



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

August 12, 2020

Today's Workshop

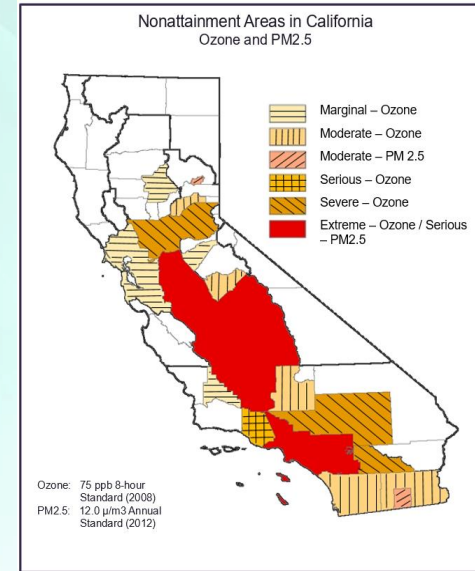
- **Goal:**
 - Present initial HD I/M program concept design and timing
 - Seek feedback from participants to inform further development
- **Presentation Outline:**
 - Welcome and HD I/M team member introductions
 - Why HD I/M?
 - Proposed HD I/M program structure and phase in
 - Detailed discussion 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 NO_x reduction in 2024
- In South Coast region, action needed beyond current programs by 2031
 - Further NO_x reductions on order of 80% needed



Proposed HD I/M Program Structure and Phase-In



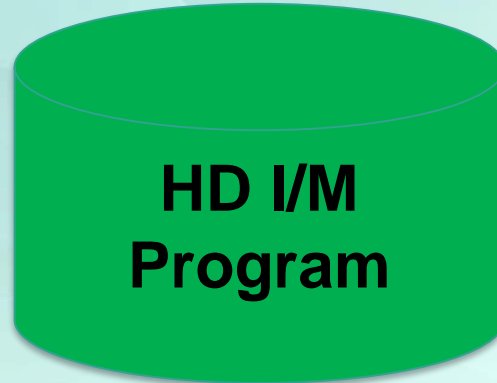
Proposed HD I/M Program Structure

Vehicle Testing

OBD Data

Opacity Data

DMV
Interlink



Enforcement and Compliance Monitoring

RSD Data

ALPR
Data

Referee
Network

CARB/CHP
Citations

Truck Owner
Interface

OBD Device
Registration
Interface

Third-Party
Tester
Interface

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



CertiTech/OEM Telematics Collection Device



2

Remotely transfer OBD data from device to vendor



Device Vendor Database



3

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



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 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 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_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

