

Proposed Amendments to the Heavy-Duty Vehicle Inspection Program and the Periodic Smoke Inspection Program

May 25, 2018

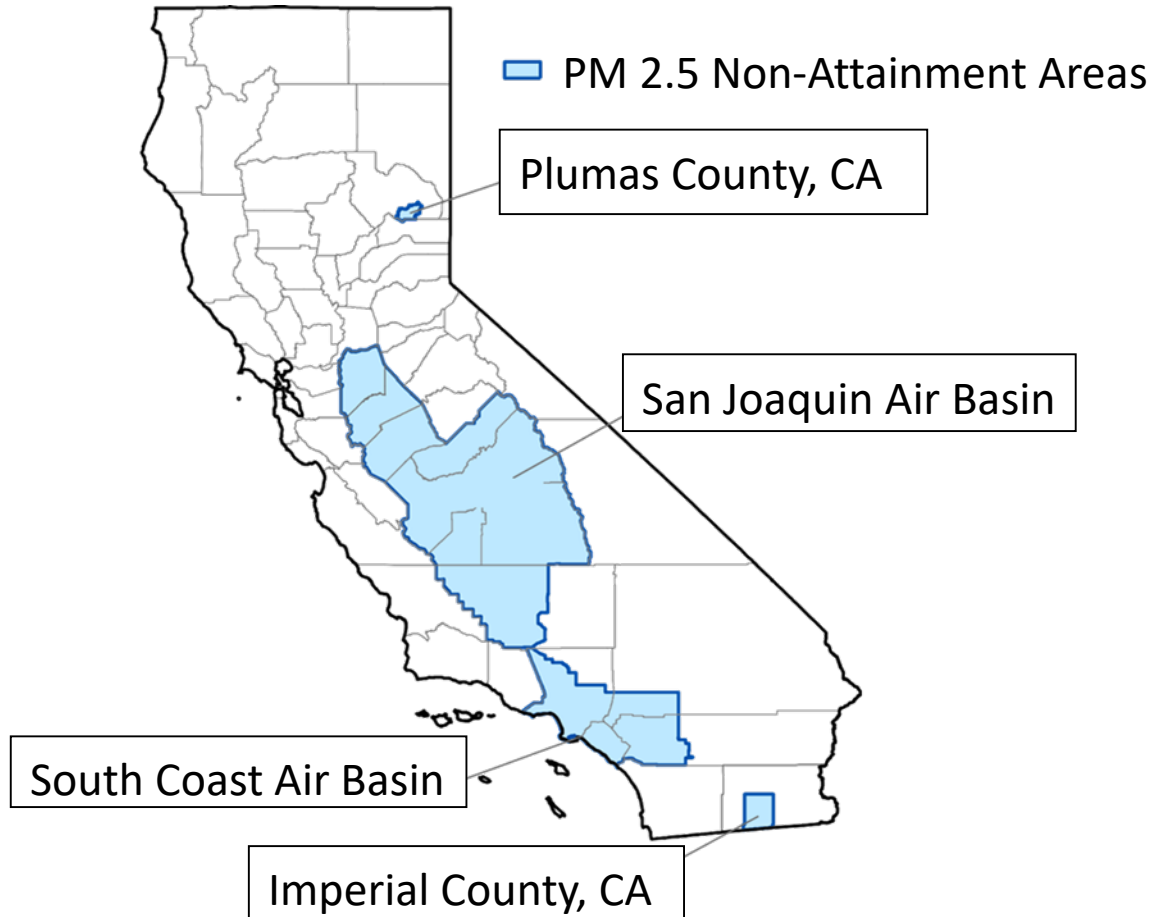
Sacramento, California

Presentation Outline

- Background
- Review of Current Smoke Inspection Program Requirements
- Proposed Changes
- Recommendation

Particulate Matter Pollution in California

PM 2.5 Non-Attainment Areas in California



- South Coast and San Joaquin Valley record some of the nation's highest PM_{2.5} levels
- Heavy-duty vehicles represent about 26% of statewide diesel PM 2.5 emissions
- Diesel PM is a toxic air contaminant known to cause cancer

Impacts of Black Carbon

- Reducing diesel PM also has climate benefits
- Black carbon is a component of diesel PM
 - Makes up ~15% of diesel PM from HD vehicles
- Black carbon absorbs solar radiation and warms atmosphere
 - Thousands of times as potent as carbon dioxide

Significant Steps Taken To Reduce PM Emissions from the HD Sector

- Tighter PM Certification Standards
 - Over a 97% reduction over the last 20 years
 - All 2007+ MY engines come equipped with diesel particulate filters (DPFs)
- Fleet Rules and Retrofit Requirements
 - Truck and Bus Rule
 - Requires retrofit of DPFs on 2006 and older trucks
 - Turnover to 2010+ engines by 2023
- Nearly all diesel vehicles operating in CA now have a DPF

Emissions Control Systems

- Emissions control systems are highly effective when properly maintained
- Malfunctioning systems
 - Engine problems can lead to excess engine-out PM
 - Backpressure buildup can lead to cracking of the DPF substrate if not addressed

Well Maintained
DPF

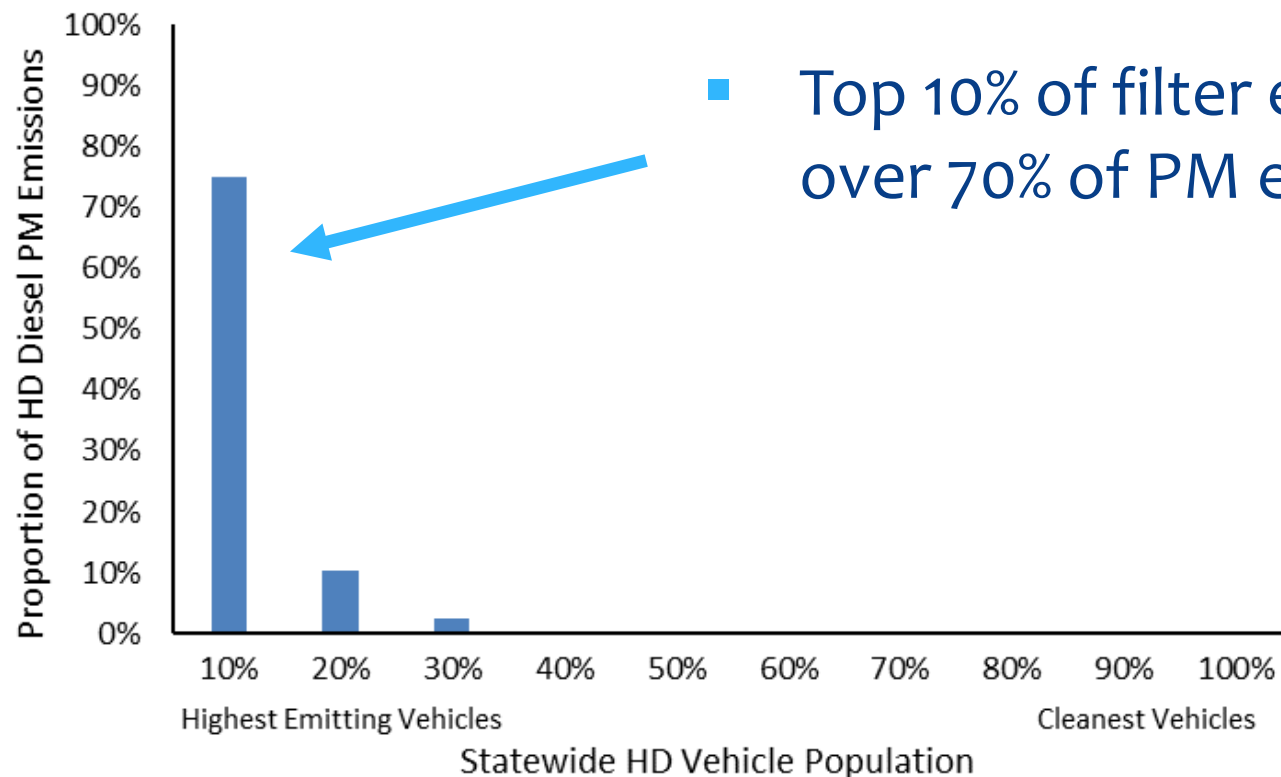


Damaged DPF



High Emitter Problem

PM Emissions from Filter Equipped Vehicles



- Top 10% of filter equipped vehicles are responsible for over 70% of PM emissions

- Timely repair is vital to reducing PM emissions from HD vehicle sector

Current On-Road HD Smoke Inspection Programs

- **HDVIP**
 - Roadside inspections by CARB enforcement staff for excessive smoke and tampering
- **PSIP**
 - Annual self-testing for California fleets of 2 or more vehicles
- **Current Opacity Limits**
 - 1991 Model Year and Newer Engines: **40% Opacity**
 - Pre-1991 Model Year Engine: **55% Opacity**



Updates to the HDVIP/PSIP Regulations Needed

- Current opacity limits are too high to detect malfunctioning emission control systems
- HD vehicles equipped with a properly functioning DPF measure at near-zero opacity levels



Proposed Amendments to the HDVIP/PSIP

- Lower Opacity Limits for both HDVIP & PSIP
- PSIP Smoke Tester Training Requirements
- PSIP Reporting Requirements
- Voluntary OBD Data Submittal in lieu of the annual PSIP smoke testing requirements
- Proposed Testing Upon Vehicle Sale

Proposed Lower Opacity Limits



- DPF-equipped vehicles:
 - **5% opacity**

- Non DPF-equipped vehicles:
 - **20% - 40% opacity** depending on model year and technology

Smoke Tester Training Requirements

- Commercial PSIP Smoke Testers
 - Successful completion of the CCDET HDVIP/PSIP training course, or
 - Any other CARB approved training course
- Direct Employees of the Fleet
 - Complete online training course through the CARB website, or
 - Complete any of the options available to commercial smoke testers



PSIP Reporting Requirements

- **Current Requirements:**
 - Keep records of annual opacity testing for 2 years
 - Present records upon audit by CARB
- **Proposed Changes:**
 - Starting in 2023, electronically report and upload annual opacity test results

PSIP Voluntary OBD Submittal

- Fleets can choose to submit a vehicle's OBD data to CARB in lieu of performing annual PSIP smoke opacity test
 - Applicable to OBD-Equipped (2013 Model Year and Newer) Engines
 - OBD monitors vehicle components that can affect emissions and illuminates when there is a problem
 - OBD can detect an upstream issue before it causes catastrophic damage to the DPF
- Vehicles with PM related fault codes would need to undergo repairs to clear the codes



Testing Upon Vehicle Sale & Proposed 15 Day Changes

- Seller must complete opacity test within 90 days prior to sale
 - Proposed 15-day changes to exempt certain sales:
 - To brokers/dealerships
 - Out-of-state
 - For vehicle salvage
 - From a lessor to lessee
- Proposed 15-day change to exempt military tactical vehicles from HDVIP and PSIP

Estimated Cost and Economic Impacts

- Majority of costs arise from repairs
 - ~9% of heavy-duty vehicles operate above the proposed opacity limits
 - Estimated repair costs of ~\$3,200 to \$7,400 per non-compliant vehicle
- Total regulatory cost ~\$220 million between 2019 and 2025
- No significant impact to the economy



Projected PM Emission Benefits

- 1,170 tons of PM reduced between 2019 and 2025
- South Coast Air Basin and San Joaquin Valley Air Basin projected to see greatest emissions reductions
- PM emissions reductions greatest in disadvantaged communities near major trucking arteries
- Cost Effectiveness: : ~\$93/lb of PM

Statewide PM Emission Benefits

Year	Tons PM/Day
2019	0.55

Health Benefits

Premature Deaths Avoided	134
Hospitalizations Avoided	18
ER Visits Avoided	56

Recommendation

- Approve staff's proposal with 15-day changes:
 - Lower opacity limits
 - Smoke tester training requirements
 - PSIP reporting requirements
 - Voluntary OBD testing in lieu of the annual PSIP smoke test
 - Proposed Testing Upon Vehicle Sale (with *15-day changes*)