

California Air Resources Board (CARB) 2024 Regulations



Advance Clean Fleets (ACF)

Advance Clean Trucks (ACT)

CARB Omnibus Ultra-low NOx Rule

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December 28th, 2023 Update

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What Is Happening In California?

The California Air Resource Board (CARB) has passed regulations that dramatically affect production, sales, and operation of gas and diesel powered vehicles. These regulations begin affecting fleets in 2024. The ACF regulation will affect customers the most.



New Regulations

- Advance Clean Fleets (ACF)
- Advance Clean Trucks (ACT)
- CARB Omnibus Ultra-low NOx Rule 2024

What Does This Mean For Haaker Customers?

Customers will need to transition to electric powered fleets. This may include developing infrastructure to charge and maintain electric equipment, changing purchase plans, and applying for exemptions or grants to support the transition process.

Haaker has been building our electric fleet options to provide our customers with industry breaking technologies as they come to market. As regulations affect not only the equipment we can sell you, but also your current fleets, Haaker is here to help you navigate what equipment is best for you that fits within compliance regulations.

Advance Clean Fleets (ACF)

Fleet Migration To ZEVs

CARB's ACF ruling means public and private fleets will be required to transition to electric powered vehicles. All high priority and federal fleets will be required to remove internal combustion engine (ICE) vehicles as they begin purchasing ZEVs with either the Model Year Schedule or the Milestone Option. State and local government fleets may continue operating ICE vehicles only if they *do not opt-in* to the Milestone Option.

ZEV - Zero Emission Vehicle

ZEVs include Battery Electric Vehicles (BEV) and Hydrogen Fuel Cell Electric Vehicles (FCEV). It does not include Hybrid Electric Vehicles (HEV). Plug-In Hybrid Vehicles (PHEV) are considered Near Zero Emissions Vehicles (NZEV), but are limited by all-electric range requirements.

Milestone Option: ZEV Fleet Milestones

Percentage of vehicles that must be zero-emission	10%	25%	50%	75%	100%
Milestone Group 1: Box trucks, vans, buses with two axles, yard tractors, light-duty package delivery vehicles	2025	2028	2031	2033	2035 & beyond
Milestone Group 2: Work trucks, day cab tractors, buses with 3 axles	2027	2030	2033	2036	2039 & beyond
Milestone Group 3: Sleeper cab tractors and specialty vehicles	2030	2033	2036	2039	2042 & beyond

- Reporting & record keeping requirements starting 1/1/2024
- **December 28, 2023 Update:** CARB will not take enforcement action for reporting or regulation requirements until U.S. EPA grants a preemption waiver or decides a waiver unnecessary

ACF Milestones

How Are Milestones Calculated?

The annual ZEV Fleet Milestone is calculated by counting the vehicles in the California fleet for groups, then multiplying the number of vehicles in each Milestone Group by the ZEV percentage requirement for that year (see table on page 4).

Example A: For the calendar year 2030, a California fleet consists of 100 Group 1 vehicles, 50 Group 2 vehicles, and 30 Group 3 vehicles:

Milestone Group 1: 100 vehicles x 25% = 25 ZEVs

Milestone Group 2: 50 vehicles x 25% = 12.5 ZEVs

Milestone Group 3: 30 vehicles x 10% = 3 ZEVs

Total ZEV Fleet Milestone = 40.5 ZEVs, which rounds up to 41 ZEVs needed that year.

Can Any ZEV Count Towards Compliance?

- **Yes**, a ZEV from any Milestone Group can count toward the fleet's total ZEV Fleet Milestone requirement.
- In **Example A** above, the fleet might choose to have 30 ZEV vans (Group 1), 10 ZEV work trucks (Group 2), and 1 ZEV sleeper cab tractor (Group 3) in 2030.

Year 2030	Milestone Calculation	Actual ZEV Vehicles
Group 1	25 ZEVs	30 ZEV vans
Group 2	12.5 ZEVs	10 ZEV work trucks
Group 3	3 ZEVs	1 ZEV sleeper cab tractor
Total	41 ZEVs needed	41 ZEVs in fleet

- **Vector/Truvac** falls under “Class 8” & “Specialty Vehicle” which is Milestone Group 3
- **Elgin** sweepers falls under “Class 7 & 8” & “Work Truck” which is Milestone Group 2

High Priority & Federal Fleets

High Priority fleets are defined as having either:

- **\$50M+** gross annual revenue
- Own, operate, or direct the operation of **50+ vehicles** (not including light duty)

Federal fleets are defined as:

- Any vehicle a federal agency owns, operates, or directs the operation of in California

Starting January 1, 2024:

- Any **new ICE vehicle** purchased, 2024 or newer, must have an engine certified to CA emission standards
- Any **used ICE vehicle** purchased must have a 2010 or newer model engine

Two Compliance Paths

1. Model Year Schedule

- Only ZEV vehicles can be added to the CA fleet
- Replacements after useful life (13 years)
- Beginning January 1, 2025, fleet owners must remove ICE vehicles from their fleet if (1) they exceed their minimum useful life mileage thresholds, or (2) the engine model year is 18+ years old

2. Milestone Option

- Migrating to ZEV as a percentage of the fleet (see table on page 4)
- Must opt-in to Milestone Option
- Phase ZEV into your fleet between 2025 and 2042

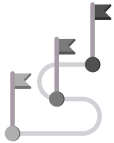
State and Local Government Fleets



Fleet Requirements Purchase Schedule

- **50%** of total vehicles purchased in calendar year to be ZEV/NZEV starting January 1, **2024**
- **100%** of total vehicles purchased in calendar year to be ZEV/NZEV starting January 1, **2027**
- *Exception if agency has 10 or less vehicles*

Milestone Option

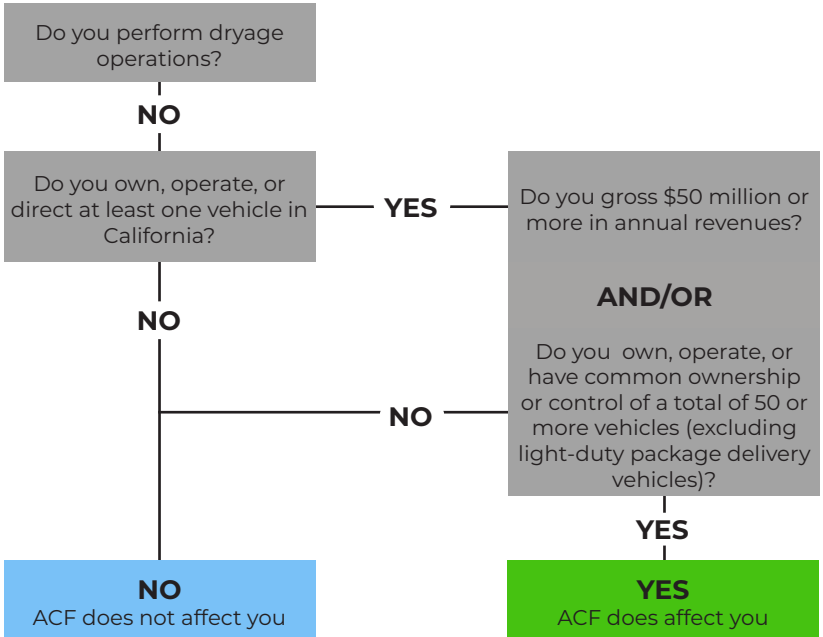


- Until January 1, 2030, state and local government agencies can **opt-in to the ZEV milestone** option and achieve ZEV goal percentages
- This enables a phased transition to ZEVs from 2024 to 2042 based on truck classification (refer to Table on page 4)
- Owners must **meet or exceed the milestone percentage** requirements to remain eligible

How Does This Affect My Existing Vehicles?

- **State and local governments following the default ZEV Purchase Schedule may continue to operate their existing vehicles** as long as they want; there is no requirement to remove or retire existing ICE vehicles.
- Fleets that opt-in to the ZEV Milestone Option must ensure milestone percentages are met, which may require removing existing vehicles
- ZEV purchases before 2024 count towards future ZEV purchase requirements as long as they are active in the fleet

Does ACF Affect You In The Private Sector?



Which Vehicles Does ACF Affect?

- Medium and heavy duty on-road vehicles with a gross vehicle weight rating greater than 8,500 lbs.
- Off road yard tractors
- Light-duty mail and package delivery vehicles

General ACF Exemptions

- School buses, military tactical vehicles, emergency vehicles, historical vehicles, dedicated snow removal vehicles, two-engine vehicles (excluding street sweepers), heavy cranes, transit vehicles, and vehicles that are subject to the zero-emission airport shuttle regulations, intermittent snow removal vehicles.

Waste & Wastewater Fleets

Wastewater, Utilities, & Transit Fleet Provisions

- Waste/Wastewater Fleets extension to 2030 on all vehicles using biomethane fuel
- Transit fleets are exempt until 2030 if they are subject to the Innovative Clean Transit (ICT) regulation
- Must opt-in to Milestone Option

Temporary Delay Compliance Within The Zev Milestone Option

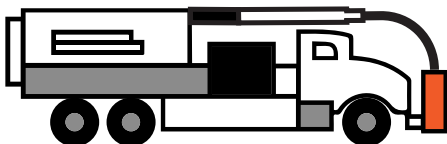
- Delay compliance of eligible vehicles by shifting them from Milestone Groups 1 and 2 into Group 3
- Shifts **all of your fleet into Group 3**

What Is An Eligible Wastewater Fleet?

- Fleets that **own and operate a wastewater treatment facility**, and the agency's primary purpose is the collection, treatment, and recycling of wastewater biosolids

What Is An Eligible Waste Fleet?

- Fleets that are contracted with a municipality mandated to support the hauling, transfer, and processing of diverted in-state organic waste to produce biomethane



- Minimum 10+ year contract or 3+ year contract with renewal provision

ACF Exemptions (cont.)

State and Local Government Fleet Exemptions



ZEV Purchase Exemption

- If a ZEV is needed in a configuration not available on the market, the owner may purchase a new internal combustion engine (ICE) vehicle with a CA certified engine
- Starting 2025, California Air Resource board will post an exemption list of common configurations with no ZEV option
- Purchases made with this exemption must be reported in the Truck Regulation Upload and Compliance Reporting System (TRUCRs)



Daily Use Exemption

- If the daily use demands exceed current ZEV capabilities, the fleet owner may request an exemption
- 10% of the CA fleet are still required to be ZEVs
- Fleet owners must submit mileage or usage records to prove ZEVs couldn't meet demand



ZEV Infrastructure Delay Extension

- If a fleet owner starts installing ZEV fueling infrastructure (electric charging stations) at least 1 year before their next compliance deadline, then they can request an extension on the deadline
- No new ICE purchases. Operating existing vehicles
- 2-5 year extensions available

State and Local Government Fleet Exemptions



Vehicle Delay Extension

- If a fleet owner has ordered a ZEV vehicle for immediate delivery at least 1 year before their next compliance deadline but it does not arrive in time, then they can request an extension on the deadline
- Must submit proof of purchase via email
- No new ICE purchases. Operating existing vehicles
- Not applicable to fleets not participating in milestone program



Backup Vehicle Exemption

- A vehicle operating less than 1,000 miles annually can be designated as a backup and may be excluded from ZEV compliance regulations
- Fleet owners must designate backup vehicles in the Truck Regulation Upload and Compliance Reporting System (TRUCRs)
- Renew backup status annually



Non-Repairable Vehicle Exemption

- If a ICE vehicle was in a one time catastrophic event, then fleet owners may purchase a used ICE vehicle to replace it
- The replacement engine must be the same year or newer than the non-repairable vehicle
- Proof of non-repairable status must be provided

Advance Clean Trucks (ACT)

What is ACT?

ACT is aiming to reduce greenhouse gases (GHGs) to improve California's air quality. It serves to improve zero-emission technology in the transportation sector because mobile sources are the largest contributors to the formation of ozone, greenhouse gas emissions, fine particulate matter (PM_{2.5}), and toxic diesel particulate matter.

The Advanced Clean Truck Regulation is part of a holistic approach to accelerate a large-scale transition of zero-emission medium-and heavy-duty vehicles from Class 2b to Class 8.



Zero-Emission Truck Sales

- Manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines would be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035.
- **By 2035**
 - 55% of Class 2b – 3 truck sales are ZEV
 - 75% of Class 4 – 8 straight truck sales are ZEV
 - 40% of truck tractor sales are ZEV



Company and Fleet Reporting

- Retailers, manufacturers, brokers and other large employers are required to report information about shipments and shuttle services.
- Fleet owners, with **50 or more trucks**, are required to report about their existing fleet operations.

What Does This Mean For Me?

- Any new trucks ordered that will have a MY23 engine delivered in California, have that engine built and installed into the truck chassis by 3/31/24. It does not matter when the truck is ultimately delivered, or registered in California. The critical issues are that the engine be built by 12/31/23 and installed in the truck by 3/31/24

Are any zero-emission trucks commercially available?

More than 70 different models of zero-emission vans, trucks and buses that already are commercially available.

What does it cost to charge a battery electric truck?

It varies based on how fast you charge, the utility rate, and the time of day. Check the Haaker website at the QR on the cover for a link to a cost calculator.

What incentives are available for purchasing zero-emission trucks?

Several funding programs are available from state agencies, federal agencies, and local air districts. Current projects provide point-of-sale rebates to offset initial costs.

How can fleet owners afford to operate zero-emission trucks?

Zero-emission trucks have higher upfront costs but have lower operating costs by eliminating gas costs.

CARB Omnibus Ultra-Low NOx Rule 2024

What is the Ultra-Low NOx Rule?

A key measure in the Mobile Source Strategy is the establishment of low oxides of nitrogen (**NOx**) engine emission standards that result in a 90% reduction in NOx emissions compared to the emissions of diesel engines. This measure is critical for attaining federal health-based air quality standards for ozone in 2031 in the South Coast and San Joaquin Valley air basins, and fine particulate matter (**PM**) standards in the next decade.

Omnibus Measures



Low-NOx Engine Standard

- Established NOx engine emission standards that are 90 percent below current levels on existing certification cycles and lower NOx standards on new certification cycles
- NOx standards cut by 75% from 0.2 to 0.05 starting 2024
- NOx standards cut by 90% starting 2027



Lower In-Use Emission Performance Level

- Particulate matter (PM) 50% Reduction
 - NOx Idle 67% Reduction
-
- Clean Idle Certification/Label availability only for CARB Certified engines
 - Ongoing negotiations with manufacturers which may push to 2026
 - ICE engines need credits earned on ZEV sales to be sold
 - **Limited Availability ICE Engines**
 - Detroit DD13 & Cummins L9N
 - Detroit DD3, DD5, Cummins B6.7, L9, X12

CARB24 DTNA Powered Availability in CY 2024

2025 and beyond will be communicated at a later time

Certification		Registration	DD5	DD6	DD10	DD15	DD16	4300	4300
CARB	CARB States w/ CARB Warranty		✓	✓	✓	✗	✓	✓	✓
	Non CARB States w/ CARB Warranty		✓	✓	✓	✓	✓	✓	✓
EPA Only	Non CARB States		✓	✓	✓	✓	✓	✓	✓

Volume limitations and escalator will apply within CARB Opt-In States, exact quantities are TBD

CARB24 Cummins Powered Availability in CY 2024

2025 and Beyond will be reviewed at a later time

Certification		Registration	B6.7	L9	L9N	ISX12N	X12	X15
CARB	CARB States		✓	✓	✓	✗	✓	✗
EPA/50-State	Non-CARB States		✓	✓	✓*	✓*	✓	✓

Volume limitations and escalator will apply within CARB Opt-In States, exact quantities are TBD

ZEV Vehicle Credits

CARB releases annual credit bank balances each year, as well as the total number of vehicles produced for that model year and the total number of zero-emission vehicles and plug-in hybrids.

Small volume manufacturers may earn, bank, and trade credits for the ZEVs and PHEVs it produces and delivers for sale in California.

Large volume manufacturers must produce a minimum percentage of their credits from ZEVs equal to the minimum ZEV floor.

Electric Powered Equipment



Elgin Broom Bear

Street Sweeper

- 400 kWh battery capacity
- 300 hp and up to 1,700 ft lbs of torque
- Recharge in as quickly as 3 hours
- 4.5 yd³ hopper with a variable dump height between 38" and 112"



Envirosight Camera Truck

Pipe Inspection Equipment

- Portably power equipment
- Rapid Pipe Assessment & Cloud Based AI
- Avoid Confined Space Entry
- Understand Hazards



OK Champion S660E

Electric Rodder

- 8 hour battery capacity
- 35 hp electric motor
- Rotation speed 0 to 175 rpm
- Rod pulling force 3,500 lbs @ 200 fpm



Stetco Bucket Truck

Debris Removal Equipment

- Removes Debris Too Large For Vacuum
- Extracts Water & Removes Debris
- Digs In Dry Conditions, No Slurry
- No Waste Water Dump Trips
- Compliant With EPA Requirements



Scrubmaster B400RH

Sweeper-Scrubber

- 45" scrubbing path
- 60" sweeping path with dust control
- 105 gallon solution/recovery tanks
- 8+ hour runtime on a single charge
- 5.3 ft³ dry sweeping hopper



Tuffy PowerLoad

Pressure Washer

- Skid and trailer mounted
- Full charge in 6.5 hours (230v)
- 4 gpm at 4000 psi
- 100 gallon water tank w/ automatic fill
- Aluminum construction made in USA



Sweepmaster 1500

Floor Sweeper

- 50-64" sweeping path
- 60" high dump hopper with max fill overthrow design
- 8.8 ft³ hopper
- Clean up to 110,000-155,000 ft² per hour



Nautilus E

Hot Water Floor Scrubber

- 55" scrubbing path with optional side brooms
- 90 gallon solution/recovery tanks
- 8+ hour runtime on a single charge
- Stainless steel scrub deck



Liberty SC50

Autonomous Floor Scrubber

- Copycat, fill in, and manual modes
- Consistent 98-99.5% coverage
- 20" scrub path
- 15 gallon solution & recovery tanks
- Works independently, freeing up staff



Glutton Collect

Outdoor Vacuum Sweeper

- Up to 16 hours of run time
- Compact, maneuverable and self-propelled to climb steep terrain
- 24 M2 Glutton dust filter
- High suction power & variable speed

Coming Soon!



Nitehawk Osprey Electric

Parking Lot Sweeper

- 2 To 6 passengers
- Rated capacity 800-1,100 lbs
- Dual high/low head and tail lights
- 3 yd³ hopper with no clog screen
- No CDL required

Coming Soon!



Nitehawk Raptor Electric

Parking Lot Sweeper

- Rated capacity 800-1,100 lbs
- Dual high/low head and tail lights
- 5 yd³ hopper with no clog screen
- "Stealth Sweeping" System
- 100 gallon water capacity



Pickman Passenger

Dual Cab Utility Vehicle

- Move, carry or tow with power
- 4,000 lbs towing and 660 lbs payload capacity
- Transport up to 4 passengers
- 130 mile range with 25 mph top speed



Pickman Mission

Large Storage Utility Vehicle

- 4,000 lbs towing and 1,100 lbs payload capacity
- 80 ft³ cargo box with refrigeration/freezer options
- 130 mile range with 25 mph top speed



Madvac LS125E

Mini Sweeper

- 48" wide, high-dump sweeper
- 12-foot retractable wander hose
- Industry leading 2350 CFM rating
- 2 gpm @ 1800 PSI super wash
- No CDL required



Madvac LR50E

All Terrain Litter Vacuum

- Enclosed operator cabin
- No CDL required
- 9 hours of runtime on a 5 hour charge
- Cleans up to 84,480 ft² per hour
- 75 gallon litter capacity



Columbia Payloader

Utility Vehicle Cart

- Move up to 4 passengers
- Rated capacity up to 4,000 lbs
- Up to a 30-mile range
- Tow capacity up to 18,000 lbs
- Exceptional maneuverability



Columbia Journeyman

Utility Vehicle

- Move up to 6 passengers
- Rated capacity up to 1,100 lbs
- Up to a 40-mile range
- Max forward speed up to 25 miles per hour

Your To Do List

- Assess your fleet. How many Zero Emission Vehicles do you currently have?
- Find out which designation your fleet falls under (State/Local or High Priority)
- Figure out which CARB regulations affect you and how they affect your fleet.
- Decide which transition program is best for you. Opt-in to programs if necessary.
- Apply for exemptions and timeline extensions for applicable equipment
- Find the electric equipment best suited for your fleet.
- Make a purchase plan to achieve compliance deadlines. What equipment needs to be removed? When do ZEV replacements need to be added?
- Apply for grants to supplement ZEV purchases

Key Dates

2024

50% ZEV purchase begins January 1

2025

CARB exemption list and milestone dates start

See pg. 4

2027

100% ZEV purchase begins

2035

100% milestone dates start

See pg. 4

2042

Everyone has 100% ZEV, no exemption

Funding Available

If your fleet is unable to comply with electric vehicle purchase requirements and can not maintain milestone schedules, certain vehicles and equipment may be eligible for exemptions or extensions to make annual goals achievable.

If your fleet needs assistance with purchasing mandated ZEV requirements, you may be eligible for different funding or grant options:

- CARB Incentives & Funding
- Advance Vehicle Technology and Infrastructure Funding
fundingfindertool.org
- Commercial Clean Vehicle Federal Tax Credit
- Hybrid & Zero-Emission Truck & Bus Voucher Incentive Program (HVIP)
californiahvip.org
- EnergiIZE Commercial Vehicles
www.energiize.org



Going Green

Haaker sold the very first 100% electric street sweeper to the City of Los Angeles in 2023. As alternative fuel equipment grows in popularity, Haaker is proud to offer zero emissions compliant equipment.