



Potential Amendments to the In-Use Off-Road Diesel Regulation Workgroup

Potential Costs and Incentives
October 15, 2021

Agenda

Cost Analysis

- Current Cost Data
- Potential Methodology
- Stakeholder Feedback

Potential Incentives

- Carl Moyer Program
- CORE construction

Cost Analysis

Purpose

- Quantify all costs and benefits associated with the regulation
- Assess alternatives to the regulatory proposal

Formal Regulatory Process

- Standardized Regulatory Impact Analysis – Publicly discloses all economic impacts of a proposed regulation
- Initial Statement of Reasons: Economic Chapter – Summarizes costs, cost savings, and benefits

Potential Costs



Equipment Capital Costs

- Cost to purchase Tier 4 final equipment as a result of the operational backstop on Tier 0-2 equipment



Renewable Diesel Requirements

- Potential cost parity so little to no expected cost
- Deeper analysis still needs to be performed



Reporting/Recordkeeping

- Only new reporting and recordkeeping requirements as part of the amendments



Other Stakeholder Inputs?

Equipment Cost Data: Sources

Recorded Auction Sales

- Collected between 2019-2021
- About 2500 used sales recorded

Moyer Database

- Projects for new Tier 4 final equipment
- About 450 funded replacement projects

Website Research

- Online vehicle marketplace

Stakeholder Feedback?

- Request input from stakeholders for additional data or sources

Breakdown of Cost Data: By Horsepower

Horsepower	# of Auction Data Points	# of Moyer Data Points
25-49	310	48
50-74	391	90
75-99	505	63
100-174	572	130
175-299	402	91
300-599	333	73
600-750	20	14

Recorded Information

- Purchase Price
- Model Year and Sale Year (=Age of Engine)
- Horsepower
- Engine Tier
- Equipment Type

Breakdown of Cost Data: By Equipment Type

Equipment Type	# of Auction Data Points	# of Moyer Data Points	Current DOORS T0-T2 Populations
Excavators	708	51	9%
Tractors/Loaders/Backhoes	705	112	24%
Skid Steer Loaders	487	24	8%
Rubber Tired Loaders	381	89	6%
Forklifts	376	41	10%
Rollers	330	6	6%
Crawler Tractors	171	19	5%
Scrapers	107	29	3%
Rough Terrain Forklifts	91	31	4%
Off-Road Truck	77	4	3%
Graders	76	8	3%

Equipment Cost Data: Potential Methodology

Auction and Moyer Cost Data

- Estimate the relationship between price, HP, and age
- Allows us to estimate the cost of Tier 4f equipment and the residual value of old equipment



Off-Road Inventory

- Off-road inventory provides population information for Tier 0-2 equipment
- Would assume turnover to T4f due to the amendment



Final Equipment Costs

- Use the estimated prices and the population information to estimate total equipment costs for each year as a result of the potential amendments

Fleet Purchasing Behavior

By Fleet Size

How many fleets purchase brand new?

How many purchase slightly used vs. older equipment?

This will feed into our compliance assumptions:

Example:

Fleet Size	New Purchase	Used (0-5 years)	Used (5-10 years)
Large	X%	Y%	Z%
Medium			
Small			

Need Stakeholder Input

Financing Mechanisms

Purpose

- Need to understand as part of the cost analysis

Questions for Stakeholders

- How often is financing used, what interest rates could be expected, and how much of total cost if financed?
- Is financing accessed via the dealerships and who are the lenders?
- Are there different financing mechanisms for used vs. new purchases?

Recordkeeping Costs

Contractors and Public Works Requirements

- Labor to collect and review vehicle-level certificates
- Recordkeeping costs

Renewable Diesel Requirements

- Fleets must maintain fuel use records

Low-Use Reporting

- Potentially require additional documentation

**Unique
Equipment Types:**

Workover Rigs
and Railcar
Movers

**New Tier 4 Final
Equipment:**

Any other data
sources for new
costs

**High Horsepower
Equipment:**

Over 600 hp
especially

Residual Value:

Scrap and resale
value of old
equipment

**Request
for More
Data**

Questions for Stakeholders

Feedback Needed

How do fleets currently purchase equipment?
New or used purchases? Differences by fleet size?
Financing or rental?

Where is equipment sold? In-state vs. out-of-state?

Are there other costs we may want to consider?

Questions or Comments???

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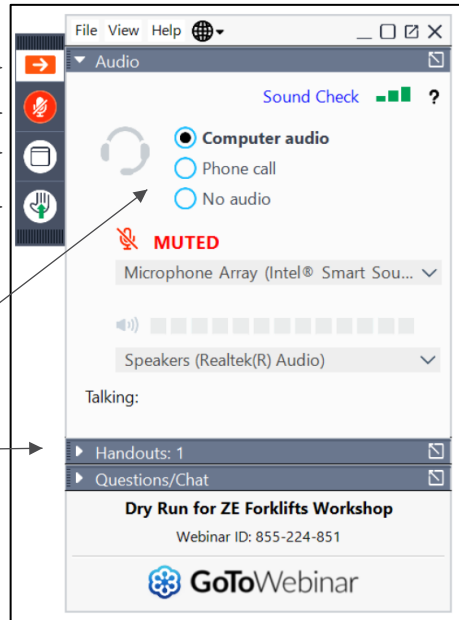
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Carl Moyer Program Accomplishments



Provided over \$1 billion in funds since 1998



Cleaned up over 61,000 old high-polluting engines



Reduced 184,000 tons of ozone precursors and 6,700 tons of PM

Carl Moyer Program Background

General Background

- Implemented via partnership between CARB and local air districts
- Projects must be cost-effective and reduce emissions above and beyond regulatory requirements
- Incentive amount based on emissions reduced

Off-Road Equipment

- Typical off-road project types are repowers and replacements
- Most popular equipment types funded are scrapers and loaders

Moyer Opportunities - Large Fleets

(based on proposed amendments)

- Fleet must meet final compliance requirements
- Potential funding for Tier 4 Final or zero-emission:

T0

No opportunities remain for existing Tier 0 upon adoption

T1

Funding until **12/31/2022** of existing Tier 1

T2

Funding until **12/31/2024** of existing Tier 2

T3

Existing Tier 3 may be replaced

T4i

Existing Tier 4i may be replaced

Moyer Opportunities – Medium Fleets

(based on proposed amendment)

- Fleet must meet final compliance requirements
- Potential funding for Tier 4 Final or zero-emission:

T0

Funding until **12/31/2022** of existing Tier 0

T1

Funding until **12/31/2024** of existing Tier 1

T2

Funding until **12/31/2026** of existing Tier 2

T3

Existing Tier 3 may be replaced

T4i

Existing Tier 4i may be replaced

Moyer Opportunities – Small Fleets

(based on proposed amendment)

- After 1/1/2026, small fleets must meet final compliance requirements
- Potential funding for Tier 4 Final or zero-emission:

T0

Funding until **12/31/2025** of existing Tier 0

T1

Funding until **12/31/2027** of existing Tier 1

T2

Funding until **12/31/2029** of existing Tier 2

T3

Existing Tier 3 may be replaced

T4i

Existing Tier 4i may be replaced

Clean Off-Road Equipment Voucher Incentive Program (CORE)

Current program:

- Provides fleets access to funding to offset cost of zero-emission equipment
- Is a first come, first serve program, and historically freight-specific

Potential new funding allocation of \$195M:

- Potentially expanding to zero-emission construction equipment as well as agricultural, lawn and garden, and other freight enabling equipment

Next Steps:

- Board will consider this \$195M allocation in November 2021, and the CORE team will be hosting public workshops
- Funds could become available in early to mid-2022

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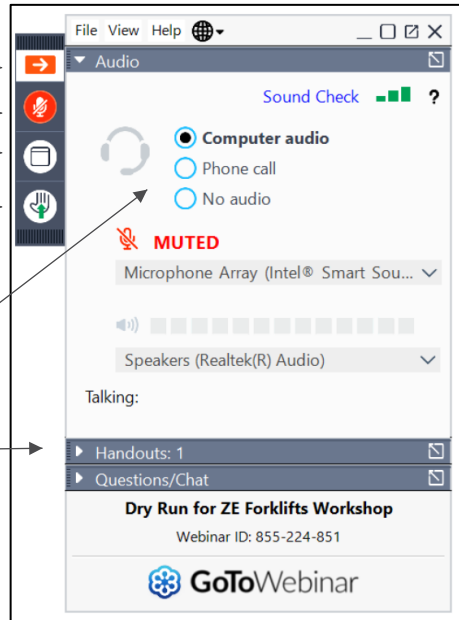
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