Proposed Advanced Clean Fleets (ACF) Regulation Workshop

May 4, 2022

Today's Outline

- Introduction and background
- Zero-emissions vehicle (ZEV) market outlook
- Regulation overview
  - High priority and federal fleets 5/2/2022
  - 100 % ZEV sales by 2040 5/2/2022
  - State and local government fleets 5/4/2022
  - Drayage Trucks 5/6/2022
- Emissions and next steps

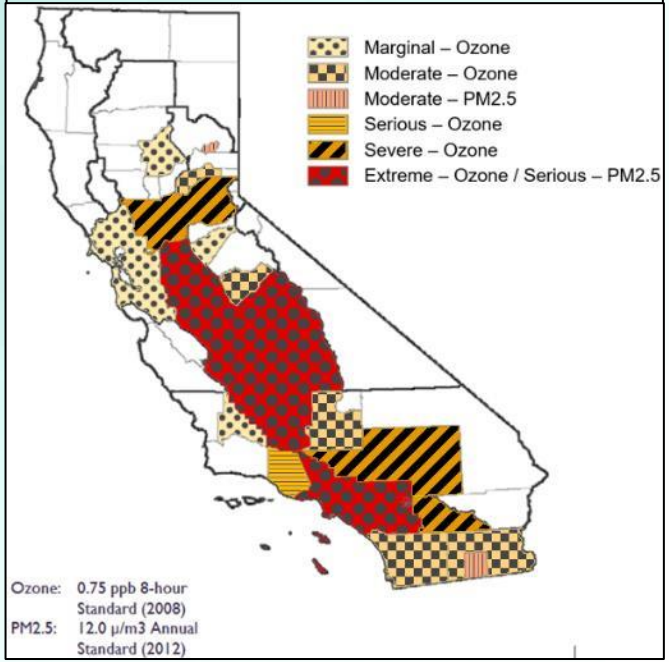
Today's Meeting Materials

- On "Meetings and Events" page on Advanced Clean Fleets (ACF) webpage (https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets/advanced-clean-fleets-meetings-events)
- Submit comments to informal comment docket (https://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=acf-comments-ws&comm_period=1)
  - Informal comment docket open late summer
  - Formal comment docket opens September 2

Major Oxides of Nitrogen (NOx) and Fine Particulate Matter ($PM_{2.5}$) Emissions Reductions Needed

- California has the worst air quality in the nation
- Unique challenges in San Joaquin Valley and South Coast
- Heavy-duty trucks and federal sources* remain largest contributors
- More reductions needed to meet meet 2031 and 2037 attainment
  - Nearly all heavy-duty trucks to have 2010 model year engines by 2023

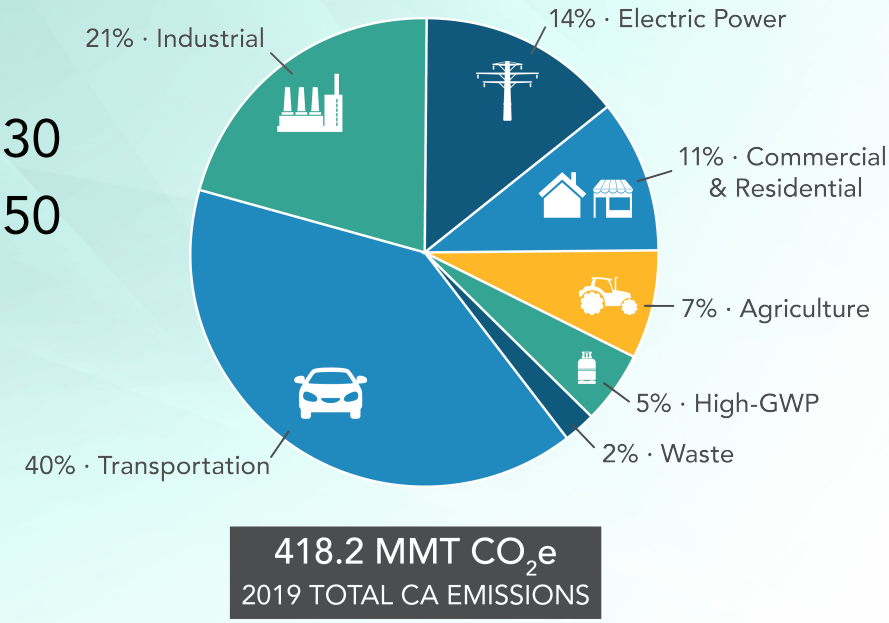
California Ozone and $PM_{2.5}$ Non-Attainment Areas



*Planes, trains, ships

Greenhouse Gas (GHGs) Goals

- California's climate change targets
  - 40% below 1990 levels by 2030
  - 80% below 1990 levels by 2050
  - Carbon neutrality by 2045
- Clean electricity
  - 33% renewable by 2020
  - 60% renewable by 2030
  - Zero-carbon by 2045



CARB

Source: California GHG Inventory (https://ww2.arb.ca.gov/ghg-inventory-graphs)

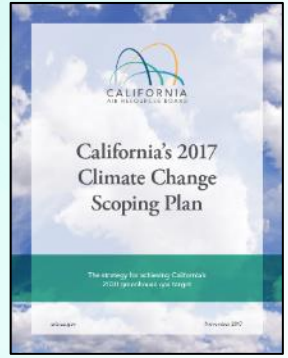
California Leading the Way for a Sustainable Future

Governor 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*

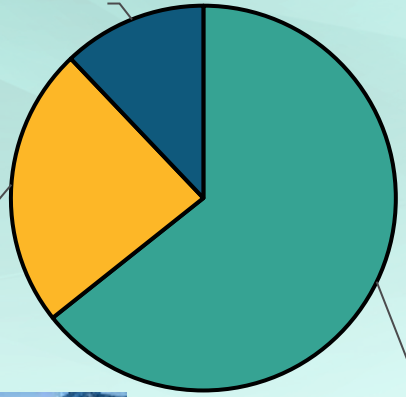


CARB

Biggest Trucks Have Highest Emissions

Daily Truck Population

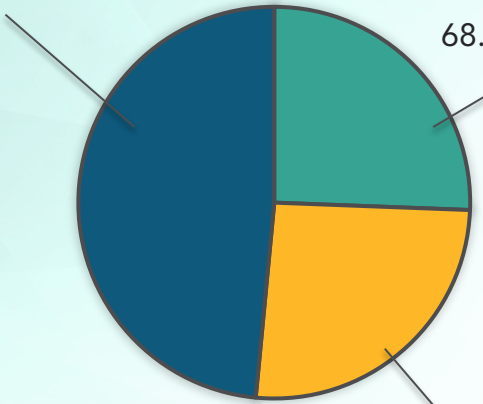
Class 7-8 Tractors
219,000 (12%)



Class 4-8 Straight Trucks and Buses
427,000 (24%)

Class 2b-3 Trucks and Vans
1,164,000 (64%)

Daily NOx Emission



Class 7-8 Tractors
129.7 tpd (48%)

Class 2b-3 Trucks and Vans
68.5 tpd (26%)

Class 4-8 Straight Trucks and Buses
69.3 tpd (26%)

CARB

Source: California Air Resources Board (CARB) Emissions Inventory EMFAC2021, (https://arb.ca.gov/emfac/) Calendar Year 2021, including California International Registration Plan (IRP) and out-of-state IRP trucks; excludes motor homes, transit buses, and school buses.

ZEV Market Overview

Advanced Clean Trucks (ACT)

- Manufacturers must sell ZEVs as a percentage of sales*
- Approved June 2020
- Begins with 2024 model year
- Credit for sales start in 2021
- Minimum tractor sales
- Flexibility to shift sales between categories
- One-time fleet reporting

Model Year (MY)	Class 2b-3	Class 4-8	Class 7-8 Tractors
2024	5%	9%	5%
2025	7%	11%	7%
2026	10%	13%	10%
2027	15%	20%	15%
2028	20%	30%	20%
2029	25%	40%	25%
2030	30%	50%	30%
2031	35%	55%	35%
2032	40%	60%	40%
2033	45%	65%	40%
2034	50%	70%	40%
2035+	55%	75%	40%

CARB

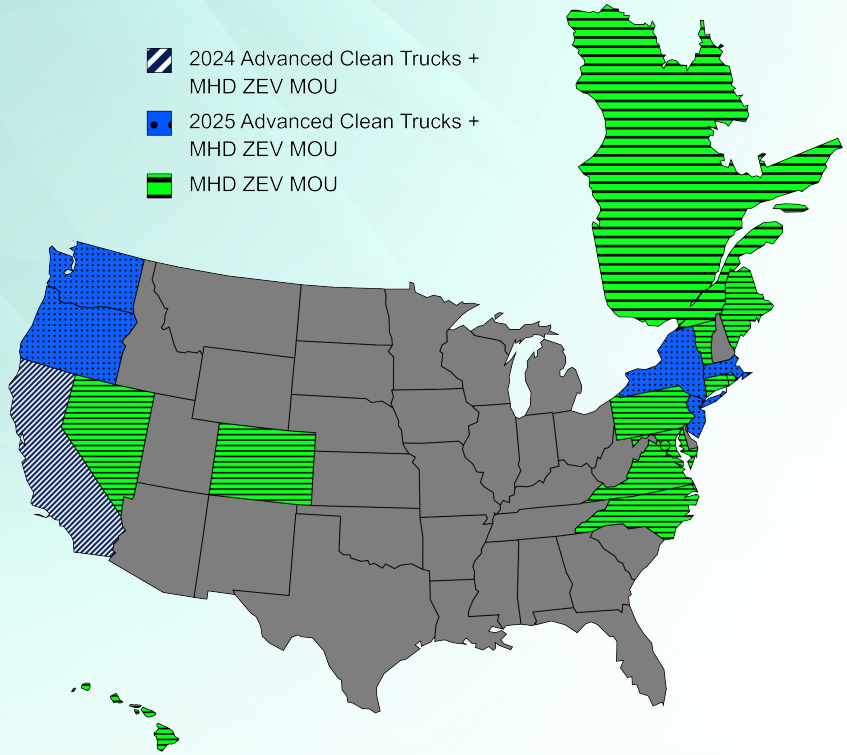
*Partial credit for near-zero emissions vehicles (NZEVs). NZEVs are plug-in hybrids with minimum all electric range

ACT One-time Fleet Reporting Summary

- Truck and fleet operations survey collected in 2021
- Results posted online in aggregated formats
  - 1,866 entities
  - 7,767 facilities
  - 386,286 vehicles
- Large Entity Reporting Data (https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks/large-entity-reporting)

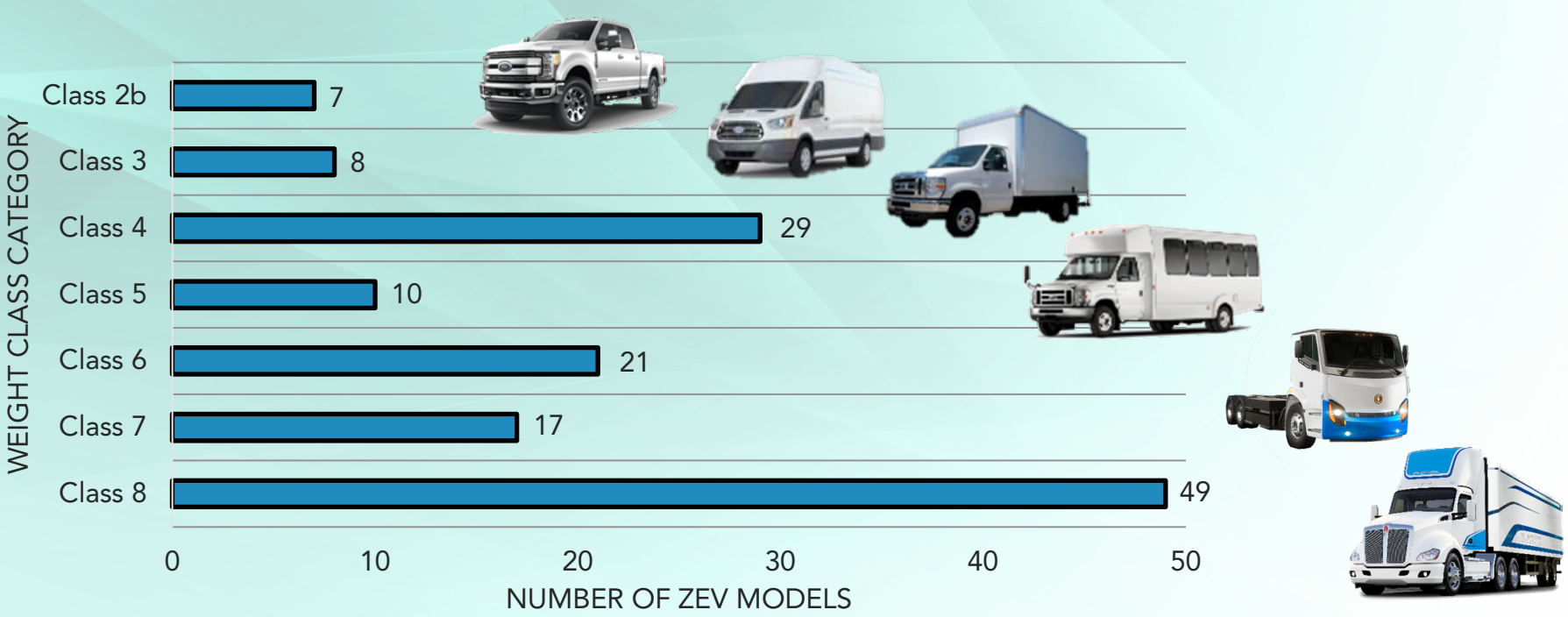
California is not Alone…

- Section 177 of the Clean Air Act allows states to adopt California motor vehicle standards
- Adopted ZEV regulations
  - Advanced Clean Cars - 12 states
  - Advanced Clean Trucks - 6 states
- Medium- and heavy-duty ZEV commitments
  - 17 states and DC
  - Province of Quebec, Canada



CARB

140 ZEV Models Commercially Available in US



More than 500 ZEV models available worldwide

CARB

ZE Tractor Commercial Availability

Available Today

- BYD 8TT
- Freightliner eCascadia
- Kenworth T680E
- Lion Electric LION8
- Nikola TRE
- Peterbilt 579
- SEA Cascadia
- Volvo VNR Electric

2022

- Hyundai XCIENT

2023

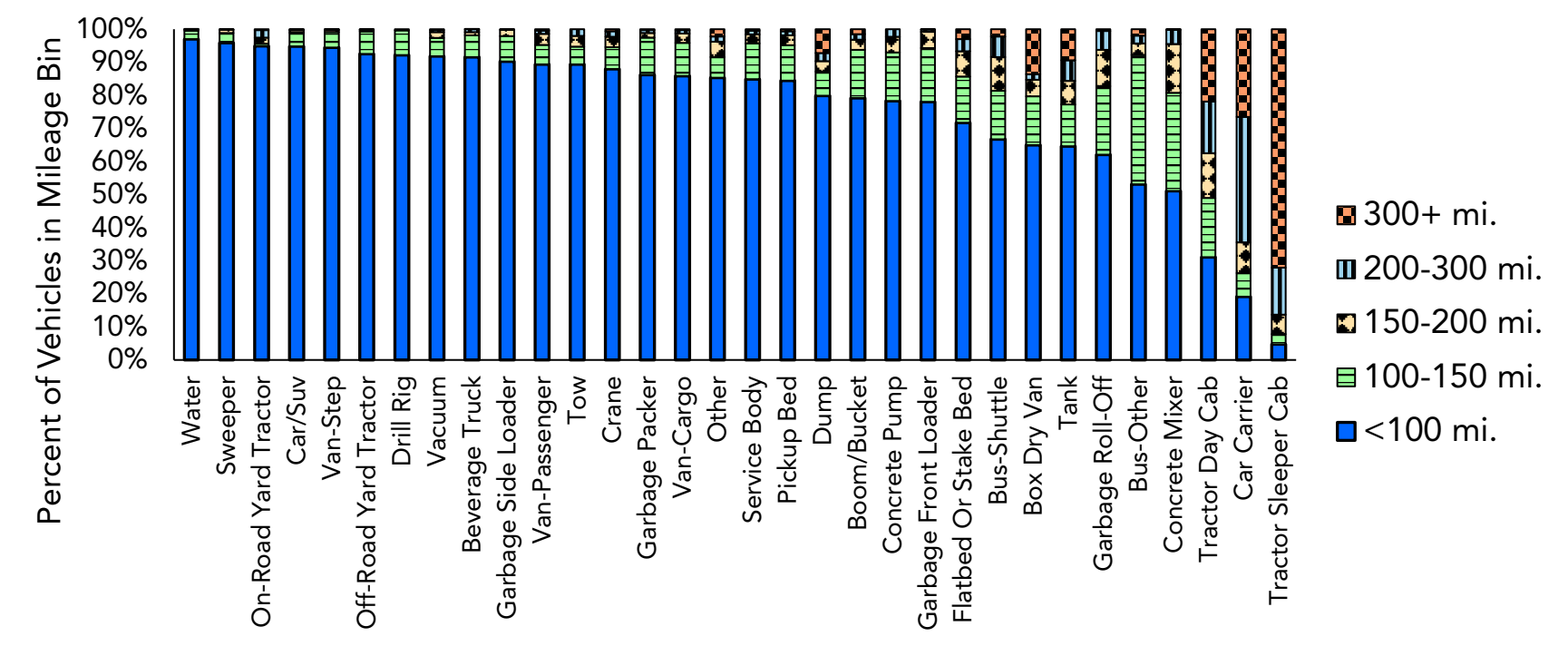
- Nikola One/Two
- Tesla Semi

CARB

Same ZEV Chassis with Multiple Configurations

CARB

Most Trucks Travel <100 Miles Per Day



CARB

ACT Large Entity Reporting Data, owned vehicles

CALIFORNIA
AIR RESOURCES BOARD

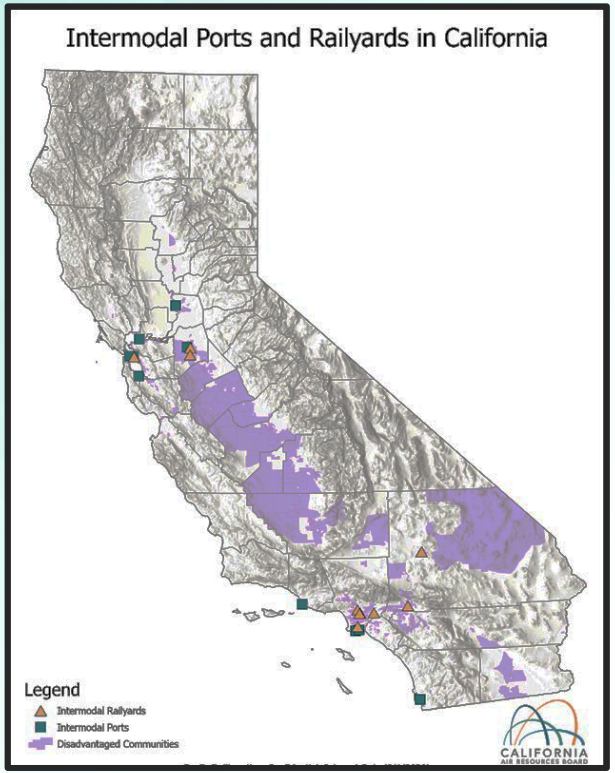
Updated Draft Language for Drayage Fleets Section 2014

Drayage Truck Background

Current drayage truck regulation sunsets in 2022

- Trucks will have to meet 2010 MY engine standards beginning in 2023

The seaports and intermodal railyards under the current drayage regulation are all located within ~1 mile of a disadvantaged community



Drayage Truck Inventory: 2019 Baseline

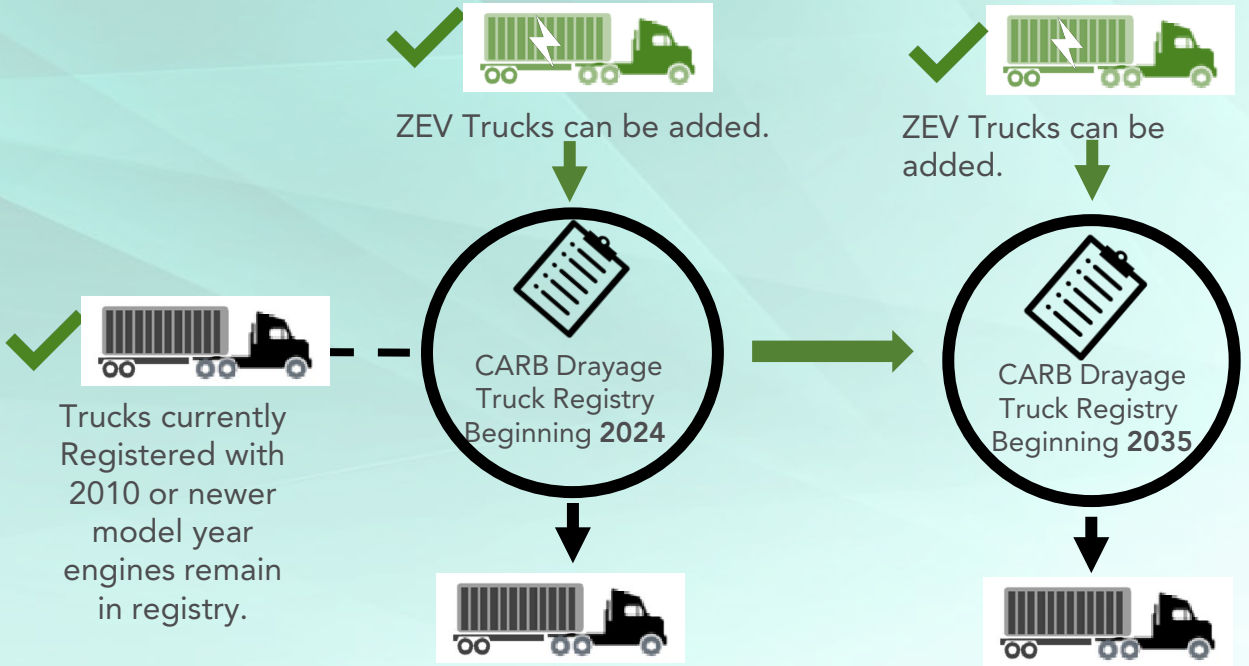
Vehicle Category	Port of Oakland (POAK)	Port of LA/LB (POLA)	Other Seaports*	Railyards**
Instate Class 8† Active Trucks***	4,224‡	13,951‡	1,453‡	8,988
Instate Class 8† Inactive Trucks***	n/a***	2,770	n/a	n/a
Instate POAK Class 8 already in POLA†	136	n/a	n/a	n/a
Class 4-7†	22	180	n/a	n/a
Out of State†	823	854	n/a	n/a
Total	5,205	17,755	1,453	8,988

† *Non-gasoline*
‡ *T7 POLA Class 8, T7 POAK Class 8, and T7 Other Ports Class 8 in EMFAC2021*
* *Estimate based on past surveys; requesting updated information from other seaports*
** *Estimated based on information provided by Union Pacific (UP) Railroad and Burlington Northern and Santa Fe (BNSF) Railway*
*** *POLA trucks with more than 112 visits/year are considered as "active trucks". 112 visit/year was determined based on POLA monthly active truck counts. POAK did not provide monthly visit data and therefore all POAK Class 8 in-state trucks were considered active.*

Proposed Drayage Truck Regulation

- Require Class 7-8 drayage trucks operating at California's seaports and intermodal railyards to be Zero-Emission Vehicles (ZEVs) by 2035
- Includes a phased-in approach for drayage trucks beginning in 2024

Proposed Drayage Truck ZE Fleet Transition



CALIFORNIA
AIR RESOURCES BOARD

Drayage Scope and Applicability

Drayage Scope and Applicability

"Drayage Truck" means any in-use on-road vehicle with a gross vehicle weight rating (GVWR) greater than 26,000 pounds, that is operated

- on or that transgresses through California seaport or intermodal railyard property to load, unload, or transport cargo, such as containerized, bulk, or break-bulk goods, empty containers, and chassis; or
- off seaport or intermodal railyard property transporting cargo or empty containers or chassis that originated from or is destined to a seaport or intermodal railyard property.

Drayage Scope and Applicability

"Seaport" means the property where marine and seaport terminals are typically located for the loading and unloading of water-borne commerce onto and from ocean-going vessels.

"Intermodal Railyard" means a facility owned or operated by a Class I Railroad that receives both drayage trucks and locomotives.

CARB

CALIFORNIA
AIR RESOURCES BOARD

Drayage Truck Requirements

Legacy Drayage Truck Requirements

"Legacy Drayage Truck" means a non-zero-emission drayage truck with a 2010 or newer engine model year that was registered in the Drayage Truck Registry on or before January 1, 2024.

By December 1, 2023	Register with The CARB Online System
Beginning in 2024	Visit a regulated seaport or intermodal railyard at least once each year to remain in The CARB Online System
Beginning in 2025	Annually report mileage by February 15th (trucks over 12 years)
	Legacy drayage trucks can stay in the registry until they exceed the minimum useful life requirements

ZEV Drayage Truck Requirements

"Zero-emission Vehicle" (ZEV) means an on-road vehicle with a drivetrain that produces zero exhaust emissions of any criteria pollutant (or precursor pollutant) or greenhouse gas under any possible operational modes or conditions.

Beginning in 2024	Any drayage truck added to the CARB Online System must be a Zero-Emission Vehicle
Beginning in 2035	All drayage trucks entering seaports and intermodal railyards must be Zero-Emission Vehicles

Proposed Drayage Truck Exemptions

The following vehicles are exempt from the drayage requirements:

- Dedicated use vehicles
  - (e.g., car transport, fuel delivery)
- Emergency vehicles
  - (e.g., ambulance)
- Military tactical support vehicles
- Vehicles subject to the regulation for mobile cargo handling equipment
  - (e.g., yard trucks)
- Vehicles operating pursuant to a declared emergency event

Vehicle Delivery Delay Extension

Available if vehicle delivery is delayed for reasons beyond fleet owner control

- Ordered ZEVs at least 1 year in advance of deadline
- Purchase agreement required

CALIFORNIA
AIR RESOURCES BOARD

Seaport and Intermodal Railyard Requirements

Seaport and Intermodal Railyard Reporting Requirements

Beginning January 1, 2024, collect and report the following information for *each* drayage truck subject to this regulation that enters the facility or property:

- Vehicle Identification Number (VIN)
- license plate
- visit frequency

CARB

Seaport Terminals and Intermodal Railyard Requirements

Beginning January 1, 2024, verify compliance status for each truck in the CARB Online System

- Collect and report quarterly the non-compliant trucks
  - motor carrier information
  - truck information
    - date and time of entry
    - owner/operator name
    - license state of issuance
    - VIN

What it Means for Drayage Trucks

- Builds on the existing drayage truck registry process
- Beginning in 2024, requires any drayage trucks added to the CARB Online System to zero-emission trucks
- Legacy drayage trucks must register prior to 2024
  - can continue operating as usual until minimum useful life is reached
  - must visit a California seaport or railyard at least once a year to remain in The CARB Online System
- Achieves all zero-emission drayage truck fleet by 2035

CARB

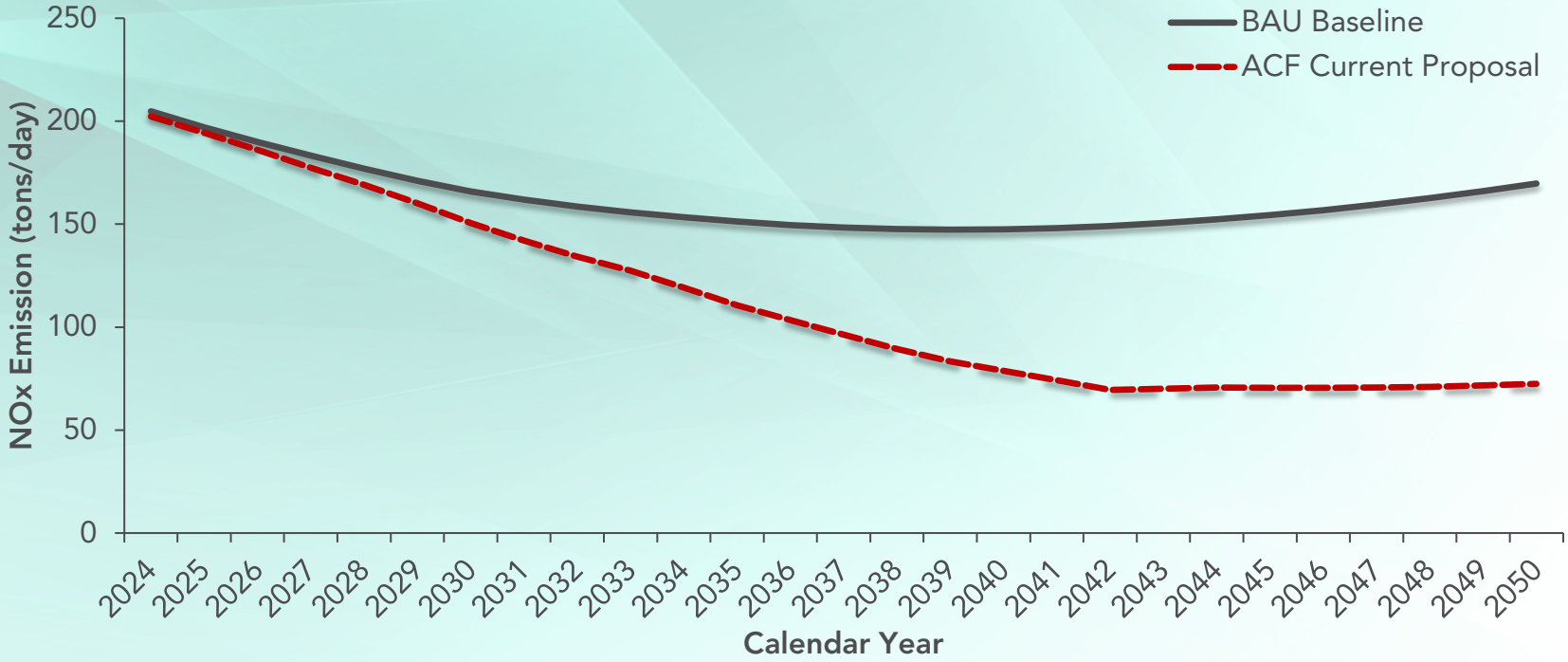
CALIFORNIA
AIR RESOURCES BOARD

Emissions, Outreach, Next Steps

Emissions Overview, Outreach, and Next Steps

- Emissions
- Outreach
  - ACF regulation
  - Infrastructure and funding
  - ZEV resources for fleets
- Next steps

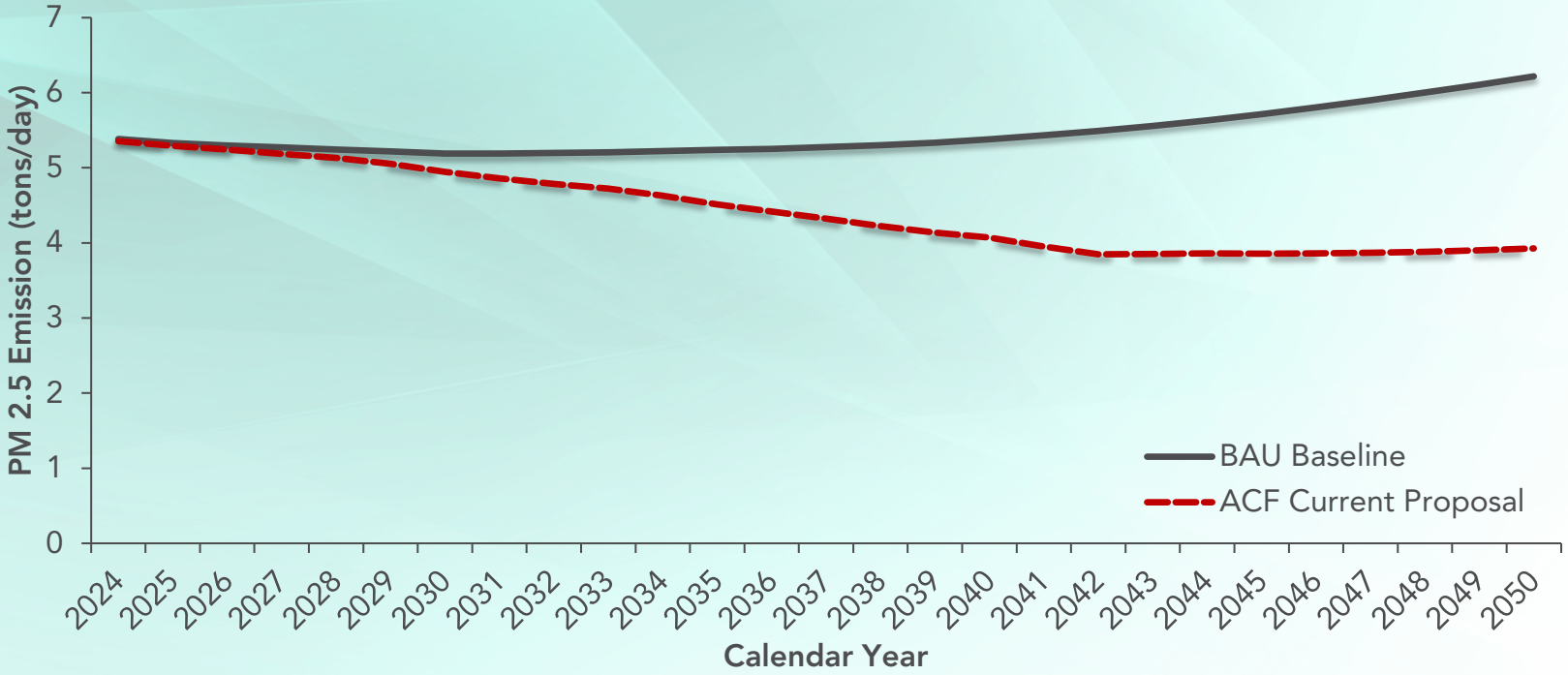
Projected Statewide NOx Emissions



CARB

* BAU baseline includes the impacts of ACT and HD Omnibus
Includes all four components of ACF

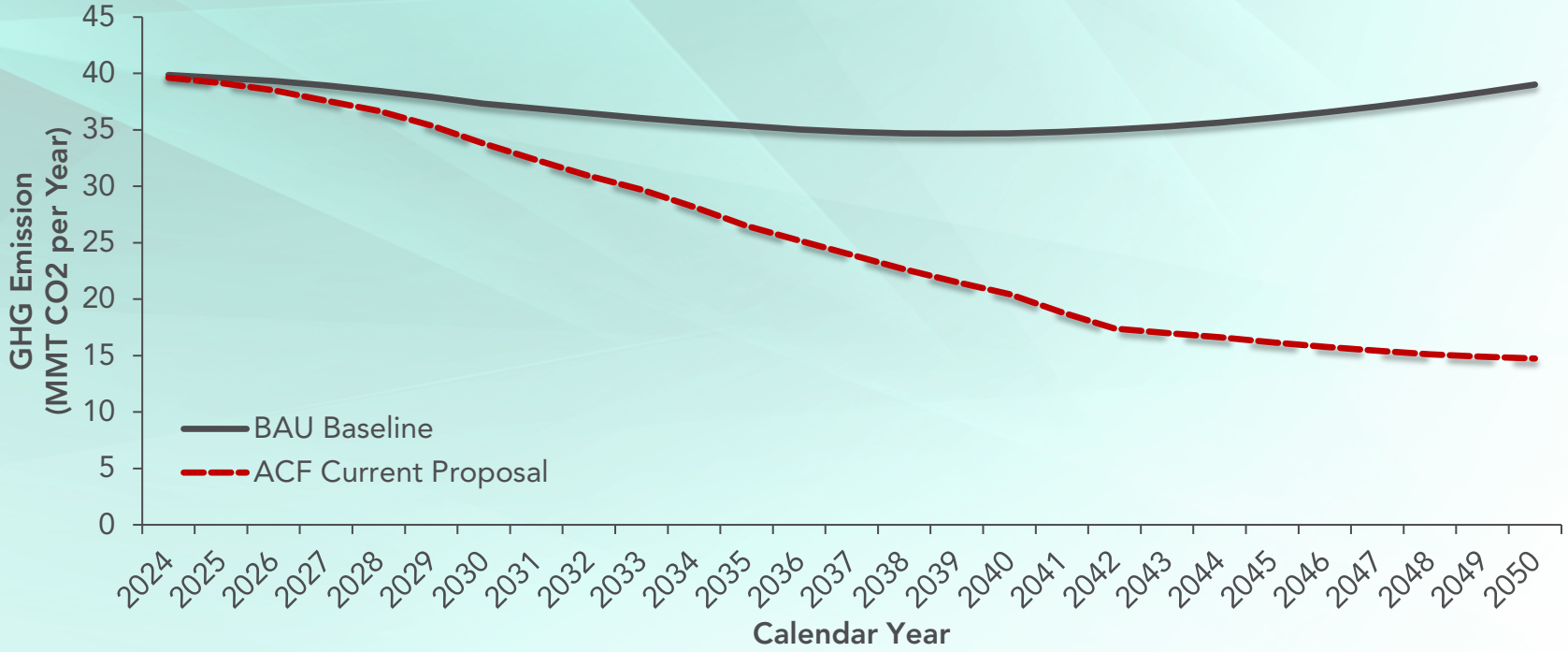
Projected Statewide PM2.5 Emissions (Exhaust and Brake Wear)



CARB

* BAU baseline includes the impacts of ACT and HD Omnibus
Includes all four components of ACF

Projected Statewide Tank-to-Wheel GHG Emissions

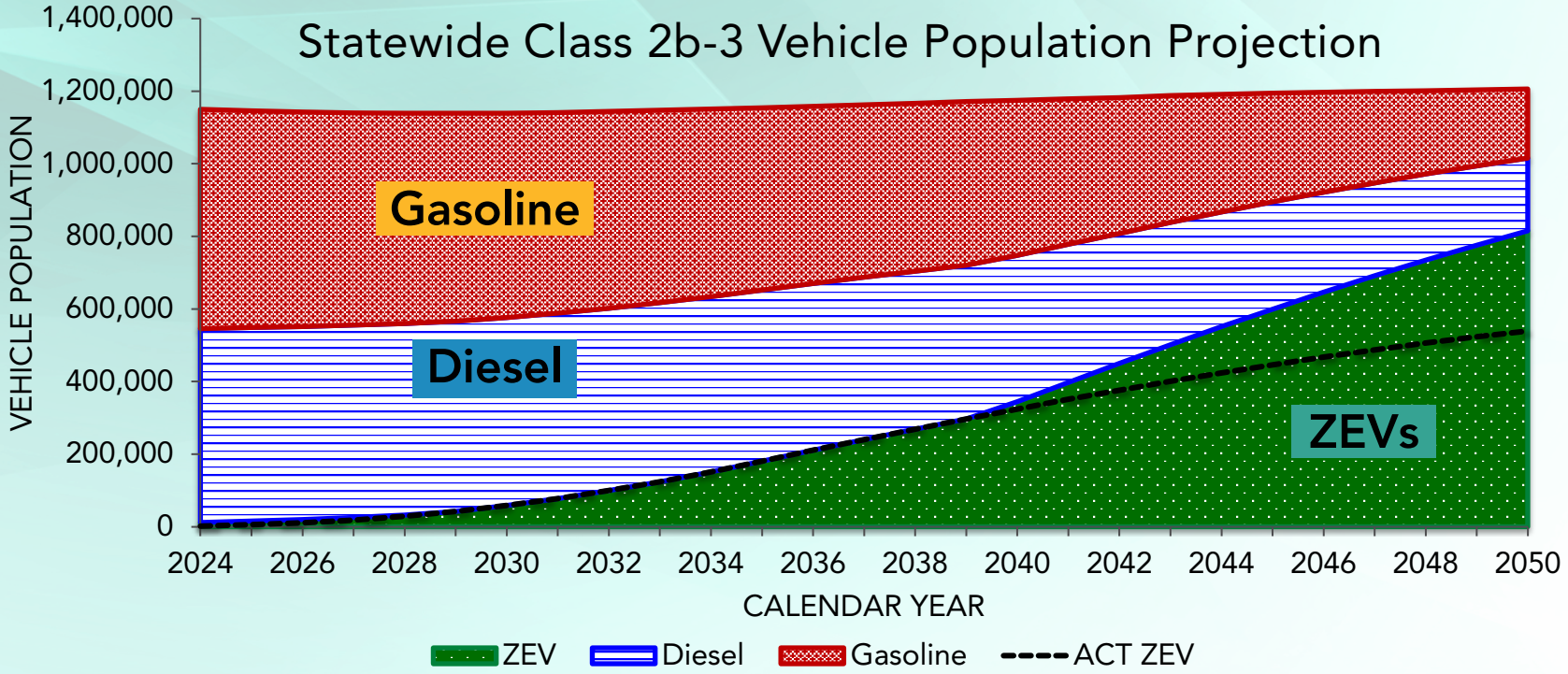


Tailpipe CO_2 emissions Only

* BAU baseline includes the impacts of ACT and HD Omnibus.

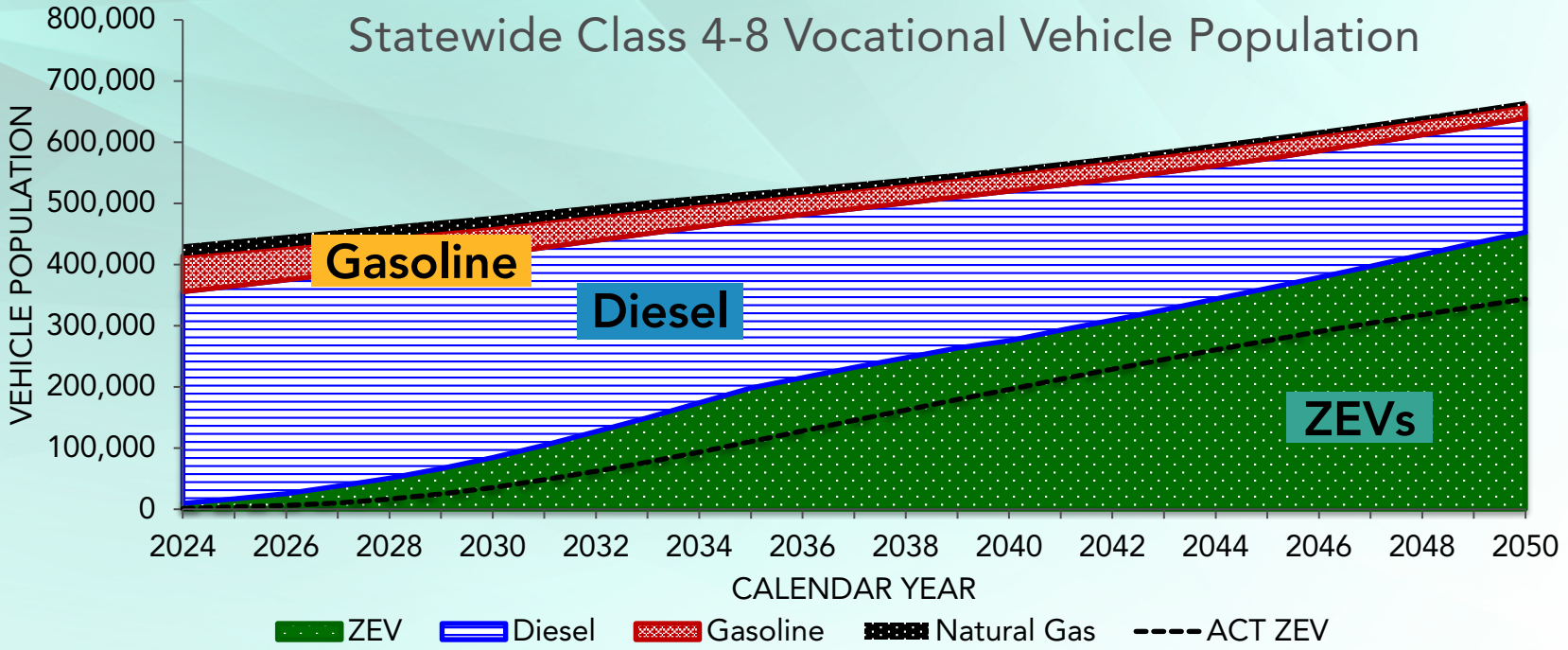
CARB

Projected Technology Distribution Under ACT and ACF Proposal

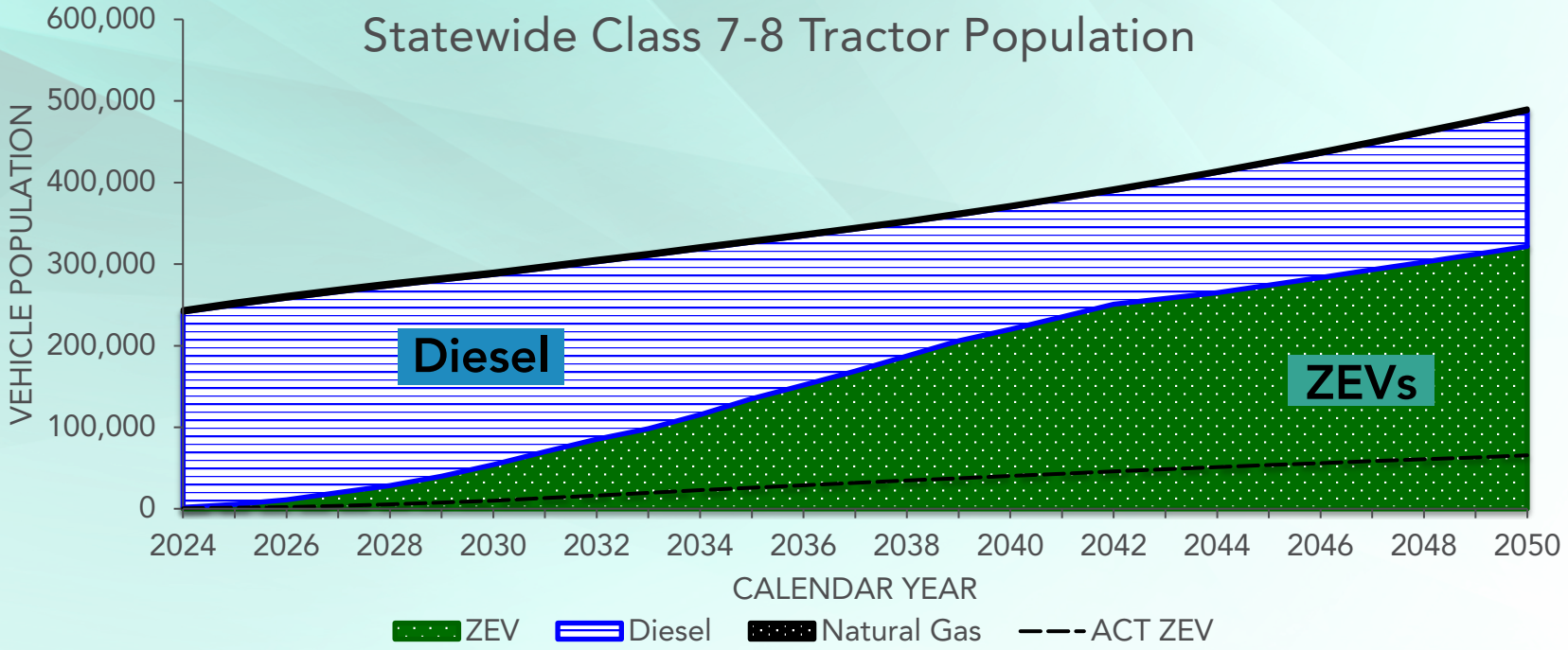


CARB

Projected Technology Distribution Under ACT and ACF Proposal

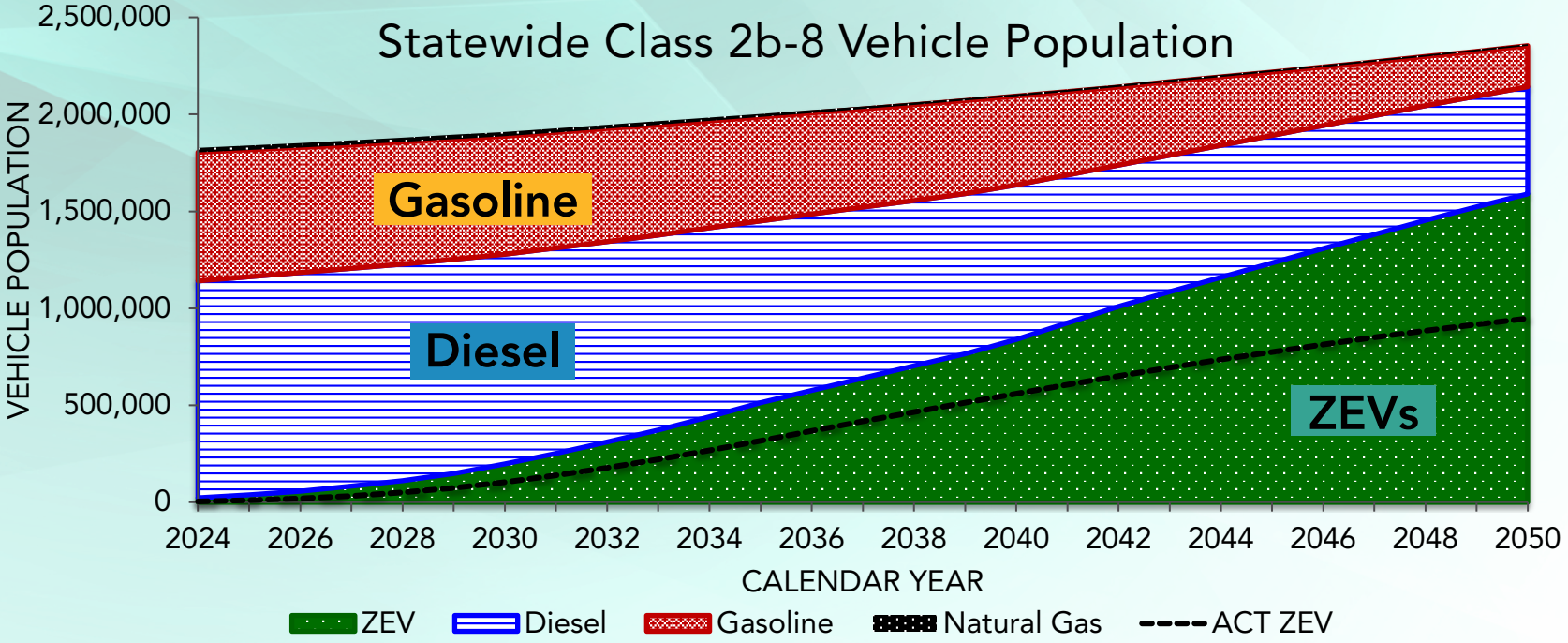


Projected Technology Distribution Under ACT and ACF Proposal



CARB

Projected Technology Distribution Under ACT and ACF Proposal



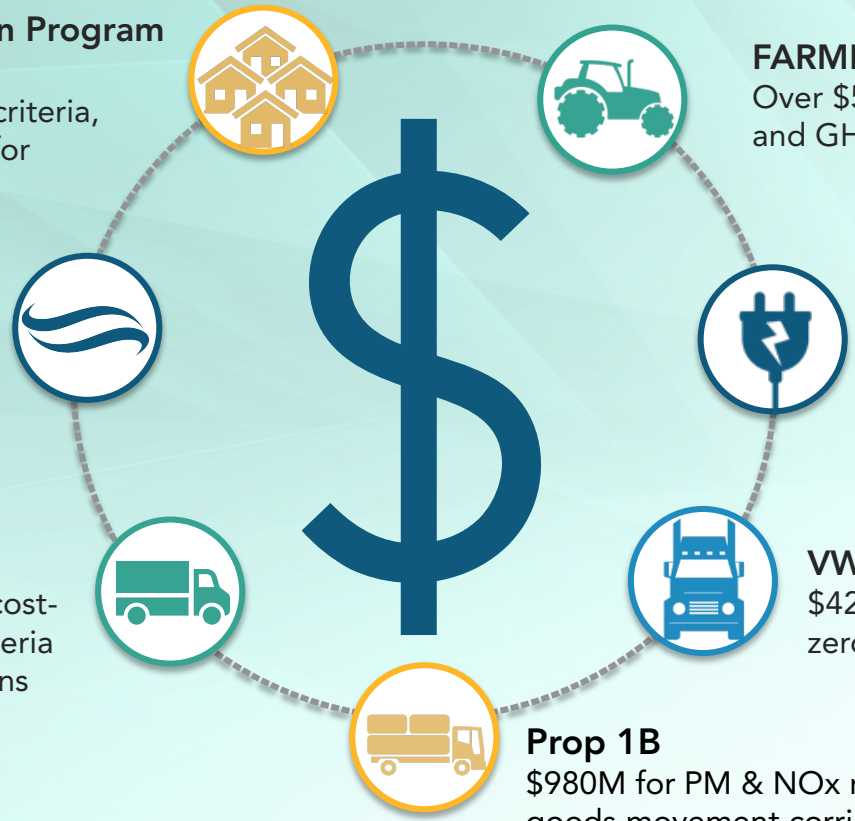
CARB

Over $8 Billion Dollars Committed to Date

Community Air Protection Program (AB 617)
Over $960M since 2017 for criteria, toxics and GHG reductions for community goals

Air Quality Improvement Program (AQIP)
Over $490M since 2009 for criteria pollutant and toxics reductions

Carl Moyer Program
Over $1.8B since 1998 for cost-effective, SIP creditable criteria pollutant emission reductions



FARMER Program
Over $535M since 2017 for criteria, toxics and GHG reductions for the ag sector

Low Carbon Transportation
Over $3.6B since 2014 for advanced technologies to provide GHG reductions and priority populations benefits

VW Mitigation Trust
$423 million for NOx mitigation and zero-emission

Prop 1B
$980M for PM & NOx reductions in goods movement corridors

CARB

Governor's California Blueprint

Investing in a Zero-Emission Future

$256 million
Low-Income ZEVs

$545 million
Drayage & Transit Buses

$600 million
Trucks, Buses & Off-Road

$250 million
Ports

$419 million
Communities & Clean Mobility

$100 million
Emerging Opportunities

CARB

CARB Total: $2.17 B | **ZEV Package Total: $6.1 B**

Stakeholder Outreach on ACF Rulemaking

- 273 group and individual meetings with over 130 stakeholders
- Listening sessions and briefings to community
- Letters to over 11,000 large entities and fleets
- Postcards to over 273,000 vehicle owners
- Emails to over 100,000 recipients
- CARB trainings to over 800 attendees
- Numerous webpage resources
- Social media and radio interviews
- Attendance at in person events

Infrastructure

- CARB has key role as regulator, information source, and communication facilitator
- Collaborating closely with agency partners on developing ZEV infrastructure and supporting market
- Continued discussion between agencies, fleets, and infrastructure providers needed

Infrastructure meeting materials and recordings (https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets/advanced-clean-fleets-meetings-events)

ZEV Resources For Fleets

- Websites available with helpful resources
  - CARB TruckStop ZEV Webpage (https://ww2.arb.ca.gov/sites/default/files/truckstop/zev/zevinfo.html) – Overview of regulations, incentives, our partners, market availability, ZEV 101 info to be added soon
  - HVIP Website (https://californiahvip.org/) – Vehicle catalogue, funding updates, FAQs, planning guides
  - EnergIIZE Website (https://www.energiize.org/) – Infrastructure Readiness Center, TCO tool, funding finder
  - Funding Finder Tool (https://fundingfindertool.org/) – Filters alternative fuel vehicle and infrastructure programs
  - CARB Infrastructure Resource Webpage (https://ww2.arb.ca.gov/zero-emission-vehicle-zev-infrastructure-topics) – resource for finding information about zero-emission fueling infrastructure

Next Steps

- Meeting materials posted on “Meetings and Events” page on CARB’s Advanced Clean Fleets webpage
- Submit comments to informal comment docket (https://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=acf-comments-ws&comm_period=1)
- For more information, please contact CARB staff by email (zevfleet@arb.ca.gov), or by phone at (866) 634-3735
- 45-Day rulemaking package early September 2022
- Board recommendation October 2022