The Benefits of New Technology Diesel Technology to California

Assessment of Critical Barriers and Opportunities **to Commercialize Medium and Heavy Duty Truck Technologies in California**

UC Davis Institute of Transportation Studies & California Energy Commission
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Tom Fulks,
West Coast Representative
tfulks@mightcomm.com

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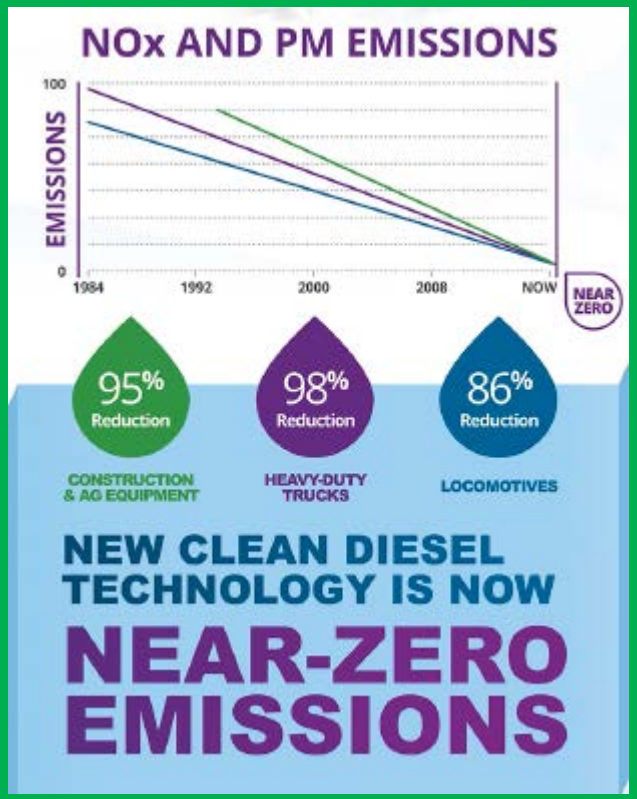
Diesel power is a key strategy to achieve climate and clean air goals in the future.

Proven. Available. Affordable



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California's Commercial Fleet Composition
Class 3-8 Commercial Vehicles

MY 2007 & Newer: Near Zero PM Standards

CA: 29.1 %

Nat'l Avg: 38%

253,000 of 867,000 diesel vehicles come with an engine that meets or beats MY 2007 Standard

MY 2010 & Newer: Near Zero NOx Standards

13.8 %

Nat'l Avg: 20.7%

120,000 of 867,000 diesel vehicles come with an engine that meets or beats MY 2010 Standard

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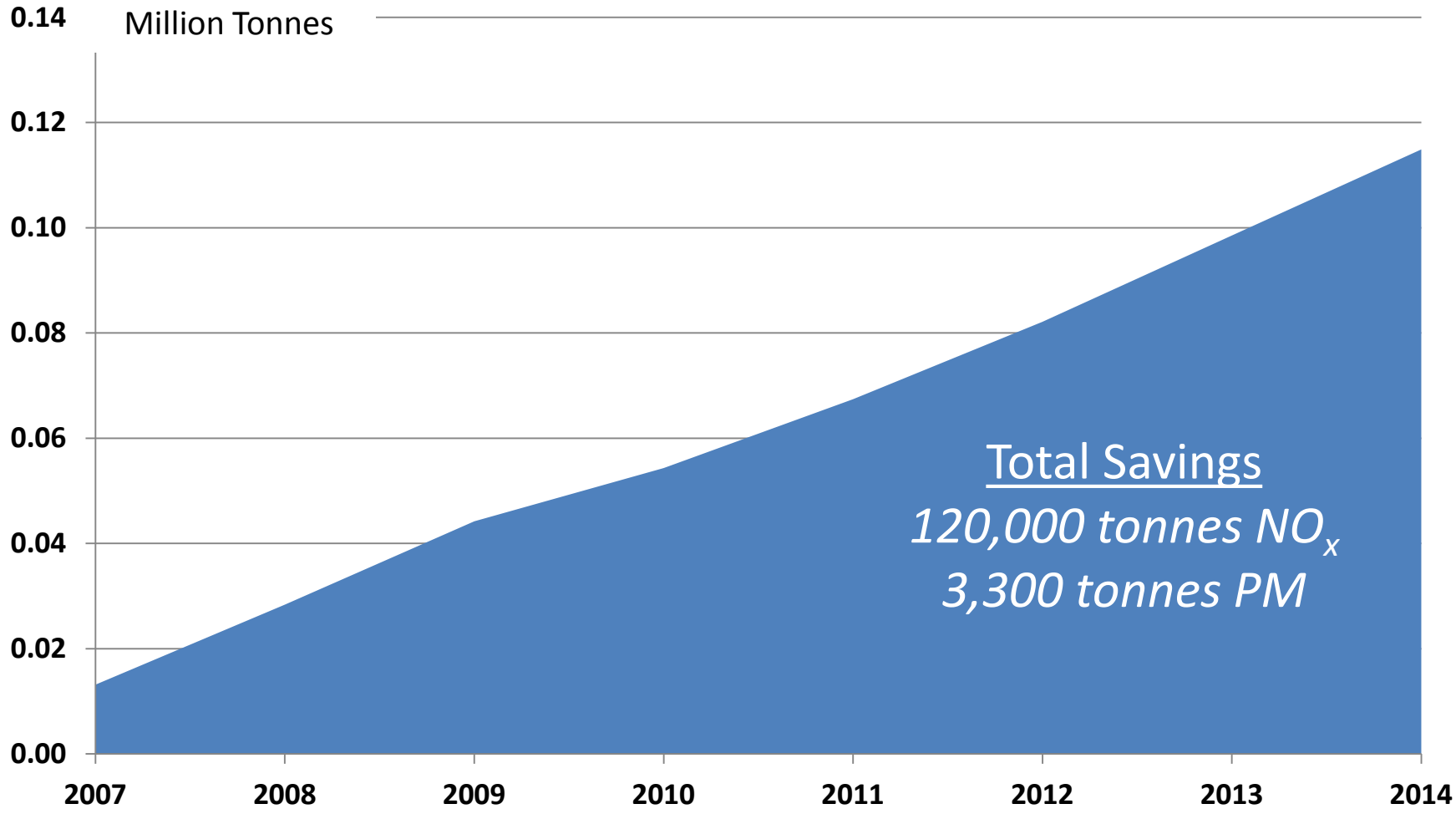
New Clean Diesel Technology Commercial Vehicles have delivered substantial clean Air Benefits in California….



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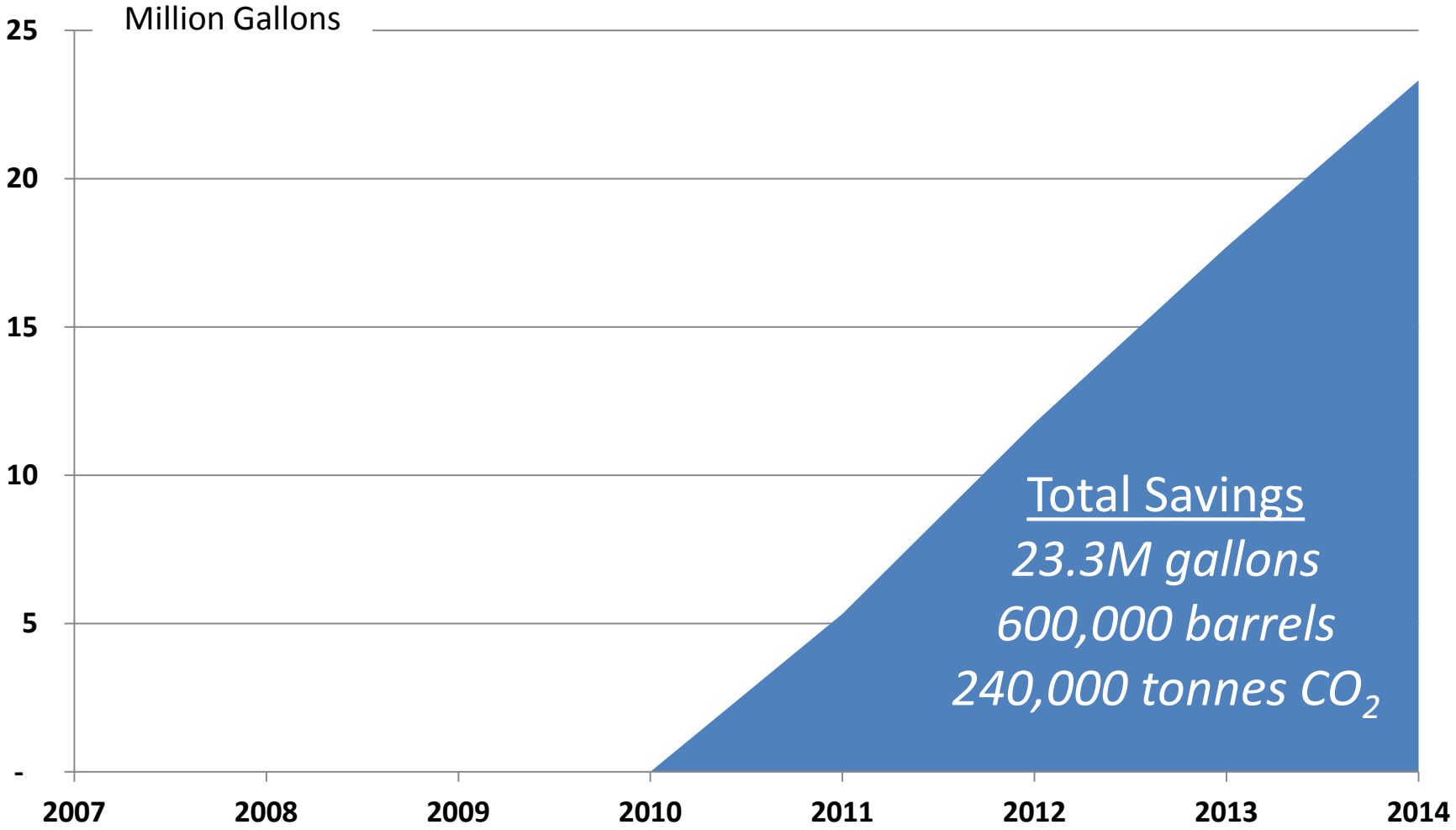
Newest technology (2010 and later MY) diesel trucks are also delivering significant fuel saving and CO2 benefits to California



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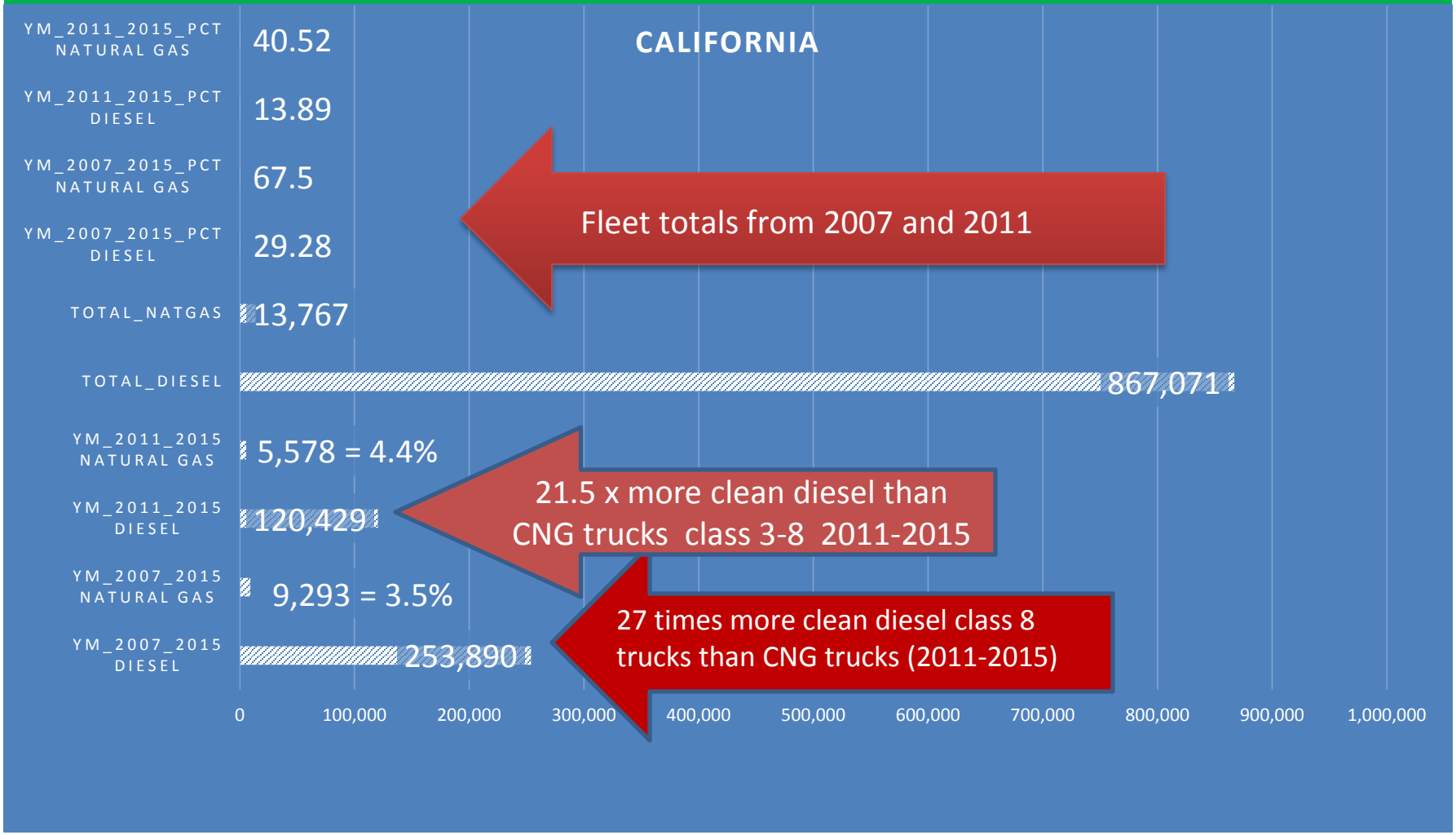
From 2011-2015, CA Fleets have invested in 21 times more clean diesel trucks than CNG (class 3-8)



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California Stands to Gain from New Fuel Economy Requirement

Diesel Will Deliver Fuel Savings Benefits of Phase 1&2 Fuel Economy Requirements for Commercial Vehicles

PHASE 1: 2014-2018
270 million tons CO2
530 million barrels of crude

PHASE 2: 2021-2027
1 billion tons CO2
1.8 billion barrels of crude

California stands to benefit the most from these rules as it is home to the largest commercial truck fleet in the country

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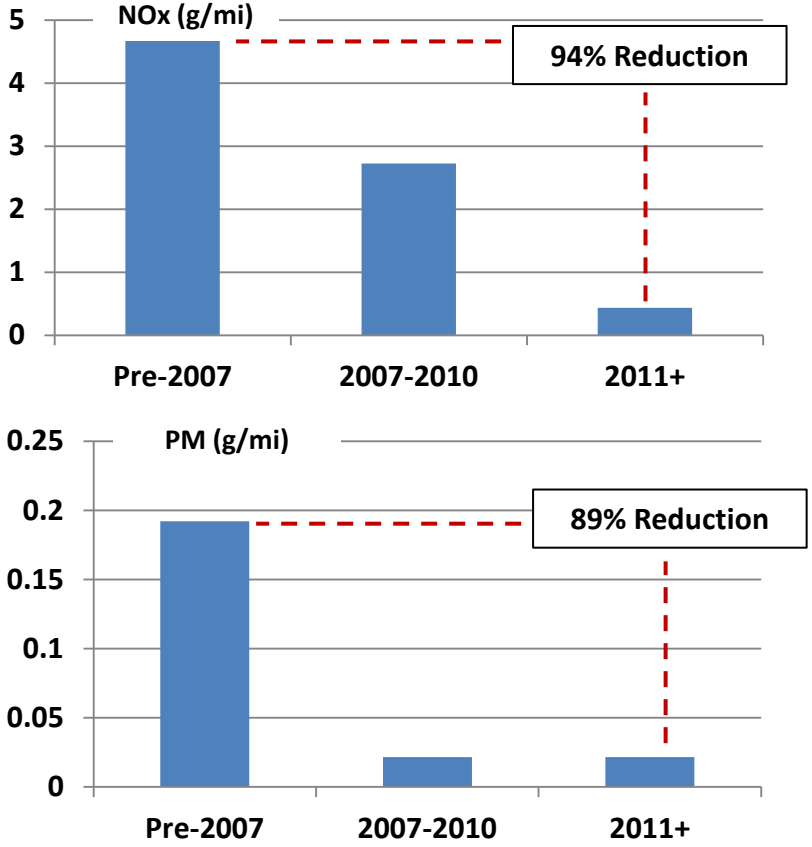
Class 7 vocational trucks with new technology diesel engines save 3.1 tonnes of CO2 per year.

Class 7 Vocational Savings from NTDE

Savings to the new technology diesel buyer	Per Year
Average vehicle miles traveled	45,000
Fuel savings - gallons	310
Fuel savings - bbl	7
Fuel cost savings @ $2.75/gal	$850
CO_2 savings – metric tonnes	3.1
NO_x savings – metric tonnes	0.32
Particulate matter savings – kg	8



EPA estimates for in-use distance based output. Phase-in for 2004 and 2007 rulemaking is averaged across 2007-2009 and 2010 and beyond respectively. Pre-2007 estimates are based on an estimate of all vehicles in operation before 2007.

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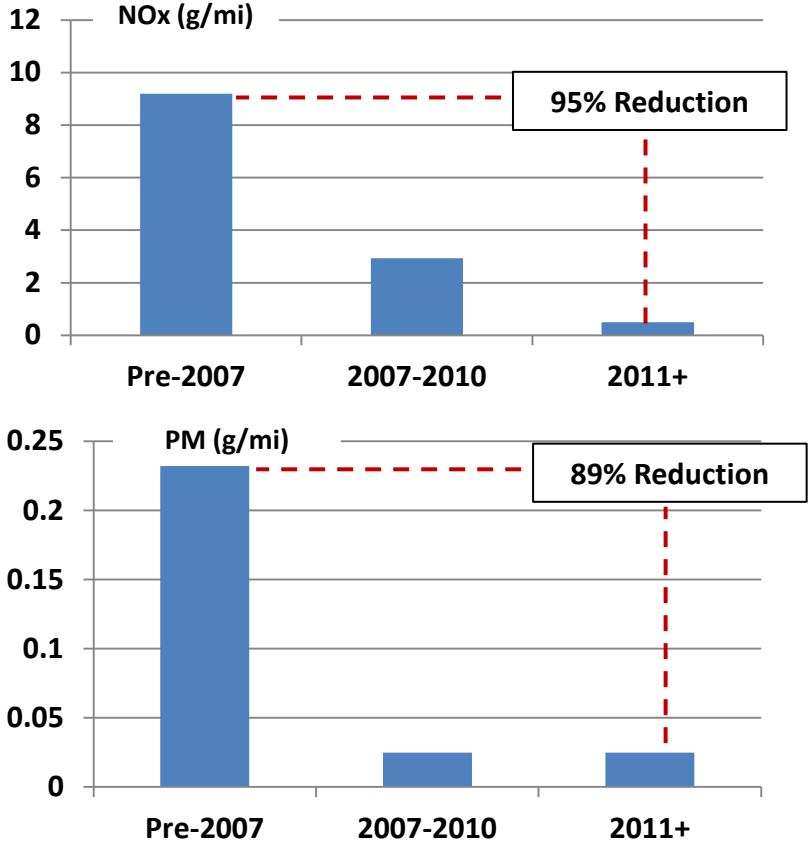
New technology diesel engines in class 8 trucks save ~$2,400/year in fuel costs.

Class 8 Line Haul Savings from NTDE

Savings to the new technology diesel buyer	Per Year
Average vehicle miles traveled	125,000
Fuel savings - gallons	875
Fuel savings - bbl	21
Fuel cost savings @ $2.75/gal	$2,400
CO_2 savings – metric tonnes	8.9
NO_x savings – metric tonnes	1.1
Particulate matter savings – kg	26



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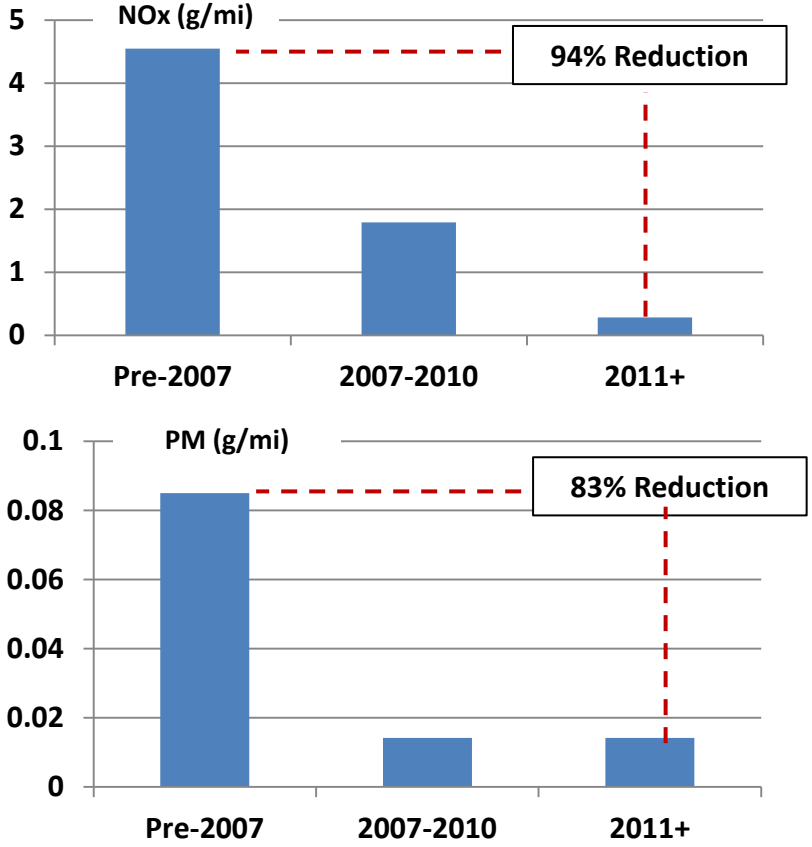
Pick up and delivery vehicles have achieved a 20X reduction in real world NOx emissions with new technology diesel engines.

Class 5 Pick Up & Delivery Savings from NTDE

Savings to the new technology diesel buyer	Per Year
Average vehicle miles traveled	35,000
Fuel savings - gallons	160
Fuel savings - bbl	4
Fuel cost savings @ $2.75/gal	$440
CO_2 savings – metric tonnes	1.6
NO_x savings – metric tonnes	0.15
Particulate matter savings – kg	2



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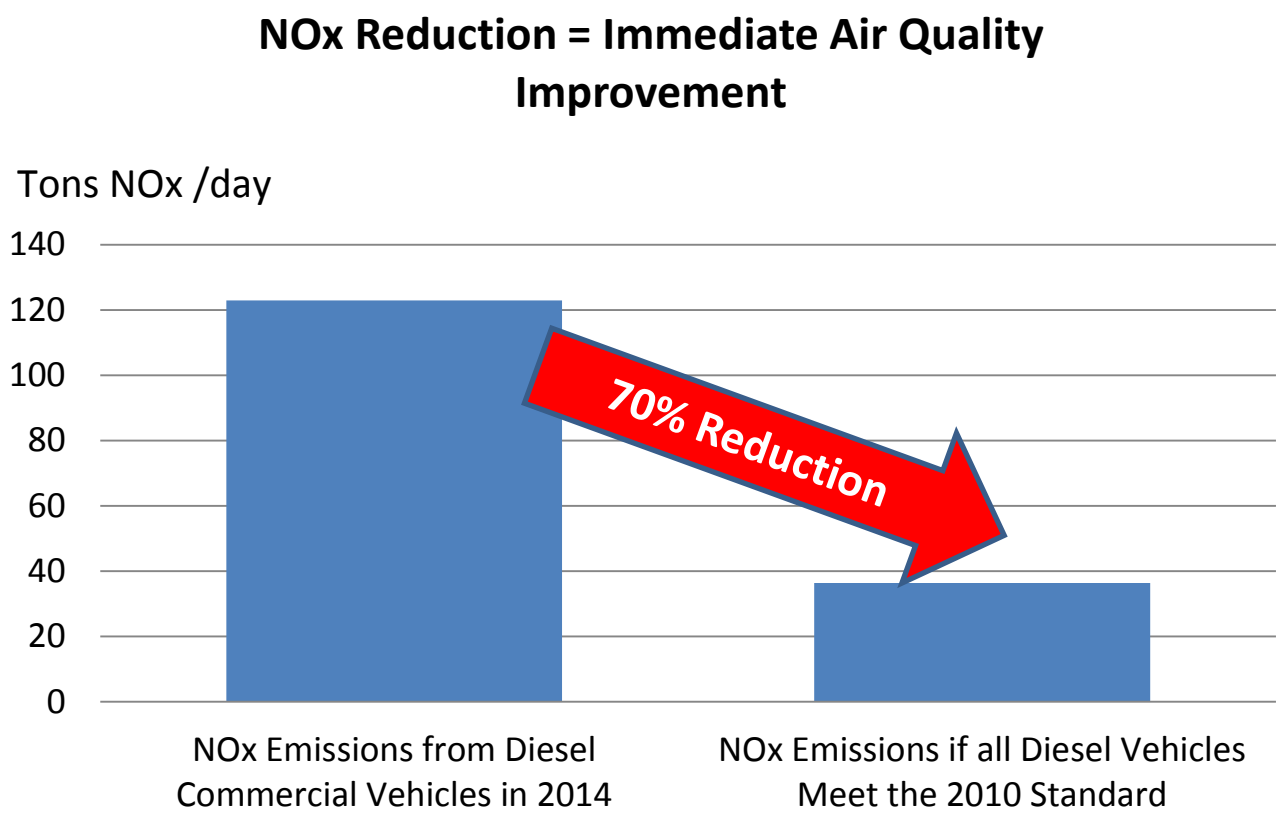
California's trucking fleet is one of the oldest in the nation…

(Class 3-8 based on year-end 2014 Vehicles in Operation Data, IHS Insight)

- **13.9% of commercial vehicles comes with a MY 2010 or newer engine** compared to the national average of 20.7%
- **California ranks #48 out of 51 states for the adoption of MY 2010**
- The difference is **not** made up for by natural gas

What If Every Truck Were Just…. Newer Clean Diesel Technology?

Accelerating penetration of new technology clean diesel engines could deliver substantial NOx reductions (and CO2 benefits) faster than other options.



SOURCE: South Coast Air Quality Management District

How to Achieve Immediate Benefits Today?

Are there opportunities to advance the share of the commercial vehicle fleet to new or newer technology?

Are incentive funding opportunities available?

- Can access to **Greenhouse Gas Reduction Funding** or **Prop 1B funds** help accelerate a faster turnover in the fleet to new or newer commercial vehicles that meet the latest emissions standards?
- Are there other policies that can achieve these results?

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