emissions, would be anticipated as a co-benefit from the transition of diesel fuel to natural gas combustion.

Figure 9 – Estimated NOx Reduction Comparison to Recent/Possible Rulemakings



A similar graph to Figure 9 was previously included in the ISR Framework.[59] However, the chart has now been updated to reflect new emission reduction estimates for a potential ISR (in green), as well as the addition of the central furnace measure most recently adopted, and two other potential measures explained below.

Estimated emission reductions for two "further study measures" outlined in the District's most recent air quality plan to attain state ozone standards, the "2022 Regional Air Quality Strategy" (RAQS), were also included for reference. As noted in the 2022 RAQS, these control measures require a more detailed analysis and more time to assess potential adoption/implementation in San Diego County. While they will be evaluated during the next three years by staff, forthcoming State regulations could mandate the need to amend corresponding local rules in a shorter timeframe. For Further Study Measure FS-7, Zero-Emission Water Heaters, the possible incorporation of zero-emission standards for all new/existing water heaters has the potential to reduce NOx emissions by at least 149 tons per year (0.4 tons per day), if such limits were determined to be feasible, cost-effective, and adopted. For Further Study Measure FS-10, Zero-Emission Central Furnaces, the possible incorporation of zero-emission standards for all new/existing fan-type central furnaces has the potential to reduce NOx emissions by at least 112 tons per year (0.3 tons per day), if such limits were determined to be feasible, cost-effective, and adopted.[60]

The two further study measures identified (if adopted) would provide much needed NOx emission reductions in under-resourced communities and the region at large, and directly in the homes of all citizens countywide where the public spends most of their time. They would also provide

[59] ISR Framework, Figure 2, p. 11, Attachment A

[60] SDAPCD, 2022 Revision of the Regional Air Quality Strategy, Attachment I, pp. I-10 and I-12, https://www.sdapcd.org/content/dam/sdapcd/documents/grants/planning/Att.%20A%20-%202022%20RAQS.pdf.

significant NOx reductions to help support attainment of near-term federal attainment deadlines in 2032.

In addition, the estimated NOx emission reductions for the adopted District rules described above ranged between 55% and 67% of baseline emissions. In comparison, as listed in Table 8, a potential warehouse ISR is estimated to result in a NOx emission reduction of 74% (26.7 ÷ 36.1). Though the percentage of NOx emissions reduced from baseline emissions are estimated to be greater for a potential warehouse ISR than those from other District rules, the absolute NOx emissions reduced from an ISR are estimated to be less due to the lesser estimated baseline NOx emissions attributed to warehousing activities.

ISR Framework Emission Reduction Estimates

The preliminary emission reduction estimates presented in the ISR Framework were 50 tons per year for NOx, and 0.27 tons per year for DPM, which are greater than the estimates presented here.[61] The preliminary ISR Framework estimates were based on the best available information at the time, which consisted of scaling of the SCAQMD emission reduction estimates in proportion to the District's smaller population of warehouses with at least 100,000 sq. ft. of indoor floor space. The difference between the emission reduction estimates was anticipated due to the different methodologies used between the ISR Framework and this Supplement.

2.4.4 Public Health Benefits

Public health benefits in 2028 and 2032 that could be anticipated from a potential warehouse ISR were estimated using the EPA's CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA).[62] The NOx and PM2.5 emission reductions under Scenario 3 (Low-NOx, ZEV, Other) were used as inputs for the COBRA screening tool to calculate the economic value of the health benefits associated with those anticipated emission reductions. Scenario 3 was used because the emission reductions were the most realistic estimate of the three scenarios evaluated. Table 10 summarizes some of the preliminary results of the COBRA tool if a warehouse ISR was adopted. This includes the changes in certain health incidences, which are the number of events that would be avoided per year because of the emission reductions, and the low and high value monetary health benefits, i.e., avoided healthcare costs and lost productivity corresponding with those avoided health incidences.[63] In other words, these values indicate the potential health benefits that would be forgone if a potential warehouse ISR as evaluated in this Supplement is not adopted by the District.

[61] ISR Framework, p. 11, Attachment A
[62] https://cobra.epa.gov/
[63] See Appendix E: EPA COBRA Output Tables for additional information about the total health benefits estimated.

Table 10 – Total Health Benefits for Scenario 3 (Low-NOx, ZEV, Other)*

Year	ISR Applicability Threshold (sq ft)	Change in Incidence (per year)				Total Health Benefits (per year)	
		Minor Restricted Activity Days	School Loss Days	Work Loss Days	Health Related Incidences (up to)[64]	Low Value	High Value
2028	100k and greater	6.3	17.0	1.1	32.6	$410,984	$514,534
2028	50k and greater	13.1	35.4	2.2	67.9	$854,940	$1,068,368
2032	100k and greater	5.1	12.7	0.9	24.6	$312,957	$395,797
2032	50k and greater	10.4	26.4	1.8	51.0	$646,898	$816,603

*Preliminary estimates subject to change.

2.5 COMPLIANCE COSTS AND COST-EFFECTIVENESS

The total annual compliance costs for San Diego County were estimated using a weighted annual cost of $0.26/sq ft derived from SCAQMD's information on average costs and WAIRE Menu Items implemented.[65] As listed in Table 11, the average annual compliance costs that would be incurred by each local warehouse are estimated to be between $29,000 and $49,000 per year. Actual costs would vary depending on the site-specific actions taken to reduce emissions. The District acknowledges these compliance costs are higher than initially estimated in the ISR Framework ($14,400 to $26,100 per year).[66] This increase in the estimated compliance costs was due to a greater average cost per square feet used in this Supplement than the costs used in the ISR Framework ($0.10 to $0.14/sq ft).[67]

State law requires air districts to evaluate the cost-effectiveness of proposed rules.[68] Cost-effectiveness is typically expressed in terms of total compliance costs (dollars) per unit of emissions reduced (tons or pounds). Cost-effectiveness values, expressed in dollars per pound of NOx emissions reduced ($/lb), were estimated using the total annual compliance costs and the emission reductions listed in Tables 8 and 9 for Scenario 3.[69]

[64] Health related incidences include the following: total mortality; nonfatal heart attacks; infant mortality; total hospital admits, all respiratory; total emergency room visits, respiratory; total asthma onset; total asthma symptoms; emergency room visits, asthma; lung cancer; hospital admits (cardio-cerebro/peripheral vascular disease, Alzheimer's disease, Parkinson's disease); stroke; total hay fever/rhinitis; cardiac arrest, out of hospital; and emergency room visits, all cardiac. See Appendix E: EPA COBRA Output Tables.

[65] Appendix F: Average Annual Compliance Costs

[66] ISR Framework, p. 13, Attachment A

[67] Average compliance costs used for the ISR Framework were derived from: SCAQMD, Final Socioeconomic Impact Assessment for Proposed Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments To Reduce Emissions (WAIRE) Program and Proposed Rule 316 – Fees for Rule 2305, May 2021, p. ES-9, http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-May7-027.pdf?sfvrsn=10.

[68] California Health and Safety Code Section 40703

[69] For Scenarios 1 and 2, see Appendix G: Cost-Effectiveness Scenarios 1 & 2.

As listed in Table 11, preliminary cost-effectiveness estimates for a potential warehouse ISR in San Diego County currently range between $362 to $464/lb of NOx reduced in 2028. The cost-effectiveness values are estimated to increase to a range between $485 and $622/lb in 2032 as NOx emission reductions are anticipated to decrease each year due to increasing emission benefits from various CARB mobile source regulations.[70]

Table 11 – Compliance Costs and Cost-Effectiveness for Scenario 3 (Low-NOx, ZEV, Other)*

ISR Applicability Threshold (sq ft)	Warehouse Count	Total Floor Area (sq ft)	Total Cost (per year)	Average Cost Per Warehouse (per year)	2028 Cost-Effectiveness ($/lb)	2032 Cost-Effectiveness ($/lb)
100k and greater	243	45,719,544	$11,932,039	$49,103	$464	$622
50k and greater	657	74,121,426	$19,344,457	$29,444	$362	$485

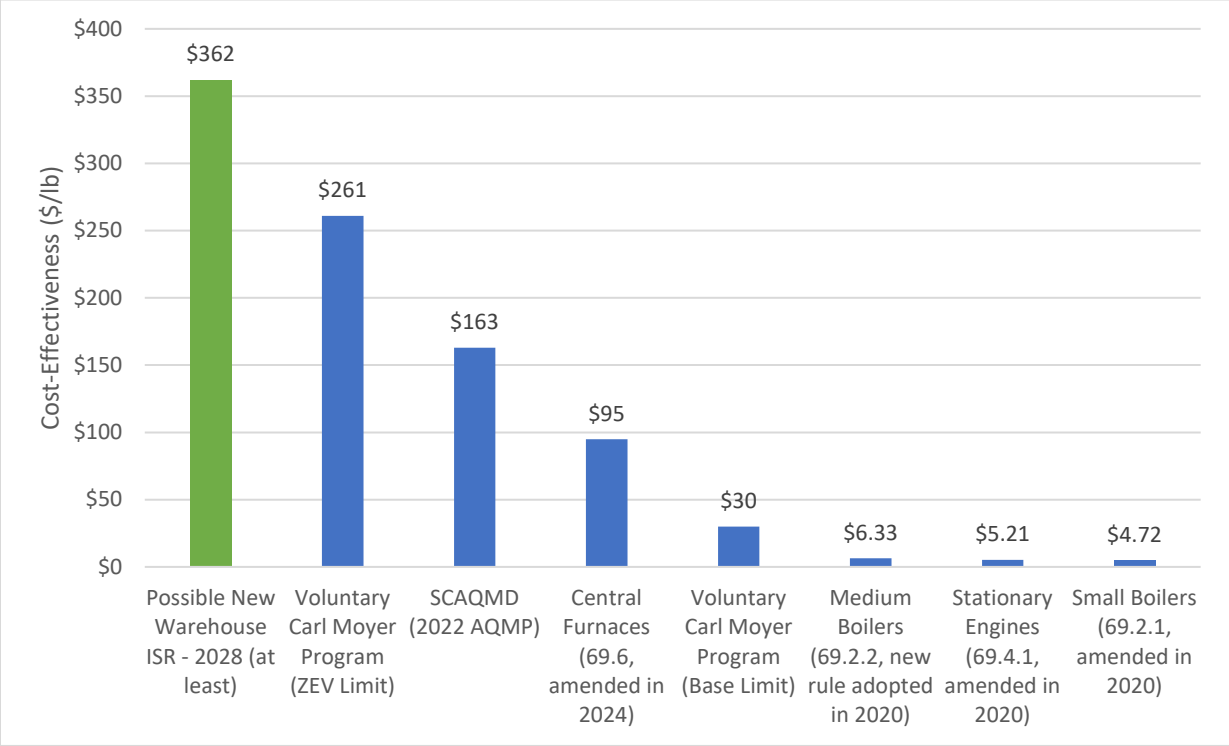
*Preliminary estimates subject to change.

Figure 10 below, which updates a similar graph in the ISR Framework, compares recent stationary source rulemaking cost-effectiveness figures in relation to the estimated cost-effectiveness of a possible ISR in San Diego County.[71] The estimated cost-effectiveness for a possible ISR exceeds the cost-effectiveness estimated for these recent rulemakings, as well as for incentive-based projects within the Carl Moyer program, which is generally recognized as some of the highest cost-effectiveness values for achieving emission reductions. In July 2020 when the District adopted NOx rules for small boilers (Rule 69.2.1), medium boilers (Rule 69.2.2), and stationary engines (Rule 69.4.1), all three rulemakings were estimated with cost-effectiveness values under $7 per pound of emissions reduced. Similar low cost-effectiveness values are also anticipated from previously identified measures found within the District's recently adopted 2022 Regional Air Quality Strategy (RAQS).

[70] The cost-effectiveness values for PM2.5 emissions reduced may be estimated with future rulemaking of a potential warehouse ISR. Staff anticipates those cost-effectiveness values to be considerably greater than the values presented for NOx due to the lesser estimated PM2.5 emission reductions.

[71] ISR Framework, Figure 5, p. 13, Attachment A

Figure 10 – Cost-Effectiveness Comparison to Recent Rulemakings and Incentive Programs



Notably, staff have also included SCAQMD's new health-based rule development cost-effectiveness threshold within the revised figure above, which equates to $325,000/ton of NOx reduced ($163/lb, rounded).[72] The SCAQMD uses this screening criteria to evaluate possible NOx emission reduction measures and determine the measures that are cost-effective to pursue rulemaking. The SCAQMD does note that their threshold is not an absolute method for determining to proceed with rule development action. In comparison, the cost-effectiveness of a possible new warehouse ISR in San Diego County, calculated at a minimum of $362/lb, is more than double the SCAQMD's new health-based threshold.[73]

2.6 DISTRICT COSTS FOR RULE DEVELOPMENT AND ADMINISTRATION

Staff preliminarily reviewed the potential feasibility of adopting a local ISR like the SCAQMD Rule 2305 regulating warehouses of 100,000 sq ft and larger (and fees to recover rule implementation and enforcement costs), considering technological, environmental, and economic factors.[74] The following are the updated estimates for District's rule development costs and future costs

[72] SCAQMD, 2022 Air Quality Management Plan, December 2, 2022, p. 4-76, https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16

[73] The average cost-effectiveness for SCAQMD Rule 2305 was approximately $235/lb. District staff derived this value from SCAQMD, Rule 2305, Staff Report, Table 23, p. 77.

[74] ISR Framework, pp. 14-15, Attachment A

associated with the ongoing rule implementation, outreach, possible litigation defense, and enforcement activities. These preliminary updated cost estimates may be revised during any future rulemaking processes.

- Additional one-time costs of approximately $250,000 would be expected to be incurred to prepare a socioeconomic impact assessment and CEQA compliance documentation using technical consultants with expertise in those areas. *(No Change from ISR Framework)*
- Preliminary estimates indicate that the additional staff time for the various compliance and outreach activities will likely result in the need for at least two additional full-time staff positions at the District to administer a potential warehouse indirect source program if an ISR were to be developed to regulate warehouses of 100,000 sq ft and larger, and at least six additional full-time staff positions if an ISR were to be developed to regulate warehouses of 50,000 sq. ft. and larger, given the 3x increase in number of facilities that could potentially be regulated. Estimated salary and benefits for the additional six positions is estimated at up to $900,000 in ongoing costs. *(Change from ISR Framework)*
- Services and supply costs, primarily for information technology, as reporting by warehouses would likely be conducted through a new District web portal, are estimated to cost $200,000 to develop initially and $25,000 annually to maintain. (*No Change from ISR Framework)*
- District legal costs may also be incurred if an ISR were to be litigated. The District estimates up to 0.5 full-time equivalent (FTE) positions, estimated around $135,000 in one-time costs, may be required for legal assistance during litigation. Based on feedback received from the SCAQMD, outside legal counsel may also be necessary at a to-be-determined cost. *(Change from ISR Framework)*
- District may incur additional costs in relation to additional enforcement-related actions necessary to ensure facilities are complying. The District estimates up to 0.5 FTE positions, estimated around $75,000 in ongoing costs, may be required. While staff has accounted for general inspector-related work in preliminary fee estimates, such work may not fully account for unanticipated costs stemming from large-scale enforcement-related actions across hundreds of facilities. Such work would likely be focused on additional staffing/workload for Civil Action Investigators who would be tasked with overseeing any Notices of Violation (NOVs) that are issued. SCAQMD noted in a recent update that over 350 NOVs had been issued as of October 2024, which is approximately 10% of the total facilities (3,655 warehouses) potentially subject to Rule 2305 requirements.[75] A similar metric in San Diego County would anticipate between 20 to 60 NOVs being issued for enforcement-related action if a possible warehouse ISR were developed, depending on the threshold of square footage size ultimately used (100k sq ft or 50k sq ft).
- The District anticipates that to administer a warehouse indirect source rule like SCAQMD Rule 2305, three reports would be required of facilities subject to the San Diego rule. This includes:
    - One-time warehouse operations notification report (preliminarily estimated at approximately $100 per facility)*(No Change from ISR Framework),*
    - One-time initial site information report (preliminarily estimated at approximately $300 per facility)*(No Change from ISR Framework),* and
    - An annual compliance report (preliminarily estimated at approximately $600 per facility for each reporting year)*(No Change from ISR Framework)*.

[75] SCAQMD, 2nd Annual WAIRE Report, October 2024, pp. 6 and 28, https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/annual_report_waire_program_102024.pdf?sfvrsn=9

- Staff believes ongoing staff costs associated with the direct implementation of the program (e.g., costs associated with reviewing, evaluating, and enforcing standard rule provisions) could be recouped by District fees. However, costs associated with CEQA document development, socioeconomic impact assessment development, web portal development, internal/external legal counsel, and enhanced enforcement activities, may not be recouped through fees alone (though legal judgements and enforcement agreements could potentially recoup some costs incurred).

2.7 ADDITIONAL CONSIDERATIONS

2.7.1 Update on SCAQMD Warehouse Rule 2305

In May 2021, the SCAQMD adopted Rule 2305 (Warehouse Indirect Source Rule - Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program), a first-of-its-kind air district rule to help reduce NOx and DPM emissions specifically from the freight sector in the Greater Los Angeles region. The SCAQMD also adopted companion Rule 316 (Fees for Rule 2305), establishing fees paid by the regulated warehouses to fund the air district's implementation and administration of Rule 2305.[76]

Any potential warehouse ISR for San Diego County would likely be modeled after SCAQMD Rule 2305 since currently it is the only rule in existence that regulates indirect source emissions from warehousing activities. In that rule, warehouse owners and operators are required to implement certain actions to reduce impacts from their operations. Since local districts cannot directly regulate trucks or truck trips, Rule 2305 offers a menu of options, such as installing solar panels or zero-emission charging infrastructure, providing neighboring residents with air filters, and paying a mitigation fee, in addition to reducing emissions from truck trips to their facilities. If a potential warehouse ISR for San Diego County were to be developed, it is critical for the ISR to include a menu of compliance options to be legally enforceable by the District.

Litigation

The California Trucking Association (CTA) filed a lawsuit in federal court in August 2021 seeking to invalidate SCAQMD's Rules 2305 and 316. Additional parties intervened in the lawsuit. Intervenors defending Rule 2305 included the State of California, CARB, East Yard Communities for Environmental Justice, the Peoples' Collective for Environmental Justice, the Sierra Club, the Natural Resources Defense Council, Communities for a Better Environment, and the Environmental Defense Fund. Airlines for America intervened on behalf of CTA. The lawsuit alleged that SCAQMD Rules are federally preempted, violate Proposition 26, and that SCAQMD does not have authority over existing warehouses, among other claims. On December 14, 2023, the court granted summary judgment to SCAQMD et al. and denied the plaintiffs' claims.[77] As of December 2024, no further appeals have been filed.

[76] See ISR Framework for more information about SCAQMD Rule 2305, pp. 8-10, Attachment A.
[77] https://www.uschamber.com/assets/documents/CTA-MSJ-Order.pdf

EPA's Approval of Rule 2305

On September 11, 2024, the U.S. Environmental Protection Agency (EPA) approved Rule 2305 as a SIP strengthening measure rather than a full approval. Though the EPA made clear that the rule was nonetheless still federally enforceable, full approval of the rule was not granted due to specific deficiencies identified by the EPA. These deficiencies included: two ambiguous definitions that cite California Code of Regulations that have not been approved in the State Implementation Plan (SIP); the rule's inclusion of a sunset clause, meaning if the rule were to sunset in the future, it had the potential to interfere with reasonable further progress or attainment of the National Ambient Air Quality Standards, and represented a potential inconsistency with the Clean Air Act; and, two instances in the rule of a concept known as "unbounded director's discretion," which potentially allows an air district to undermine enforceability of a SIP regulation.[78]

Due to these deficiencies, the EPA could not assign credit in the SIP for the emission reductions anticipated from Rule 2305 up and until the deficiencies are resolved; something SCAQMD may seek to rectify in future rule amendments. While Rule 2305 withstood a legal challenge in federal court, the court's decision does not preclude other lawsuits from being filed to challenge the EPA's approval of Rule 2305 into the SIP. As of December 2024, no further appeals or litigation have been filed.

WAIRE Program Implementation Update

On October 18, 2024, SCAQMD staff presented a summary of their "2nd Annual Report for the Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program" at their Mobile Source Committee meeting.[79] The report provides an overview of the WAIRE Program's implementation from Rule 2305 adoption on May 7, 2021, through August 31, 2024. Below is an overview and key highlights from the presentation.[80]

Overview

- Rule 2305 is in 3rd year of implementation
- WAIRE Program is an innovative rule and is continuing to grow and evolve
- Overall, warehouses that have submitted reports in WAIRE Program are over-complying (earning more WAIRE points than required)
- WAIRE Program phase-in is continuing, and compliance is improving
- WAIRE Program is reducing emissions, and facilitating new actions and business models to support zero emissions technology

Key Highlights

- Almost 5,400 operators subject to Rule 2305
    - Industry is dynamic, and warehouse leases are commonly only a few years in duration
- Significant staff effort required for program implementation

[78] Federal Register, 89 FR 73568, https://www.govinfo.gov/content/pkg/FR-2024-09-11/pdf/2024-20349.pdf
[79] SCAQMD, Mobile Source Committee Meeting Agenda, October 18, 2024, presentation slides, pp. 88 – 99, http://www.aqmd.gov/docs/default-source/Agendas/Mobile-Source/msc-agenda-101824.pdf?sfvrsn=18
[80] https://www.youtube.com/live/VVxxaz2nozk?si=-jcuzLDS4MlyOd-W&t=1684

    - Reporting software
    - Data management
    - Report auditing
- Options selected in the Initial Site Information Reports (ISIR) indicate facilities planned to take advantage of flexibility in rule
    - Mitigation fees are rarely selected
- Warehouse operators in the WAIRE Program are finding it feasible to comply with the rule
- Most common options are ZE hostler usage and Near-Zero Emissions (NZE) truck visits
- ZEV trucks and infrastructure are growing because of Rule 2305.
- WAIRE Mitigation Fee Program
    - About 4% of all WAIRE Points earned
    - WAIRE Mitigation Program will reduce emissions in communities near warehouses that paid the fees
    - Solicitations and project awards subject to approval by Governing Board following public process
- Reporting Progress
    - Phase 1 facilities (≥250,000 sq ft)
        - 43% of 2022 Annual WAIRE Reports (AWR) submitted
        - 41% of 2023 AWRs submitted
    - Phase 2 facilities (≥150,000 - <250,000 sq ft)
        - 28% of 2023 AWRs submitted
    - This is a new program, and reporting rates are expected to continue improving as industry adapts
- Outreach Statistics Since Rule Adoption
    - 21,875+ compliance advisory mailers sent to warehouse facility owners and operators
    - 10,300+ calls and emails to WAIRE Program Hotline
    - 73,700+ visits to the WAIRE program website[81]
    - 7,700+ views of training videos (outside of webinars)
    - 140+ in-person and virtual webinar presentations
    - 83,800+ informational emails sent about WAIRE Program resources
    - 3,400+ warehouse operators visited in-person (as of October 9, 2024)
- Recent Compliance and Enforcement
    - In September 2023, Compliance Advisory sent out to over 5,000 addresses
    - Approximately 377 Notices of Violation (NOV) issued (failure to submit ISIR and/or AWR reports) in 4 waves
    - Next Steps
        - Continue enforcement efforts
        - Continue providing compliance assistance and resolution of NOVs
        - Evaluate whether additional resources are needed long-term for enforcement efforts
- Next Steps
    - Continue enforcement efforts (Phase 1 & 2 non-reporters)
    - Outreach to Phase 3 owners and operators
    - Continue to review/audit reported information (Phases 1 & 2)
    - Continue to update WAIRE POP reporting software
    - Make WAIRE Program data publicly available

[81] www.aqmd.gov/waire

2.7.2 CARB Mobile Source Regulations

The State of California has the regulatory authority to directly regulate the sources of pollution that make indirect sources an issue, including trucks, marine vessels, rail locomotives, and cargo handling equipment. Many of these state regulations were recently adopted to include zero-emission requirements that will begin soon. The District anticipates these CARB regulations (both existing and future) to continue to improve air quality throughout the region, and particularly in under-resourced communities, where indirect sources (such as warehouses) are a concern to community members. Three of these CARB regulations are discussed in more detail below.

Advanced Clean Trucks Regulation (ACT)

In June 2020, CARB adopted its Advanced Clean Trucks (ACT) Regulation to ensure expanding supplies of zero-emission trucks. Truck manufacturers must sell zero-emission vehicles as a growing percentage of sales in all vehicle classes starting in 2024. Ten additional states have adopted CARB's ACT regulation, and to date four other states are in the process of doing so.[82] These united efforts are expected to further expand the zero-emission supply chain, leading to increased economies of scale and lower costs. In 2023, the EPA granted a waiver of preemption for the ACT regulation allowing CARB to enforce the regulation.[83]

Advanced Clean Fleets Regulation (ACF)

In April 2023, CARB adopted the Advanced Clean Fleets (ACF) Regulation to require fleets that are well suited for electrification to transition to ZEVs where feasible. The regulation requires (1) 100% zero-emission drayage trucks, last mile delivery, and government fleets by 2035, (2) 100% zero-emission refuse trucks and local buses by 2040, and (3) 100% zero-emission capable utility fleets by 2040.

Because the ACF regulation requirements are more stringent than EPA requirements, a waiver from EPA is required for CARB to implement the ACF regulation. By letter dated November 15, 2023, CARB submitted a request that the EPA grant a waiver of preemption for the ACF on-road regulations and an authorization for the ACF off-road regulations, as elements of the regulation apply to off-road engines and equipment, specifically off-road yard tractors. The EPA conducted a public hearing on August 14, 2024, to receive comments concerning CARB's request.[84]

By letter dated January 13, 2025, CARB withdrew their request for a waiver from the EPA.[85] Due to the withdrawal, CARB does not have the authority to enforce the requirements of the ACF regulation for drayage truck operators, and federal and privately owned fleets. These fleet categories are thus no longer required to be transitioned to ZE vehicles. Consequently, the anticipated emission benefits that would have been achieved through implementation of the ACF regulation, including those from the turnover of truck fleets servicing warehousing operations, have not been accounted for in this analysis. CARB's plans to address the impacts from the waiver withdrawal are to be determined.

[82] https://www.electrictrucksnow.com/states#:~:text=States%20that%20have%20signed%20the%20100%25%20zero-emission%20truck,...%204%20NEW%20JERSEY%20...%205%20MASSACHUSETTS%20

[83] 88 FR 20688, https://www.govinfo.gov/content/pkg/FR-2023-04-06/pdf/2023-07184.pdf

[84] 89 FR 57151, https://www.govinfo.gov/content/pkg/FR-2024-07-12/pdf/2024-15343.pdf

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

Zero-Emission Truck Measure

One example of a future CARB regulation is the Zero-Emission Truck measure outlined in the 2022 SIP, which aims to accelerate zero-emission adoption beyond existing measures (including ACF). CARB is evaluating a variety of options to achieve this commitment including, but not limited to, differentiated registration fees for higher emitting vehicles, increase vehicle turnover by requiring vehicles to be scrapped after reaching the end of their useful lives, introduction of differentiated fees that offset the battery electric and hydrogen fuel cell vehicle purchase price differential by collecting fees on higher emitting vehicles, and a potential statewide indirect source rule. Some of these options would require expanded authority for CARB (such as a request for a waiver from the EPA) or collaboration with air districts.[86]

2.7.3 Assembly Bill 98 (Carrillo and Reyes)

Assembly Bill 98 (AB 98) was passed by the California state legislature in late August 2024 and signed by Governor Newsom on September 29, 2024.[87] AB 98 will apply to new and expanded warehouses that are proposed for any floor size, though more requirements apply to proposed facilities over 250,000 sq ft in size.

In summary, AB 98 will: (1) prescribe statewide warehouse standards for new or expanded logistics use developments to minimize impacts on certain "sensitive receptors," as specified; (2) prohibit cities and counties from approving new or expanded logistics use developments unless they meet specified standards; (3) require cities and counties to update their circulation elements by January 1, 2028 to include specified truck routes, except that certain local agencies in the Inland Empire must comply with this requirement by January 1, 2026; and (4) provide for enforcement of circulation update requirements by the Attorney General.

As AB 98 is written to date, the bill will primarily affect new and expanded warehouse operations throughout the state. Existing warehouse operations may not be as impacted. Thus, there may still be opportunities to benefit from a rulemaking and/or incentive programs for the San Diego region.

2.7.4 District Study of Warehouse Facilities in the Portside Community

In response to stakeholder feedback, in December 2024 staff conducted an informal case study of warehouse buildings that are located within the general vicinity of a specific sensitive receptor in the Portside Community (Barrio Senior Villas).[88] In all, approximately 70 warehouse buildings located in the area were identified using the CoStar inventory and were further researched and reviewed by staff. This research was conducted to determine the number of facilities identified with the CoStar inventory that may be conducting goods movement-related activities and would potentially be subject to a possible warehouse ISR. Certain physical characteristics of a warehouse building (e.g., dock doors, grading, and room for trucks to park) were used to evaluate the potential for trucking activity occurring there. Staff used a combination of internet searches, Google Earth, and other available information to preliminarily assess the type of operations being

[86] CARB, Discussion Draft 2025 Mobile Source Strategy, October 11, 2024, https://ww2.arb.ca.gov/sites/default/files/2024-10/Discussion_Draft_2025_Mobile_Source_Strategy.pdf
[87] https://legiscan.com/CA/text/AB98/id/3020126
[88] 2322 Newton Ave, San Diego, 92113

conducted at the 70 sample facilities, in particular those with floor areas less than 50,000 sq ft. See Attachment F: District Sample Warehouse Study for the analysis.

Note that this case study is not intended to be considered an official determination of whether a listed facility may (or may not) be subject to a potential warehouse ISR if developed. Additional information from each facility subject to a potential warehouse ISR, including any required reports and details about the facility would be needed to make such a determination. The analysis consisted of staff's observations based on the tools utilized and is only intended to provide additional information about the different types of operations observed within the sample area.

For the 70 sample warehouse buildings researched, the following is a summary of staff's preliminary findings:

- Average size of the warehouse buildings in the area evaluated is 11,334 sq ft.
- The largest warehouse building is approximately 52,000 sq ft in size.
- 32 facilities (45%) have dock doors that are accessible either on-site or from the street, that would suggest a prototypical warehouse operation. Conversely, 38 facilities (55%) do not have such doors.
- 34 facilities (48%) have multiple tenants, suggesting the site may be used for multiple purposes other than warehousing/logistics.
- 45 facilities (64%) do not appear to be involved in goods movement activities, and would likely not be subject to a possible ISR.
    - These activities include but are not limited to:
        - Auto repair
        - Boat repair
        - Auto/Boat storage
        - Pool/Billiards hall
        - Educational facility
        - Storage for traffic control equipment
        - Metal repair shop
        - Bakery
        - Residential housing
        - Church
        - Youth and Community Center
        - Art gallery
        - Event space rental
        - Towing operation
        - Recycling operation
- 41 facilities (58%) have limited space such that a truck could not easily enter/park on-site.
- 43 facilities (61%) either had "no" or "unlikely" space to install EV infrastructure on-site.

From these findings, staff determined that for many of these smaller facilities, additional information would be needed to determine if they are truly conducting typical warehousing activities, and the level of trucking activity occurring at those locations. Many of these facilities have limited space to allow for parking a truck on-site, therefore limiting the option to install charging infrastructure at the facility. As a result, it is unclear whether these facilities would have reasonable and adequate compliance options to choose from in a possible warehouse ISR similar to SCAQMD Rule 2305. Both observations suggest that regulating warehouses smaller than 50,000 sq ft in size may be challenging both legally and practically.

Figure 11 shows the 70 warehouse building locations (in blue) assessed around the sensitive receptor selected in the sample area in the Portside Community. Figure 12 shows within the same sample area the warehouse building locations (in yellow) that staff identified as likely to be subject to a possible warehouse ISR due to their size and characteristics. The red dot on both maps indicates the location of the sensitive receptor assessed.

Figure 11 – Warehouse Building Locations Assessed

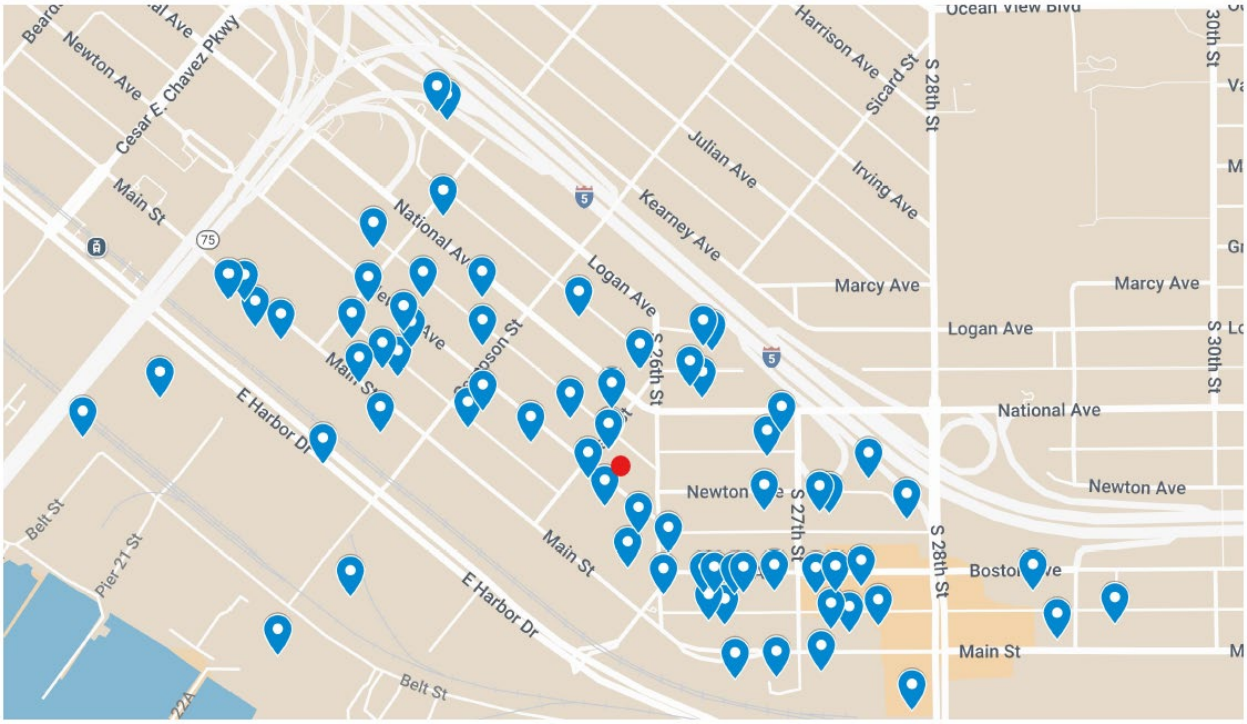
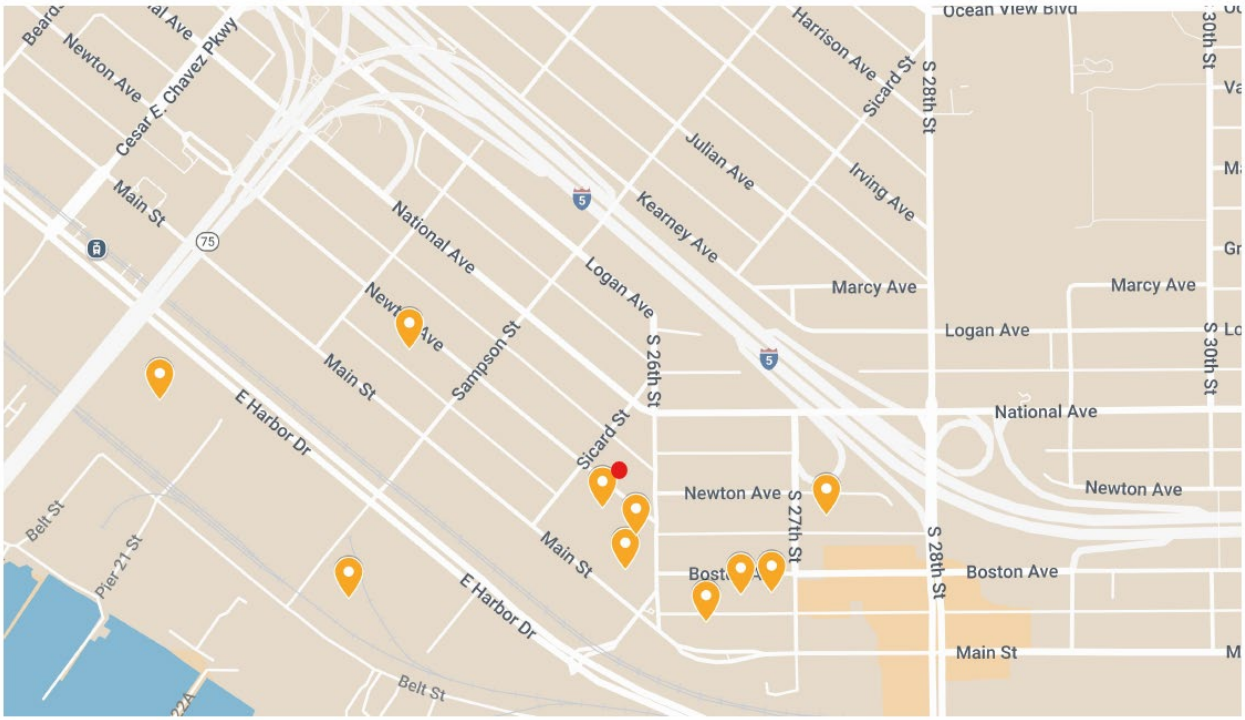


Figure 12 – Warehouse Building Locations Potentially Subject to a Possible ISR (if developed)



The assessment was based on several observations and/or factors including: tenant business name, facility appeared to be involved in goods movement activity, sufficient room for trucks to park, and single tenant occupancy. Based on staff's observational assessment of the area researched, approximately 14% (10 out of 70) of the CoStar warehouse inventory in the sample area may be conducting prototypical warehouse operations. This suggests that the possible ISR emission reductions presented in this Supplement are very likely to be best-case estimates.

2.8 STAFF'S CONCLUSIONS

At the June 2023 meeting, the Governing Board instructed staff to prioritize under-resourced communities and consider smaller warehouses and warehouses near sensitive receptors (e.g., residences, hospitals, schools, etc.). To respond to this direction, staff convened the WWG over the past year to discuss these aspects. Additionally, in response to Governing Board direction, staff developed a truck trip rate analysis using modeled transportation data specific to the San Diego region (Section 2.3). The estimated truck trip rates allowed for the calculation of potential baseline emissions and reductions, public health benefits (Section 2.4), and cost-effectiveness values (Section 2.5). These estimates were then used to help inform the District's evaluation of a potential warehouse ISR and the impacts for the AB 617 communities and countywide. In addition, the challenges of regulating warehouses near sensitive receptors and smaller warehouses were considered (EHC Comment Letter). Staff believes the Governing Board's consideration and acceptance of this Supplement, together with the initial ISR Framework and WWG meeting series,

will fulfill the requirement set forth by AB 423 to consider an ISR for warehouse and distribution centers.

In line with commitments made with the WWG, this Supplement will be released for public comment for 30 days. Following this public comment period, the District intends to present its findings to the Governing Board, including any feedback received from stakeholders during the public comment period.

APPENDIX A: DAILY TRUCK VOLUMES FOR EACH WAREHOUSE CLUSTER

Table A1 – Daily Truck Volumes by Warehouse Size for Each Cluster

Cluster	Average Warehouse Floor Area (sq ft)	Warehouse Count	Total Floor Area (sq ft)	Total Trucks Per Day	Average Warehouse Size (sq ft)
Oceanside and Vista	100k and Greater	8	851,664	1,459	106,458
	50k to <100k	21	1,397,812	863	66,562
	25k to <50k	78	2,474,187	4,234	31,720
	12.5k to <25k	236	4,083,326	8,552	17,302
	<12.5k	108	876,038	5,093	8,111
	Total	***451***	***9,683,027***	***20,200***	***21,470***
Carlsbad and Vista	100k and Greater	15	1,921,287	1,960	128,086
	50k to <100k	105	6,290,514	16,755	59,910
	25k to <50k	223	7,425,091	15,202	33,296
	12.5k to <25k	303	6,288,688	14,918	20,755
	<12.5k	2	23,122	255	11,561
	Total	***648***	***21,948,702***	***49,091***	***33,871***
San Marcos and Escondido	100k and Greater	0	0	0	N/A
	50k to <100k	2	149,815	612	74,908
	25k to <50k	72	2,472,125	5,999	34,335
	12.5k to <25k	268	4,495,538	10,615	16,774
	<12.5k	620	5,707,356	15,151	9,205
	Total	***962***	***12,824,834***	***32,377***	***13,331***
Poway	100k and Greater	6	835,301	1,020	139,217
	50k to <100k	47	3,279,200	4,221	69,770
	25k to <50k	54	2,223,727	2,270	41,180
	12.5k to <25k	94	1,642,595	2,797	17,474
	<12.5k	0	0	0	N/A
	Total	***201***	***7,980,823***	***10,308***	***39,706***
Sorrento Valley	100k and Greater	0	0	0	N/A
	50k to <100k	53	3,176,307	3,385	59,930
	25k to <50k	53	1,814,763	4,133	34,241
	12.5k to <25k	88	1,798,033	4,529	20,432
	<12.5k	13	142,170	882	10,936
	Total	***207***	***6,931,273***	***12,929***	***33,484***
Miramar	100k and Greater	0	0	0	N/A

Cluster	Average Warehouse Floor Area (sq ft)	Warehouse Count	Total Floor Area (sq ft)	Total Trucks Per Day	Average Warehouse Size (sq ft)
	50k to <100k	38	2,473,152	3,004	65,083
	25k to <50k	156	5,146,046	6,810	32,987
	12.5k to <25k	279	5,308,304	9,551	19,026
	<12.5k	187	2,070,425	2,447	11,072
	Total	***660***	***14,997,927***	***21,811***	***22,724***
Kearny Mesa	100k and Greater	3	557,994	969	185,998
	50k to <100k	23	1,685,677	1,671	73,290
	25k to <50k	91	2,986,107	5,617	32,814
	12.5k to <25k	276	5,086,723	8,605	18,430
	<12.5k	67	750,849	2,651	11,207
	Total	***460***	***11,067,350***	***19,512***	***24,059***
Santee and El Cajon	100k and Greater	0	0	0	N/A
	50k to <100k	2	143,150	394	71,575
	25k to <50k	165	5,190,970	5,459	31,460
	12.5k to <25k	200	3,735,069	5,537	18,675
	<12.5k	315	2,563,619	11,281	8,138
	Total	***682***	***11,632,808***	***22,670***	***17,057***
Portside Community	100k and Greater	6	692,315	1,039	115,386
	50k to <100k	11	612,648	1,187	55,695
	25k to <50k	43	1,526,138	3,701	35,492
	12.5k to <25k	110	1,869,459	3,143	16,995
	<12.5k	276	1,966,753	7,921	7,126
	Total	***446***	***6,667,313***	***16,990***	***14,949***
International Border Community	100k and Greater	36	5,910,420	2,469	164,178
	50k to <100k	101	6,836,830	5,077	67,691
	25k to <50k	55	2,074,592	1,844	37,720
	12.5k to <25k	106	1,923,577	2,712	18,147
	<12.5k	4	26,162	204	6,541
	Total	***302***	***16,771,581***	***12,306***	***55,535***

Below are a few highlights from the data listed in Table A1.

Cluster with the greatest:

- Number of warehouses (962): San Marcos and Escondido
- Total floor area (21,948,702 sq ft): Carlsbad and Vista
- Total trucks per day (49,091): Carlsbad and Vista
- Average warehouse floor size (55,535 sq ft): International Border Community

APPENDIX B: WAREHOUSE CLUSTER TRUCK TRIP RATES

Table B1 – Average Daily Truck Trip Rates for the Warehouse Clusters*

Cluster	Warehouse Floor Area (sq ft)	Class 2B to 5 Daily Truck Trip Rate (per 1,000 sq ft)	Class 6 to 7 Daily Truck Trip Rate (per 1,000 sq ft)	Class 8 Daily Truck Trip Rate (per 1,000 sq ft)
Oceanside and Vista	100k and greater	0.13	0.04	0.19
	50k to <100k	0.05	0.01	0.07
	25k to <50k	0.13	0.04	0.19
	12.5k to <25k	0.15	0.05	0.24
	<12.5k	0.43	0.13	0.66
	Cluster average (all sizes)	**0.15**	**0.05**	**0.24**
Carlsbad and Vista	100k and greater	0.08	0.02	0.12
	50k to <100k	0.20	0.06	0.30
	25k to <50k	0.15	0.05	0.23
	12.5k to <25k	0.17	0.05	0.27
	<12.5k	0.81	0.25	1.24
	Cluster average (all sizes)	**0.16**	**0.05**	**0.25**
San Marcos and Escondido	100k and greater	N/A	N/A	N/A
	50k to <100k	0.30	0.09	0.46
	25k to <50k	0.18	0.05	0.27
	12.5k to <25k	0.17	0.05	0.27
	<12.5k	0.20	0.06	0.30
	Cluster average (all sizes)	**0.19**	**0.06**	**0.29**
Poway	100k and greater	0.09	0.03	0.14
	50k to <100k	0.09	0.03	0.15
	25k to <50k	0.08	0.02	0.12

Cluster	Warehouse Floor Area (sq ft)	Class 2B to 5 Daily Truck Trip Rate (per 1,000 sq ft)	Class 6 to 7 Daily Truck Trip Rate (per 1,000 sq ft)	Class 8 Daily Truck Trip Rate (per 1,000 sq ft)
	12.5k to <25k	0.13	0.04	0.19
	<12.5k	N/A	N/A	N/A
	Cluster average (all sizes)	**0.10**	**0.03**	**0.15**
Sorrento Valley	100k and greater	N/A	N/A	N/A
	50k to <100k	0.08	0.02	0.12
	25k to <50k	0.17	0.05	0.26
	12.5k to <25k	0.19	0.06	0.28
	<12.5k	0.46	0.14	0.70
	Cluster average (all sizes)	**0.14**	**0.04**	**0.21**
Miramar	100k and greater	N/A	N/A	N/A
	50k to <100k	0.09	0.03	0.14
	25k to <50k	0.10	0.03	0.15
	12.5k to <25k	0.13	0.04	0.20
	<12.5k	0.09	0.03	0.13
	Cluster average (all sizes)	**0.11**	**0.03**	**0.16**
Kearny Mesa	100k and greater	0.13	0.04	0.20
	50k to <100k	0.07	0.02	0.11
	25k to <50k	0.14	0.04	0.21
	12.5k to <25k	0.12	0.04	0.19
	<12.5k	0.26	0.08	0.40
	Cluster average (all sizes)	**0.13**	**0.04**	**0.20**
Santee and El Cajon	100k and greater	N/A	N/A	N/A
	50k to <100k	0.20	0.06	0.31

Cluster	Warehouse Floor Area (sq ft)	Class 2B to 5 Daily Truck Trip Rate (per 1,000 sq ft)	Class 6 to 7 Daily Truck Trip Rate (per 1,000 sq ft)	Class 8 Daily Truck Trip Rate (per 1,000 sq ft)
	25k to <50k	0.08	0.02	0.12
	12.5k to <25k	0.11	0.03	0.17
	<12.5k	0.32	0.10	0.50
	Cluster average (all sizes)	**0.14**	**0.04**	**0.22**
Portside Community	100k and greater	0.11	0.03	0.17
	50k to <100k	0.14	0.04	0.22
	25k to <50k	0.18	0.05	0.27
	12.5k to <25k	0.12	0.04	0.19
	<12.5k	0.30	0.09	0.46
	Cluster average (all sizes)	**0.19**	**0.06**	**0.29**
International Border Community	100k and greater	0.03	0.01	0.05
	50k to <100k	0.05	0.02	0.08
	25k to <50k	0.07	0.02	0.10
	12.5k to <25k	0.10	0.03	0.16
	<12.5k	0.57	0.17	0.88
	Cluster average (all sizes)	**0.05**	**0.02**	**0.08**

*Preliminary estimates subject to change.

APPENDIX C: OTHER REFERENCED TRUCK TRIP RATES

The following are truck trip rates referenced from other sources to provide a comparison to the results from the truck trip analysis described in this Supplement.

In 2013, SCAQMD conducted a survey of about 400 warehouse operators in their region. A total of 63 operators responded, which is a response rate of about 16%. Table C1 lists the minimum, maximum, and average rates reported in the survey.[89] The overall trip rate is for trips from all vehicles (including cars), and truck trip rate is for trucks only. The reported truck trip rates range from 0.05 to 1.76 trucks trips per 1,000 sq ft., with an average rate of 0.53.

Table C1 - SCAQMD Business Survey

Statistical Measure	Overall Trip Rate (daily trips per 1,000 sq ft)	Truck Trip Rate (daily trips per 1,000 sq ft)
Minimum	0.33	0.05
Maximum	3.41	1.76
Average	1.22	0.53

The truck trip rates shown in Table C2 are from a study prepared by the Institute of Transportation Engineers (ITE) in 2016 in support of SCAQMD's development of their warehouse Rule 2305.[90] The estimated rates for trucks and 5 or more axle trucks are for 3 warehouse categories: transload and short-term storage, cold storage, and fulfillment center. These rates range from 0.233 to 0.836 trucks per 1,000 sq ft.

Table C2 - ITE Warehouse Study

Category	Trucks Daily Trips Per 1,000 sq ft	5+ Axle Trucks Daily Trips Per 1,000 sq ft
Transload & Short-Term Storage	0.454	0.233
Cold Storage	0.836	0.749
Fulfillment Center	0.717	0.242

[89] SCAQMD High Cube Warehouse Truck Trip Study, White Paper Summary of Business Survey Results, June 2014, Table 10, p. 10, https://www.aqmd.gov/docs/default-source/ceqa/handbook/high-cube-warehouse-trip-rate-study-for-air-quality-analysis/business-survey-summary.pdf?sfvrsn=2

[90] Institute of Transportation Engineers, High-Cube Warehouse Vehicle Trip Generation Analysis, October 2016, Table 5, p. 13, https://www.aqmd.gov/docs/default-source/ceqa/handbook/high-cube-warehouse-trip-rate-study-for-air-quality-analysis/ite_highcubewarehousestudy_10-2016.pdf

Table C3 lists the truck trip rates from ITE's "Trip Generation Manual, 10th Edition."[91] Except for the rate for High-Cube Fulfillment Center Warehouse at 1.37, the other truck rip rates listed on this table range from 0.10 to 0.64.

Table C3 - ITE Trip Rates

Category	**Daily Truck Trips Per 1,000 sq ft**
Warehousing	0.19
Mini-Warehouse	0.17
High-Cube Transload & Short-Term Storage Warehouse	0.10
High-Cube Fulfillment Center Warehouse	1.37
High-Cube Parcel Hub Warehouse	0.64
High-Cube Cold Storage Warehouse	0.12

[91] ITE, Trip Generation Manual, 10th Edition, p. 1, https://www.troutdaleoregon.gov/media/14881

APPENDIX D: EMFAC2021 OFF-MODEL SCALING FACTORS

The EMFAC2021 off-model scaling factors for San Diego County were provided to the District from CARB staff via email on October 15, 2024.

List of Abbreviations

CMS	Clean Miles Standard Program
ACCII	Advanced Clean Cars II
HDIM	Clean Truck Check, also known as Heavy-Duty Inspection and Maintenance
CTP	Federal Clean Trucks Plan
ACF	Advanced Clean Fleets Regulation[92]

Table D1 - EMFAC2021 Scaling Factors, SD County, NOx, Calendar Year 2028

Calendar Year	Vehicle Category	fuel_type	Pollutant_Process_x	CMS CR	ACCII CR	HDIM CR	CTP CR	ACF CR
2028	LHD1	Gasoline	NOx_TOTEX	1	1	1	1	1
2028	LHD1	Diesel	NOx_TOTEX	1	1	1	1	1
2028	LHD2	Gasoline	NOx_TOTEX	1	1	1	1	1
2028	LHD2	Diesel	NOx_TOTEX	1	1	1	1	1
2028	T6 CAIRP Class 4	Diesel	NOx_TOTEX	1	1	0.622605074	0.997238308	1
2028	T6 CAIRP Class 5	Diesel	NOx_TOTEX	1	1	0.617841209	0.997411732	1
2028	T6 Instate Delivery Class 4	Diesel	NOx_TOTEX	1	1	0.72606175	0.998458492	1
2028	T6 Instate Delivery Class 5	Diesel	NOx_TOTEX	1	1	0.644336061	0.997986567	1
2028	T6 Instate Other Class 4	Diesel	NOx_TOTEX	1	1	0.743335078	0.998340821	1
2028	T6 Instate Other Class 5	Diesel	NOx_TOTEX	1	1	0.628087707	0.997680306	1
2028	T6 OOS Class 4	Diesel	NOx_TOTEX	1	1	0.682847326	0.97767121	1
2028	T6 OOS Class 5	Diesel	NOx_TOTEX	1	1	0.64973267	0.976397879	1
2028	T6 CAIRP Class 6	Diesel	NOx_TOTEX	1	1	0.596974128	0.995849249	1
2028	T6 CAIRP Class 7	Diesel	NOx_TOTEX	1	1	0.643303458	0.99595826	1
2028	T6 Instate Delivery Class 6	Diesel	NOx_TOTEX	1	1	0.686750406	0.998120036	1

[92] The scaling factors for CARB's Advanced Clean Fleets (ACF) regulation were adjusted to 1.0 (i.e., no emission benefits) due to CARB's withdrawal for a waiver from the EPA.

Calendar Year	Vehicle Category	fuel_type	Pollutant_Process_x	CMS CR	ACCII CR	HDIM CR	CTP CR	ACF CR
2028	T6 Instate Delivery Class 7	Diesel	NOx_TOTEX	1	1	0.696680653	0.998811855	1
2028	T6 Instate Other Class 6	Diesel	NOx_TOTEX	1	1	0.669584025	0.998016241	1
2028	T6 Instate Other Class 7	Diesel	NOx_TOTEX	1	1	0.751711506	0.998063576	1
2028	T6 Instate Tractor Class 6	Diesel	NOx_TOTEX	1	1	0.776032804	0.997941183	1
2028	T6 Instate Tractor Class 7	Diesel	NOx_TOTEX	1	1	0.80541071	0.998304335	1
2028	T6 OOS Class 6	Diesel	NOx_TOTEX	1	1	0.649345504	0.96570784	1
2028	T6 OOS Class 7	Diesel	NOx_TOTEX	1	1	0.670213188	0.973778457	1
2028	T7 CAIRP Class 8	Diesel	NOx_TOTEX	1	1	0.382405534	0.991739631	1
2028	T7 NNOOS Class 8	Diesel	NOx_TOTEX	1	1	0.419031825	0.946174123	1
2028	T7 NOOS Class 8	Diesel	NOx_TOTEX	1	1	0.407611127	0.939388268	1
2028	T7 Tractor Class 8	Diesel	NOx_TOTEX	1	1	0.489344964	0.997537998	1

Table D2 - EMFAC2021 Scaling Factors, SD County, PM2.5, Calendar Year 2028

Calendar Year	Vehicle Category	fuel_type	Pollutant_Process_x	CMS CR	ACCII CR	HDIM CR	CTP CR	ACF CR
2028	LHD1	Gasoline	PM2.5_TOTEX	1	1	1	1	1
2028	LHD1	Diesel	PM2.5_TOTEX	1	1	1	1	1
2028	LHD2	Gasoline	PM2.5_TOTEX	1	1	1	1	1
2028	LHD2	Diesel	PM2.5_TOTEX	1	1	1	1	1
2028	T6 CAIRP Class 4	Diesel	PM2.5_TOTEX	1	1	0.784827929	0.999921719	1
2028	T6 CAIRP Class 5	Diesel	PM2.5_TOTEX	1	1	0.800631512	0.999890028	1
2028	T6 Instate Delivery Class 4	Diesel	PM2.5_TOTEX	1	1	0.617705423	1	1
2028	T6 Instate Delivery Class 5	Diesel	PM2.5_TOTEX	1	1	0.64096161	0.999861375	1
2028	T6 Instate Other Class 4	Diesel	PM2.5_TOTEX	1	1	0.634557396	0.999956931	1
2028	T6 Instate Other Class 5	Diesel	PM2.5_TOTEX	1	1	0.714905857	0.999914987	1
2028	T6 OOS Class 4	Diesel	PM2.5_TOTEX	1	1	0.758272225	0.999048098	1
2028	T6 OOS Class 5	Diesel	PM2.5_TOTEX	1	1	0.801924807	0.998766153	1
2028	T6 CAIRP Class 6	Diesel	PM2.5_TOTEX	1	1	0.819349587	0.999781623	1
2028	T6 CAIRP Class 7	Diesel	PM2.5_TOTEX	1	1	0.776197888	0.999679631	1
2028	T6 Instate Delivery Class 6	Diesel	PM2.5_TOTEX	1	1	0.631513808	0.999963531	1
2028	T6 Instate Delivery Class 7	Diesel	PM2.5_TOTEX	1	1	0.651763924	0.999955514	1
2028	T6 Instate Other Class 6	Diesel	PM2.5_TOTEX	1	1	0.669111797	0.99996989	1
2028	T6 Instate Other Class 7	Diesel	PM2.5_TOTEX	1	1	0.643276858	0.999904641	1
2028	T6 Instate Tractor Class 6	Diesel	PM2.5_TOTEX	1	1	0.628396949	0.999942915	1
2028	T6 Instate Tractor Class 7	Diesel	PM2.5_TOTEX	1	1	0.626685794	1	1
2028	T6 OOS Class 6	Diesel	PM2.5_TOTEX	1	1	0.800668587	0.999065526	1
2028	T6 OOS Class 7	Diesel	PM2.5_TOTEX	1	1	0.781524314	0.998441511	1

Calendar Year	Vehicle Category	fuel_type	Pollutant_Process_x	CMS CR	ACCII CR	HDIM CR	CTP CR	ACF CR
2028	T7 CAIRP Class 8	Diesel	PM2.5_TOTEX	1	1	0.517120069	0.99992398	1
2028	T7 NNOOS Class 8	Diesel	PM2.5_TOTEX	1	1	0.540201337	0.999328287	1
2028	T7 NOOS Class 8	Diesel	PM2.5_TOTEX	1	1	0.518182257	0.999291103	1
2028	T7 Tractor Class 8	Diesel	PM2.5_TOTEX	1	1	0.573669456	0.999981856	1

Table D3 - EMFAC2021 Scaling Factors, SD County, NOx, Calendar Year 2032

Calendar Year	Vehicle Category	fuel_type	Pollutant_Process_x	CMS CR	ACCII CR	HDIM CR	CTP CR	ACF CR
2032	LHD1	Gasoline	NOx_TOTEX	1	1	1	1	1
2032	LHD1	Diesel	NOx_TOTEX	1	1	1	1	1
2032	LHD2	Gasoline	NOx_TOTEX	1	1	1	1	1
2032	LHD2	Diesel	NOx_TOTEX	1	1	1	1	1
2032	T6 CAIRP Class 4	Diesel	NOx_TOTEX	1	1	0.539860577	0.960806427	1
2032	T6 CAIRP Class 5	Diesel	NOx_TOTEX	1	1	0.540597448	0.963419545	1
2032	T6 Instate Delivery Class 4	Diesel	NOx_TOTEX	1	1	0.62609491	0.979237501	1
2032	T6 Instate Delivery Class 5	Diesel	NOx_TOTEX	1	1	0.558710922	0.975311808	1
2032	T6 Instate Other Class 4	Diesel	NOx_TOTEX	1	1	0.631284726	0.976582087	1
2032	T6 Instate Other Class 5	Diesel	NOx_TOTEX	1	1	0.542868681	0.970984168	1
2032	T6 OOS Class 4	Diesel	NOx_TOTEX	1	1	0.613130909	0.847769686	1
2032	T6 OOS Class 5	Diesel	NOx_TOTEX	1	1	0.586894461	0.839304851	1
2032	T6 CAIRP Class 6	Diesel	NOx_TOTEX	1	1	0.516424662	0.949855215	1
2032	T6 CAIRP Class 7	Diesel	NOx_TOTEX	1	1	0.551117869	0.948801237	1
2032	T6 Instate Delivery Class 6	Diesel	NOx_TOTEX	1	1	0.59508444	0.97666703	1
2032	T6 Instate Delivery Class 7	Diesel	NOx_TOTEX	1	1	0.648135759	0.989681916	1
2032	T6 Instate Other Class 6	Diesel	NOx_TOTEX	1	1	0.569868504	0.973754649	1
2032	T6 Instate Other Class 7	Diesel	NOx_TOTEX	1	1	0.690150902	0.983581724	1
2032	T6 Instate Tractor Class 6	Diesel	NOx_TOTEX	1	1	0.676820702	0.9747113	1
2032	T6 Instate Tractor Class 7	Diesel	NOx_TOTEX	1	1	0.762989636	0.987384225	1
2032	T6 OOS Class 6	Diesel	NOx_TOTEX	1	1	0.583049982	0.808613328	1
2032	T6 OOS Class 7	Diesel	NOx_TOTEX	1	1	0.579835254	0.853477865	1

Calendar Year	Vehicle Category	fuel_type	Pollutant_Process_x	CMS CR	ACCII CR	HDIM CR	CTP CR	ACF CR
2032	T7 CAIRP Class 8	Diesel	NOx_TOTEX	1	1	0.341700604	0.935980161	1
2032	T7 NNOOS Class 8	Diesel	NOx_TOTEX	1	1	0.390620447	0.769604729	1
2032	T7 NOOS Class 8	Diesel	NOx_TOTEX	1	1	0.375674202	0.801041585	1
2032	T7 Tractor Class 8	Diesel	NOx_TOTEX	1	1	0.412475791	0.970595135	1

Table D4 - EMFAC2021 Scaling Factors, SD County, PM2.5, Calendar Year 2032

Calendar Year	Vehicle Category	fuel_type	Pollutant_Process_x	CMS CR	ACCII CR	HDIM CR	CTP CR	ACF CR
2032	LHD1	Gasoline	PM2.5_TOTEX	1	1	1	1	1
2032	LHD1	Diesel	PM2.5_TOTEX	1	1	1	1	1
2032	LHD2	Gasoline	PM2.5_TOTEX	1	1	1	1	1
2032	LHD2	Diesel	PM2.5_TOTEX	1	1	1	1	1
2032	T6 CAIRP Class 4	Diesel	PM2.5_TOTEX	1	1	0.797055513	0.997340062	1
2032	T6 CAIRP Class 5	Diesel	PM2.5_TOTEX	1	1	0.799418848	0.998066635	1
2032	T6 Instate Delivery Class 4	Diesel	PM2.5_TOTEX	1	1	0.641410907	0.998909981	1
2032	T6 Instate Delivery Class 5	Diesel	PM2.5_TOTEX	1	1	0.671629302	0.998574504	1
2032	T6 Instate Other Class 4	Diesel	PM2.5_TOTEX	1	1	0.668975306	0.998996463	1
2032	T6 Instate Other Class 5	Diesel	PM2.5_TOTEX	1	1	0.743538002	0.998325213	1
2032	T6 OOS Class 4	Diesel	PM2.5_TOTEX	1	1	0.789484865	0.987675902	1
2032	T6 OOS Class 5	Diesel	PM2.5_TOTEX	1	1	0.813380509	0.986058392	1
2032	T6 CAIRP Class 6	Diesel	PM2.5_TOTEX	1	1	0.814895867	0.997656526	1
2032	T6 CAIRP Class 7	Diesel	PM2.5_TOTEX	1	1	0.775940388	0.995669708	1
2032	T6 Instate Delivery Class 6	Diesel	PM2.5_TOTEX	1	1	0.660933104	0.999014574	1
2032	T6 Instate Delivery Class 7	Diesel	PM2.5_TOTEX	1	1	0.639475323	0.998851023	1
2032	T6 Instate Other Class 6	Diesel	PM2.5_TOTEX	1	1	0.71014897	0.998825849	1
2032	T6 Instate Other Class 7	Diesel	PM2.5_TOTEX	1	1	0.645847491	0.997865884	1
2032	T6 Instate Tractor Class 6	Diesel	PM2.5_TOTEX	1	1	0.655771137	0.998054314	1
2032	T6 Instate Tractor Class 7	Diesel	PM2.5_TOTEX	1	1	0.624186604	0.998684722	1
2032	T6 OOS Class 6	Diesel	PM2.5_TOTEX	1	1	0.813209638	0.988725073	1
2032	T6 OOS Class 7	Diesel	PM2.5_TOTEX	1	1	0.789917843	0.986344264	1

Calendar Year	Vehicle Category	fuel_type	Pollutant_Process_x	CMS CR	ACCII CR	HDIM CR	CTP CR	ACF CR
2032	T7 CAIRP Class 8	Diesel	PM2.5_TOTEX	1	1	0.503835842	0.998694815	1
2032	T7 NNOOS Class 8	Diesel	PM2.5_TOTEX	1	1	0.536777104	0.994080544	1
2032	T7 NOOS Class 8	Diesel	PM2.5_TOTEX	1	1	0.512868429	0.995392112	1
2032	T7 Tractor Class 8	Diesel	PM2.5_TOTEX	1	1	0.558710836	0.999465527	1

APPENDIX E: EPA COBRA OUTPUT TABLES

Table E1 – 2028, Scenario 3, 100k sq ft Threshold

Total Health Benefits		
	$410,984	$514,534
	Low Value	High Value
	Change in Incidence	Monetary Value
Total Mortality	**0.024 / 0.031**	**$352,237 / $455,787**
Mortality, All Cause (PM)	0.006 / 0.013	$90,300 / $193,850
Mortality, O3 Short-term Exposure (O3)	0.001	$11,250
Mortality, O3 Long-term Exposure (O3)	0.017	$250,687
Nonfatal Heart Attacks (PM)	**0.004**	**$346**
Infant Mortality (PM)	**0.000**	**$717**
Total Hospital Admits, All Respiratory	**0.003**	**$61**
Hospital Admits, All Respiratory (PM)	0.001	$18
Hospital Admits, All Respiratory (O3)	0.002	$42
Total Emergency Room Visits, Respiratory	**0.046**	**$75**
Emergency Room Visits, Respiratory (PM)	0.004	$6
Emergency Room Visits, Respiratory (O3)	0.043	$70
Total Asthma Onset	**0.203**	**$15,459**
Asthma Onset (PM)	0.020	$1,554
Asthma Onset (O3)	0.182	$13,905
Total Asthma Symptoms	**31.008**	**$10,535**
Asthma Symptoms, Albuterol Use (PM)	3.707	$2
Asthma Symptoms, Chest Tightness (O3)	7.522	$2,902
Asthma Symptoms, Cough (O3)	8.873	$3,423
Asthma Symptoms, Shortness of Breath (O3)	3.796	$1,464
Asthma Symptoms, Wheeze (O3)	7.111	$2,743
Emergency Room Visits, Asthma (O3)	**0.000**	**$0**
Lung Cancer (PM)	**0.001**	**$23**
Hospital Admits, Cardio-Cerebro/Peripheral Vascular Disease (PM)	**0.001**	**$29**
Hospital Admits, Alzheimers Disease (PM)	**0.003**	**$75**
Hospital Admits, Parkinsons Disease (PM)	**0.000**	**$9**
Stroke (PM)	**0.000**	**$27**
Total Hay Fever/Rhinitis	**1.284**	**$1,431**
Hay Fever/Rhinitis (PM)	0.128	$143
Hay Fever/Rhinitis (O3)	1.156	$1,288
Cardiac Arrest, Out of Hospital (PM)	**0.000**	**$7**
Emergency Room Visits, All Cardiac (PM)	**0.002**	**$4**
Minor Restricted Activity Days (PM)	**6.336**	**$797**
School Loss Days (O3)	**16.965**	**$28,811**
Work Loss Days (PM)	**1.081**	**$342**
Total PM Health Effects	**11.295 / 11.302**	**$94,398 / $197,948**
Total O3 Health Effects	**45.667**	**$316,585**

Table E2 – 2028, Scenario 3, 50k sq ft Threshold

Total Health Benefits		
	$854,940	$1,068,368
	Low Value	High Value
	Change in Incidence	Monetary Value
Total Mortality	**0.050 / 0.065**	**$732,500 / $945,928**
Mortality, All Cause (PM)	0.013 / 0.027	$186,119 / $399,547
Mortality, O3 Short-term Exposure (O3)	0.002	$23,466
Mortality, O3 Long-term Exposure (O3)	0.036	$522,915
Nonfatal Heart Attacks (PM)	**0.008**	**$712**
Infant Mortality (PM)	**0.000**	**$1,478**
Total Hospital Admits, All Respiratory	**0.006**	**$126**
Hospital Admits, All Respiratory (PM)	0.001	$38
Hospital Admits, All Respiratory (O3)	0.005	$89
Total Emergency Room Visits, Respiratory	**0.097**	**$157**
Emergency Room Visits, Respiratory (PM)	0.007	$12
Emergency Room Visits, Respiratory (O3)	0.089	$145
Total Asthma Onset	**0.422**	**$32,207**
Asthma Onset (PM)	0.042	$3,203
Asthma Onset (O3)	0.380	$29,004
Total Asthma Symptoms	**64.589**	**$21,975**
Asthma Symptoms, Albuterol Use (PM)	7.641	$5
Asthma Symptoms, Chest Tightness (O3)	15.690	$6,053
Asthma Symptoms, Cough (O3)	18.508	$7,140
Asthma Symptoms, Shortness of Breath (O3)	7.918	$3,055
Asthma Symptoms, Wheeze (O3)	14.833	$5,723
Emergency Room Visits, Asthma (O3)	**0.001**	**$0**
Lung Cancer (PM)	**0.001**	**$47**
Hospital Admits, Cardio-Cerebro/Peripheral Vascular Disease (PM)	**0.002**	**$61**
Hospital Admits, Alzheimers Disease (PM)	**0.007**	**$154**
Hospital Admits, Parkinsons Disease (PM)	**0.001**	**$18**
Stroke (PM)	**0.001**	**$56**
Total Hay Fever/Rhinitis	**2.676**	**$2,981**
Hay Fever/Rhinitis (PM)	0.264	$295
Hay Fever/Rhinitis (O3)	2.411	$2,687
Cardiac Arrest, Out of Hospital (PM)	**0.000**	**$14**
Emergency Room Visits, All Cardiac (PM)	**0.004**	**$8**
Minor Restricted Activity Days (PM)	**13.058**	**$1,642**
School Loss Days (O3)	**35.387**	**$60,098**
Work Loss Days (PM)	**2.229**	**$705**
Total PM Health Effects	**23.280 / 23.295**	**$194,566 / $407,994**
Total O3 Health Effects	**95.259**	**$660,374**

Table E3 – 2032, Scenario 3, 100k sq ft Threshold

Total Health Benefits		
	$312,957	$395,797
	Low Value	High Value
	Change in Incidence	Monetary Value
Total Mortality	**0.018 / 0.024**	**$268,692 / $351,532**
Mortality, All Cause (PM)	0.005 / 0.011	$72,240 / $155,079
Mortality, O3 Short-term Exposure (O3)	0.001	$8,437
Mortality, O3 Long-term Exposure (O3)	0.013	$188,015
Nonfatal Heart Attacks (PM)	**0.003**	**$277**
Infant Mortality (PM)	**0.000**	**$574**
Total Hospital Admits, All Respiratory	**0.002**	**$46**
Hospital Admits, All Respiratory (PM)	0.001	$15
Hospital Admits, All Respiratory (O3)	0.002	$32
Total Emergency Room Visits, Respiratory	**0.035**	**$57**
Emergency Room Visits, Respiratory (PM)	0.003	$5
Emergency Room Visits, Respiratory (O3)	0.032	$52
Total Asthma Onset	**0.153**	**$11,672**
Asthma Onset (PM)	0.016	$1,243
Asthma Onset (O3)	0.137	$10,428
Total Asthma Symptoms	**23.442**	**$7,901**
Asthma Symptoms, Albuterol Use (PM)	2.966	$2
Asthma Symptoms, Chest Tightness (O3)	5.641	$2,176
Asthma Symptoms, Cough (O3)	6.654	$2,567
Asthma Symptoms, Shortness of Breath (O3)	2.847	$1,098
Asthma Symptoms, Wheeze (O3)	5.333	$2,058
Emergency Room Visits, Asthma (O3)	**0.000**	**$0**
Lung Cancer (PM)	**0.000**	**$18**
Hospital Admits, Cardio-Cerebro/Peripheral Vascular Disease (PM)	**0.001**	**$24**
Hospital Admits, Alzheimers Disease (PM)	**0.003**	**$60**
Hospital Admits, Parkinsons Disease (PM)	**0.000**	**$7**
Stroke (PM)	**0.000**	**$22**
Total Hay Fever/Rhinitis	**0.970**	**$1,080**
Hay Fever/Rhinitis (PM)	0.103	$114
Hay Fever/Rhinitis (O3)	0.867	$966
Cardiac Arrest, Out of Hospital (PM)	**0.000**	**$5**
Emergency Room Visits, All Cardiac (PM)	**0.001**	**$3**
Minor Restricted Activity Days (PM)	**5.068**	**$637**
School Loss Days (O3)	**12.723**	**$21,608**
Work Loss Days (PM)	**0.865**	**$274**
Total PM Health Effects	**9.036 / 9.042**	**$75,518 / $158,357**
Total O3 Health Effects	**34.251**	**$237,439**

Table E4 – 2032, Scenario 3, 50k sq ft Threshold

Total Health Benefits		
	$646,898	$816,603
	Low Value	High Value
	Change in Incidence	Monetary Value
Total Mortality	**0.038 / 0.050**	**$555,220 / $724,926**
Mortality, All Cause (PM)	0.010 / 0.022	$147,991 / $317,697
Mortality, O3 Short-term Exposure (O3)	0.001	$17,490
Mortality, O3 Long-term Exposure (O3)	0.027	$389,739
Nonfatal Heart Attacks (PM)	**0.007**	**$566**
Infant Mortality (PM)	**0.000**	**$1,175**
Total Hospital Admits, All Respiratory	**0.005**	**$96**
Hospital Admits, All Respiratory (PM)	0.001	$30
Hospital Admits, All Respiratory (O3)	0.004	$66
Total Emergency Room Visits, Respiratory	**0.072**	**$118**
Emergency Room Visits, Respiratory (PM)	0.006	$9
Emergency Room Visits, Respiratory (O3)	0.067	$108
Total Asthma Onset	**0.317**	**$24,164**
Asthma Onset (PM)	0.033	$2,547
Asthma Onset (O3)	0.283	$21,617
Total Asthma Symptoms	**48.520**	**$16,379**
Asthma Symptoms, Albuterol Use (PM)	6.076	$4
Asthma Symptoms, Chest Tightness (O3)	11.694	$4,511
Asthma Symptoms, Cough (O3)	13.794	$5,322
Asthma Symptoms, Shortness of Breath (O3)	5.901	$2,277
Asthma Symptoms, Wheeze (O3)	11.055	$4,265
Emergency Room Visits, Asthma (O3)	**0.000**	**$0**
Lung Cancer (PM)	**0.001**	**$37**
Hospital Admits, Cardio-Cerebro/Peripheral Vascular Disease (PM)	**0.002**	**$48**
Hospital Admits, Alzheimers Disease (PM)	**0.005**	**$122**
Hospital Admits, Parkinsons Disease (PM)	**0.001**	**$14**
Stroke (PM)	**0.001**	**$45**
Total Hay Fever/Rhinitis	**2.007**	**$2,237**
Hay Fever/Rhinitis (PM)	0.210	$234
Hay Fever/Rhinitis (O3)	1.797	$2,003
Cardiac Arrest, Out of Hospital (PM)	**0.000**	**$11**
Emergency Room Visits, All Cardiac (PM)	**0.003**	**$6**
Minor Restricted Activity Days (PM)	**10.383**	**$1,305**
School Loss Days (O3)	**26.374**	**$44,792**
Work Loss Days (PM)	**1.772**	**$561**
Total PM Health Effects	**18.511 / 18.523**	**$154,708 / $324,413**
Total O3 Health Effects	**70.999**	**$492,190**

APPENDIX F: AVERAGE ANNUAL COMPLIANCE COSTS

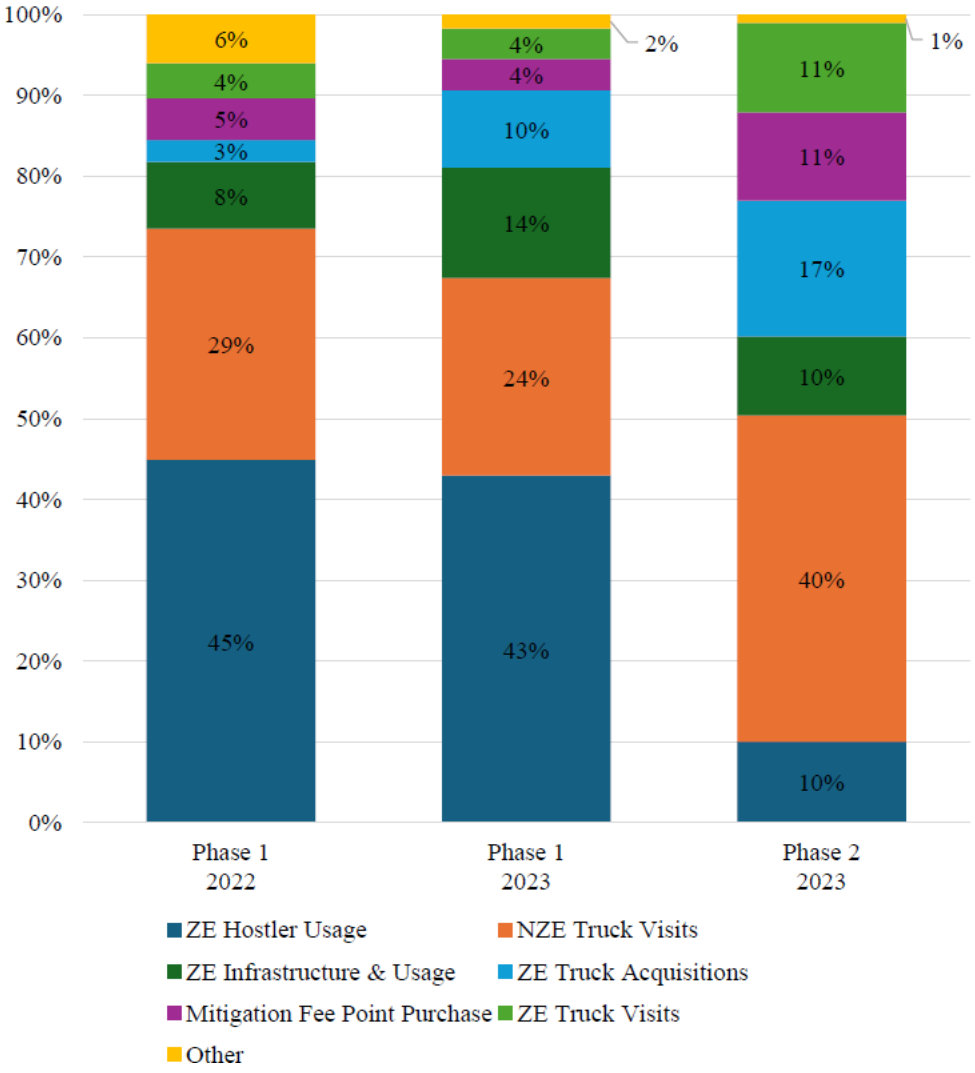
Referenced from the SCAQMD's cost information, Table F1 shows discounted total costs over a ten-year compliance time horizon (2022 – 2031).[93] It also shows a cost summary for each compliance scenario including net present value (assuming 1% discount rate), average annual cost, and a weighted average annual cost per square foot of warehouse space after taking into account equipment acquisition from CARB's Advanced Clean Trucks, Low NOx Omnibus. The total costs presented here are inclusive of all administrative costs and fees related to compliance.[94]

Table F1 – Total Cost Summary of Each Compliance Scenario (2022-2031) After Accounting for CARB's ACT and Low NOx Omnibus Regulation[95]

	Equipment	Discounted Total Costs - NPV (1%) (in millions)	Discounted Total Costs - NPV (4%) (in millions)	Average Annual Cost (in millions)	Average Annual Cost ($/sq. ft)
Sc1	NZE Class 8	$1,225.7	$1,102.6	$127.2	$0.16
Sc2	NZE Class 8	$1,345.1	$1,219.9	$139.2	$0.17
Sc3	NZE Class 8	$430.2	$374.4	$45.2	$0.06
Sc4	NZE Class 8	$887.4	$749.5	$94.1	$0.12
Sc5	ZE Class 8	$1,067.2	$941.8	$111.5	$0.14
Sc6	ZE Class 6 & 8	$1,799.3	$1,603.8	$187.3	$0.23
Sc7	Mitigation Fee	$6,298.0	$5,264.0	$670.2	$0.83
Sc7a	Mitigation Fee	$1,097.7	$985.5	$114.0	$0.14
Sc8	NZE Class 6	$1,785.0	$1,627.1	$184.3	$0.23
Sc9	NZE Class 6	$553.6	$467.6	$58.7	$0.07
Sc10	ZE Class 6	-$114.9	-$87.3	-$12.6	-$0.02
Sc11	Solar	$9,796.9	$9,712.2	$979.0	$1.21
Sc12	ZE Class 8	$8,117.5	$7,445.5	$836.7	$1.04
Sc13	ZE Class 2b-3	$803.2	$752.8	$82.1	$0.10
Sc14	ZE Class 2b-3	$1,128.8	$978.3	$118.7	$0.15
Sc15	Filter System	$5,985.7	$5,056.7	$634.7	$0.79
Sc16	Filter	$5,862.9	$4,953.4	$621.6	$0.77
Sc17	TRU	$54.2	$45.8	$5.7	$0.70
Sc18	Yard Trucks	$1,152.6	$1,028.7	$120.0	$0.15

[93] SCAQMD, Rule 2305, Staff Report, p. 64
[94] SCAQMD, Rule 2305, Staff Report, p. 71
[95] SCAQMD, Rule 2305, Staff Report, Table 20, p. 72

Figure F1 - Total Earned WAIRE Points Menu Items and Mitigation Fees (Normalized)[96]



[96] SCAQMD, 2nd Annual WAIRE Report, Appendix B, Figure A-5, p. 39

Table F2 – Total Cost Summary of Each Compliance Scenario (Adapted)[97]

Compliance Scenario	Equipment	Scenario Description	Average Annual Compliance Cost (per sq ft)	Earned WAIRE Points[98] (% of total)	Weighted Average Annual Compliance Cost (per sq ft)
Low-NOx Trucks					
Sc1	NZE Class 8	NZE Class 8 truck acquisitions and subsequent visits from those trucks	$0.16		
Sc2	NZE Class 8	NZE Class 8 truck acquisitions and subsequent visits from those trucks (early purchase)	$0.17		
Sc3	NZE Class 8	NZE Class 8 truck acquisitions (funded by Carl Moyer program) and subsequent visits from those trucks	$0.06		
Sc4	NZE Class 8	NZE Class 8 truck visits from non-owned fleets	$0.12		
Sc8	NZE Class 6	NZE Class 6 truck acquisitions and subsequent visits from those trucks	$0.23		
Sc9	NZE Class 6	NZE Class 6 truck visits from non-owned fleets	$0.07		
Average			**$0.14**	**40%**	**$0.05**
ZEV Hostlers and Trucks					
Sc5	ZE Class 8	ZE Class 8 truck visits from non-owned fleets	$0.14		
Sc6	ZE Class 6&8	Level 3 charger installations followed by ZE Class 6 & Class 8 truck acquisitions and subsequent visits from those trucks, using installed chargers	$0.23		
Sc10	ZE Class 6	ZE Class 6 truck visits from non-owned fleets	$(0.02)		
Sc13	ZE Class 2b-3	ZE Class 2b-3 truck acquisitions and subsequent visits from those trucks	$0.10		

[97] Adapted from Table F1.

[98] Derived from Figure F1 for Phase 2 facilities (150k to <250k sq ft , first compliance period in 2023). Earned WAIRE Points for the smallest facilities subject to Rule 2305 (Phase 3, 100k to <150k sq ft, first compliance period in 2024) will be presented in a subsequent SCAQMD Annual WAIRE Report anticipated to be released in 2025.

Compliance Scenario	Equipment	Scenario Description	Average Annual Compliance Cost (per sq ft)	Earned WAIRE Points[98] (% of total)	Weighted Average Annual Compliance Cost (per sq ft)
Sc14	ZE Class 2b-3	ZE Class 2b-3 truck visits from non-owned fleets	$0.15		
Sc18	Yard Trucks	ZE Hostler Acquisitions and Usage	$0.15		
Average			**$0.13**	**38%**	**$0.05**
ZEV Infrastructure					
Sc11	Solar	Rooftop solar panel installations and usage	$1.21		
Sc12	ZE Class 8	Hydrogen station installations followed by ZE Class 8 truck acquisitions and subsequent visits from those trucks, using the hydrogen station	$1.04		
Sc17	TRU	TRU plug installations and usage in cold storage facilities	$0.70		
Average			**$0.98**	**10%**	**$0.10**
Mitigation Fee					
Sc7	Mitigation Fee	Pay Mitigation Fee	$0.83		
Sc7a	Mitigation Fee	Pay Mitigation Fee and account for NZE trucks visiting the facility incentivized from the WAIRE Mitigation Program	$0.14		
Average			**$0.49**	**11%**	**$0.05**
Filters					
Sc15	Filter System	Filter System Installations	$0.79		
Sc16	Filter	Filter Purchases	$0.77		
Average			**$0.78**	**1%**	**$0.01**
Total				**100%**	**$0.26**

APPENDIX G: COST-EFFECTIVENESS SCENARIOS 1 & 2

For comparative purposes, the estimated countywide cost-effectiveness values for Scenario 1 (100% Low-NOx) and Scenario 2 (100% ZEV) are listed in Tables G1 and G2 respectively. **Note that Scenarios 1 and 2, in which all subject facilities implement either the same 100% Low-NOx or 100% ZEV compliance options, are best-case scenarios only and would *not* occur in practice.** This is because a potential warehouse ISR would need to provide multiple compliance options as modeled after the SCAQMD Rule 2305 for the ISR to be legally enforceable by the District. Therefore, in practice all subject facilities would most likely not select the same compliance option as each facility would have the choice to implement the appropriate compliance option(s) specific to their operations.

The cost-effectiveness values range between $154 to $198/lb in 2028, and $206 to $265/lb in 2032 for Scenario 1; and between $128 to $165/lb in 2028, and $172 to $221/lb in 2032 for Scenario 2. These estimated cost-effectiveness values for Scenarios 1 and 2 are less than those for Scenario 3 (Low-NOx, ZEV, Other) due to the lesser average costs of $0.14 and $0.13/sq ft respectively used in this analysis.[99]

Table G1 – Compliance Costs and Cost-Effectiveness for Scenario 1 (100% Low-NOx)*

ISR Applicability Threshold (sq ft)	Warehouse Count	Total Floor Area (sq ft)	Total Cost (per year)	Average Cost Per Warehouse (per year)	2028 Cost-Effectiveness ($/lb)	2032 Cost-Effectiveness ($/lb)
100k and greater	243	45,719,544	$6,172,138	$25,400	$198	$265
50k and greater	657	74,121,426	$10,006,393	$15,230	$154	$206

*Preliminary estimates subject to change.

Table G2 – Compliance Costs and Cost-Effectiveness for Scenario 2 (100% ZEV)*

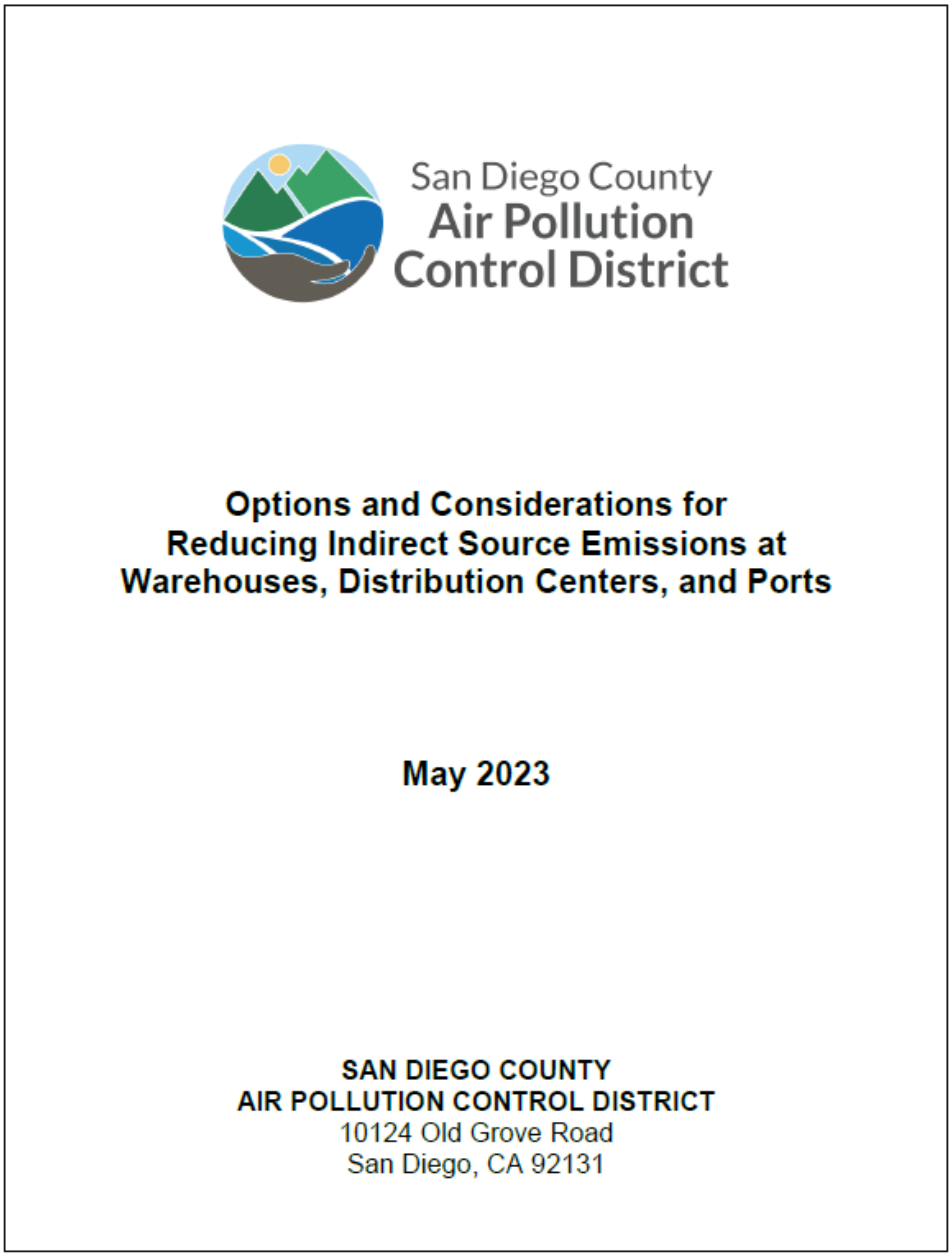
ISR Applicability Threshold (sq ft)	Warehouse Count	Total Floor Area (sq ft)	Total Cost (per year)	Average Cost Per Warehouse (per year)	2028 Cost-Effectiveness ($/lb)	2032 Cost-Effectiveness ($/lb)
100k and greater	243	45,719,544	$5,714,943	$23,518	$165	$221
50k and greater	657	74,121,426	9,265,178	$14,102	$128	$172

*Preliminary estimates subject to change.

[99] Appendix F: Average Annual Compliance Costs

ATTACHMENT A: OPTIONS AND CONSIDERATIONS FOR REDUCING INDIRECT SOURCE EMISSIONS AT WAREHOUSES, DISTRIBUTION CENTERS, AND PORTS (or ISR FRAMEWORK)

Click here to view Attachment A in pdf format.[100]



[100] https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/references/isr-framework-english.pdf

ATTACHMENT B: WWG TIMELINE AND WORKING GROUP PARTICIPANTS

Click here to view Attachment B in pdf format.[101]

WAREHOUSE WORKING GROUP (WWG) TENTATIVE TIMELINE AND POSSIBLE WORKING GROUP PARTICIPANTS

	Regulatory Strategies	Non-Regulatory Strategies
August 2023	- Planning and Policy Committee Update on Warehouse Working Group (Timeline of Actions, Purpose Statement) - Identify and get tentative commitments from potential Warehouse Working Group Participants - Initiate procurement process to secure contractor(s) to prepare required CEQA and SIA documentation (~10 months to complete)	
September 2023	- Introductory meeting(s) with potential Warehouse Working Group participants - Facility and background information collection (ongoing)	- Identify potential non-regulatory strategies in introductory meeting(s) with potential Warehouse Working Group participants.
October 2023	- Governing Board Update on Warehouse Working Group (Board Letter, Timeline of Actions, Purpose Statement) - Introductory meeting(s) with potential Warehouse Working Group participants - Public Outreach, Engagement, and Meaningful Input Opportunities o AB617 Portside Steering Committee o AB617 International Border Steering Committee o EJ Community Impacted in East County o EJ Community Impacted in North County o SDAPCD Environmental Justice Partnership o APCD-Industrial Working Group (AIWG) o Possible Affected Warehouse Owners/Operators - Public Outreach (Email/Social Media Announcements to announce Kickoff Warehouse Working Group Meeting) - Facility and background information collection (ongoing)	- Identify potential non-regulatory strategies in introductory meeting(s) with potential Warehouse Working Group participants.
November 2023	- Warehouse Working Group Formal Kickoff Meeting (Virtual, 1x monthly, 2 hours) with the following possible topics: o June 2023, August 2023, and October 2023 Governing Board & Planning and Policy Committee Direction/Feedback o Warehouse Inventory (Small, under-resourced communities; proximity to sensitive receptors; prioritization) o Overview of legal authority (federal preemption; Proposition 26; no land use authority) o Other possible strategies (incentives, new concepts, etc.) o Concept for APCD Truck Trip Survey - Facility and background information collection (ongoing)	- Identify potential non-regulatory strategies in meeting(s) with potential Warehouse Working Group participants.

-1-
Subject to Change

[101] https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/092523/timeline-participants.pdf

ATTACHMENT C: WAREHOUSE WORKING GROUP PURPOSE STATEMENT

Click here to view Attachment C in pdf format.[102]

San Diego County Air Pollution Control District

Warehouse Working Group Purpose Statement

Purpose
The purpose of the Warehouse Working Group (WWG) is to offer input to the San Diego County Air Pollution Control District (SDAPCD) regarding potential regulatory and non-regulatory strategies to reduce air pollution and public health impacts from heavy-duty trucks and other indirect sources associated with warehouses and distribution centers in the San Diego region, with priority to those facilities in under-resourced communities.

Line of Reporting
The WWG may make recommendations to SDAPCD staff and the SDAPCD Planning and Policy Committee. The SDACPD Planning and Policy Committee may report those recommendations to the SDAPCD Governing Board.

Membership
The WWG membership will represent a balanced range of stakeholder interests with on-the-ground knowledge and information about the freight sector and community air quality impacts including, but not limited to, community groups and residents, warehouse owners and operators, trucking companies, government agencies, and other interested parties. In inviting members, SDAPCD will strive to ensure both community/environmental and freight/warehouse stakeholder interests are adequately represented. A membership roster will be available on the SDAPCD website. SDAPCD may augment WWG membership if additional expertise or perspective is desired.

Responsibilities
Members are expected to regularly participate in WWG meetings, review meeting materials provided by SDAPCD, and share information and provide feedback based on their respective areas of expertise. Additionally, members are asked to regularly communicate information about WWG developments to their respective constituencies, and actively seek perspectives to share in WWG discussions. The level of commitment for members is anticipated to be 1 – 4 hours per month.

Members are not asked to seek consensus in their advice to the SDAPCD. However, SDAPCD staff will record areas of agreement, as well as the diverse perspectives when there is not agreement. Staff will work to integrate the WWG's advice, and input from other interested parties including the public, into the development of proposed indirect source control strategies for warehouses and distribution centers, as appropriate. The SDAPCD Governing Board has final decision-making authority.

Meeting Information
Meetings will be held virtually and administered by SDAPCD. Links to meeting materials will be made available on a new dedicated webpage on the SDAPCD website. Meeting times will be determined based on member availability. Members of the public will be allowed to speak on any item within the area of focus for the meeting. Meeting agendas will be posted no later than 48 hours in advance of the meetings. Live language interpretation will be available at each meeting provided such services are needed. SDAPCD staff may require limiting the amount of time for public and/or member comment to ensure meetings are run efficiently.

Meeting Decorum
To ensure WWG meetings are effective and inclusive, all members agree to recognize and adhere to the following meeting rules and guidelines of participation: (1) Create space for everyone to contribute, (2) Only one person speaks at a time, (3) Listen to each other, (4) Respect each other's opinions, knowledge, and perspectives, and (5) Be conscious of time constraints. Meetings will be moderated either by SDAPCD staff or a professional/impartial facilitator.

Duration of Existence
The WWG will function on an on-going basis, subject to annual review by the SDAPCD.

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[102] https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/092523/purpose-statement.pdf

ATTACHMENT D: INDUSTRY WAREHOUSE ISR ANALYSIS

Click here to view Attachment D in pdf format.[103]

APCD Preliminary Comments on IEA Warehouse ISR Analysis Slide Deck and Excel Spreadsheet
11/30/2023

APCD appreciates the opportunity to provide feedback. Overall, we have the following main takeaways:

1. There remain large data gaps in making a strong correlation between the stated findings, which is that warehouses have little/no correlation to high levels of DPM in various communities.
    - No surface street truck activity data is a primary concern. However, it's possible that SANDAG truck volume data could fill in this gap.

   IEA Response: Agreed that a lack of surface street truck activity data is a challenge in this analysis. Hopefully the District can share the data that they found from SANDAG – and ideally it would be actual counts vs modeled street traffic.

2. The comparison to "normal" traffic data and "truck" traffic data may not be appropriate.
    - Percent of traffic data does not necessarily equate or compare to emissions from such vehicles. For examples, trucks make up a very small percent of traffic activity but emit higher emissions than typical passenger vehicles. An assessment that reviews *emissions* between the two could better address that dynamic.

   IEA Response: Agreed, the graphs have been revised to show count of trucks on the roads rather than percentage.

    - Most general vehicle traffic is not powered by diesel; consequently, making any assumptions between "normal" vehicle traffic and DPM seems off-base. A more appropriate and focused comparison might be to look at the level of truck activity in the same areas but attempt to determine the impact of DPM emissions from other emission sources (i.e. off-road, marine, cargo handling, etc.). Doing so could present a better comparison as to the level of impact trucks are having in these same neighborhoods, to perhaps make the findings stronger.

   IEA Response: Agreed, we spoke with CARB staff who worked on EMFAC and while they walked us through the EMFAC methodology and source of the data, we could not replicate a result that made sense. CalEnviroScreen, for all of SD County, had approximately 132 tons of DPM allocated throughout the census tracts. At CARB's recommendation, use of Diesel PM2.5 without any other calculations yielded results in EMFAC that were much higher. That said, it was useful in that we now know the universe of vehicle classes used in the on-road diesel portion of emissions and the breakdown of emission sources by class. While we may not be able to single out the portion of on-road DPM on CalEnviroScreen, we may be able to infer the proportionality of on-road mobile source emissions associated with the classes most likely to be used by warehouses and distribution centers within SD County.

3. We would encourage taking this feedback to improve the study and allowing APCD to review once again before having this be presented to the WWG group and/or AB617 Steering committees.

Technical Comments on PowerPoint:

1. Slide 2 - The problem statement in the PPT presentation Slide 2 indicates this review is focused on the degree that warehouses are responsible for DPM in specific census tracts.
    - It would be useful to expand that statement to also look at NOx levels in specific census tracts as well, since NOx is a precursor to ozone, and it's possible any proposed warehouse rule would also be investigating NOx reductions to assist in attainment of federal ozone standards.

   IEA Response: Agreed. Although the scope of the CalEnviroScreen data set used in this study does not include NOx, EMFAC and CEPAM model outputs for annual NOx emissions as well and can support NOx forecasting.

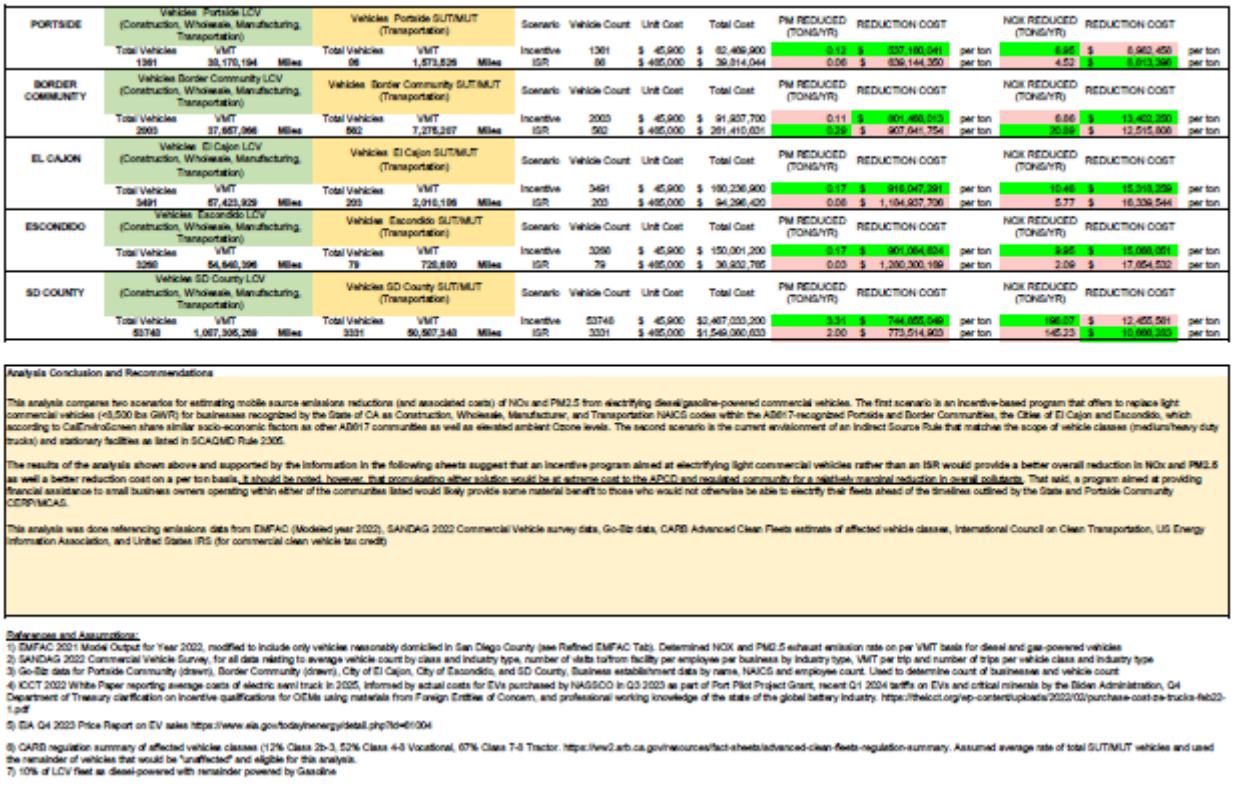
    - The same concern exists regarding the follow-up question on Slide 2, which is whether additional regulation on warehouse facilities provide material improvement to DPM emissions in those census tracts. However, answering this question could be difficult to conclusively answer, given that any reduction in NOx levels might not be seen in the immediate area of the census tract; ozone is mainly created in the inland foothill areas of the County.

   IEA Response: Agreed, it will be difficult to ascertain any given census tract's contribution to the total measured zone concentrations at monitoring stations in the County.

[103] Staff's preliminary comments on the IEA Warehouse ISR Analysis (PowerPoint and Excel) as of 1/5/2024, https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/references/industry-warehouse-isr-analysis.pdf.

ATTACHMENT E: ISR VS INCENTIVE ANALYSIS

Click here to view Attachment E in pdf format.[104]



	Vehicles: Portside LCV (Construction, Wholesale, Manufacturing, Transportation)			Vehicles: Portside SUT/MUT (Transportation)			Scenario	Vehicle Count	Unit Cost	Total Cost	PM REDUCED (TONS/YR)	REDUCTION COST		NOX REDUCED (TONS/YR)	REDUCTION COST	
PORTSIDE	Total Vehicles	VMT		Total Vehicles	VMT		Incentive	1301	$ 45,900	$ 62,469,900	0.13	$ 537,180,041	per ton	6.95	$ 9,062,456	per ton
	1301	35,176,194	Miles	86	1,573,826	Miles	ISR	86	$ 495,000	$ 39,914,044	0.08	$ 539,144,350	per ton	4.52	$ 8,813,396	per ton
	Vehicles: Border Community LCV (Construction, Wholesale, Manufacturing, Transportation)			Vehicles: Border Community SUT/MUT (Transportation)			Scenario	Vehicle Count	Unit Cost	Total Cost	PM REDUCED (TONS/YR)	REDUCTION COST		NOX REDUCED (TONS/YR)	REDUCTION COST	
BORDER COMMUNITY	Total Vehicles	VMT		Total Vehicles	VMT		Incentive	2003	$ 45,900	$ 91,937,700	0.11	$ 801,468,013	per ton	6.66	$ 13,402,200	per ton
	2003	37,667,066	Miles	502	7,276,207	Miles	ISR	502	$ 495,000	$ 261,410,631	0.29	$ 907,641,754	per ton	20.69	$ 12,515,806	per ton
	Vehicles: El Cajon LCV (Construction, Wholesale, Manufacturing, Transportation)			Vehicles: El Cajon SUT/MUT (Transportation)			Scenario	Vehicle Count	Unit Cost	Total Cost	PM REDUCED (TONS/YR)	REDUCTION COST		NOX REDUCED (TONS/YR)	REDUCTION COST	
EL CAJON	Total Vehicles	VMT		Total Vehicles	VMT		Incentive	3491	$ 45,900	$ 160,236,900	0.17	$ 916,047,291	per ton	10.46	$ 15,313,259	per ton
	3491	57,423,929	Miles	203	2,016,106	Miles	ISR	203	$ 495,000	$ 94,296,420	0.06	$ 1,184,937,706	per ton	5.77	$ 16,339,544	per ton
	Vehicles: Escondido LCV (Construction, Wholesale, Manufacturing, Transportation)			Vehicles: Escondido SUT/MUT (Transportation)			Scenario	Vehicle Count	Unit Cost	Total Cost	PM REDUCED (TONS/YR)	REDUCTION COST		NOX REDUCED (TONS/YR)	REDUCTION COST	
ESCONDIDO	Total Vehicles	VMT		Total Vehicles	VMT		Incentive	3268	$ 45,900	$ 150,001,200	0.17	$ 901,064,824	per ton	9.95	$ 15,060,051	per ton
	3268	54,640,396	Miles	79	726,899	Miles	ISR	79	$ 495,000	$ 36,922,785	0.03	$ 1,200,300,189	per ton	2.09	$ 17,654,532	per ton
	Vehicles: SD County LCV (Construction, Wholesale, Manufacturing, Transportation)			Vehicles: SD County SUT/MUT (Transportation)			Scenario	Vehicle Count	Unit Cost	Total Cost	PM REDUCED (TONS/YR)	REDUCTION COST		NOX REDUCED (TONS/YR)	REDUCTION COST	
SD COUNTY	Total Vehicles	VMT		Total Vehicles	VMT		Incentive	53748	$ 45,900	$2,467,033,200	3.31	$ 744,955,049	per ton	196.07	$ 12,465,581	per ton
	53748	1,067,395,269	Miles	3331	50,507,340	Miles	ISR	3331	$ 495,000	$1,549,080,033	2.00	$ 773,514,903	per ton	145.23	$ 10,666,253	per ton

Analysis Conclusion and Recommendations

This analysis compares two scenarios for estimating mobile source emissions reductions (and associated costs) of NOx and PM2.5 from electrifying diesel/gasoline-powered commercial vehicles. The first scenario is an incentive-based program that offers to replace light commercial vehicles (<8,500 lbs GWR) for businesses recognized by the State of CA as Construction, Wholesale, Manufacturer, and Transportation NAICS codes within the AB617-recognized Portside and Border Communities, the Cities of El Cajon and Escondido, which according to CalEnviroScreen share similar socio-economic factors as other AB617 communities as well as elevated ambient Ozone levels. The second scenario is the current envisionment of an Indirect Source Rule that matches the scope of vehicle classes (medium/heavy duty trucks) and stationary facilities as listed in SCAQMD Rule 2305.

The results of the analysis shown above and supported by the information in the following sheets suggest that an incentive program aimed at electrifying light commercial vehicles rather than an ISR would provide a better overall reduction in NOx and PM2.5 as well a better reduction cost on a per ton basis. It should be noted, however, that promulgating either solution would be at extreme cost to the APCD and regulated community for a relatively marginal reduction in overall pollutants. That said, a program aimed at providing financial assistance to small business owners operating within either of the communities listed would likely provide some material benefit to those who would not otherwise be able to electrify their fleets ahead of the timelines outlined by the State and Portside Community CERP/MCAS.

This analysis was done referencing emissions data from EMFAC (Modeled year 2022), SANDAG 2022 Commercial Vehicle survey data, Go-Biz data, CARB Advanced Clean Fleets estimate of affected vehicle classes, International Council on Clean Transportation, US Energy Information Association, and United States IRS (for commercial clean vehicle tax credit)

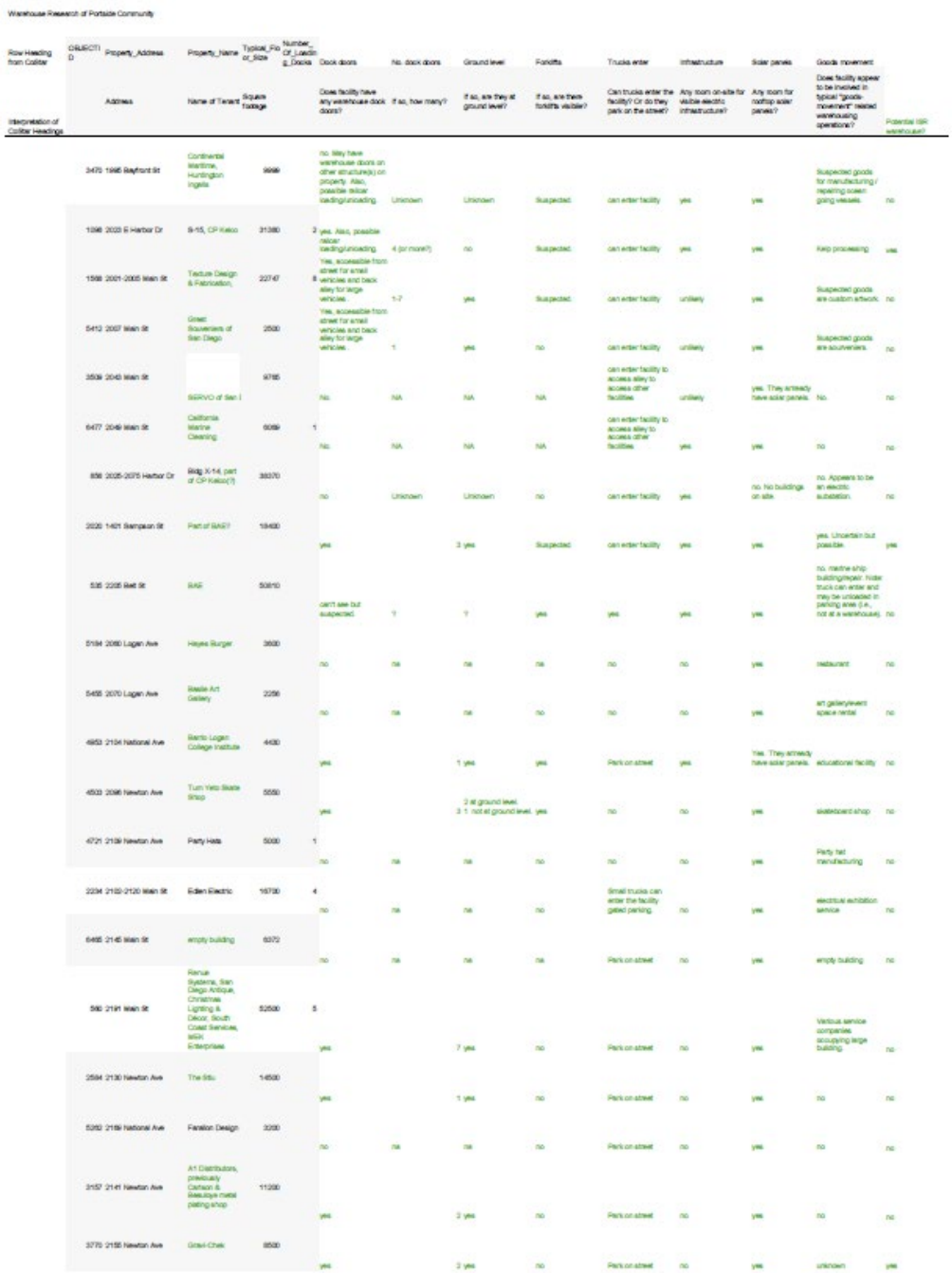
References and Assumptions:

1) EMFAC 2021 Model Output for Year 2022, modified to include only vehicles reasonably domiciled in San Diego County (see Refined EMFAC Tab). Determined NOX and PM2.5 exhaust emission rate on per VMT basis for diesel and gas-powered vehicles
2) SANDAG 2022 Commercial Vehicle Survey, for all data relating to average vehicle count by class and industry type, number of visits to/from facility per employee per business by industry type, VMT per trip and number of trips per vehicle class and industry type
3) Go-Biz data for Portside Community (drawn), Border Community (drawn), City of El Cajon, City of Escondido, and SD County, Business establishment data by name, NAICS and employee count. Used to determine count of businesses and vehicle count
4) ICCT 2022 White Paper reporting average costs of electric semi truck in 2025, informed by actual costs for EVs purchased by NASSCO in Q3 2023 as part of Port Pilot Project Grant, recent Q1 2024 tariffs on EVs and critical minerals by the Biden Administration, Q4 Department of Treasury clarification on incentive qualifications for OEMs using materials from Foreign Entities of Concern, and professional working knowledge of the state of the global battery industry. https://theicct.org/wp-content/uploads/2022/03/purchase-cost-zx-trucks-feb22-1.pdf
5) EIA Q4 2023 Price Report on EV sales https://www.eia.gov/todayinenergy/detail.php?id=61004
6) CARB regulation summary of affected vehicles classes (12% Class 2b-3, 53% Class 4-8 Vocational, 67% Class 7-8 Tractor. https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-summary. Assumed average rate of total SUT/MUT vehicles and used the remainder of vehicles that would be "unaffected" and eligible for this analysis.
7) 10% of LCV fleet as diesel-powered with remainder powered by Gasoline

[104] The ISR vs Incentive Analysis (Excel) was prepared by an IEA member and submitted to the District via email on June 26, 2024. The attachment contains the information from the "Analysis Summary" worksheet, https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/references/isr-vs-incentive-analysis.pdf.

ATTACHMENT F: DISTRICT SAMPLE WAREHOUSE STUDY

Click here to view Attachment F in pdf format.[105]



Warehouse Research of Portside Community

Row Heading from Collar Interpretation of Collar Headings	OBJECTID Address	Property_Address Name of Tenant	Property_Name Square Footage	Typical_Floor_Size	Number_Of_Loading_Docks Does facility have any warehouse dock doors?	Dock doors If so, how many?	No. dock doors If so, are they at ground level?	Ground level If so, are there forklifts visible?	Forklifts Can trucks enter the facility? Or do they park on the street?	Trucks enter Any room on-site for visible electric infrastructure?	Infrastructure Any room for rooftop solar panels?	Solar panels Does facility appear to be involved in typical "goods movement" related warehousing operations?	Goods movement Potential ISR warehouse?
	3470 1995 Bayfront St	Continental Maritime, Huntington Ingalls	9999		no. May have warehouse doors on other structure(s) on property. Also, possible indoor loading/unloading	Unknown	Unknown	Suspected	can enter facility	yes	yes	Suspected goods for manufacturing / repairing ocean going vessels	no
	1298 2023 E Harbor Dr	9-15, CP Kelco	31380	2	yes. Also, possible indoor loading/unloading	4 (or more?)	no	Suspected	can enter facility	yes	yes	Kelp processing	yes
	1598 2001-2005 Main St	Texture Design & Fabrication,	22747	8	Yes, accessible from street for small vehicles and back alley for large vehicles.	1-7	yes	Suspected	can enter facility	unlikely	yes	Suspected goods are custom artwork	no
	5412 2007 Main St	Great Souvenirs of San Diego	2500		Yes, accessible from street for small vehicles and back alley for large vehicles.	1	yes	no	can enter facility	unlikely	yes	Suspected goods are souvenirs	no
	3506 2043 Main St	SSRVO of San I	9785		No.	NA	NA	NA	can enter facility to access alley to access other facilities.	unlikely	yes. They already have solar panels.	No.	no
	6477 2049 Main St	California Marine Cleaning	9089	1	No.	NA	NA	NA	can enter facility to access alley to access other facilities.	yes	yes	no	no
	856 2025-2075 Harbor Dr	Bldg X-14, part of CP Kelco(?)	39370		no	Unknown	Unknown	no	can enter facility	yes	no. No buildings on site.	no. Appears to be an electric substation.	no
	2026 1401 Sampson St	Part of BAE?	19400		yes		2 yes	Suspected	can enter facility	yes	yes	yes. Uncertain but possible.	yes
	535 2205 Bell St	BAE	53810		can't see but suspected	?	?	yes	yes	yes	yes	no. marine ship building/repair. Note: trucks can enter and may be unloaded in parking area (i.e., not at a warehouse).	no
	5184 2060 Logan Ave	Hayes Burger	3600		no	na	na	na	no	no	yes	restaurant	no
	5456 2070 Logan Ave	Reside Art Gallery	2256		no	na	na	no	no	no	yes	art gallery/event space rental	no
	4953 2104 National Ave	Barrio Logan College Institute	4400		yes		1 yes	yes	Park on street	yes	Yes. They already have solar panels.	educational facility	no
	4503 2096 Newton Ave	Turn Yelo Skate Shop	5550		yes		2 at ground level, 3 ? not at ground level	yes	no	no	yes	skateboard shop	no
	4721 2139 Newton Ave	Party Hats	5000	1	no	na	na	no	no	no	yes	Party hat manufacturing	no
	2234 2102-2120 Main St	Eden Electric	16700	4	no	na	na	no	Small trucks can enter the facility gated parking	no	yes	electrical exhibition service	no
	5495 2145 Main St	empty building	6372		no	na	na	na	Park on street	no	yes	empty building	no
	560 2191 Main St	Renue Systems, San Diego Antique, Christmas Lighting & Décor, South Coast Services, Wish Enterprises	52500	5	yes		7 yes	no	Park on street	no	yes	Various service companies occupying large building	no
	2584 2130 Newton Ave	The Silo	14500		yes		1 yes	no	Park on street	no	yes	no	no
	5262 2159 National Ave	Fanalon Design	3200		no	na	na	no	Park on street	no	yes	no	no
	3157 2141 Newton Ave	A1 Distributors, previously Carlson & Westbye metal plating shop	11200		yes		2 yes	no	Park on street	no	yes	no	no
	3775 2150 Newton Ave	Grad-Chek	8520		yes		2 yes	no	Park on street	no	yes	unknown	yes

[105] https://www.sdapcd.org/content/dam/sdapcd/documents/rules/warehouse-work-group/references/sample-warehouse-study.pdf