Public Workshop: Developing California’s Senate Bill 210 Heavy-Duty Vehicle Inspection and Maintenance Program

January 29, 2020
Sacramento, California
Today’s Workshop

• Welcome and introductions
• Staff presentation: we will pause for open discussion throughout the presentation
  • California’s need for a comprehensive heavy-duty vehicle inspection and maintenance (HD I/M) program
  • Overview of Senate Bill (SB) 210 (Senator Leyva; Chapter 298, Statutes of 2019)
  • HD I/M draft program concepts
  • SB 210 HD I/M pilot concepts
  • Next steps
• Open discussion

Webcast Participants Submit Questions to: coastalrm@calepa.ca.gov
California’s Need for a Comprehensive HD I/M Program
Major NOx Reductions Needed

- Heavy-duty vehicles remain one of the largest emissions contributors in the state
- HD I/M is a key measure in California’s State Implementation Plan (SIP) statewide strategy
- In San Joaquin Valley region, HD I/M is one of the largest proposed near-term reduction measures
  - SJV SIP Commitment: 6.8 TPD NOx reduction in 2024
- In South Coast region, action needed beyond current programs by 2031
  - Further NOx reductions on order of 80% needed
Increasingly Stringent New Heavy-Duty Engine Standards

Emission Standards for New Heavy-Duty Engines Since 1990

- Reductions in new engine standards since 1990:
  - ~97% NOx
  - ~98% PM

- Average in-use emissions well above standards

- Must ensure emission controls are working properly to maintain low emissions throughout entire operating life
  - **Purpose of HD I/M**
HD I/M: Enhancing CARB’s Existing HDV Inspection Programs

- SB 210 directs CARB to develop and implement a new, comprehensive HD I/M program, in coordination with partner State agencies
  - Target excess NOx and PM emissions
  - Require all vehicles operating in California to comply
  - Allow on-board diagnostics (OBD) system checks to identify malfunctioning emissions-related components in applicable engines

- Program objectives:
  - Maintain low emissions throughout a vehicle’s life
  - Ensure emissions control systems are functioning properly
  - Ensure proper maintenance practices are followed
  - Ensure quick and adequate repair of malfunctioning parts
  - Minimize downtime for vehicle owners
SB 210: Vehicle Applicability

- All heavy-duty vehicles (non-gasoline) with gross vehicle weight ratings (GVWR) > than 14,000 pounds operating in California subject to program
  - In-state, out-of-state/country

- Gasoline heavy-duty vehicles > 14,000 pounds not covered because already subject to BAR’s Smog Check program
SB 210: Vehicle Exemptions

• Zero-emission heavy-duty vehicles
• Authorized emergency vehicles
• Tactical military vehicles for testing/training purposes
• New heavy-duty vehicles certified to most stringent optional NOx emission standard (0.02 g/bhp-hr hour) for 4 years after start of vehicle inspections
  • Only heavy-duty natural gas engines have been certified to CARB’s most stringent, optional NOx standard
SB 210: General Requirements

• CARB shall establish test procedures to measure the effectiveness of NOx and PM emissions control technologies

• CARB shall issue a Compliance Certificate
  • Must be kept with the vehicle and presented to inspection officers to show proof of compliance
SB 210: General Requirements (continued)

• Heavy-duty vehicles must be in compliance with the HD I/M program to legally operate in California
  • DMV registration tied to program compliance for in-state vehicles
  • Vehicles registered out-of-state must also demonstrate compliance through Compliance Certificate

• CARB shall assess a compliance fee to fund the reasonable costs of program implementation
  • Shall not exceed $30
  • Shall be adjusted annually based on California Consumer Price Index
  • At least one test procedure, including the compliance fee, must not exceed $30 compliance fee
SB 210: Pilot Program Requirements

• Demonstrate technologies that show potential for the HD I/M program
  • Help inform program development

• Report results to transportation and environmental legislative committees before HD I/M program adoption by CARB

• Implement HD I/M program no later than two years after completion of the pilot program
SB 210: Enforcement Authority

- Gives CARB and/or CHP authority
  - Require emissions testing of vehicles to register or operate in the state
  - Develop and implement enforcement methods to ensure compliance
  - Ensure the following:
    - Vehicles operating as intended
      - No malfunction indicator light (MIL) on and no visible smoke
    - Vehicles are operating with an up-to-date certificate
  - Inspect vehicles subject to this program
  - Assess penalties
  - Request vehicles to be removed from service following notice and opportunity for an administrative hearing
- DMV must confirm compliance prior to issuing vehicle registration
Open Discussion on SB 210 Requirements

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HD I/M Draft Program Concepts
Program Concepts

• Periodic Testing Requirements
• Real-Time Emissions Monitoring
• Enhanced Enforcement Strategies
Potential Periodic Testing Requirements

• Demonstrate emissions compliance at specified time intervals
  • OBD equipped vehicles: OBD data submission
  • Non OBD equipped vehicles: opacity testing
• Seeking stakeholder input on structure of periodic testing and required submission intervals
Potential OBD Data Submission Requirements

• Vehicle Applicability
  • 2013+ model year diesel engines
  • 2018+ model year diesel hybrids
  • 2018+ model year alternative fuel engines and alternative fuel hybrids

• OBD data submission requirements the same for all vehicles

• Collect OBD using the applicable SAE J1939 or SAE J1979 protocol
  • OBD data, as outlined in HD OBD regulations, section 1971.1 and 1971.5, title 13, California Code of Regulations
OBD Test Submission Determination

• Passing criteria for OBD data submissions
  • No active fault codes
  • No permanent codes

• Failing test submission
  • Minimum 45 days to repair and resubmit valid test results
    (75 days for agriculture vehicles)
Potential Periodic Testing Options: OBD-Equipped Vehicles

• Telematics service providers
  • Telematics/fleet management services, electronic logging monitors, OEMs

• Dongles
  • Purchase CARB-approved dongle

• Contractor testing
  • Use CARB-approved dongle for mobile testing or at select locations

• Kiosks
  • Located at high-volume weigh stations or ag inspection stations

CARB
Potential Periodic Testing: Non-OBD Vehicles

• Non-OBD vehicles comprise ~27% of California fleet after full implementation of Truck and Bus regulation in 2023
  • Drops to ~14% in 2030

• Non OBD-equipped heavy-duty vehicles
  • 2012 and older model year diesel engines
  • 2017 and older model year diesel hybrids
  • 2017 and older alternative fuel engines

• Same smoke opacity test as currently required
  • SAE J1667 snap acceleration test procedure
Real-Time On-Road Emissions Monitoring Systems

• Establish a statewide infrastructure of remote sensing (RSD) and plume capture devices to monitor vehicle emissions
  • Emissions snapshot in real-time
• Potential uses in HD I/M
  • Identify potential high emitters when coupled with Automatic License Plate Recognition (ALPR)
  • Program validation – monitor real-world emissions; gauge program success
  • Additional enforcement tool
• Seeking stakeholder input on best potential locations to establish monitoring equipment
On-Road Emissions Monitoring Systems: CARB’s Portable Emissions AcQuisition System (PEAQS) Video
Potential High Emitter Follow-Up Testing Requirements

• Vehicles flagged as high emitters would be subject to emissions testing to verify emissions compliance

• Vehicles required to submit passing emissions test following flagging as a potential high emitter
  • Vehicles to submit compliance verification via one of the periodic submission methods discussed previously
  • Frequent violators subject to referee testing
    • Could include visual inspection for tampering and basic maintenance
Enforcement Strategies

• Tie program compliance to DMV registration
• Require valid Compliance Certificate to operate in California
• Establish remote screening program
  • Emissions screening methods (RSD and plume capture)
• Establish of Automated License Plate Reader (ALPR) infrastructure
• Coordinated CARB/CHP enforcement effort
Potential Contractor Implementation

• Authorized compliance fees could support direct program implementation by HD I/M expert contractor

• Potential contractor program responsibilities:
  • Build and maintain HD I/M testing database
  • Perform contractor mobile testing and referee functions
  • Provide first level HD I/M customer support to vehicle owners
  • Develop HD I/M specific dongle for OBD data submission
  • Install and maintain RSD/PEAQS HD I/M infrastructure

• Are there other roles an implementation contractor should take on as part of this program?
Open Discussion on HD I/M Draft Concepts

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SB 210 Pilot Concepts
OBD Testing Options

• Evaluate potential OBD testing technology options for use in HD I/M program
  • Obtain driver feedback/preferences on OBD testing technologies (dongles, scan tools, kiosks, telematics)

• Evaluate remote OBD submission process
  • Develop and test technical data submission and transmission specifications
  • Ensure data and privacy security
  • Evaluate potential costs for firmware updates and data submission
RSD/Plume Capture/ALPR Technology Evaluations

• Evaluate how different RSD/plume capture systems could be utilized together in a statewide emissions monitoring network
  • Systems proposed for piloting: Hager Environmental & Atmospheric Technologies (HEAT), OPUS, CARB’s PEAQS
    • ALPR equipped to each system for license plate identification
  • Evaluate potential effectiveness to detect high emitting vehicles
    • Understand effectiveness of technologies for different vehicle operating conditions and different terrains
• Evaluate effectiveness of stand-alone ALPR cameras to identify potential non-compliance
Flagging Vehicles with Potential Issues

• Evaluate mechanisms for flagging high emissions and non-compliance through RSD/plume capture/ALPR
  • Develop best practices for transferring vehicle data to CARB database and ensuring data privacy/security
  • Develop QA/QC practices for determining problem vehicles within the database environment

• Develop effective process for notifying flagged vehicles of potential issue

• Pilot methods for flagged vehicles to demonstrate compliance
HD I/M Repair Impacts

- Evaluate potential real-world impacts to fleet business operations as a result of a HD I/M program
  - Work with HD repair shops and fleets to evaluate potential changes to vehicle repair process due to HD I/M
  - Assess costs associated with HD I/M related repairs
    - Link OBD diagnostic trouble codes to specific repairs
  - Assess vehicle downtime as a result of HD I/M related repairs
    - Downtime needed for actual repair to clear the MIL
    - Downtime associated with availability of repair shops, trained mechanics, ordering parts, etc.
Assessing Repair Diagnosis and Repair Durability

• Proper repair diagnosis and durability of emissions related components are critical elements of a robust I/M program
• Evaluate the current capabilities of repair facilities to accurately diagnose and repair emissions related components
  • Assess if current HD repair operations meet the needs of a California HD I/M program
• Measure pre-repair and post-repair emissions of vehicles at participating HD repair shops
  • Dyno, PEMS, and/or OBD for emissions testing
  • Verify repair addressed the emissions issue
  • Recapture vehicles for retesting in the future to assess effectiveness of repairs after vehicle is put back into operation
HDV Repair Assistance

- Assess whether or not a repair assistance program could be useful in a fully implemented HD I/M program
- Qualified owners to pay for proportion of emissions related repair bill with remainder of costs covered though funding grant
  - San Joaquin Air Pollution Control District to manage funds disbursement
  - Repair facilities in Stockton, Fresno, and Bakersfield
  - Currently $500,000 in repair assistance funding available
Outreach Enhancements

• Partner with state agencies, fleets, trucking associations, and other interested trucking advocacy groups to develop effective outreach, educational, and training tools
  • Assess how to modify and improve current outreach mechanisms
  • Ensure program information is available through a wide-variety of avenues
  • Develop effective outreach strategies to ensure information reaches out-of-state constituents
Next Steps: HD I/M Development Timeline

- First public workshop held on February 11, 2019
  - Public workshops will continue throughout program development
- 2019 workgroup meetings: May, July, and November
  - Next meeting on February 19, 2020, at Depot Park facility to continue discussions started today
  - Workgroup meetings will continue throughout program development
- Board hearing: anticipate 2021 timeframe
- Implementation start: expected in 2022/2023 timeframe
For More HD I/M Program Information

• Visit CARB’s website at: https://ww2.arb.ca.gov/our-work/programs/heavy-duty-inspection-and-maintenance-program

• Subscribe to receive HD I/M email updates at: https://public.govdelivery.com/accounts/CARB/subscriber/new?topic_id=hdim

• Contacts:
  • Krista Fregoso at 916-445-5035 or Krista.Fregoso@arb.ca.gov
  • James Goldstene at 916-229-0637 or James.Goldstene@arb.ca.gov
Open Discussion on SB 210 Pilot Concepts and Open Discussion

- Feedback on pilot concepts presented
- Suggestions for other pilot concepts

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