



EFFECTIVENESS OF ON-BOARD DIAGNOSTIC (OBD) TESTING FOR VEHICLE INSPECTION AND MAINTENANCE (I/M)

A Report to the Illinois General Assembly EXECUTIVE SUMMARY

Background

Illinois has had a vehicle inspection and maintenance (I/M) program since 1986 to help identify vehicles that are in need of repairs because they exceed air pollution limits. I/M is limited to vehicles registered in metropolitan Chicago and metropolitan East St. Louis, and it is one of Illinois' most important tools for improving air quality and meeting federal air quality standards. For example, I/M reduces emissions of ozone-forming volatile organic compounds by 26 tons per day in northeastern Illinois.

Legislation signed into law last year (Public Act 92-0682) allows, and new federal regulations require, the Illinois EPA to replace traditional I/M tailpipe exhaust tests with a simpler and quicker test of the on-board diagnostic (OBD) system. All 1996 and newer cars and light trucks have powerful computers that use OBD technology to manage and monitor their operations. Because OBD testing is available only on model year 1996 and newer vehicles, Illinois EPA will continue to provide traditional tailpipe testing for the significant, but declining, portion of the affected fleet that is pre-1996.

The OBD system ensures that the engine runs at peak efficiency, and it will turn on a dashboard warning light to alert the motorist of any problems with engine and/or emissions control components as soon as they occur. Early detection of problems makes warranty coverage programs more effective. Moreover, OBD systems can detect problems before they become more expensive to repair.

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History of OBD Testing

Illinois EPA started OBD testing in January 2000 on an "advisory-only" basis, which means the results were not used to determine compliance, but they were made available to motorists. This gave Illinois EPA and our contractor, Envirotest, an opportunity to refine the OBD test. The next phase, which began July 2002 and continues through December 2003, uses OBD testing along with gas cap pressure tests to determine compliance.

However, vehicles that fail the OBD test are given a second chance to pass with a tailpipe test. Beginning in January 2004, compliance for most 1996 and newer vehicles will consist solely of gas cap pressure tests and OBD tests.

OBD Results: Faster and More Effective

OBD testing has proven to be faster and less likely to produce vehicle damage. In addition, vehicle owners have reported repair costs for OBD-failed vehicles that are comparable to or less than repair costs for vehicles that fail traditional tailpipe tests.

OBD Vehicle Inspection and Maintenance Testing in Illinois Results through 2002

- OBD Emissions Test Duration: 50% faster than tailpipe testing
- Average Wait Time: 10% less since OBD testing began
- Vehicle Damage Claims: 42% less since OBD testing began
- OBD Repair Costs: Comparable to or less than the most rigorous tailpipe test *

* In Illinois, repairs have averaged \$238 for vehicles that only failed the OBD test compared to \$404 for those that only failed the "IM 240" tailpipe test. Other states have experienced comparable repair costs for OBD test failures.

In 2002, forty percent of the vehicles completing an emissions test in Illinois were 1996 or newer and, therefore, OBD-equipped. With fleet turnover, OBD testing will gradually replace tailpipe testing, and this should further reduce customer wait times and vehicle damage claims.

OBD Fail Rate

In Illinois, the fail rate for all vehicles undergoing the combined tailpipe and gas cap tests in 2002 was twelve percent. By comparison, the fail rate for OBD and gas cap testing on 1996 and newer models has been between seven and eight percent during the phase-in period. However, OBD fail rates should be considerably lower once OBD testing is fully implemented – roughly around three percent based on results from other states. Indeed, Illinois EPA believes many motorists will respond to the OBD warning system and have their vehicles repaired before undergoing the test, thereby lowering the initial failure rate. As noted above, vehicle owners have reported repair costs for OBD-failed vehicles that are comparable to or less than repair costs for vehicles that fail traditional tailpipe tests.

OBD test failures can be grouped into three categories:

- Engine and/or emissions control malfunctions (88.2 percent)
- OBD systems that don't work properly (10.5 percent)
- Missing/damaged connectors needed to link the OBD system with computers at testing facilities (1.3%)

Results also show that over twenty percent of OBD-equipped vehicles returning for retests were found to be "not ready." This happens when vehicles return to a test facility immediately after repairs are performed and the OBD systems are not ready to be tested. Many vehicles require a period of normal driving to ensure that the OBD system has performed all required checks and is ready for testing again. This issue has been encountered in all states that have implemented OBD testing. Illinois EPA has increased outreach efforts to the public and repair technicians in order to address this issue.