



Proposed Amendments to the Airborne Toxic Control Measure for Transport Refrigeration Units (TRU)

Board Meeting 2 of 2
February 24, 2022

Need for Zero-Emission TRUs



Cut community health risk
(support Assembly Bill 617 emission reductions)



Help attain regional air standards
(support State Implementation Plan)

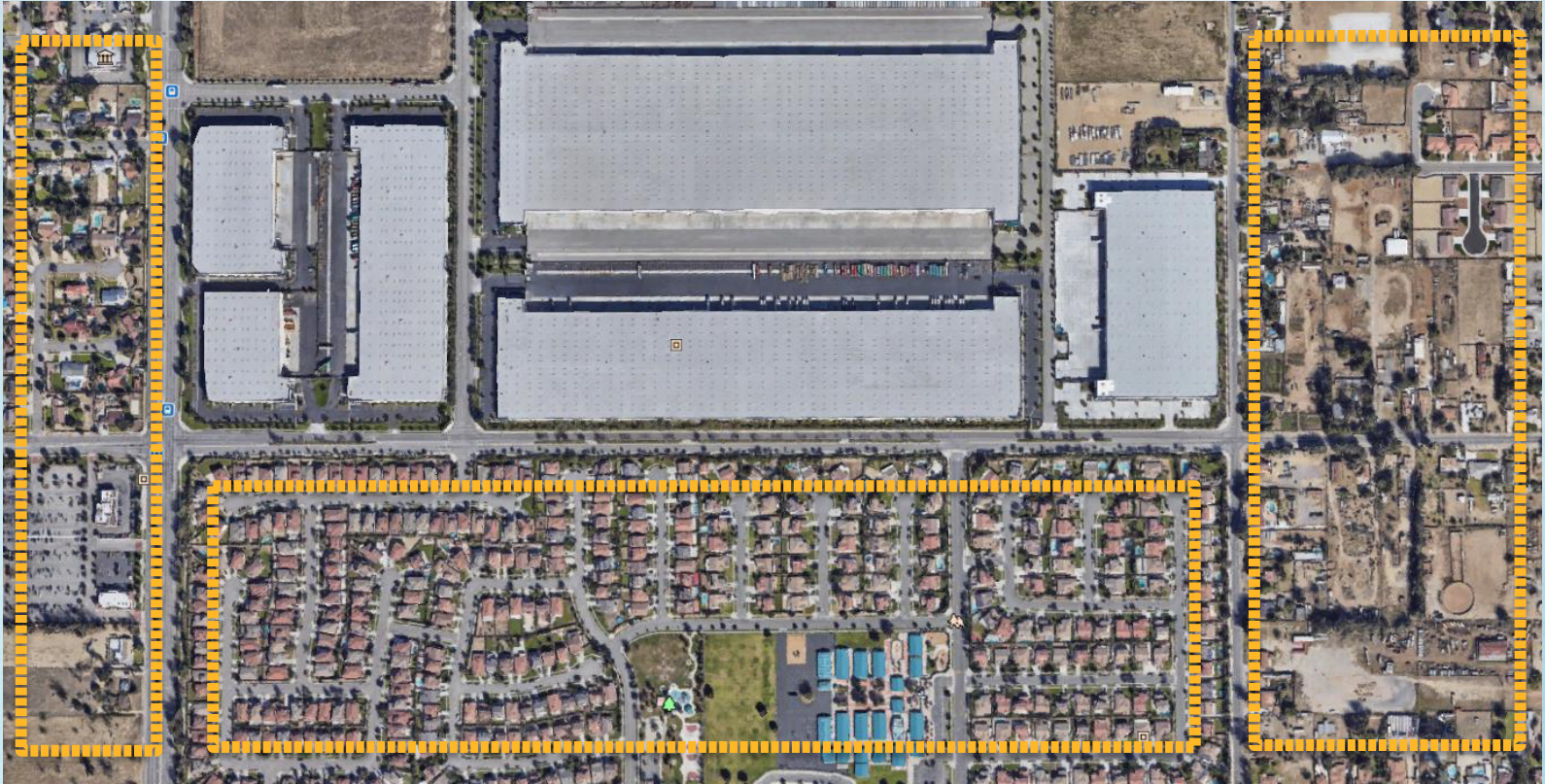


Mitigate climate change (support Scoping Plan and
Short-Lived Climate Pollutant Reduction Strategy)



Governor's Executive Order N-79-20

Near-Source Health Risk from TRUs



Public Process

11 Public
workshops and
meetings

40,000
Postcards

160+ Stakeholder
calls, meetings,
and site visits

Notice package
and 45-day
comment period
July 2021

First Board
meeting
September 2021

15-day comment
period
December 2021

Zero-Emission TRUs: Two-Part Rulemaking



Part 1 (today's action - proposed amendments)

- Zero-emission truck TRUs
 - California-based
 - Local, regional, and return-to-base operations
- Particulate matter (PM) emission standard for newly-manufactured trailer TRUs, container TRUs, railcar TRUs, and TRU generator sets
- Lower global warming potential refrigerant



Part 2 (subsequent rulemaking)

- Zero-emission trailer TRUs, container TRUs, railcar TRUs, and TRU generator sets
 - California and out-of-state-based
 - Used in long-haul operations and do not return-to-base each day
- Direct-drive refrigeration units

Key Elements of the Proposed Amendments

Date	Requirement	Applicable Facility	Truck TRU	Trailer TRU	DSC TRU	Railcar TRU	TRU Gen Set
12/31/2022	Refrigerant with GWP \leq 2,200 (newly-manufactured units)		✓	✓	✓		
	PM emission standard (newly-manufactured units)			✓	✓	✓	✓
12/31/2023	Report all TRUs operating in CA to CARB		✓	✓	✓	✓	✓
	Register applicable facility	✓					
	TRU operating and applicable facility registration fees every 3 years	✓	✓	✓	✓	✓	✓
	CARB compliance labels		✓	✓	✓	✓	✓
	Zero-emission fleet requirement (15% per year)		✓				

Recap of the First Board Meeting

- Broad support from Board members and the public
 - First zero-emission off-road fleet requirement
- Need for additional outreach
- Stakeholder comments
 - CARB's fee authority
 - Alternative labeling requirements
 - Clarify lessor/lessee requirements

Proposed 15-Day Changes

- Released for public comment on December 22, 2021
 - Clarified lessor/lessee requirements
 - Extended length of compliance extension due to OEM delays
 - Modified applicable facility requirements
 - Removed LCFS credits from total cost



Proposed 15-Day Changes (Continued)

- Updated fee amounts
- Added zero-emission truck TRU assurances
- Modified non-compliance/penalty provisions
- Added severability language to fee requirements



Updated Economic Analysis

- Upfront capital costs for TRU and infrastructure purchases; operational savings
- Excludes LCFS credits
- Funding opportunities available to reduce capital costs



Total net cost =
\$850.2 million
(originally \$1.04 billion)

Total Cost of Ownership: Diesel vs. Battery-Electric Truck TRU

	Diesel-Powered Truck TRU	Battery-Electric Truck TRU with LCFS Credits	Battery-Electric Truck TRU without LCFS Credits
TRU Capital Cost	\$19,300	\$44,600	\$44,600
Infrastructure Capital Cost (includes installation)	n/a	\$4,900	\$4,900
Average Annual Fuel Cost	\$2,650	\$2,760	\$2,760
Annual TRU Maintenance Cost	\$1,290	\$680	\$680
Annual Infrastructure Maintenance Cost	n/a	\$93	\$93
Average Annual LCFS Credit	n/a	(-\$2,000)	n/a
Total Cost of Ownership (10-year useful life)	\$61,300	\$72,600	\$90,800

Note: Capital costs amortized over a five-year period at 5 percent interest. Diesel and electricity rates from 2021 IEPR Update.

Available TRU Incentive Funding

AB 617 CAP Incentives

- Zero-emission, hybrid-electric TRUs, and infrastructure
- FY 21-22 (~\$260 million)*

Carl Moyer

- Zero-emission TRUs and infrastructure
- FY 21-22 (~\$247 million)*

CORE

- Zero-emission TRUs and infrastructure
- FY 21-22 (~\$195 million)*

LCFS

- Credits for using low carbon transportation fuels
- ~\$2,000/zero-emission truck TRU per year

Prop 1B

- Zero-emission TRUs and infrastructure
- FY 21-22 (~12 million)*

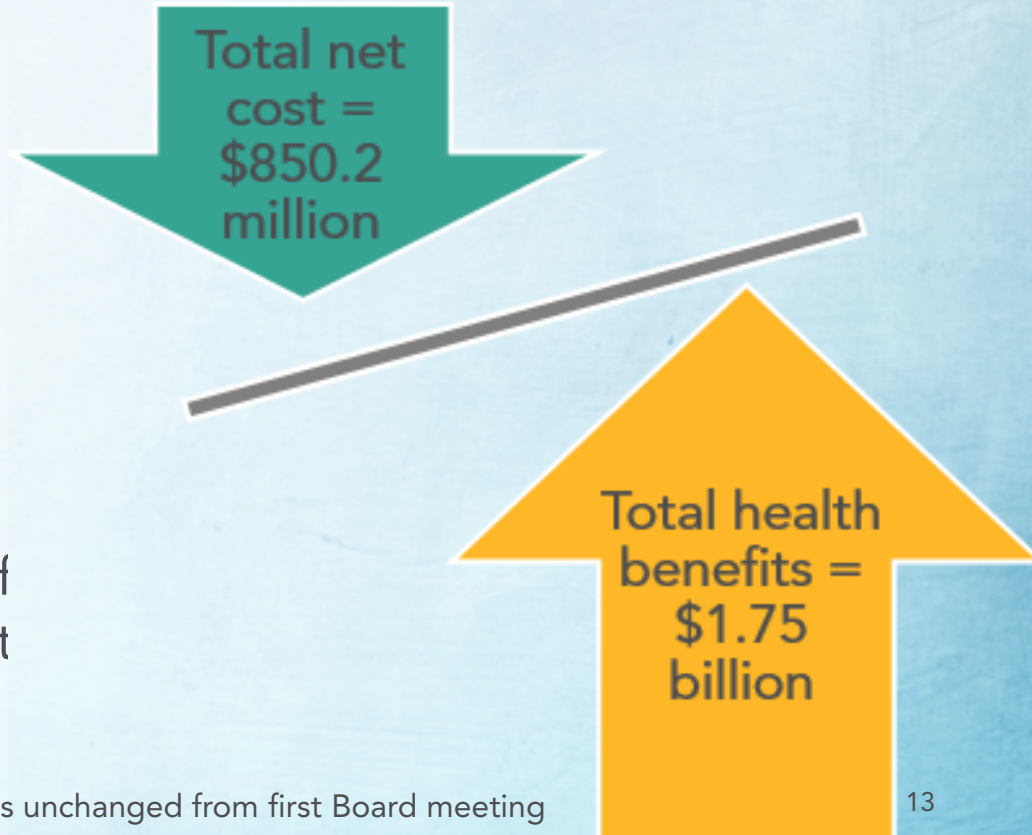
Utility Programs

- Charging infrastructure service upgrades and electricity rates
- FY 2018-23 (~\$781 million)*

* Funding amounts for entire program and not TRU-specific. More information and program links available on CARB's [TRU Funding Assistance](#) webpage.

Emissions and Health Benefits vs. Updated Total Net Cost from 2022 to 2034

- Total health benefits = \$1.75 billion
- Estimated emission reductions =
 - 1,258 tons of PM2.5
 - 3,515 tons of NOx
 - 1.42 million metric tons of carbon dioxide equivalent



Environmental Analysis

- Draft Supplemental Environmental Analysis completed
- Released for public comment from July 27, 2021 – September 19, 2021
- Final Supplemental Environmental Analysis and written responses to comments published on February 18, 2022

Staff Recommendation

Adopt Board Resolution 22-5

- Approval of written responses to environmental analysis comments
- Certification of the Final Supplemental EA and making the required CEQA findings
- Adoption of the Proposed Amendments, including 15-day changes
- Second zero-emission rulemaking for non-truck TRUs
- Additional stakeholder outreach