



Measures for Reducing Emissions from On-Road Heavy-Duty Vehicles

2022 AQMP Mobile Source Working Group

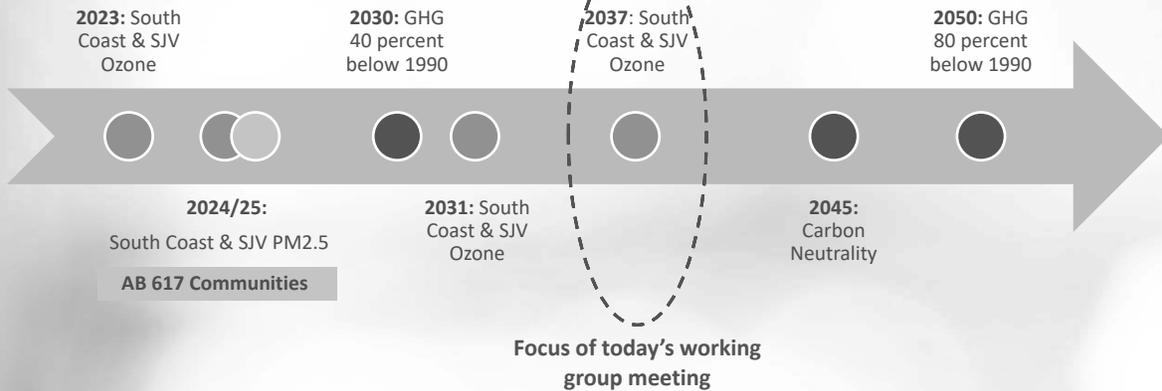
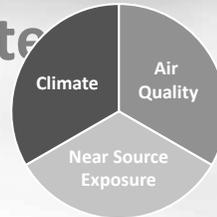
June 3, 2021

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Outline

- 2022 Air Quality Management Plan
- CARB Adopted Regulatory Measures
- 2020 Mobile Source Strategy Concepts
- Overview of Proposed Measures
- Infrastructure Planning and Development
- Governor's Zero Emissions Vehicles & Infrastructure package

California's Air Quality and Climate Goals

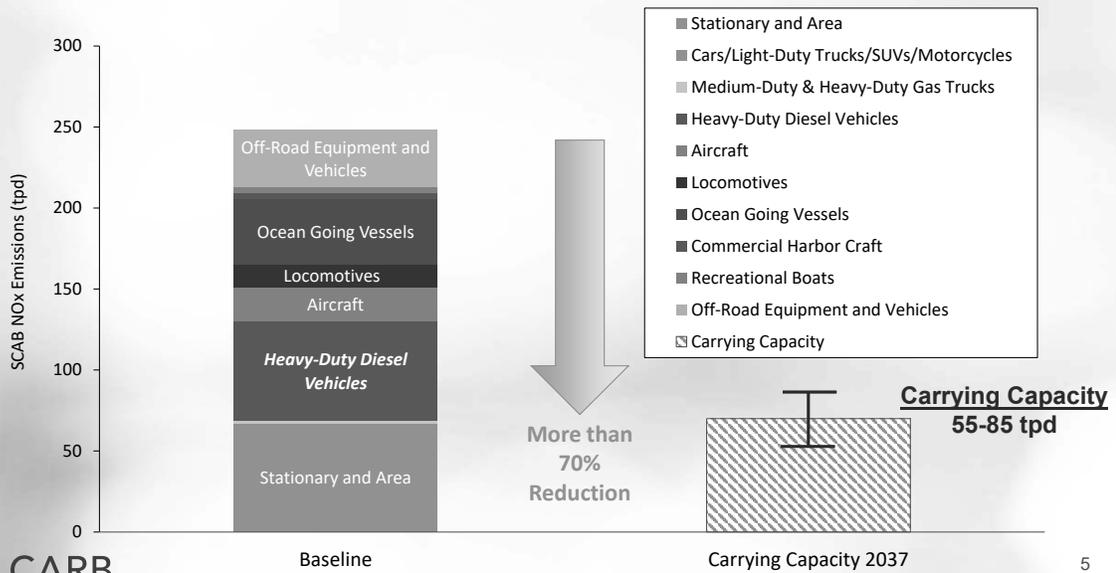


2022 AQMP

- Address attainment of the 2015 8-hour ozone standard (70 ppb) for South Coast Air Basin and Coachella Valley without reliance on black box measures in 2037



2037 Attainment Working Draft



CARB Adopted Regulatory Measures from 2018-2020



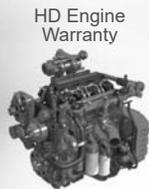
HD Vehicle Inspection Program (HDVIP)/
Periodic Smoke Inspection Program (PSIP)



Innovative Clean Transit (ICT)



Advanced Clean Trucks



HD Engine Warranty

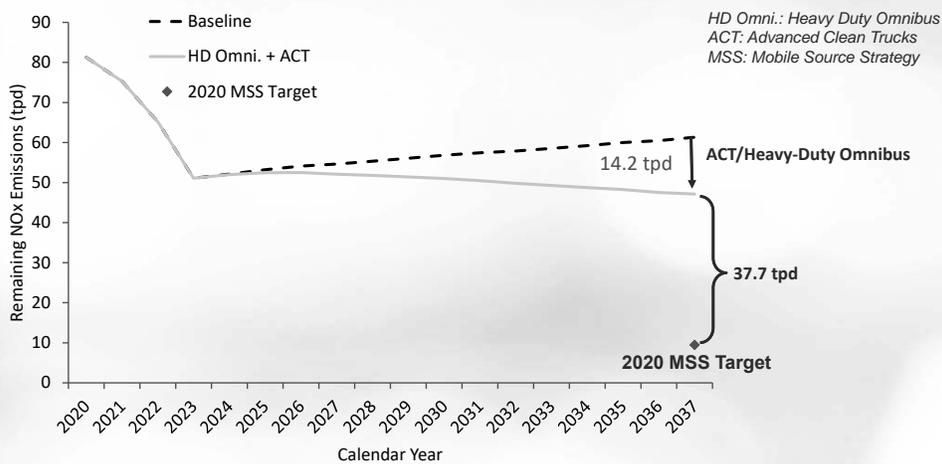


Zero Emission (ZE) Airport Shuttle Bus



HD Omnibus

NOx Emission Reductions for Heavy-Duty Vehicles in South Coast from Adopted Measures



2020 Mobile Source Strategy

- Builds on 2016 Mobile Source Strategy
- Conceptual scenario approach
- Identifies technology mixes needed to meet toxics, air quality and climate targets
- Reflects Governor's recent ZEV EO
- Informs policy development



Executive Order N-79-20

 **100% ZEV sales** by 2035

Full transition to **ZEV short-haul/drayage trucks** by 2035 

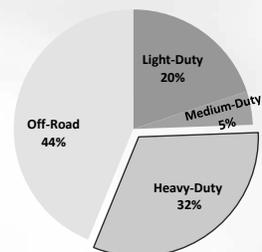
Full transition to **ZEV buses & heavy-duty long-haul trucks** by 2045*  

Full transition to **ZE off-road equipment** by 2035*  *where feasible

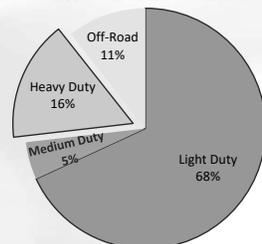
2020 Mobile Source Strategy Concepts for Heavy-Duty Vehicles

- Heavy-duty vehicles (above 14,000 lbs. GVWR) are 32% of mobile source NOx in South Coast and 16% of statewide mobile source GHG emissions
- **Concepts**
 - Aggressive ZEV penetration, and accelerated replacement of older vehicles
 - Cleaner combustion
 - Continued energy efficiency improvements
 - In-use performance measures
 - Renewable fuels where electrification is not feasible

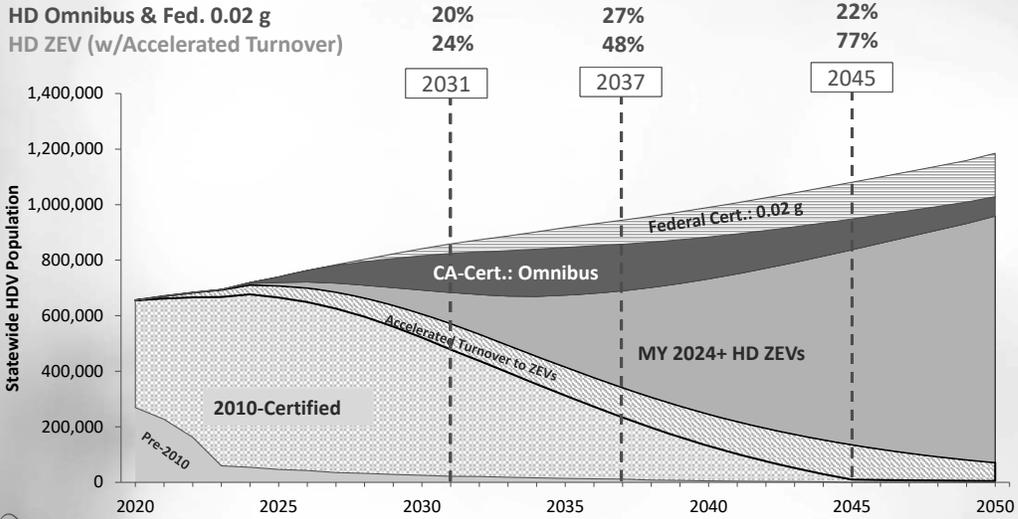
NOx - Mobile Sources (SC)



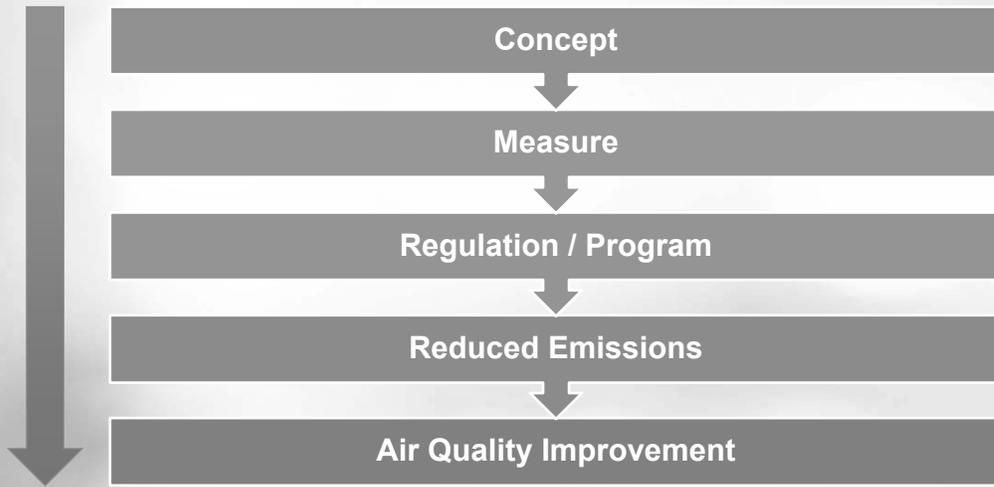
GHG - Mobile Sources



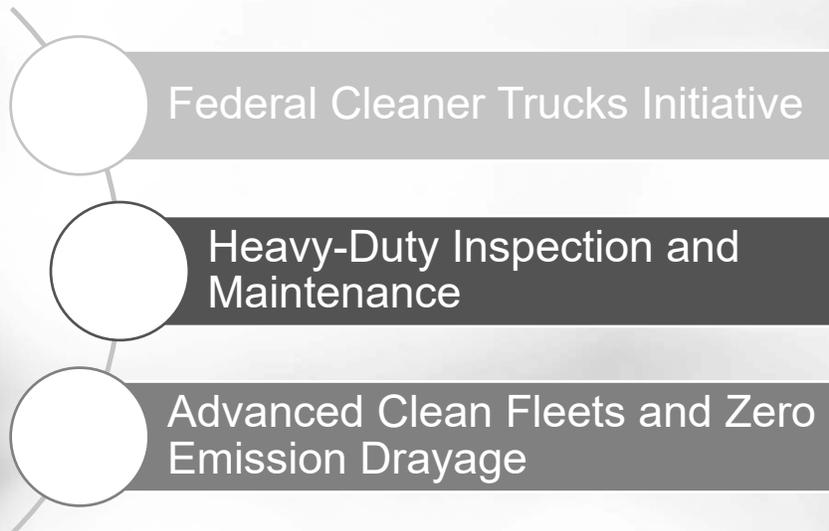
2020 Mobile Source Strategy On-Road Heavy Duty Vehicles



Evolution of a Concept



Proposed Heavy-Duty Vehicle Measures



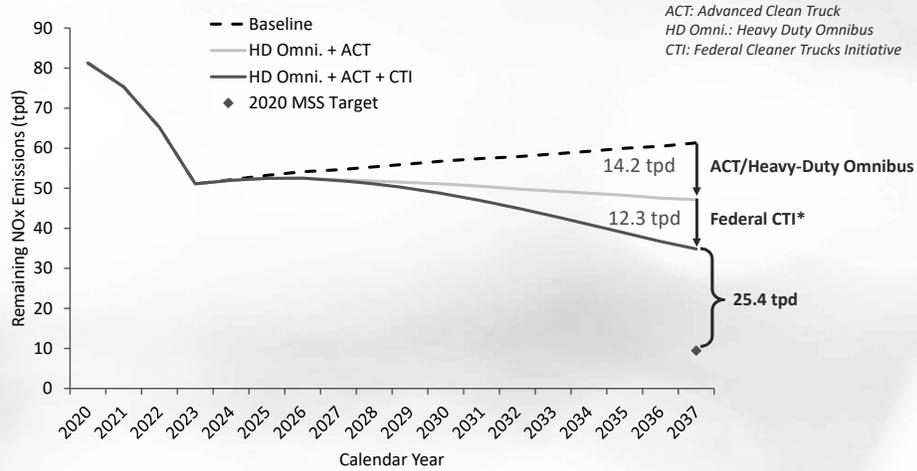
Implementation: 2027

Federal Cleaner Trucks Initiative

- The Environmental Protection Agency (EPA) is pursuing a Cleaner Trucks Initiative (CTI) regulation to update NOx emissions standards for heavy-duty trucks
- In 2020, EPA released an Advanced Notice of Proposed Rulemaking
- Proposed rulemaking expected in 2021



Anticipated NOx Emission Reductions for Heavy-Duty Vehicles in South Coast from CTI



* Preliminary estimate assuming 90% cleaner in-use

Implementation: 2023

Heavy-Duty Inspection & Maintenance Overview

- Senate Bill 210 (Leyva; Statutes of 2019) directs CARB to develop and implement a new, comprehensive HD I/M program
 - Maintain low emissions throughout a vehicle's life
- Applies to all (non-gasoline) heavy-duty vehicles operating in California
- Major program elements
 - Require periodic vehicle inspections
 - Complementary roadside high-emitter vehicle screening
- First hearing December 2021

HD I/M Roadside High-Emitter Vehicle Screening

- Real-time emissions monitoring equipment with ALPR cameras to identify high emitting vehicles
- High emitters would be required to demonstrate compliance via testing mechanisms discussed previously



1 mobile and 2 unattended systems
PM focus

• 2 mobile and 11 - 12 unattended systems
• PM focus

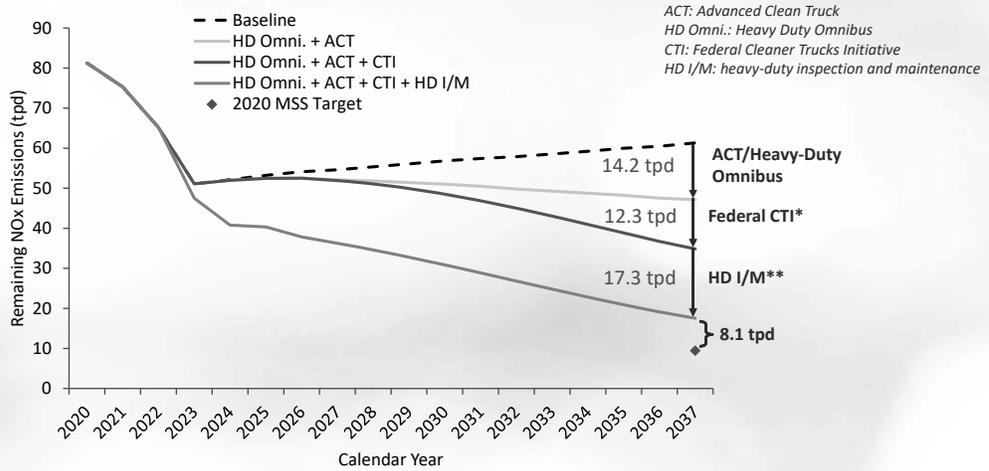
• 2 mobile and 11 - 12 unattended systems
• PM and NOx focus



HD I/M Implementation: Proposed Program Phase-In

- First Phase – Begins **January 1, 2023**
 - High emitter vehicle screening
- Second Phase – Begins **July 1, 2023**
 - Enforcement of compliance certificate requirements starts
 - DMV registration holds for California registered vehicles start
- Third Phase – Begins **January 1, 2024**
 - Periodic testing starts

Anticipated NOx Emission Reductions for Heavy-Duty Vehicles in South Coast from HD I/M



* Preliminary estimate assuming 90% cleaner in-use
 ** Draft estimates based on current rulemaking analysis. Subject to change.

Implementation: 2023

Advanced Clean Fleets Regulation

- Phase-in zero emission trucks and buses 2023 to 2045*
 - State and local government fleets
 - High priority private fleets and federal agencies
 - Drayage trucks serving ports and railyards
- Contribute to meeting zero-emission fleet goals where feasible
- Prioritize benefits in disadvantaged communities
- First hearing December 2021



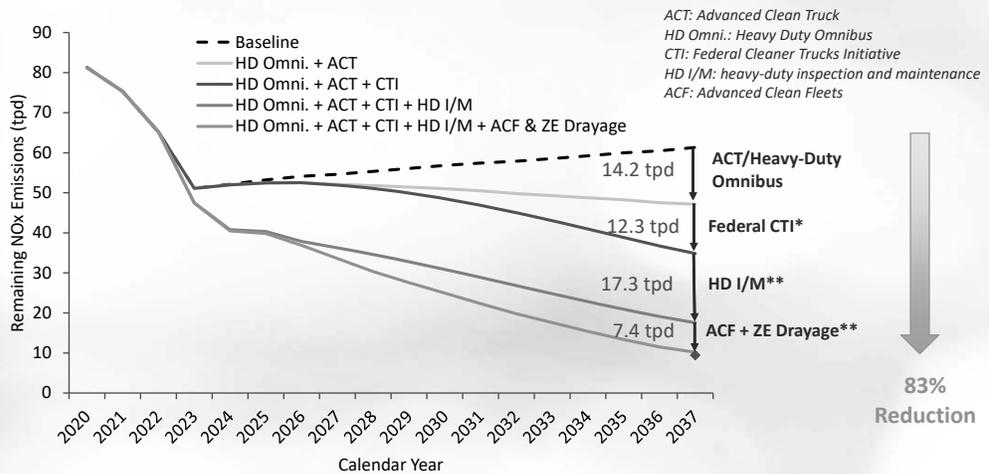
*Applies to on-road vehicles with a gross vehicle weight rating >8,500 lbs. and off-road yard tractors

Zero Emission Drayage Truck

- Trucks must register with CARB if they conduct drayage activities at the seaports and railyards
- Beginning in 2023, any truck added to the CARB Drayage Truck Registry must be zero-emissions
- Legacy drayage trucks removed from registry at the end of their useful life
- All drayage trucks would be required to be zero-emission by 2035



NOx Emission Reductions for Heavy-Duty Vehicles in South Coast from ACF & ZE Drayage



* Preliminary estimate assuming 90% cleaner in-use
 ** Draft estimates based on current rulemaking analysis. Subject to change.



Interagency Coordination on Infrastructure

- Zero-emission technology for both on- and off-road sectors requires streamlined infrastructure build-out
- Results from the 2020 MSS are incorporated into the CEC's technical analysis for AB 2127 report
- Staff will continue working with CEC, CPUC, and GO-Biz to layout the infrastructure buildout needed to support the number of ZEVs anticipated to be deployed in future years



California Budget 2021-22 (May Revise)

- Governor's Proposed Budget for FY 21/22 devotes \$3.2 billion over the next three years to fast-forward on the state's zero-emission vehicle goals
- Incentives will play a pivotal role in supporting the State's air quality and climate goals

Zero Emission Vehicle Package
(\$ in Millions)

Investment Category	Department	Program	Governor's Budget	May Revision 2021-22	Total 2021-22
		Clean Trucks, Buses & Off-Road Equipment	\$315	\$87	\$402
	Air Resources Board	Clean Cars 4 All & Transportation Equity Projects (\$400 million total)	\$150	\$0	\$150
		Clean Vehicle Rebate Project (\$400 million total)	\$0	\$134	\$134
		Drayage Trucks & Infrastructure (\$470 million total)	\$0	\$160	\$160
	Air Resources Board & California Energy Commission	Drayage Pilot Project	\$0	\$65	\$65
		Transit Buses & Infrastructure (\$290 million total)	\$0	\$100	\$100
		School Buses & Infrastructure (\$450 million total)	\$0	\$150	\$150
	California Energy Commission	Clean Transportation Program/ ZEV Infrastructure	\$500	(\$500)	\$500
		ZEV Manufacturing Grants (\$250 million total)	\$0	\$125	\$125
	GO-Biz	ZEV Market Development Strategy	\$0	\$5	\$5
		Total	\$965	\$826	\$1,791

Zero-Emission Vehicle & Infrastructure Package

\$1.8 Billion for FY 2021-22

	Drayage Trucks & Infrastructure	\$225 M
	Transit & School Buses	\$250 M
	CVRP	\$134 M
	Clean Cars 4 All & Equity	\$150 M
	Clean Trucks, Buses & Off-Road	\$400 M
	Clean Transportation Program/ZEV Infrastructure	\$500 M
	ZEV Manufacturing Grants	\$125 M
	ZEV Market Development Strategy	\$5 M

Next Steps

- Incorporate CARB's heavy duty measures into 2022 State SIP Strategy as well as 2022 South Coast AQMP
- Continue working closely with U.S. EPA on Cleaner Truck Initiatives
- Evaluate additional opportunities for emissions reductions through regulatory and incentives programs
- Continue the interagency coordination on infrastructure planning and development

Contact

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Overview and Update on Warehouse Indirect Source Rule

RULES 2305 AND 316

WAREHOUSE ACTION AND INVESTMENTS TO REDUCE EMISSIONS (WAIRE)
PROGRAM

Background

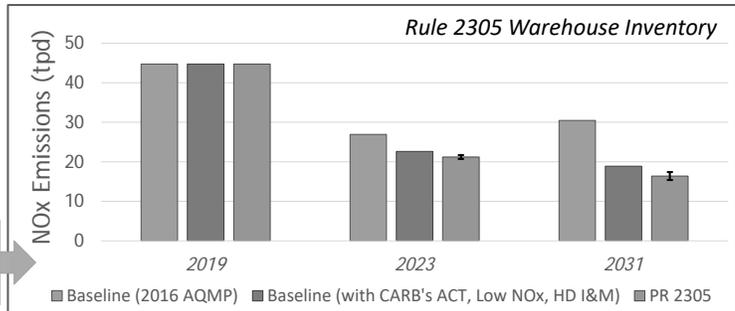
Rules 2305 and 316 were approved by South Coast AQMD Board on May 7, 2021

- Rule 2305 includes requirements for warehouse owners/operators. Rule 316 includes administrative fees.
- Rule covers about 3,000 warehouses

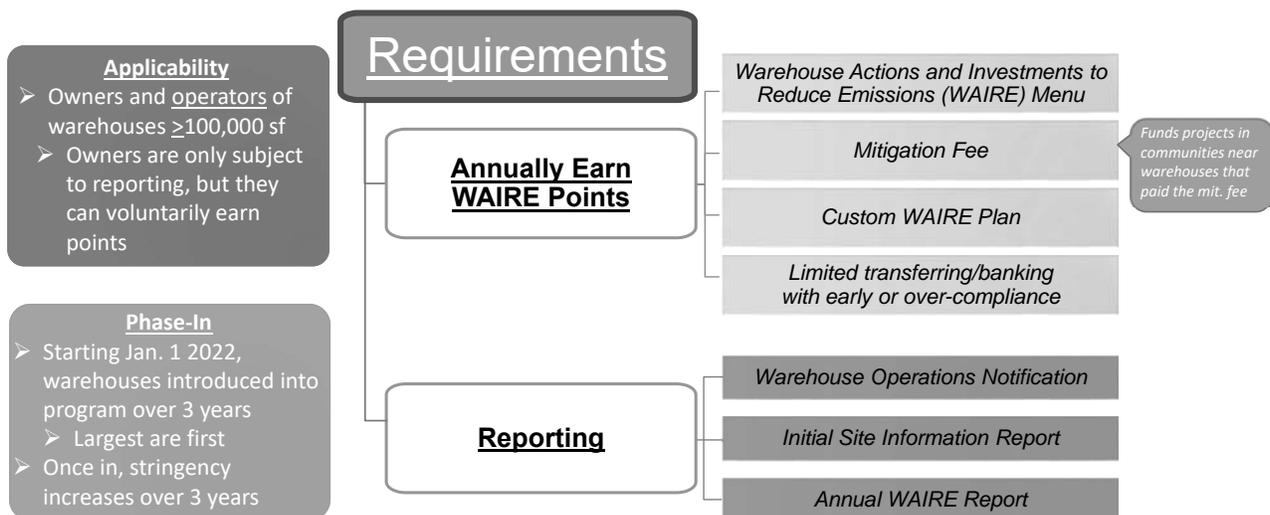
Rules implement control measure MOB-03 from 2016 AQMP

- Control measure development included one-year process evaluating potential voluntary and regulatory approaches, followed by three years of rule making
- Control measure did not include quantifiable emission reduction commitment

All Stationary Sources
= 43 tpd in 2023



OVERVIEW OF RULE 2305



WAIRE Menu includes many options

WAIRE Menu Actions & Investments	Commercial Availability	
	Year 1 of PR 2305	Next 2-3 years
Acquire ZE Class 8		✓
Acquire ZE Class 4-7	✓	
Acquire ZE Class 2b-3	✓	
Acquire NZE Class 8	✓	
Acquire NZE Class 4-7	✓	
ZE Class 8 Visits		✓
ZE Class 4-7 Visits	✓	
ZE Class 2b-3 Visits	✓	
NZE Class 8 Visits	✓	
NZE Class 4-7 Visits	✓	
Acquire ZE Yard Truck	✓	
Use ZE Yard Truck	✓	
150-350 kW EVSE Acquisition	✓	
51-149 kW EVSE Acquisition	✓	
19.2-50 kW EVSE Acquisition	✓	
Up to 19.2 kW EVSE Acquisition	✓	
TRU Plug EVSE Acquisition	✓	
Begin construction on 19.2-350 kW charger project	✓	
Begin construction on up to 19.2 kW charger project	✓	
Begin construction on TRU Plug project	✓	
Finalize 19.2-350 kW Level charger project	✓	
Finalize up to 19.2 kW charger project	✓	
Finalize TRU Plug project	✓	
Hydrogen (H ₂) Station	✓	
Use Vehicle Charging Stations	✓	
TRU Charging	✓	
H ₂ Station Usage	✓	
Install Rooftop Solar Panels	✓	
Install Carport Solar Panels	✓	
Use Solar Panels	✓	
Install Stand-Alone HVAC Filter System	✓	
Replace HVAC Filters	✓	



>1,200 NZE trucks funded by South Coast AQMD since 2017



>200 warehouses already have solar

<https://alboldrivezero.org/tools/zero-emission-technology-inventory/>

Spending Approach for WAIRE Mitigation Program

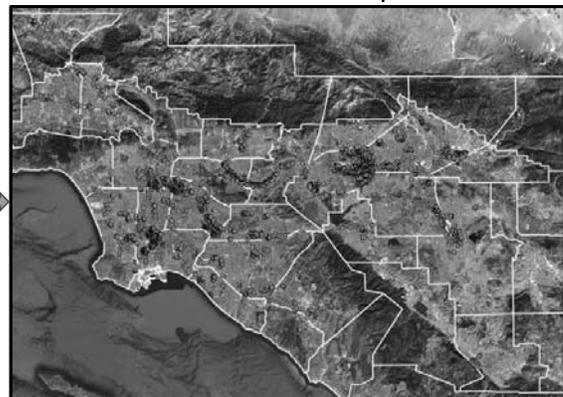
WAIRE Mitigation Program would be funded by mitigation fees paid by warehouse operators

- Leverage extensive South Coast AQMD experience with incentive programs

Key elements of proposed program

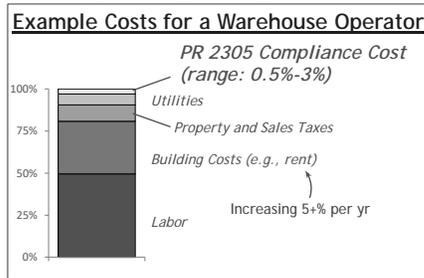
- Funding supports local projects around warehouses that paid the fee
- Within SRAs and counties
- Funds held in separate South Coast AQMD Special Revenue Fund
- Funding for NZE/ZE trucks and ZE charging and fueling infrastructure
 - Require skilled and trained workforce for infrastructure
- Public process during solicitations and prior to awarding funds to receive local community feedback

PR 2305 Warehouses and Source Receptor Areas



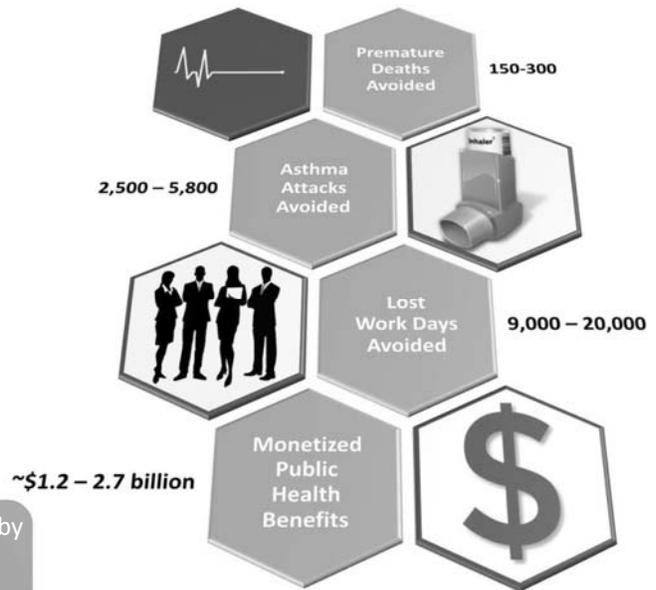
Commitment on WAIRE Program elements in Board Resolution

Warehouse ISR Costs & Public health Benefits



PR 2305 could potentially increase cost of goods by about 0.05%

- Public health benefits exceed compliance costs by about 3:1
- Benefits from reducing regional pollution are ~20-25% greater per capita in EJ communities



Expected Benefits Through 2031

SIP Credit

Emission reductions must meet EPA criteria to be SIP creditable

- EPA criteria for emission reductions can be satisfied at rule adoption, *or during later analysis*
 - Example rules: SIP-approved **SJVAPCD ISR (Rule 9510)**
Not SIP-approved **South Coast AQMD Rule 2202**

Post-rule adoption SIP emissions inventory updates

- Updated vehicle sales data, economic activity projections, emission factors, etc.

Regular updates to CARB on-road inventory (EMFAC) capture all these changes and present a holistic analysis of anticipated future emissions

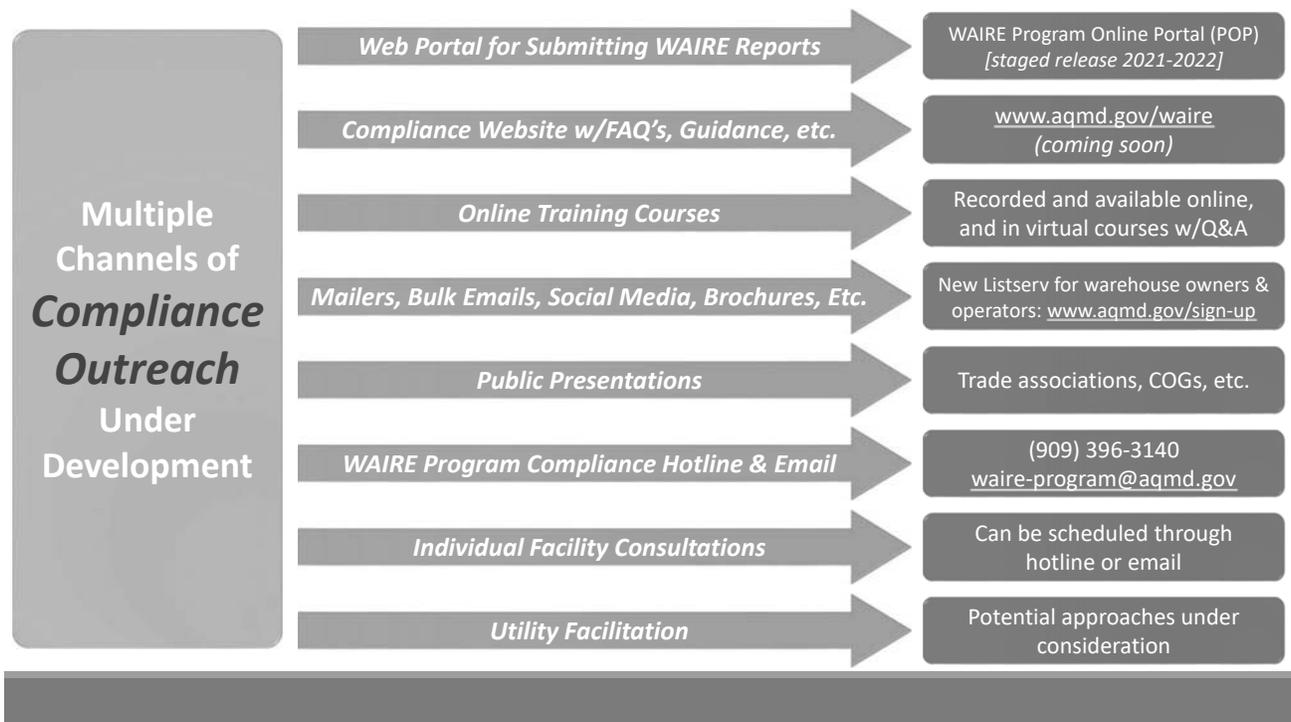
- State level data (e.g., vehicle registrations, fuel use, etc.) and annual reporting from Rule 2305 will inform future versions of EMFAC

Working with U.S. EPA to earn prospective SIP credit for WAIRE Mitigation Program

Rule 2305 will sunset when federal and state 70 ppb standards are achieved

"Integrity Elements"

- Quantifiable
- Verifiable
- Enforceable
- Surplus
- Real



Upcoming Compliance Milestones

- July 2021 – Phase 1 warehouse operators begin keeping records for total number of truck trips
 - Summary information will be reported by July 1, 2022 in Initial Site Information Report
- September 1, 2021 – All warehouse owners must submit Warehouse Operations Notifications
 - Owner contact information and whether they are an operator
 - Warehouse information: address and building size
 - Tenant information: contact information and lease duration
- January, 2022 – First Annual WAIRE Reports (AWR) can be filed documenting how early voluntary implementation of WAIRE Menu actions taken in 2021 since rule adoption have earned Points
 - AWR must be filed to bank Points for future compliance periods
- January 1 to December 31, 2022 – First compliance period for Phase 1 warehouse operators

Next Steps

- Continue to develop and implement Compliance Outreach plan
- Submit Rule 2305 to CARB for submittal into the SIP
- Conduct outreach for development of Rule 2305 data access in FIND
- Questions? -> contact waire-program@aqmd.gov or (909) 396-3140

