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

August 12, 2020
Today’s Workshop

• **Goal:**
  • Present initial HD I/M program concept design and timing
    • Seek feedback from participants to inform further development
  • **Presentation Outline:**
    • Welcome and HD I/M team member introductions
    • Why HD I/M?
    • Proposed HD I/M program structure and phase in
    • Detailed discussion on Phase 1 implementation
      • High emitter detection through remote sensing devices (RSD)
    • Open Discussion
HD I/M Program Information

• HD I/M Program Development
  • Multi-Divisional project
    • MSCD (Krista Fregoso at Krista.Fregoso@arb.ca.gov)
      • Overall program design
      • Periodic testing and database development
    • Enforcement (James Goldstene at James.Goldstene@arb.ca.gov)
      • Overall compliance and enforcement
      • Remote sensing and license plate recognition

• 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
Why California Needs Reductions?

- 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
Proposed HD I/M Program Structure and Phase-In
Proposed HD I/M Program Structure

**Vehicle Testing**
- OBD Data
- Opacity Data
- Truck Owner Interface
- OBD Device Registration Interface
- Third-Party Tester Interface

**DMV Interlink**

**Enforcement and Compliance Monitoring**
- RSD Data
- ALPR Data
- Referee Network
- CARB/CHP Citations

**HD I/M Program**
Periodic Vehicle Compliance Testing

- On-Board Diagnostics (OBD) equipped vehicles
  - OBD testing

- Non OBD equipped vehicles
  - Opacity testing
Proposed Periodic OBD Testing Requirements

• Quarterly OBD data submission
  • Collect/submit OBD data required in HD OBD regulations, section 1971.1, title 13, CCR

• Passing criteria for OBD data submissions:
  • No Malfunction Indicator Light (MIL)-on events
  • No active fault codes
  • No permanent codes

• If issue identified:
  • Follow up passing OBD data submission needed within 45 days
  • 75 days for agricultural vehicles

• Vehicle considered in non-compliance if:
  • Periodic testing submission missed
  • Follow up passing data not submitted within applicable timeframe
OBD Testing Options

• Certified telematics service providers
  • OBD data collection/submission devices on the vehicle

• Quick stop testing locations spread throughout the state

• Third-party mobile testers
Telematics Testing Option

1. Collect required OBD data from vehicle

2. Remotely transfer OBD data from device to vendor

3. Data submission to CARB HD I/M database via standardized format

Certified/OEM Telematics Collection Device

Device Vendor Database

CARB HD I/M database
Full Key Event Telematics Option

• “Set it and Forget it” testing option
• System to run a key event check within 5 minutes of every engine start
• OBD data submission upon key event being triggered
• Key events:
  • Power loss of remote OBD device
  • Change in MIL status
  • Change in electronic identifiers (i.e., E-VIN, ECU ID, etc.)
  • Change in OBD monitors readiness from “Ready” to “Not Ready”
  • Vehicle entered CA (optional GPS-based parameter)
  • No test submission in last 90 days

• More detailed discussion of testing options in 7/9/2020 workgroup documents at: https://ww2.arb.ca.gov/our-work/programs/inspection-and-maintenance-program/Meetings-and-Workshops
Incentivizing Full Key Event Telematics Option

• Full key event monitoring option may ensure quickest detection/repair of an emissions system malfunction

• Good testing option to limit excess vehicle emissions

• Seeking feedback on potential flexibilities to help incentive/benefit fleets who choose to use the full key event testing option
Minimal Key Event Telematics Option

• Stakeholders have expressed concerns that the full key option
  • May result in more frequent monitoring than other submission options and no review time for the fleet before submission

• Stakeholders have asked for a middle ground between a full key event monitoring system and quarterly submissions at a physical location (i.e., through rental dongle/kiosk option)

• Based on this feedback, a potential option could be a minimal key event detection option

• Key events proposed to be monitored:
  • Power loss of OBD device
  • No test submission in last 90 days
  • Vehicle entered CA (optional GPS based parameter)
Quick Stop Testing

• Certified testing devices available from participating facilities for truck operators to perform needed inspections
  • Designed to automatically collect required OBD data upon being plugged into OBD port
  • Automatically upload testing results to HD I/M database and give confirmation to user that test submission was successful
• Testing results available to operator through truck owner interface in HD I/M database
Quick Stop Testing (continued)

- Proposed Options: ~5-10 minute process
  - Kiosk installed at participating facility; like a “Redbox machine/ATM”
    - Operator removes dongle housed in kiosk, takes to vehicle, performs test, returns dongle upon completion
  - Dongles offered through service counter at participating facilities
    - Truck operator checks out device through service clerk, returns to clerk following completion of the test
Potential Quick Stop Testing Locations

- Goal is to provide broad coverage throughout California
- Devices could be located at participating truck stops for check out
- Propose ~20 locations spread throughout the state
Third-Party OBD Testers

• OBD testing option modeled after current smoke tester structure in PSIP regulation
  • Mobile testing services available
• Trained/certified OBD testers using CARB-certified devices to provide OBD inspection services
• Training material regarding OBD data submittal could be added to future training courses
Non-OBD Vehicles: Opacity Testing

- Same smoke opacity test and opacity thresholds as currently required in PSIP and HDVIP
  - SAE J1667 snap acceleration test procedure

- Same testing options as currently offered in PSIP
  - Self testing or certified third-party tester
Proposed Periodic Opacity Testing Requirements

• Biannual testing requirements (2x per year)
  • Electronic upload submission to CARB HD I/M database

• If test submission has opacity issue:
  • Follow up passing opacity data submission needed within 45 days
  • 75 days for agricultural vehicles

• Vehicle considered in non-compliance if:
  • Periodic testing submission missed
  • Follow up passing data not submitted within applicable timeframe
Program Interfaces for Stakeholders

- Truck Owner
- OBD Device Certification
- Third-Party Tester
Truck Owner Interface

• Website interface entrance point to HD I/M program for truck owners

• Each owner will have a primary fleet page to track HD I/M compliance

• Allow owner to pay program compliance fees and obtain Compliance Certificate
OBD Device Certification Interface

- Vendors of devices submitting OBD data for the HD I/M program would need to certify their devices.
- CARB to develop technical specifications that a device must certify to.
- Vendors to work directly through CARB staff to certify testing equipment.
- Upon successful certification, each individual testing device unit used in HD I/M program to be registered through the device certification interface.
OBD Device Certification and Testing

- **Vendor Testing:**
  - **Initial Validation Testing:** Testing done by following specific test conditions defined by CARB
  - **Field Testing:** Device vendor to perform real-world testing on an applicable heavy-duty vehicle population

- **CARB Testing:**
  - **Device Verification Testing:** Device would be tested by CARB and/or designee in a laboratory setting to verify vendor test results
Third-Party Tester Interface

- Third-party OBD/opacity testers would register individual accounts within the third-party tester interface
  - Registered accounts are the access point to submit opacity or OBD test results
- Third-party testers required to use a certified OBD testing device for OBD tests
  - Specific certified device registered to their HD I/M account
- Third-party tester contact list to be made available to truck owners
Ensuring Compliance

Remote Sensing (RSD)

Automated License Plate Recognition Cameras (ALPR)

Field Enforcement Efforts

Referee Network

Compliance Certificate/DMV Registration Link
Using Remote Sensing to Identify High Emitters

• Proposal: Deploy real-time emissions monitoring equipment with ALPR cameras throughout the state that identifies high emitters

• Vehicles flagged as potential high emitter would be required to submit passing OBD and/or opacity tests to HD I/M system within 45 days
ALPR Camera Network to Ensure Compliance

- Stand-alone ALPR cameras

- Captured license plates would be cross-checked with HD I/M database to identify vehicles operating in CA without a valid Compliance Certificate
Referee Network

• Referee network similar in function to BAR’s light duty smog check referee stations
  • Referee network could be mobile
• Referee testing may be required for:
  • Anomalies in submitted vehicle data
  • Vehicle identified as high emitter through RSD/PEAQS
  • Suspected tampering and/or fraudulent data submissions
  • Resolve disputes
  • Random audits
• Vehicles required to pass referee test within 45 days of request
  • Failure to do so could result in citation
Referee Inspection Process

• Notification and Scheduling:
  • Vehicle owners to receive referee request via mail, email and notification via fleet page in truck owner interface
  • Vehicle owners can coordinate and schedule an appointment with the HD I/M referee through their fleet page

• Referee Inspection:
  • Referee test to include a visual inspection of the vehicle, a smoke opacity test, and an OBD test if applicable
  • Referee test results submitted via referee interface to HD I/M database
Field Enforcement Efforts

• Continued CARB field inspection efforts in coordination with CHP

• SB 210 also authorizes CHP to:
  • Check for illuminated MIL in vehicle
  • Check for valid Compliance Certificate
  • Check for visible smoke
Obtaining Compliance Certificates

- SB 210 requires vehicles to possess a valid HD I/M Compliance Certificate to legally operate in California
- Proposed criteria to obtain Compliance Certificate
  - In good standing with periodic testing requirements
  - No outstanding high emitter flags/referee flags/HD I/M citations
  - Pay fee
- Fleets to obtain Compliance Certificate through truck owner interface
  - Electronic and hardcopy certificates available upon request
- DMV registration block would be placed on California vehicles operating without a valid certificate
Open Phone Lines for Questions and Discussion
Proposed Phased In Implementation
HD I/M Implementation: Proposed Program Phase In Approach

• First Phase - Starting no later than **January 1, 2023**
  • RSD high emitter vehicle detection with focus on the San Joaquin Valley
  • Fleet/vehicle reporting requirements
    • Deadline to complete reporting: July 1, 2023
    • Vehicles to receive certificate of compliance upon registering with HD I/M program, having no outstanding high emitter flags, and paying compliance fee

• First Phase to be discussed in more detail later
HD I/M Implementation: Proposed Program Phase In Approach (continued)

• Second Phase – Starting July 1, 2023
  • Enforcement of Compliance Certificate requirements begin
  • DMV registration holds begin for California registered vehicles

• Third Phase – Starting in 2024
  • Periodic testing requirements begin
Implementation Contractor for HD I/M

- CARB staff expect to hire I/M implementation contractor(s) to support roles needed for the program

- Primary responsibilities may include:
  - Develop and maintain HD I/M database
  - Establish and oversee Quick Stop testing network
  - Establish and run referee testing network
  - Procure and maintain testing devices for referee network and quick top testing locations
  - Mail out/issue Compliance Certificates
  - Perform main call center operations for HD I/M program
  - Program outreach
High Emitter Detection through Remote Sensing Devices (RSD)

• Phase 1 Implementation – San Joaquin Valley
  • Goal to meet State Implementation Plan (SIP) commitment in the San Joaquin Valley
  • Starting January 1, 2023

• Using Remote Sensing to find the dirtiest trucks
  • This “dirty screen” method will require vehicles identified as high emitters to be repaired
Remote Sensing is Well Established

• Science of RSD Platforms is well established
  • Peer reviewed studies conducted
    • Kirschetter, Steadman, Bishop, Colorado Clean Screen
• Different RSD Platforms
• Portable Emissions Acquisition System (PEAQS) currently being utilized in the field
  • https://www.youtube.com/watch?v=5kdsRR7_VVE
  • Continued deployments, installations, and enforcement on compliance utilizing our current authority
Proposed Dirty Screen Implementation

• Deploying mobile and fixed RSD systems

• Capturing License Plate Information and linking to an emissions snapshot of Particulate Matter (PM) and Nitrous Oxides (NO$_x$)

• Analyzing data to identify high emitters
Defining High Emitter

• Identify high emitters from emissions measurements using statistical methods for:
  • PM high emitter
  • NO\textsubscript{x} high emitter
Proposed Compliance Demonstration

• Owners of high emitting vehicles will be required to prove vehicle is compliant within 45 days (75 days for agricultural vehicles)
  • Submit OBD download and/or smoke opacity test
  • CARB is exploring the possibility of licensing repair shops and technicians

• CARB may also require submission of additional information and/or referee vehicle inspection based on analysis of test results
Proposed Citation for Non-Compliance

• Citation will be issued for vehicles that fail to demonstrate compliance

• Proof of compliance and payment of penalty required to clear citation
Potential Responses to Failure to Clear Citation

• Block Compliance Certificate
• Block DMV registration on California registered vehicles
• Refer the matter for civil litigation or administrative hearing
• Request vehicle storage for multiple or egregious violations
Appealing a Citation

• HSC 44152 requires that CARB provide a cited owner an opportunity for an administrative hearing

• Process under evaluation
HD I/M Development Timeline

- Public workshops will continue throughout program development
  - Next workshop expected in fall 2020
- HD I/M workgroup meetings will also continue
  - 3 workgroup meetings in 2019
  - OBD sub-committee workgroup webinar on July 9, 2020
- Board hearing: expected in December 2021
Open Phone Lines for Questions and Discussion