Smog Check in California

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January 18, 2017
Mexico City
Topics

• Overview of California’s Smog Check Program
• OBD Focused Inspections
• Consumer Assistance Program
• Enforcement
Smog Check Program Overview

- Established in 1982
- Program Administered by Bureau of Automotive Repair (BAR) since 1984

- Designed in Consultation with ARB
- De-centralized program design
  - Privately owned stations licensed by BAR
Smog Check Inspections

• Four Inspection Types
  o Two Speed Idle (non-diesel)
  o Acceleration Simulation Mode (ASM)
    • With an OBD II Test for 1996-1999 non-diesel
  o OBD II OIS Test (2000+ gasoline)
  o OBD II OIS Test (1998+ diesel)
When is a Smog Check Required?

- Biennially (every other year)
  - 6 year new vehicle exemption for gasoline, hybrid, alt fuel vehicles
- Change of Ownership
  - 4 year new vehicle exemption for gasoline, hybrid, alt fuel vehicles
- Initial Registration in State
- All are Registration Based
  - Completing the Smog Check is a requirement to receive registration (either initial or renewal)
California Smog Check Statistics

- 22 Million vehicles in program
  - 11 Million “initial” inspections/year
- 7,000 Smog Check Stations
  - Test and Repair
  - Test Only
- 21,000 Inspectors/Technicians
- Overall Failure rate (2015): 12.06%
- Average Inspection Cost (2015): $48
  - Market based
Smog Check Station Requirements

• To become a licensed Smog Check station, the facility must:
  - Be registered with BAR as an Automotive Repair Dealer (ARD)
  - Meet minimum equipment and facility requirements
  - Employ licensed inspectors
  - Retain service and repair records for three years
Smog Check Inspector Requirements

• To become a licensed Smog Check inspector, the candidate must:
  o Meet minimum experience requirements
  o Meet minimum training requirements
  o Pass a BAR licensing examination
STAR Stations

• Voluntary certification program began January 1, 2013
• Stations and inspectors must meet specified performance standards established by BAR
• Perform tests on directed vehicles and gross polluters
• Perform Repair Assistance services under BAR’s Consumer Assistance Program (CAP)
Referee Network

- Contractor Run
- Unusual Configurations (Kit Cars, Engine Changes, etc.)
- Inspection Compatibility Issues
- Inspection Disputes
- Able to Bypass Normal Inspection Procedures

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Bureau of Automotive Repair Smog Check Referee Program
BAR 97 System

ASM Testing (with dyno)
TSI Testing
Basic OBD system testing
Systems are Certified by BAR
OBD Inspection System (OIS)

- Provides in-depth OBD focused testing
- Vendors certify systems through BAR
OBD Inspection System (BAR-OIS) Conceptual Design

- **Web based software**
- **Internet Connection**
- **BAR certified DAD from equipment vendors**
- **Off-the-shelf equipment from DAD/other vendors**

**OBD Inspection System (OIS)**

- Bar Code Scanner
- Printer
- Data Acquisition Device (DAD)
OBD Based I/M Procedure

1. Does the MIL work? (Key on engine off)
2. Is the vehicle ready for an inspection?
   - No recent code clearing
3. Is the MIL commanded off?
   - If YES to all 3: PASS
   - If NO, remedy as necessary:
     - Fix MIL lamp or wiring
     - Conduct more in-use driving and return for re-inspection
     - Fix detected fault and return for re-inspection
Benefits over Tailpipe I/M

• More comprehensive fault detection
  o All emission-related components individually monitored
  o Cold start problems detected
  o Evaporative emission problems detected
  o Broad in-use testing conditions
  o Still works on vehicles meeting very stringent standards

• Convenience
  o Faster (less than 5 minutes)
  o No surprises (MIL off = pass, unless recently serviced)
  o Less expensive
    • No dynamometer
    • No emissions analyzers
OBD Performance in Roadside Data

- Smog Check data collected on vehicles randomly pulled over for data collection
- Test is not mandatory, and no enforcement action is taken
- OBD systems caught about 4.5 times as many problems as ASM (2016 data)
Problem Areas
(vehicles passing ASM with MIL On)

- MSF: 3%
- FUEL: 2%
- CCM: 2%
- CAT: 7%
- EVAP: 9%
- O2: 11%
- O2H: 22%
- SAIR: 18%
- EGR: 26%
Only a Fraction of the Benefit is Seen in Smog Check Database

Estimated True OBD Failure Rates
North Carolina 2011

- MIL On
- Not Ready
- Pass w/Recent Clear

- Only a Fraction of the Benefit is Seen in Smog Check Database

California Environmental Protection Agency
Air Resources Board
More Stringent Readiness Improves Benefits

ASM Failure Rate vs OBD Ready Status

<table>
<thead>
<tr>
<th></th>
<th>All Indicators Complete</th>
<th>One Incomplete</th>
<th>Two Incomplete</th>
<th>Three Incomplete</th>
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</thead>
<tbody>
<tr>
<td>1996-1997 MY</td>
<td>6.82%</td>
<td>11.51%</td>
<td>13.44%</td>
<td>21.45%</td>
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<tr>
<td>1998-2000 MY</td>
<td>2.87%</td>
<td>5.80%</td>
<td>7.33%</td>
<td>12.06%</td>
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<tr>
<td>2001 + MY</td>
<td>0.47%</td>
<td>1.41%</td>
<td>3.27%</td>
<td>3.88%</td>
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</table>

Vehicles Failing ASM (%)
(MIL Not Illuminated)
Consumer Assistance Program (CAP)

- Provides low income motorists with up to $500 to fix failing vehicle
  - Testing and diagnosis costs paid by owner
- Also includes vehicle retirement option
  - $1,000 to $1,500 to have vehicle scrapped
- Money for the program comes through Smog Check and vehicle registration fees.
Program Enforcement Activities (2015)

- Enforcement in a decentralized program is important to maintain program benefits/integrity.

- Initial Compliance Inspections (1,407)
  - Ensures that new stations are in compliance before beginning inspections.

- Equipment Audits (1,896)
  - Gas analyzers
  - Dynamometers
  - Signs of tampering

- Undercover Runs (973)
  - Vehicles in known condition are taken to stations for undercover inspections.
Enforcement Results (2015)

• **Station Citations**
  - 1,210 Issued
  - $891,250 in total fines

• **Inspector Citations**
  - 1,281 Issued
  - 3,924 hours of re-training

• **Disciplinary Actions**
  - 292 Total Cases
  - 183 Licenses Revoked
  - 109 Suspensions/Probation
Summary

• California’s Smog Check is working effectively to identify and repair polluting vehicles

• The test procedure relies on the power of vehicle OBD systems for vehicles so equipped
  o Faster and more cost effective than tailpipe testing
  o Stronger OBD designs will produce better results

• Effective means to fix broken vehicles and to enforce the program’s objectives are necessary components