Final Report of the OBD Policy Workgroup

Mobile Source Technical Review Subcommittee
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The Workgroup addressed NAS Issues and Other Stakeholder Concerns

- NAS Issues from July 2001 I/M Assessment
  - Future failure rates for aging vehicles
  - Pollution prevention approach of OBD
  - Lack of overlap in tailpipe and OBD failures

- Stakeholder Concerns
  - Potential conflict of interest
  - OBD durability and warranty issues
  - Tampering devices (not in original charter)
Workgroup Report Summarizes Latest Data on OBD Use in I/M Programs

- Average OBD failure rates for OR and WI similar to tailpipe testing.
  - Overall failure rate for the OBD fleet about 2.5%
  - Failure rates 7% and 3.4% for 1996 and 1997, respectively
- Most frequent causes of OBD failures are oxygen sensors, misfires, exhaust gas recirculation, and evap
- OBD I/M scan tool communications rates 99%+ (OR, WI)
- Average emissions reductions statistically the same
  - Doesn’t include evaporative and preventative OBD benefits
- OBD minimizes trips back for second and third inspections
- Short inspection times of five to ten minutes
- OBD provides unique evaporative benefits
NAS Issue: OBD Failure Rates for Aging Vehicles

- Failure rates appear consistent with traditional tailpipe testing failure rates, but only six years of data currently available.

- “Preventative” OBD failures down to 30% for more recent EPA high mileage vehicle study, versus 70% reported by the NAS from EPA’s initial “200-car” study.

- Data to date indicates that average tailpipe emissions benefits resulting from OBD failures are consistent with those of traditional tailpipe tests. Also, additional evaporative and preventative benefits.
Workgroup Recommendations

- Although failure rates do not appear to be problematic at this time, more data is needed as OBDII-equipped vehicles continue to age.
- EPA should expand the high-mileage study to about 100 vehicles per year.
- EPA and OBD Technical Workgroup should continue to review high-mileage study data and State I/M lane data.
- EPA should share results with States annually.
NAS Issue: OBD Failure Rates for Aging Vehicles (continued)

Workgroup Recommendations

- Also, look at technical questions to assist States:
  - How will the new, low emissions standards (Tier 2, LEV, ULEV, SULEV) impact effectiveness of various I/M testing technologies?
  - Would it be feasible for States to require repair on older OBDII vehicles, only for certain diagnostic trouble codes (DTCs)?

- States should continue to follow high-mileage study results and I/M program lane data and consider these results in any decisions about the future of tailpipe testing.
NAS Issue: OBD Failures for Vehicles in Need of Repair but not yet Exceeding Standards

- NAS concerns partially driven by results of the initial “200-car” study showing 70% of OBD failures were “clean but broken” vehicles
  - More recent EPA high-mileage data shows 30% of failures for “clean but broken” vehicles. Suggests as vehicles age, more failures associated with immediate emissions increases.

- Data to date show average tailpipe emissions reductions for OBD failures not statistically different from tailpipe failures.
NAS Issue: OBD Failures for Vehicles in Need of Repair but not yet Exceeding Standards (cont’d)

Workgroup Recommendations

- Re-emphasis on earlier recommendation to continue and increase EPA high-mileage testing.
- Continue to pursue a full lifecycle analysis of OBD benefits.
- EPA’s next update of the emissions modeling tool (the “MOBILE” model) should incorporate the latest available data on full range of benefits of OBD.
NAS I/M Report: Lack of Overlap Issue

- Lack of overlap between tailpipe and OBD failures
  - Several studies have shown little overlap between tailpipe and OBD failures

- Examined the reasons for “lack of overlap”
  - The failures represent only about 3% of the tests. OBD and tailpipe agreed over 97% of the time.
  - OBD represents new paradigm. Not easily compared with tailpipe.
  - Over half of the “lack of overlap” attributable to OBD “preventative” failures, evaporative failures, or below tailpipe cutpoints
  - Some portion due to margin of error in both tailpipe and OBD tests.
  - Tailpipe testing still important for 1995 and older vehicles, and may be needed for OBD vehicles as they age.
NAS I/M Report: Lack of Overlap Issue

- Recommendations to EPA and OBD Technical Workgroup

  - Technical workgroup should try to quantify what portion of the “lack of overlap” presents concern.
  - Review both the EPA data from high mileage study, and the Colorado Department of Public Health and Environment study results.
  - EPA should develop an on-going evaluation program focused on high-emitting vehicles missed by OBD….verified thru FTP testing (not field tailpipe tests).
  - Assess the approx. 2000 FTP data points available in 2004/2005 thru new manufacturer In-Use Verification Program (IUVP).
Stakeholder Issue:
Conflict of Interest Concerns

- Some stakeholders concerned about three potential areas where conflict of interest could occur:
  - Dealership inspections may be influenced by manufacturers
  - Potential for insufficient warranty and defect reporting
  - OBD design may not be robust after warranty period

- Mixed perspectives among workgroup members on whether these conflicts are likely to occur, and no evidence presented.

- Final report provides extensive list of EPA, CARB, and State compliance measures that help safeguard against these concerns.
Stakeholder Issue: Conflict of Interest Concerns (cont’d)

Recommendations: Decentralized Inspection Areas

- States with decentralized programs should consider additional safeguards (if not already in place) to prevent inspection fraud:
  - Video auditing to allow State or contractor to observe and communicate with inspection technicians
  - Bar codes to track inspection stickers
  - Audits of inspection data by the State to detect anomalies
  - “Undercover” failing cars to verify proper inspection
  - Third party testing where repair work is also being performed
- EPA should assist States to ensure adequate safeguards.
- EPA should cross-check data between centralized and decentralized I/M areas to look for anomalies in pass/fail rates.
Stakeholder Issue:
Conflict of Interest Concerns (cont’d)

Recommendations: OBD System Design

- EPA should include OBD in its approx. 150 in-use compliance tests/year
- EPA and CARB could increase the number of vehicles examined in in-use compliance programs
- EPA and CARB should set up a data base for all state I/M programs with OBD-related information to support data and trend analysis (e.g. defect reports, in-use testing results, manufacturer in-use testing, etc.)
- EPA and CARB should continue to require improvements to OBD systems as new information becomes available.
Stakeholder Issue: OBD Warranty/Durability

- OBD durability/warranty coverage
  - Consumers are liable for repair costs once warranty expires (2 years/24 k miles for smaller components, 8 years/80k miles for catalyst)

- OBD systems and emissions control components subject to “useful life” requirements of 100K miles for light duty vehicles, 120K for light duty trucks.
  - Manufacturers subject to enforcement actions if not met

**Recommendation:** Continue EPA’s high mileage study, and evaluate of State I/M lane data to monitor whether warranty periods are appropriate, or should be extended.
Stakeholder Issue: OBD Tampering Devices

- Increasing concerns about availability of tampering devices that can be used to bypass the OBD system
  - Numerous websites offering “O₂ Simulators” that can eliminate diagnostic trouble codes when catalyst missing
  - Offered for “off-road use only”

- Workgroup recommends three pronged approach:
  - EPA and CARB should run strong enforcement programs to deter the use of OBD tampering devices.
  - OBD Technical Workgroup should explore technical means for identifying tampering devices.
  - EPA and States should develop I/M program policies that help deter or remove incentive for the use of OBD tampering devices.
Next Steps for Policy Workgroup Report

- Send report forward to the Clean Air Act Advisory Committee
- Post report and “Technical Appendix” on EPA’s website at www.epa.gov/otaq/obd.htm
- EPA and the OBD Technical Workgroup will continue to address recommendations made by the Policy Workgroup.