



# **Proposed Advanced Clean Fleets (ACF) Regulation Preliminary Language Revisions Workshop**

February 13, 2023

# Prior Public Meetings

- August 30, 2022: Staff report posted
- October 27, 2022: First Board hearing
- December 12, 2022: Waste and wastewater fleet Workgroup
- January 13, 2023: Infrastructure delay and ZEV Availability Workgroup
- Individual stakeholder meetings

# Today's Outline

- Background
- Amendments and modifications
  - 100 Percent Zero-Emission Vehicle (ZEV) Sales
  - Drayage Trucks
  - High Priority Fleets
  - State and Local Government Fleets
  - Shared Provisions
- Heavy-Duty Omnibus regulation
  - Key language changes throughout presentation will be marked with “\*”



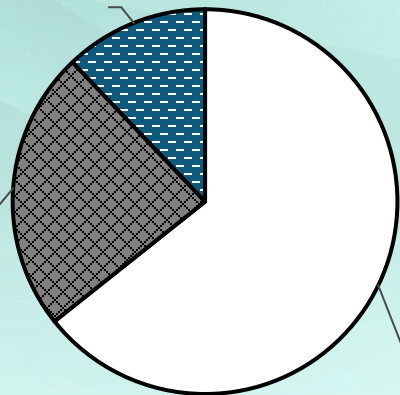
# Background

# Biggest Trucks Have Highest Emissions

## Daily Truck Population



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



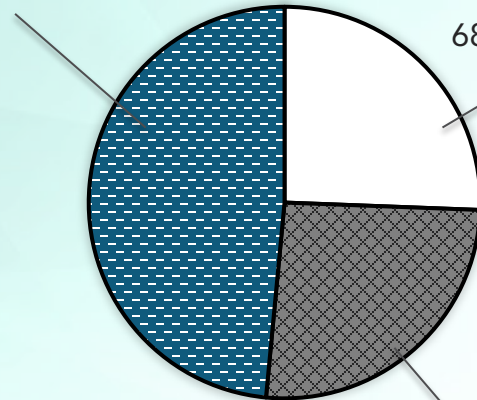
Class 4-8 Straight  
Trucks and Buses  
427,000 (24%)



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%)

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.

## Cleaning Up Trucks & Transitioning to Zero-Emission



Enhanced  
Inspections &  
Maintenance



Sales  
Mandates



Fleet Phase-in  
Requirements



Incentives  
& Recognition



Cleaner Fuels  
& Engines

Governor's goal - 100% zero-emission  
transportation by 2045 where feasible

# Measures to Clean Up Heavy-Duty Vehicles



2018  
Innovative Clean  
Transit



2020  
Advanced  
Clean Trucks



2021  
Heavy-Duty  
Inspection and  
Maintenance



Future  
Zero-Emission  
Truck Measure



2019  
Zero Emission Airport  
Shuttle



2020  
Heavy-Duty  
Omnibus



2023  
Advanced  
Clean Fleets



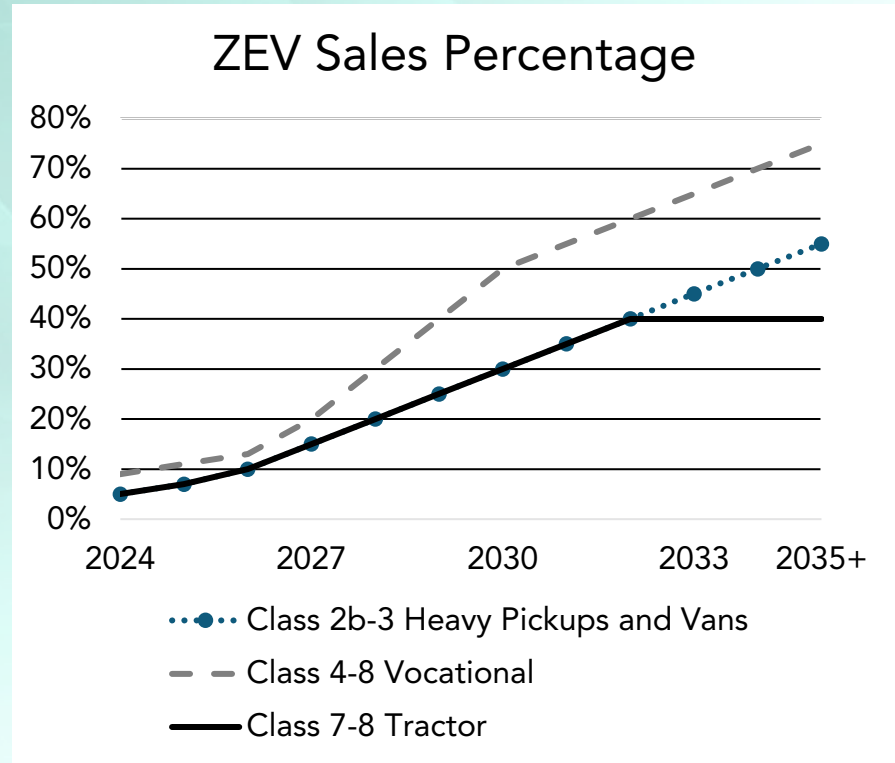
# Maximum Emissions Reductions from Truck Engines

- Existing diesel trucks upgraded to 2010 engines 2023
- Heavy-duty Omnibus regulation effective 2024
  - Engine standards, test procedures and other controls
  - Averaging, banking, and trading program
- Heavy-duty Inspection and Maintenance approved 2022
- Low Carbon Fuel Standard
  - Requires switching to lower carbon transportation fuels



# Advanced Clean Trucks Regulation

- Manufacturers to sell ZEVs in all vehicle classes as a percentage of total sales
- 320,000 ZE trucks to California by 2035
- Adopted 2020



# California is not Alone

Section 177 of the Clean Air Act allows states to adopt California motor vehicle standards

## Adopted ZEV Regulations

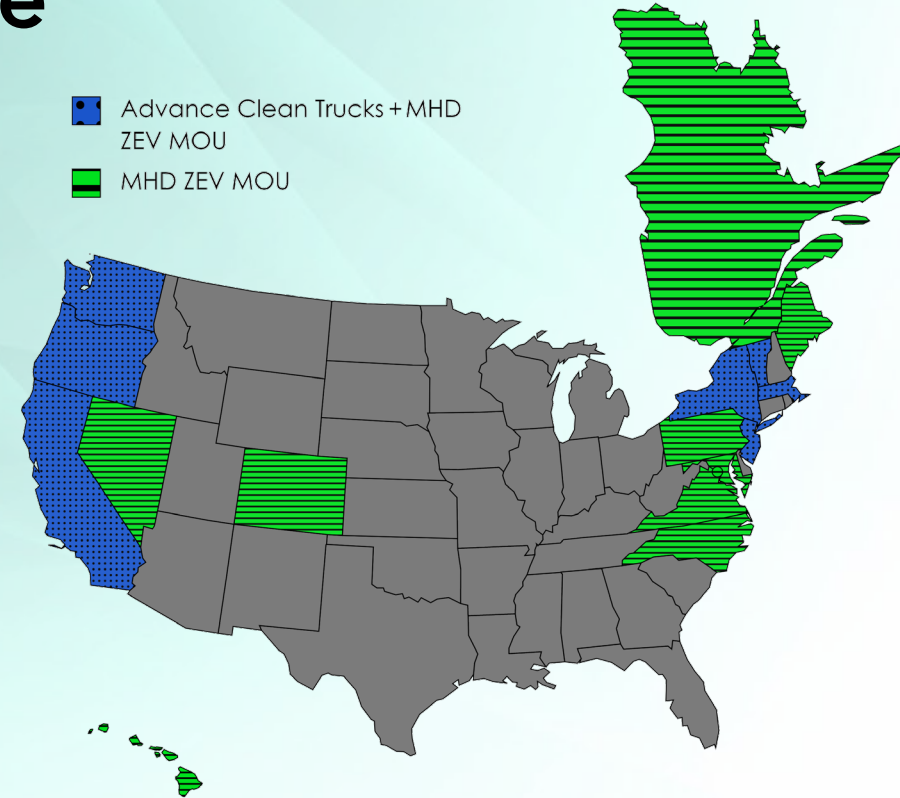
Advanced Clean Cars - 12 states

Advanced Clean Trucks - 7 states

## Medium- and Heavy-duty ZEV Commitments

17 states and DC

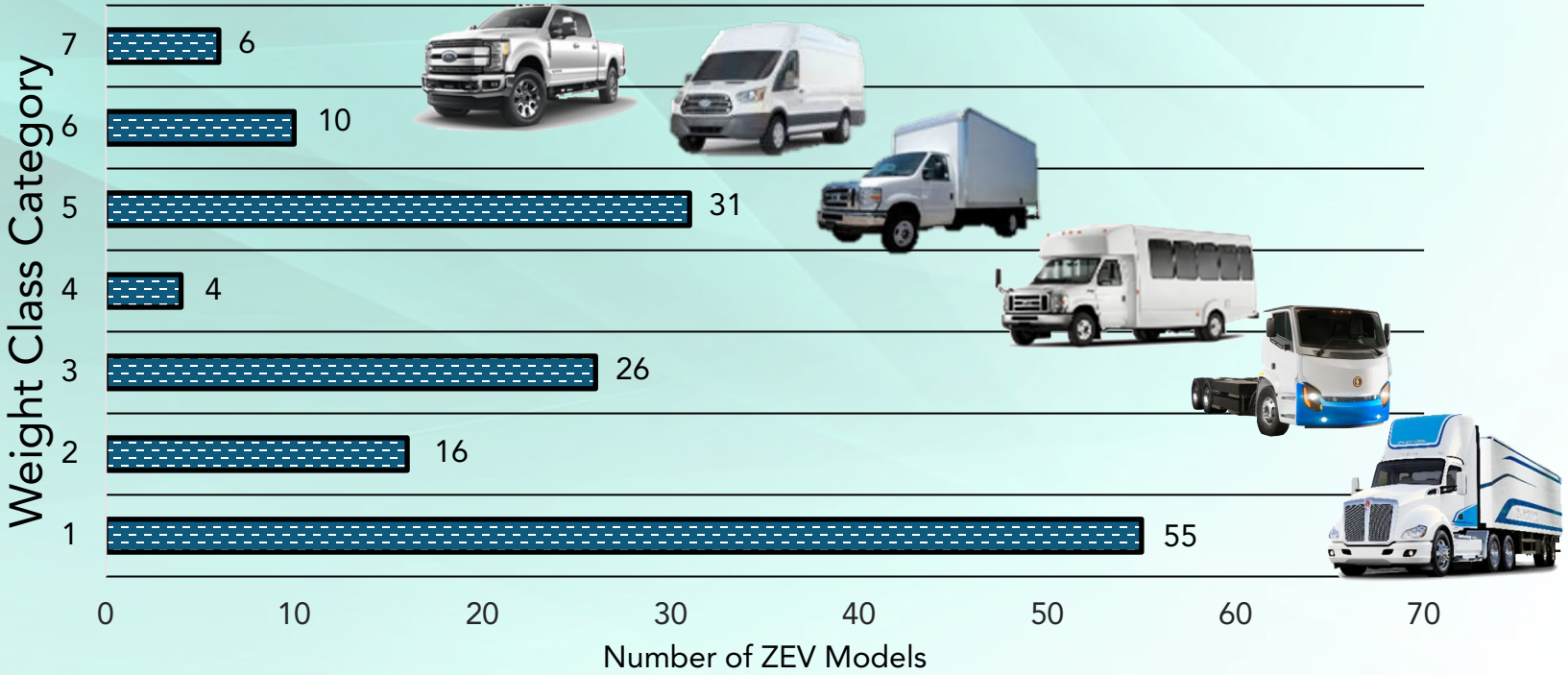
Province of Quebec, Canada



# National Policy Changes

- Inflation Reduction Act
  - Incentives up to \$40,000 per zero-emission truck
- 27th Conference of the Parties to the United Nations Framework Convention on Climate Change
  - 30 percent of new commercial delivery vehicles, buses, and trucks sales to be zero-emission by 2030
  - 100 percent zero-emission sales by 2040

# ZEV Models in United States



135 models already delivered to fleets, 148 different models are available to be ordered/pre-ordered,

# ZE Tractor Commercial Availability

## Available 2022

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



## Planned 2023

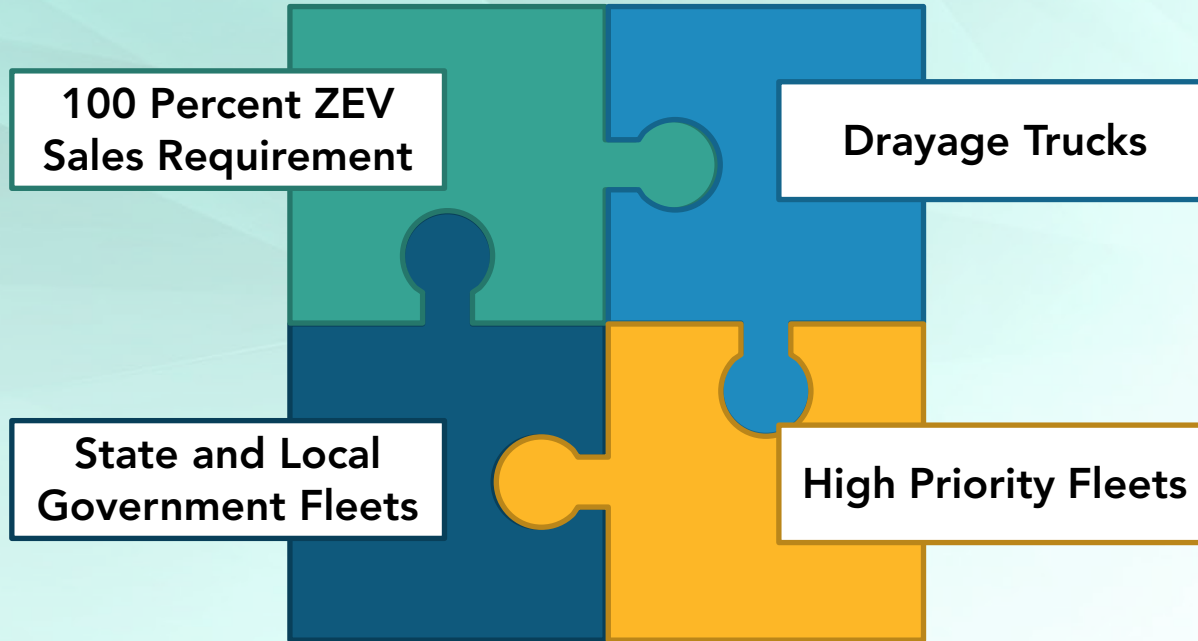
- Hyundai XCIENT
- XOS HDXT
- Hyzon Class 8
- Nikola One/Two
- Tesla Semi





# Draft Regulation Language

# ACF Regulation Components





# 100 Percent ZEV Sales

Section 2016



# 100 Percent ZEV Sales Requirement

Begins 100 percent ZEV sales in 2036 instead of 2040 model year [§2016(b)]\*

Starting 2036, all Class 2b-8 vehicles sold into California must be ZEVs

- Provides certainty to the market and supply chain for manufacturers, fleets, infrastructure providers, service technicians, partner agencies, and local governments
- Expands market choice



# Drayage Trucks

Section 2014

# Drayage Trucks Requirements

Applies to Class 7-8 on-road trucks operating at California's seaports and intermodal railyards

December 31, 2023

Registration required  
for legacy trucks

January 1, 2024

Newly added  
drayage trucks  
must be ZEVs

January 1, 2025

Must annually  
report mileage  
for trucks over  
12 years

January 1, 2035

All drayage  
trucks must be  
ZEVs

- Legacy trucks may operate until the end of their useful life
- Must visit a regulated seaport or railyard at least once a year
- May use limited extensions

# General Drayage Truck Changes

- Definitions [§2014(b)]\*
- Compliance deadlines and reporting [§2014.1]\*
- Shared language
  - Accident provision [§2014.1(a)(8)(H)]\*
  - Sales disclosure requirements [§2014.1]\*
  - Vehicle Delivery Delay Extension [§2014.2]\*
    - Extend use of existing truck until replacement is delivered
  - Infrastructure Extension Delay [§2014.2(b)]\*
    - Extend use of existing truck until infrastructure is ready

# Changes to Definitions

## Definitions [§2014(b)]

- Clarified current definitions
- Added definitions
  - Concrete mixer
  - Dedicated auto-transport
  - Dedicated fuel delivery vehicle
  - Mobile crane
  - Power take-off
  - Internal combustion engine
  - Minimum useful life
  - SAE J1667
  - Smoke Opacity test

# Compliance Deadlines and Reporting

## Compliance deadlines and reporting [§2014.1]

- Updated reporting dates and process for terminals
  - Updated reporting dates from February 15 to January 31
  - Clarified that terminals report to respective authorities
- Clarified odometer reporting requirements
  - Report odometer reading as of January 1 for legacy trucks subject to the minimum useful life requirements
- Removed physical or mailing reporting option
  - Electronic online reporting only



# High Priority Fleets

Section 2015

# Applicability

- Affected fleets [§2015(a)(1)]
  - \$50M or more in total gross annual revenue reported to the US Internal Revenue Service in prior calendar year\*
  - Owns, operates, or directs 50 or more trucks
  - Common ownership or controls 50 or more trucks
  - Federal government agency
- Affected vehicles [§2015(a)(2)]
  - Gross vehicle weight rating (GVWR) greater than 8,500 lbs.
  - Package delivery vehicles GVWR 8,500 lbs. or below
  - Yard tractors



# Model Year Schedule Summary

January 2024

Registration required for legacy trucks

January 1, 2024

Newly added trucks must be ZEVs or NZEVs

January 2025

Must annually report mileage for tractors over 12 years

January 1, 2025\*

ICE vehicles removed after useful life exceeded

- Legacy trucks may operate until the end of their useful life
- May use certain exemptions and extensions
- ICE vehicle removals begin January 2025 [§2015.1(b)]\*



# Model Year Schedule Example

Legacy Truck Engine Year	18 years
2010	2028
2011	2029
2012	2030
2013	2031
2014	2032
2015	2033
2016	2034
2017	2035
2018	2036
2019	2037
2020	2038
2021	2039
2022	2040
2023	2041
2024	2042

- California fleet
  - All additions must be ZEVs
  - Legacy trucks removed
- Tractors
  - Earlier of 18 years or
  - End of year when odometer exceeds 800,000 miles
- Yard trucks and all other vehicles
  - 18 years

# General Changes for High Priority Fleets

- Definitions\*
- Any new ICE vehicle purchase must be California certified [§2015.3(r)]\*
- Compliance deadlines and reporting [§2015.4(l)]\*
- Exemption for test/demo vehicles [§2015.3(e)(1)]\*
- Switching between compliance options [§2015(d)]\*
- Extend merger or acquisition period to 1 year [§2015(k)(1)]\*
- Late reporting provision [§2015.4(l)]\*

# General Changes, Cont'd

- If the original engine year is unknown, the engine year will be the vehicle model year less 1 year [§2015(b)]\*
- Vehicle sales disclosure [§2015(q)]\*
- Clarification that lease renewal is not a new addition to fleet [§2015(b)]\*

# Model Year Schedule Provisions

- Extensions allow for extended use of legacy trucks
  - Vehicle Delivery Delay [§2015.1(c)(5)] \*
  - Infrastructure Delay [§2015.1(c)(3)]\*
  - Backup vehicles [§2015.1(c)(1)]
- Exemptions to purchase new California certified ICE vehicles when the legacy truck has >700,000 miles or >16 years\*
  - ZEV Purchase Exemption if not available as ZEV [§2015.1(c)(6)]\*
  - Daily Usage Exemption [§2015.1(c)(2)] \*
- Mutual Aid Exemption for new ICE purchases [§2015.1(c)(8)]\*
- Accident provision [§2015.1(c)(10)]\*



# State and Local Government Fleets

Section 2013

# State and Local Government Requirements

2024-2026

January 1, 2027

50 percent of purchases must be ZEV or NZEV\*

All purchases must be ZEV or NZEV\*

- Agencies in designated counties and divisions with 10 or fewer trucks exempt until 2027\*
- May use exemptions and extensions



# Exemptions and Extensions

- May purchase new ICE vehicle with California certified engine if the existing vehicle is 13 years old or more\*
  - Daily usage exemption [§2013.1(b)]\*
  - ZEV purchase exemption [§2013.1(d)]\*
- May purchase used ICE vehicle with a 2010 or newer engine to operate as a backup vehicle [§2013.1(a)]
- Mutual aid exemption [§2013.1(e)]\*
- Intermittent snow removal vehicle exemption until 2030 [§2013(n)(7)]\*
- May postpone ZEV purchases temporarily
  - Infrastructure delay [§2013,1(c)]\*



# Summary of Changes

- Transit agencies excluded until 2030 [§2013(c)(9)]\*
  - Exclude maintenance trucks and reporting
- More flexibility for fleets complying jointly [§2013(k)]\*
  - Department of General Services on behalf of state fleet
- Access to ZEV Milestone Option [§2013(d)]\*
  - Opt-in period closes January 1, 2030



# ZEV Milestones Option




Section 2015.2

# Optional ZEV Milestone Phase-in

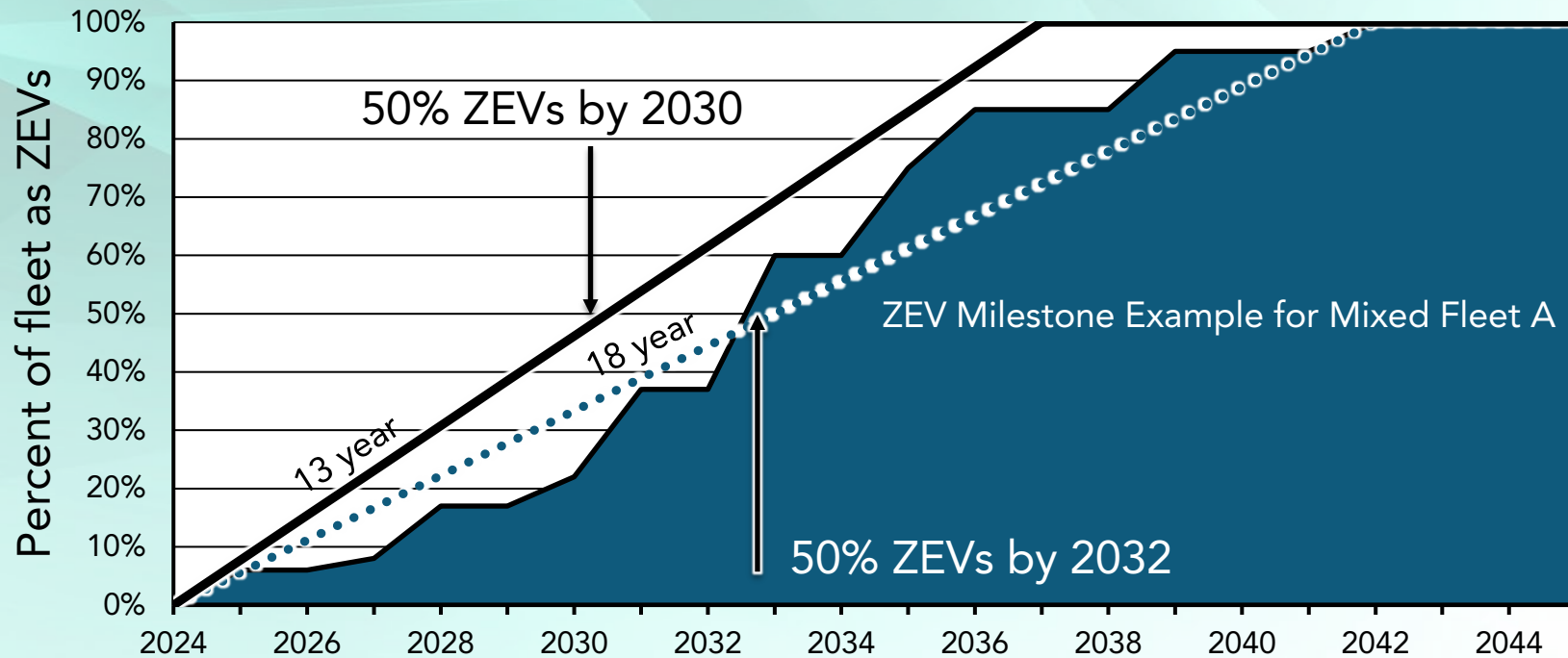
- Open to High Priority and State and Local Government fleets\*
- Must meet ZEV milestones as a percent of total fleet
- Flexibility to add new ICE vehicles that are California certified\*
- Flexibility to add used ICE vehicles with 2010 or newer model year\*
- Rental vehicle provision [§2015.2(d)]

Zero-Emission Fleet Percentage	10%	25%	50%	75%	100%
Group 1: Box trucks, vans, 2-axle buses, yard trucks, light-duty package delivery vehicles	2025	2028	2031	2033	2035
Group 2: Work trucks, day cab tractors, 3-axle buses	2027	2030	2033	2036	2039
Group 3: Sleeper cab tractors and specialty vehicles	2030	2033	2036	2039	2042

# ZEV Milestone Option Example

Vehicle Type	# of Vehicles	ZEVs in 2025	ZEVs in 2029	ZEVs in 2033	ZEVs in 2037	ZEVs in 2041	ZEVs in 2042
Box trucks, vans, two-axle buses, yard trucks 	60	6	15	45	60	60	60
Work trucks, day cab tractors, three-axle buses 	20	0	2	10	15	20	20
Sleeper cab tractors and specialty vehicles 	20	0	0	5	10	15	20
<b>ZEV Milestones</b>	<b>100</b>	<b>6</b>	<b>17</b>	<b>60</b>	<b>85</b>	<b>95</b>	<b>100</b>

# ZEV Milestone Option Example (Cont'd)



# Exemptions and Extensions

- Purchase new California certified\* ICE vehicles if remaining ICE vehicles cannot be replaced with ZEVs or NZEVs
  - ZEV Purchase Exemption if a ZEV is not available [§2015.2(f)(6)]\*
  - Daily Usage Exemption [§2015.2(f)(2)]\*
  - Must apply 1 year before compliance date
- Existing ICE vehicles will count as ZEVs temporarily
  - Infrastructure Delay [§2015.2(f)(4)]\*
  - Vehicle Delivery Delay [§2015.2(f)(5)]\*
- Vehicles excluded from fleet ZEV calculation
  - Backup vehicles [§2015.2(f)(1)]
  - Intermittent snow removal vehicles until 2030 [§2015.2(f)(10)]\*
  - Mutual Aid Exemption ICE vehicle purchases [§2015.2(f)(8)]\*
- Waste and wastewater fleets extension [§2015.2(e)]\*
- Transient rental vehicle provisions [§2015.2(d)]

# Rental Vehicle Provision

- Applies to rental fleets using the ZEV Milestones option
- Provides smooth transition to ZEVs for highly transient interstate rental vehicles
- Rental fleet owners may exclude individual transient interstate rental vehicles from the ZEV milestone calculations and meet milestones based on the average
- Annual updates during annual reporting



# Shared Language Applicable to Different Fleets



# Shared Provisions Overview

Shared Provision Name	Model Year Schedule	ZEV Milestones	State and Local Government	Drayage
Vehicle Delivery Delay (updated)	Y	Y	Y	Y
Infrastructure Delay Provisions (updated)	Y	Y	Y	Y
Vehicle Sales Disclosure (new)	Y	Y	Y	Y
ZEV Purchase Exemptions (updated)	Y	N	Y	N
Daily Usage Exemptions (updated)	Y	Y	Y	N
Accident/Non-Repairable Vehicle Provisions (new)	Y	N	N	Y
Five-Day Pass (new)	Y	Y	N	N
Mutual Aid Provisions (updated)	Y	Y	Y	N
Waste and Wastewater Fleet Provisions (new)	N	Y	Y	N
Intermittent Snow Removal Vehicle Provisions (new)	N	Y	Y	N
Backup Vehicle Exemption	Y	Y	Y	N
Hiring Entity Requirements	Y	Y	Y	Y

# Vehicle Delivery Delay Extension

- Allows for continued use of an existing ICE vehicle until replacement ZEV is received
- ZEV purchased one year ahead of next compliance date
- If manufacturer cancels a ZEV order\*
  - Fleet owner may place another order for suitable ZEVs within 180 days\*
- During next reporting period email proof of purchase to [trucrs@arb.ca.gov](mailto:trucrs@arb.ca.gov) with VIN of truck to be replaced



# Infrastructure Delay Extension

Section §2013.1(c), §2014.2(b), §2015.3(c)

# Infrastructure Delay Extension Summary

- Applies to ZEV infrastructure upgrades at fleet sites
- Addresses circumstances beyond fleet owner's control
- Must deploy all ZEVs that can be supported by site
- Project must begin 1 year prior to compliance date
  - Construction delays
  - Site electrification delays\*
- Must apply 45 days before next compliance date

# Construction Delays

- Project start based on permit issue date
- Circumstances include
  - Change of a general contractor
  - Unexpected safety issues
  - Discovery of archeological, historical, or tribal cultural resources
  - Natural disasters
  - Delay in manufacture and shipment of zero-emission charging and fueling infrastructure equipment\*
- Extension issued up to two years
  - Total project time up to three years\*

# Site Electrification Delays

- Addresses utility delays in supplying sufficient power
- Project start date when utility contract signed for signed attestation from utility to proceed with project
- First extension up to 3 years
- Can extend for up to 2 more years
- Sunsets January 1, 2030

# Infrastructure Extension Process

- Email supporting documentation to [trucrs@arb.ca.gov](mailto:trucrs@arb.ca.gov)
  - Describe reason for delay
  - Initial site capacity in kW, ZEV information, capacity of charging/fueling equipment the utility can support each year until the project is complete
  - Preliminary infrastructure capacity for all sites if fleet owner has more than one

# Vehicle Sales Disclosure

- Fleet owners must disclose potential applicability of California regulations when selling vehicles\*
  - “An on-road vehicle operated in California may be subject to the California Air Resources Board Advanced Clean Fleets regulations or other regulations. It therefore could be subject to requirements to reduce emissions of air pollutants.”





# ZEV Purchase Exemption

§2013(n)(5), §2015.1(c)(6)

# ZEV Purchase Exemption Summary

- Allows for ICE purchase if ZEV in needed configuration is not available
  - Expanded to include Class 2b-3 vehicles
- Streamlined exemption process
  - Excludes pickups, two-axle buses, box trucks, vans, and on-road tractors
- Fleet-specific exemption process\*

# ZEV Chassis Available in All Weight Classes

Class 2b	Class 3	Class 4	Class 5
<ul style="list-style-type: none"> <li>• Ford E-Transit Chassis Cab</li> <li>• Ford E-Transit Cutaway</li> </ul>	<ul style="list-style-type: none"> <li>• Via Motors Electric Chassis Cab</li> </ul>	<ul style="list-style-type: none"> <li>• Bollinger E-Chassis</li> <li>• Envirotech Cutaway Van</li> <li>• GreenPower EV Star Cab and Chassis</li> <li>• VMC Optimal E1 Cutaway Chassis</li> </ul>	<ul style="list-style-type: none"> <li>• Freightliner MT50e Custom Chassis</li> <li>• Zeus Z-19 Electric Chassis Cab</li> </ul>



Class 6	Class 7	Class 8
<ul style="list-style-type: none"> <li>• Zeus Z-22 Electric Chassis Cab</li> <li>• Zeus Z-26 Electric Chassis Cab</li> <li>• Freightliner MT50e Custom Chassis</li> <li>• Lion 6 Cab and Chassis</li> <li>• International eMV Chassis</li> <li>• BYD 6F Cab and Chassis</li> </ul>	<ul style="list-style-type: none"> <li>• International eMV Chassis</li> <li>• Volvo VNR 4x2 Straight Truck Chassis</li> <li>• Volvo VNR 6x4 Straight Truck Chassis</li> </ul>	<ul style="list-style-type: none"> <li>• BYD 8TT Tandem Axle Chassis</li> <li>• Lion 8 Tractor Truck Cab and Chassis</li> <li>• Lion 8 Straight Truck Cab and Chassis</li> <li>• Volvo VNR 4x2 Tractor Chassis</li> <li>• Volvo VNR 6x2 Tractor Chassis</li> <li>• Volvo VNR 6x4 Tractor Chassis</li> </ul>

# Same ZEV Chassis with Multiple Configurations



# Class 2 - 3



BrightDrop Zevo Step Van  
250 Miles



Ford E-Transit Chassis Cab  
126 Miles



Ford T-350 Cargo Van  
126 Miles



Ford F-150 Lightning  
240 Miles



Bollinger B2  
200 Miles



Workhorse C-650/ C-1000 Step Van  
100-150 Miles



Lightning eMotors ZEV3  
Cargo Van  
140 Miles



Rivian R1T  
260-400 Miles

# Class 4 - 7



BYD 6F  
200 Miles



BYD 6R  
80 Miles



Envirotech Cutaway  
170 Miles



Envirotech Logistic Van  
170 Miles



Envirotech Urban Truck  
170 Miles



Freightliner MT50e  
150-170 Miles



GreenPower EV Star  
150 Miles



Kenworth K270E/ K370E  
100-200 Miles

# Class 4 - 7



SEA Hino 195EV  
200 Miles



Freightliner eM2  
230 Miles



Lightning eMotors ZEV4  
130 Miles



Lightning eMotors E-450  
105 Miles



Lion Lion6  
200 Miles



Motiv Epic F-59  
105 Miles



Motiv Epic E-450  
105 Miles



Motiv Epic E-450  
105 Miles

# Class 4 - 7



Optimal EV E1  
125 Miles



Peterbilt 220 EV  
200 Miles



Phoenix ZEUS 500  
70-160 Miles



XLE Battery Electric Refuse Truck  
100 Miles



International eMV  
135 Miles



Volvo 4x2 Straight  
175 Miles



Zeus Electric Truck  
175-210 Miles



VMC Optimal S1 Shuttle Bus  
125 Miles



# Class 8



Lion Lion8 Straight  
170 Miles



Lion Lion8 Refuse  
170 Miles



Lion Lion8 Bucket  
130 Miles



Mack LR Electric  
100 Miles



Peterbilt 520 EV  
80-100 Miles



Terex EV Aerial Bucket Truck  
135 Miles



Van Hool TDX25E  
260 Miles



BYD C10MS Bus  
230 Miles

# Class 8 Tractors



BYD 8TT  
124 Miles



Freightliner eCascadia  
155-230 Miles



Kenworth T680  
150 Miles



Lion Lion8 T  
221 Miles



Nikola TRE BEV  
330 Miles



Peterbilt 579 EV  
150 Miles



Hyzon Class 8 Hydrogen  
FCEV 350-500 Miles



Volvo VNR Electric  
175-275 Miles  
4x2, 6x2 or 6x4 axles

# Class 8 – Yard Trucks



BYD 8Y  
10+ Hour Range



Kalmar Ottawa T2E+  
8-20 Hour Range



Lonestar SV S12, S22  
12-22 Hour Range



OrangeEV  
24 Hour Range

# ZEV Availability Criteria

- Zero-Emission Powertrain certified (if applicable)
- Available for order from at least one manufacturer\*
- ZEV is available within next 2 model years
- Does not include:
  - Demonstration/test/experimental vehicles
  - Manufacturer placeholder reservations for future models

# Streamlined ZEV Purchase Exemption

- CARB to list vehicle body type categories that are not available to purchase as ZEVs
- Fleets may purchase ICE on streamlined list
  - No need for fleet owners to apply for exemptions
  - Designate ICE vehicles to be replaced
  - Report new vehicle when received and keep records

# Fleet-Specific Exemption Process

- Email to [trucrs@arb.ca.gov](mailto:trucrs@arb.ca.gov)
  - Existing vehicle configuration, weight class, photos, specification sheet
  - Any frame attachments critical for primary function
  - Make, model of body equipped on vehicle
  - Documentation from at least two manufacturers stating the configuration is not available as a ZEV
- CARB to review and respond within 45 days

# Final Determination

- CARB to solicit feedback from manufacturers
  - Will direct applicant to manufacturer/upfitter that supplies the vehicle; or,
  - Will grant exemption request that provides six months to purchase ICE vehicles of that configuration
- Exemption request denied if suitable vehicle in the same or next higher weight class is available
- Information may be used to add/remove vehicles from the streamlined list

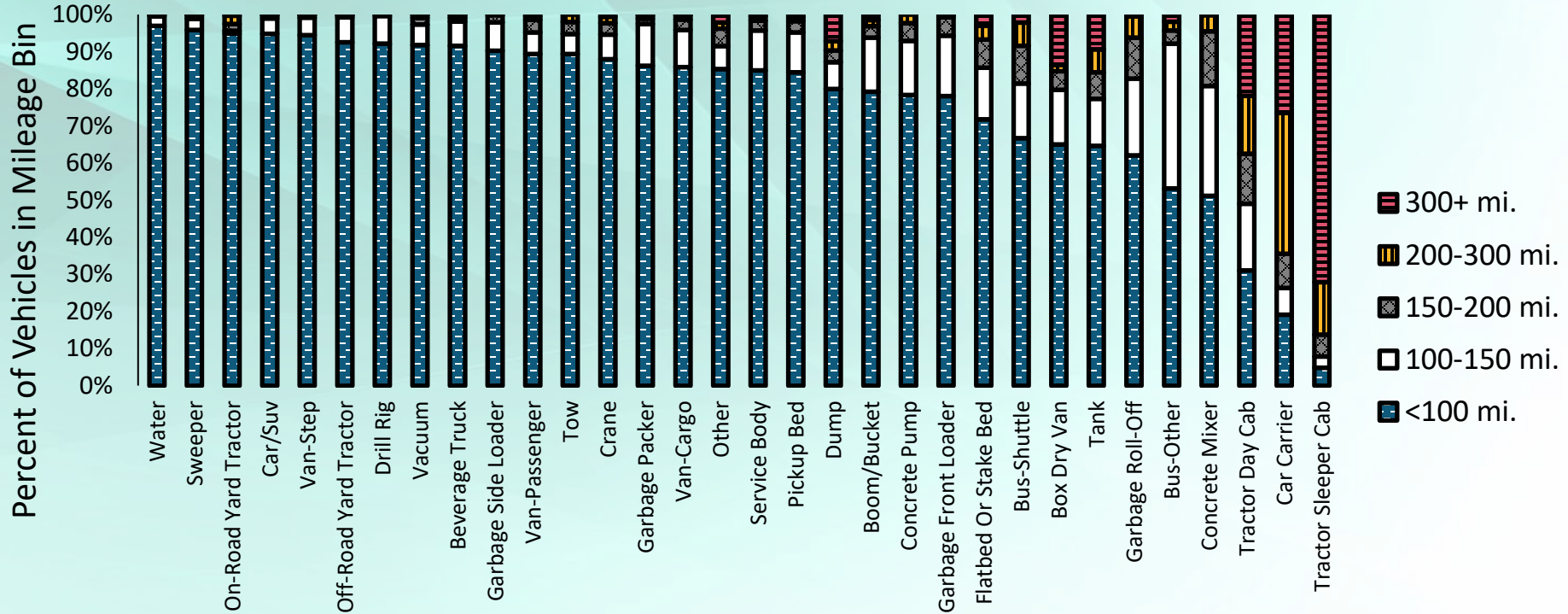


# Daily Usage Exemption

Section 2013.1(b), 2015.3(b)



# Most Trucks Travel <100 Miles Per Day



# Daily Usage Exemptions

- Allows for new ICE vehicle purchase if available ZEV cannot meet duty cycle for same truck type in fleet
  - Mileage for all trucks in 30 day period within last year
  - Collected energy usage data from ZEV and comparable ICE vehicle for 5 consecutive business days\*
- 10% of fleet must be ZEVs to apply
- Approved exemption provides 180 days to make purchase

# Non-Repairable Vehicles\*

- Allows purchase of used ICE vehicle to replace vehicle lost due to accident
- Replacement with same or newer model year engine
- Must submit documentation and information regarding replacement vehicle

# Five-Day Pass\*

- New option to allow for intermittent use of ICE vehicles in California [§2015.1(c)(9)]\*
- Vehicle excluded from California fleet for consecutive 5-day period
- Report and receive pass online 1 time per vehicle

# Earlier Access to Mutual Aid Provisions

- Applies to fleets with mutual aid agreements after exceeding ZEV fleet thresholds

Date	ZEV Fleet Threshold*
January 1, 2024	25%*
January 1, 2032	50%*
January 1, 2035	75%

- May purchase new California certified ICE vehicles until 25% of fleet using ZEV purchase exemptions
- Does not apply to ZEVs with fast mobile fueling solutions nor pickups, buses, box trucks, vans, nor tractors

# Mutual Aid Exemption Process

- When meeting ZEV threshold, email [trucrs@arb.ca.gov](mailto:trucrs@arb.ca.gov)
  - Reason for the exemption request
  - Description of needed ICE vehicle configuration
  - Documentation showing the equivalent ZEV or chassis cannot be refueled within one hour\*
  - Copy of the mutual aid agreement
- Approved for ICE vehicle purchase if conditions met
- Report ICE vehicle information when vehicle received

# Waste and Wastewater Fleet Extension

- Delays ZEV phase-in until 2030 for existing trucks using biomethane
- Counts CNG trucks in fleet as of January 1, 2024
  - Group 1 and 2 vehicles counted Group 3
  - Fleet retains same delayed schedule when replacing existing CNG trucks with other CNG or ZEVs
- Can keep purchasing CNG trucks while meeting ZEV milestones
- No extra time for existing diesel trucks

Total Percent ZEVs	10%	25%	50%	75%	100%
Milestone Group 3 Schedule	2030	2033	2036	2039	2042

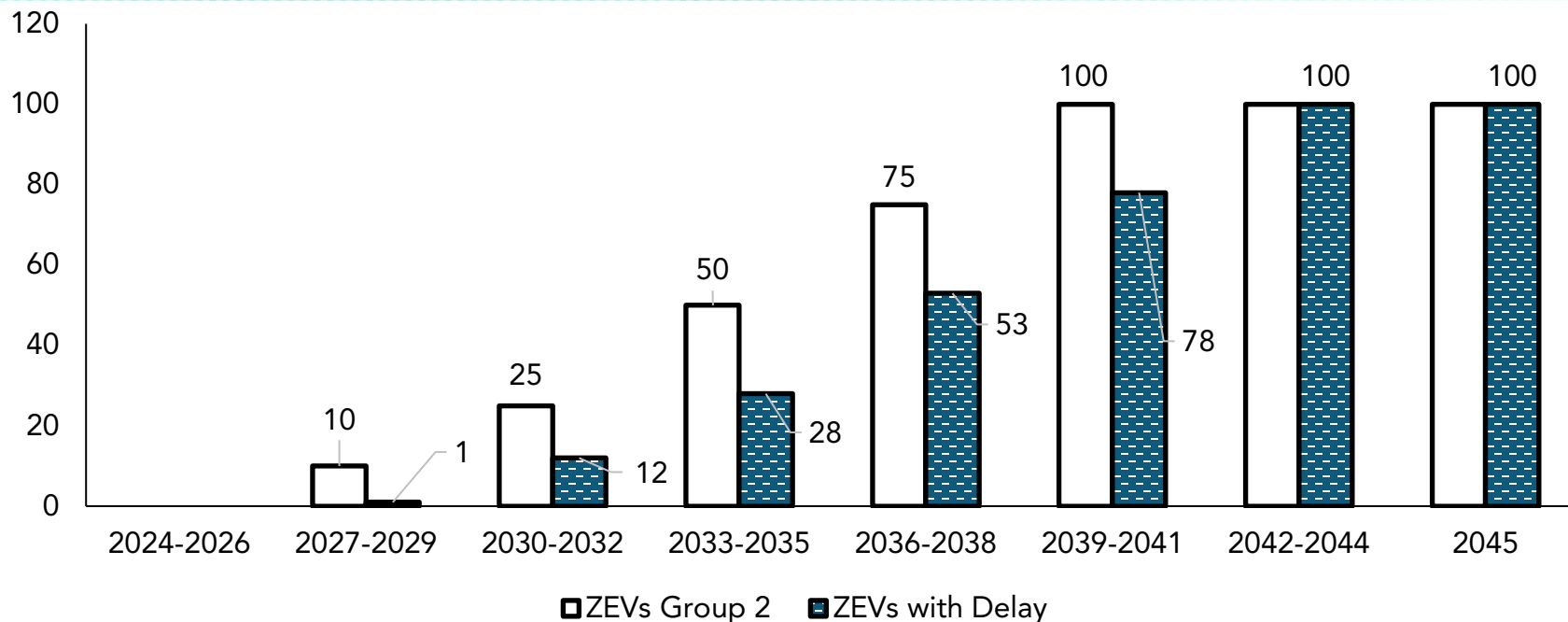
# Waste and Wastewater Fleet Vehicles

- Waste fleet CNG vehicles
  - Rear, side, and front-loader compactor trucks, tractors exclusively used as transfer trucks, or roll-off trucks
- Wastewater fleets that directly supporting the operation of facilities that collect and process diverted in-state organic waste to produce biomethane
  - All CNG vehicles
- Must be exclusively fueled with biomethane (ok if part of Low Carbon Fuel Standard)



# Delayed ZEV Schedule Example

Group 2 Vehicles - 10 diesel and 90 CNG



# Intermittent Snow Removal Vehicles\*

- Temporary exemption until 2030
- Vehicle that is equipped with a plow mounting attachment with a control system for the purpose of removing snow, and may also have one or all the following features: traction material spreader attachment with a control system; or a de-icing system attachment with a control system
- Fleets must request vehicles to be designated intermittent snow removal vehicles

# Backup Vehicle Exemption

- Allows backup vehicles used less than 1000 miles per year to be excluded from annual ZEV requirements
  - Excludes miles in support of declared emergency

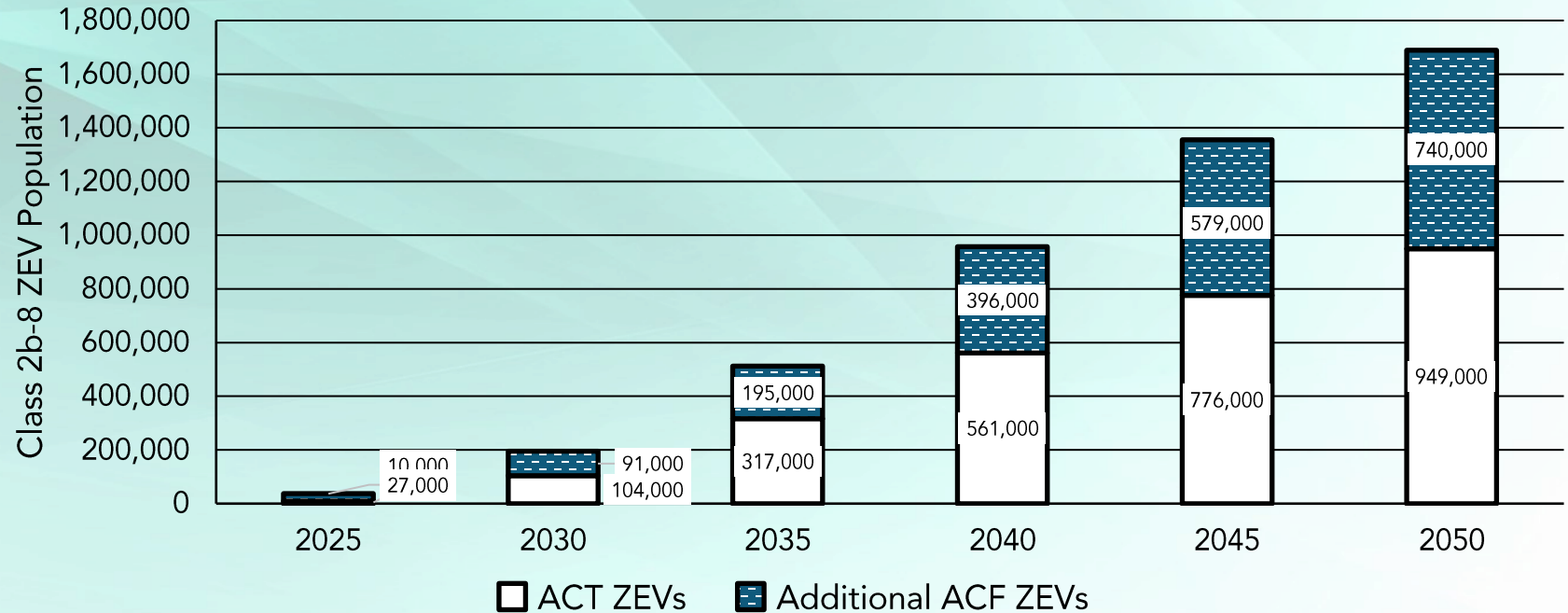
# Hiring Entity Requirements

- Motor carrier, broker, government agency, person, entity that hires and operates or hires and directs the operation of vehicles subject to:
  - Drayage truck requirements
  - State and Local Government requirements
  - High-Priority Fleet requirements
- Must verify compliance
- Disclose regulation applicability when hiring fleets

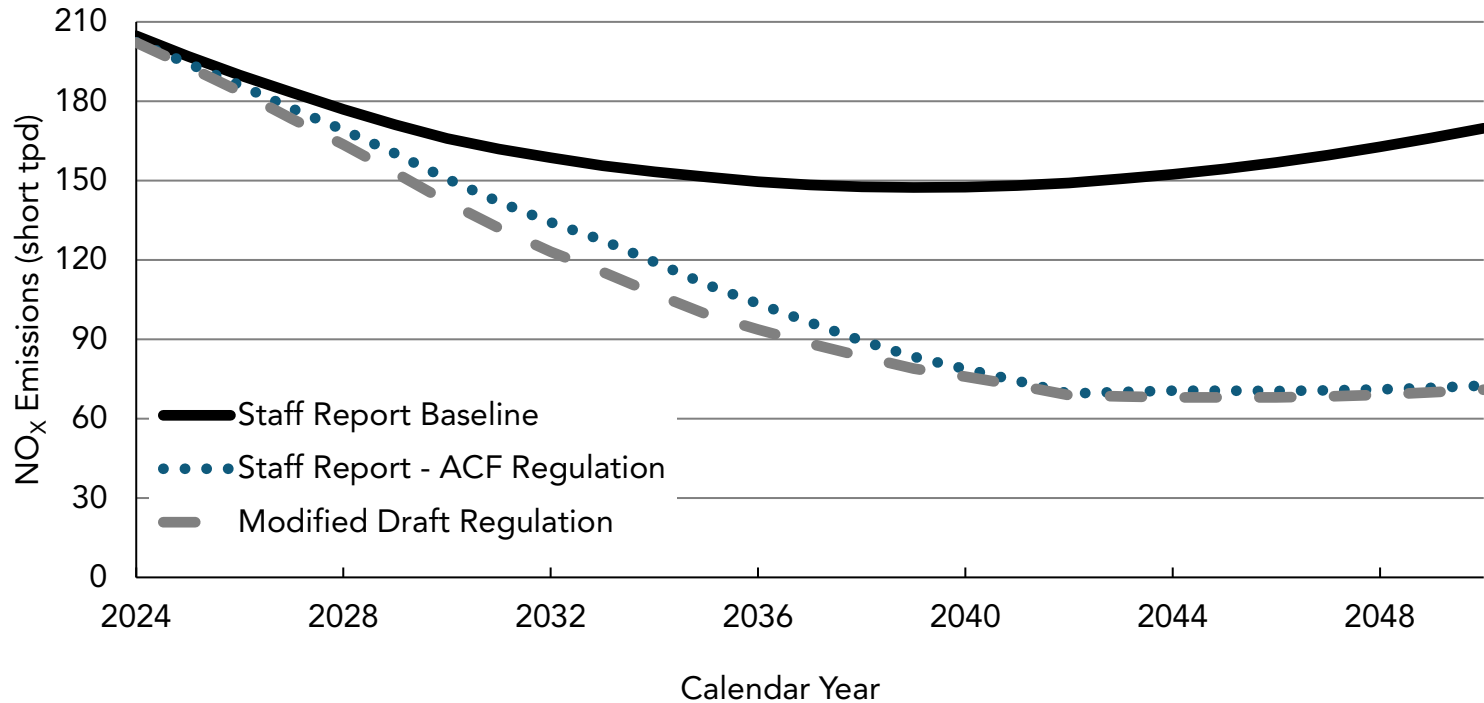


# ZEV and Emissions Projections

# Significant Increase in Medium and Heavy-Duty ZEVs Expected (2025 to 2050)



# NOx Emission Results



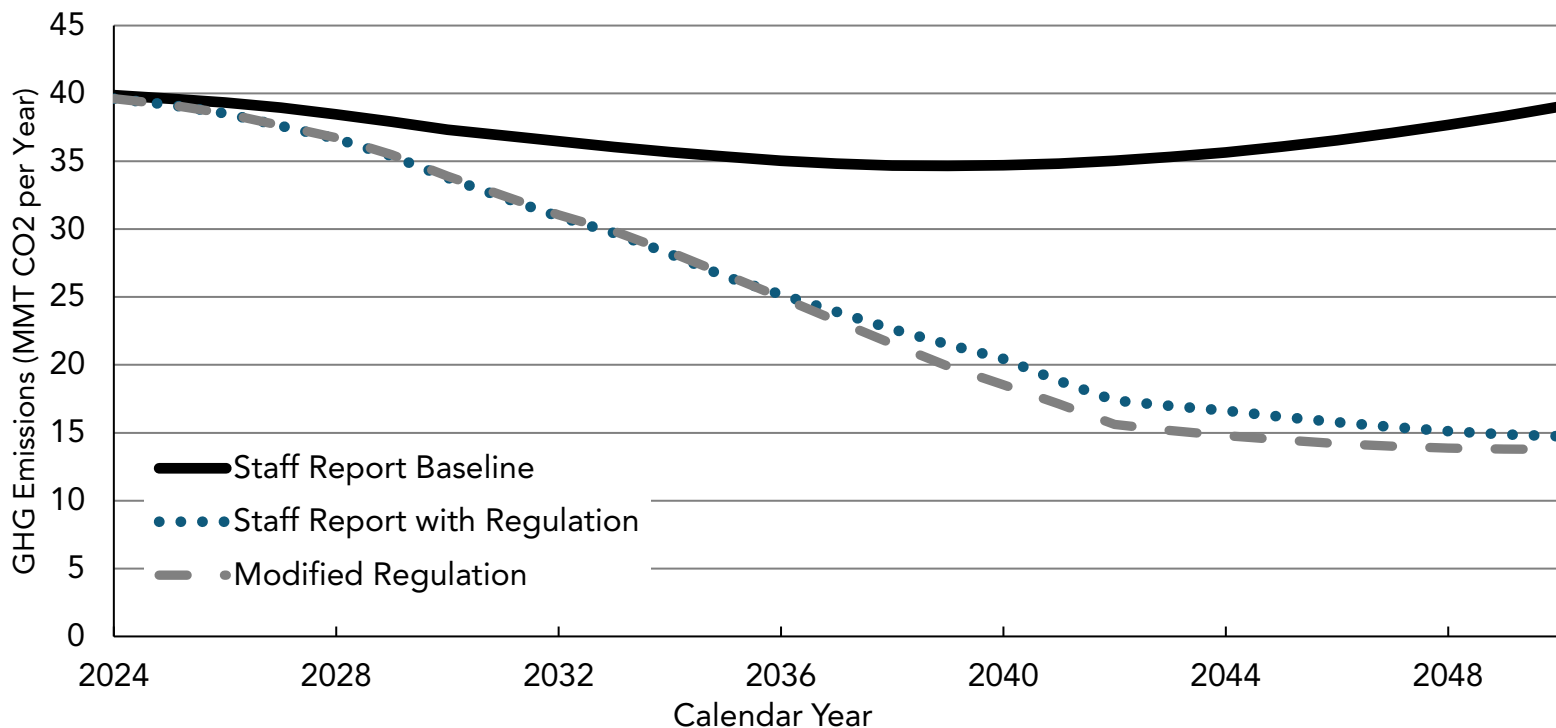
# NOx Emissions Results (tpd)

- Lower NOx emissions every year
  - California certified engine requirement
  - Earlier 100% ZEV sales

Year	Staff Report	Draft Modifications	Net Change
2031	20.0	29.9	9.9
2037	52.0	60.0	8.0
2045	83.9	86.4	2.6



# GHG Emission Results



# GHG Emissions Benefit (MMT CO<sub>2</sub>/Year)

- Slight increase in GHG emissions through 2036 due to Waste and Waste-Water Fleet provisions
- Lower GHG emissions starting 2036 due to earlier 100% ZEV sales

Year	Staff Report	Draft Modifications	Net Change
2031	4.6	4.4	-0.1
2037	10.9	11.6	0.7
2045	19.9	21.6	1.7

# Next Steps

- 15-day change package posted in March
  - Formal comment period for Board consideration
- Second Board hearing April 27-28, 2023



# Heavy-Duty Engine and Vehicle Omnibus Regulation



# Background

- Established lower NOx and PM emission standards starting in 2024 model year (MY)
- Approved by Office of Administrative Law in 2021
- Provided legacy engine provisions to ease transition to 0.05 gram per brake horsepower hour (g/bhp-hr) NOx standards
  - 0.20 g/bhp-hr legacy engines can be sold
  - All additional emissions must be offset with heavy-duty ZEVs, or in limited cases, other credits
- Caps on allowable legacy engines:
  - MY 2024: Up to 45 percent of manufacturer's total CA heavy-duty diesel engines
  - MY 2025: Up to 25 percent of manufacturer's total CA heavy-duty diesel engines

# Additional Flexibility May Be Needed

- Manufacturers working to certify Omnibus compliant products for MY 2024
- Unanticipated changes in product lines may indicate the need for additional legacy engines beyond current production caps and/or need for provisions to mitigate the incremental cost of legacy engines

# Possible Solutions

- Adjust the 45 percent and 25 percent production caps on legacy engines
- Change NO<sub>x</sub> credit pricing threshold from \$4,000 for each medium heavy-duty engine to dollar per Megagram (\$/Mg)
- Allow cross-trading of credits between different service classes to offset legacy engine deficits
- Other ideas?
  
- **Contact:** Mitzi Magtoto, Air Resources Engineer  
[mitzi.magtoto@arb.ca.gov](mailto:mitzi.magtoto@arb.ca.gov)