CALIFORNIA
AIR RESOURCES BOARD

Proposed Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation

Board Hearing
November 17, 2022

Outline

- Background
- Staff Proposal
- Benefits and Costs
- Staff Recommendation

California's Air Quality Challenges

~70% of Californians still breathe unhealthy air

Key Challenges:

- Ozone and PM2.5 in nonattainment areas
- Statewide diesel PM health risk
- Equitable benefits for disadvantaged communities

Off-Road Diesel Amendments are Critical for SIP Attainment

2022 State Strategy for the State Implementation Plan (SIP) approved in September

Commitment to achieve additional emissions reductions beyond the Current Regulation

Region	NOx (tpd)	ROG* (tpd)
Statewide (2037)	4.0	0.3
South Coast (2037)	1.0	0.1
San Joaquin Valley (2037)	0.6	<0.1

*Reactive Organic Gases

Current Off-Road Diesel Overview

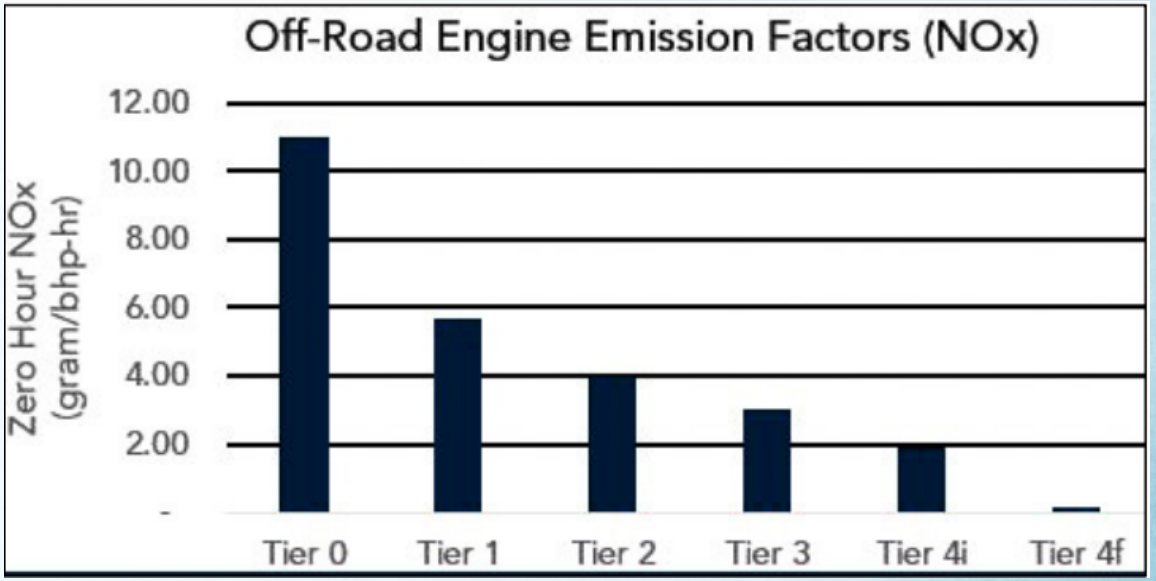
Requirements

- Vehicles with diesel-fueled off-road compression-ignition engines with maximum horsepower of 25 or greater
  - Construction, mining, industrial equipment, and others
  - Some two-engine on-road vehicles and workover rigs
- Meet declining fleet average emissions targets
- Ban on adding Tier 0 - Tier 2 vehicles
- Report and label all vehicles
- Idling limits

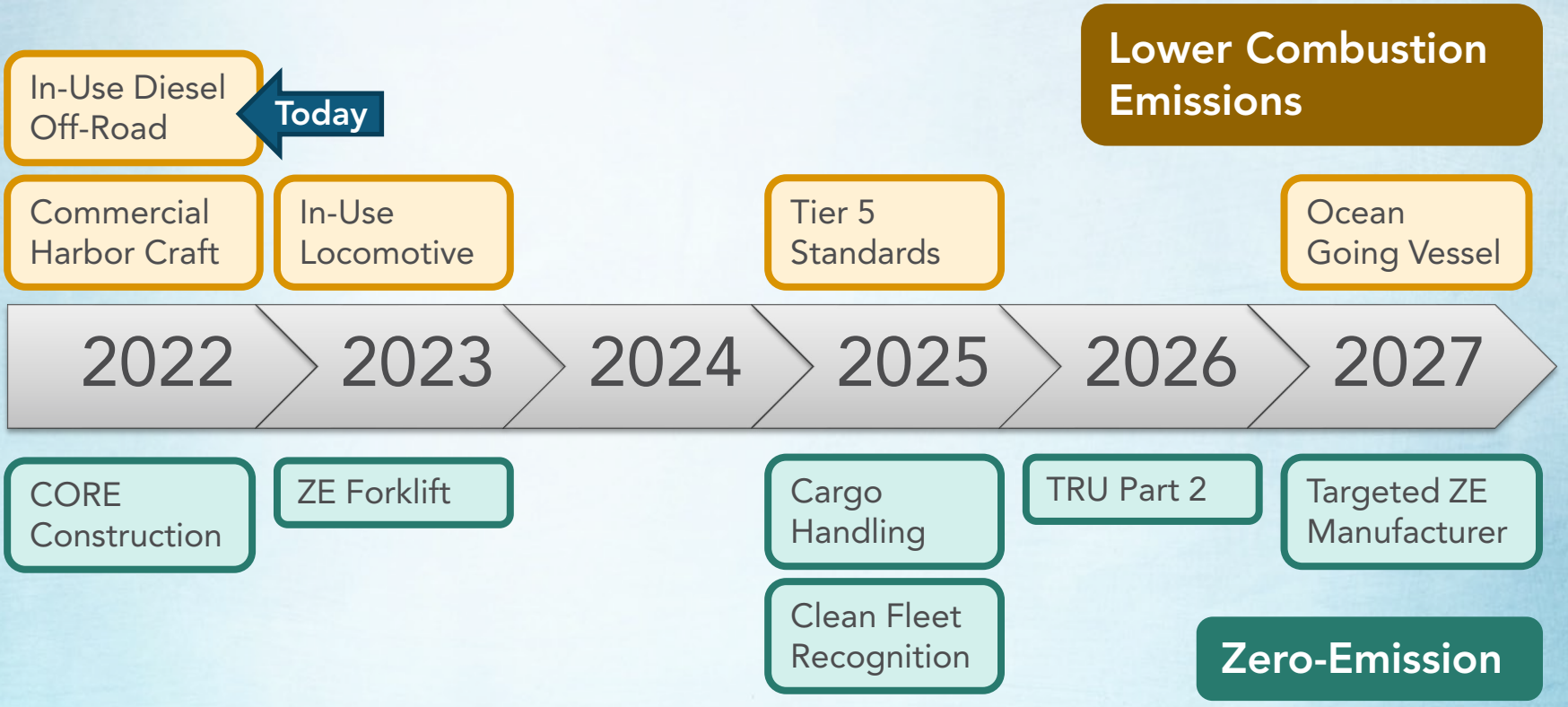
Vehicle Label

Off-Road Emission Factors by Tier

Tier 4 Final engines emit 80 times less NOx than Tier 0 engines (100-175 hp)



CARB Off-Road Actions



Reduce NOx and PM which provides health benefits and meets SIP commitment

Enhance enforceability of the regulation

Encourage the adoption of zero-emission technology

Goals of the Proposed Amendments

Major Elements of the Proposed Amendments

- Proposed Tier Phase-Out
- Expansion of Ban on Adding Vehicles
- Renewable Diesel Usage
- Contracting Requirements
- Voluntary Zero-Emission Flexibility
- Other Amendments

Proposed Tier Phase-Out

Year (January 1)	Large Fleets	Medium Fleets	Small Fleets	Ultra-Small Fleets (<500 hp)
2024	Tier 0			
2026	Tier 1	Tier 0		
2028	Tier 2	Tier 1	Tier 0	Tier 0
2030		Tier 2	Tier 1	Tier 1
2032			Tier 2	
2036				Tier 2

- Tier 0 includes model year (MY) 1994 or older on-road
- Tier 1 includes MY 1999 or older on-road
- Tier 2 includes MY 2003 or older on-road

Expansion of Ban on Adding Vehicles

Year (January 1)	Large Fleets	Medium Fleets	Small Fleets	Ultra-Small Fleets (<500 hp)
2024	Tier 3 Tier 4i*	Tier 3 Tier 4i	Tier 3	Tier 3
2028			Tier 4i	
2035				Tier 4i

Beginning January 1, 2024, fleets will also be prohibited from adding a vehicle with a Tier 0 engine as:

- Dedicated snow removal vehicles
- Vehicles used for emergency operations
- Job corps vehicles

* Tier 4i includes MY 2006 or older on-road

Renewable Diesel (RD) Usage: Requirements

- Fleets required to use R99 or R100 RD starting January 1, 2024
- R99 or R100 RD reduces NOx by ~10% and PM by ~30% in Tier 4i and older
- Fleets must attest that they are compliant and keep records that demonstrate compliance

Staff Proposal

Renewable Diesel Usage: Exceptions

Captive attainment fleets

- Fleets in which all vehicles operate exclusively in attainment counties

100% Tier 4 Final or zero-emission fleets

- Fleets that are comprised entirely of T4f and/or zero-emission vehicles

Fleets that cannot obtain R99 or R100 renewable diesel

- A fleet must maintain records that
  - Describe the fleet's normal refueling method and attempts to obtain R99 or R100
  - Documentation showing the inability to obtain R99 or R100

R99 or R100 renewable diesel in low temperatures

15 Day

- Intend to allow blending low-temp fossil fuel with RD under certain conditions

Contracting Requirements

Applicable to all contracting entities – prime contractors and public works awarding bodies

- Only hire compliant fleets
- Ensure fleets have valid Certificates of Reported Compliance

Requirements for prime contractors only:

- Report observed non-compliance to CARB
- Disclose ownership information to CARB at the job site
- Post signage with Off-Road Diesel Regulation information at job site

Voluntary Zero-Emission (ZE) Flexibility: Vehicle to Vehicle

For each ZE vehicle adopted, the fleet may continue to operate a Tier 1 or Tier 2 vehicle for two additional years beyond the phase-out years

- Must perform work of a diesel equivalent
- Must be similar max power rating as the ICE vehicle
- Must report vehicle information to CARB

Voluntary Zero-Emission (ZE) Flexibility: Zero-Emission Transition Application (ZETA)

ZETA Submittal

- Compliant at time of submittal
- Submit 4 months prior to next compliance date

ZETA Review

- Turnover to ZE
  - ❑ 15% (2030)
  - ❑ 50% (2035)
- ZETA must include:
  - Vehicle turnover
  - ZE acquisition
  - List of milestones
  - Estimated completion dates

Annual ZETA Updates

- All milestones complete
  - ☑ Continue
- Some progress is shown
  - ? Adjust milestones
- No progress
  - ☒ Revoke

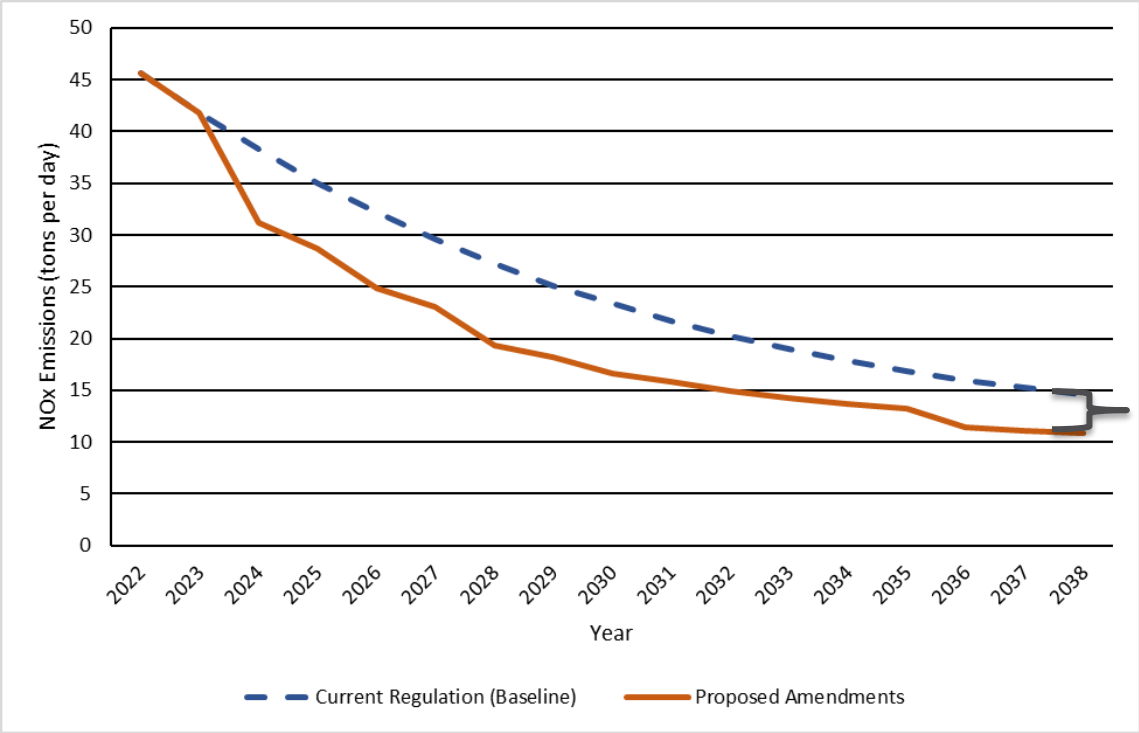
If denied or revoked → Comply with tier phase-out and fleet average requirements

CARB

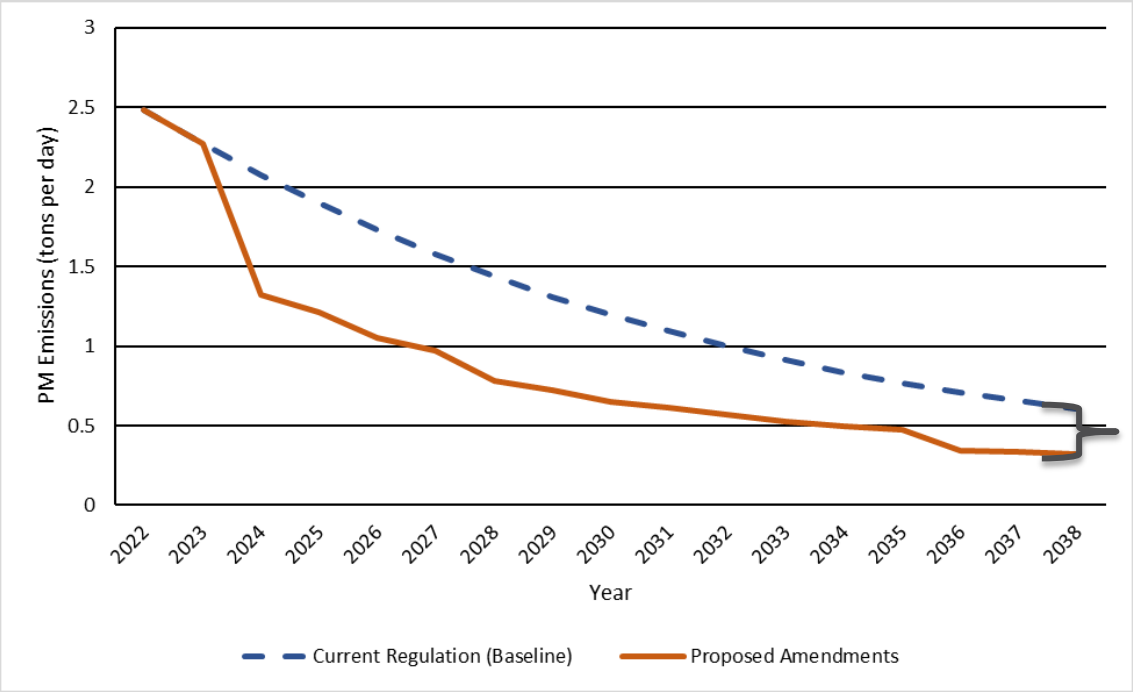
Other Amendments

Low-Use Changes	Introduce flexibilities, make consistent with other regulations, and phase-out Tier 0 in 2036
California-Certified Vehicle Adding	On January 1, 2028, any model year 2028 or later engine or vehicle of any tier added to a fleet must be certified to a California or equivalent standard
Emission Control Labels	If fleet observes that the emission control label is no longer visible or readable, must request replacement label
Changes for clarity	Reflect current CARB implementation practices and address stakeholder feedback

Estimated NOx Emissions Benefits



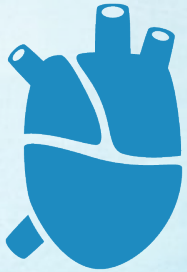
Estimated PM Emissions Benefits



Statewide Estimated Lifetime Health Benefits

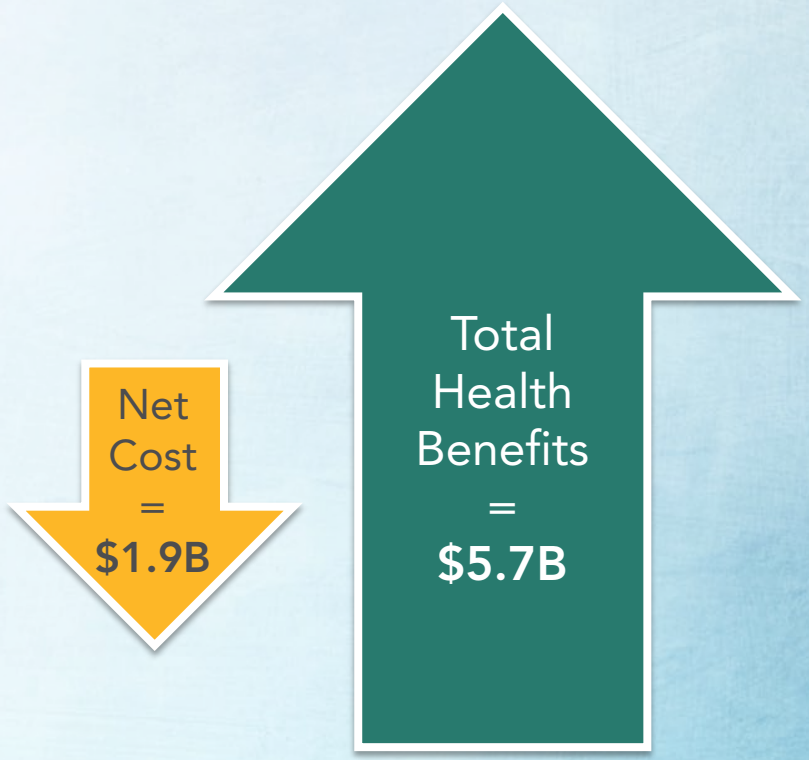
Health Outcome	Avoided Incidents (2024-2038)
Premature Deaths	571
Cardiovascular Illness Hospitalizations	82
Respiratory Illness Hospitalizations	98
Emergency Room Visits for Asthma	277

Lifetime Off-Road Diesel Amendments benefits value (2020$): **$5.7 Billion**



Estimated Costs of the Proposed Amendments (2020$)

- Estimated net cost of $1.9 billion from 2023-2038
- Cost-effectiveness of $22,700 per weighted ton
- Health benefits valuation is 3 times greater than expected costs



Staff Recommendations

- Approve Resolution 22-19
- Continued staff assistance and support to ensure improved implementation and enforcement