The State of New Jersey
Department of Environmental Protection

Enhanced Inspection and Maintenance (I/M) Program for the State of New Jersey

Incorporation of On-Board Diagnostic (OBD) Inspections into the State's I/M Program and Amendments to the New Jersey Department of Environment Protection's Enhanced I/M Rules

Proposed SIP Revision

December 31, 2001

Preface

This document is a proposed revision to the State of New Jersey's Enhanced Inspection and Maintenance (I/M) Program State Implementation Plan (SIP). The enhanced I/M program is designed to detect gasoline-fueled motor vehicles operating with excessive emissions under test conditions that represent more realistic driving conditions than New Jersey's basic I/M program. Failed vehicles are then required to be repair and re-inspected to ensure they comply with in-use emission standards. In addition, the enhanced program is designed to detect excess emissions of oxides of nitrogen (NO_x), a category of pollutants which were not previously detected as part of the basic I/M program. NO_x, along with volatile organic compounds (VOC)[†], are precursors to the formation of ozone. The implementation of this program is an integral part of New Jersey's plan to attain and maintain compliance with the health-based National Ambient Air Quality Standards (NAAQS) for ozone and for carbon monoxide (CO). Reducing the emissions of these pollutants, and their precursors, will help the State in its efforts to improve its air quality and protect the health and welfare of its citizens.

Acknowledgments

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[†] VOCs are a subset of the hydrocarbons (HCs) category of pollutants, and HCs are directly measured by the enhanced I/M test analyzers. Similarly, nitric oxide (NO), a subset of the NO_x category of pollutants, is measured by the enhanced I/M test analyzers.

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Acronyms and Abbreviations:

ASM	Acceleration Simulation Mode
CAA	Clean Air Act
CIF	Central Inspection Facility
CO	Carbon monoxide
ERF	Emission Repair Facility
Fed. Reg.	Federal Register
HC	Hydrocarbons
I/M	Inspection and Maintenance
NAAQS	National Ambient Air Quality Standards
NHSDA	National Highway Systems Designation Act
NJDEP	New Jersey Department of Environmental Protection
NJDMV	New Jersey Division of Motor Vehicles
NJDOT	New Jersey Department of Transportation
NO	Nitric Oxide
NO_x	Oxides of Nitrogen
NPRM	Notice of Proposed Rulemaking
OBD	On-Board Diagnostics
OTR	Ozone Transport Region
PI&TG	Parsons Infrastructure and Technology Group
PIF	Private Inspection Facility
ppm	parts per million
RPM	Revolutions per Minute
SIP	State Implementation Plan
USEPA	United States Environmental Protection Agency
VID	Vehicle Inspection Database
VIR	Vehicle Inspection Report
VOC	Volatile Organic Compounds

Executive Summary

This document proposes revisions to the State of New Jersey's Enhanced Inspection and Maintenance (I/M) State Implementation Plan (SIP) to:

1) formally request a deferral of the mandatory implementation date for inclusion of On-Board Diagnostic (OBD) inspections into state I/M programs from January 1, 2002 to January 1, 2003;
2) formally request that the State be allowed to phase-in the mandatory OBD inspection portion of its I/M program, and;
3) submit for inclusion as part of the overall SIP proposed amendments to the Department of Environmental Protection's (NJDEP) rules which establish the necessary test procedures and standards for implementation of an enhanced I/M program for gasoline-fueled motor vehicles in New Jersey.

The State is in the process of upgrading its enhanced I/M program to incorporate OBD inspections. On April 5, 2001, the USEPA promulgated amendments to its OBD requirements, entitled "Amendments to Vehicle Inspection Maintenance Program Requirements Incorporating the Onboard Diagnostic Check Final Rule.[††] These amendments to USEPA's rule allowed for the following: 1) all states were given a one year extension for the mandatory implementation of OBDII testing; that is, the mandatory start date is now January 1, 2002 instead of January 1, 2001; 2) states showing good cause can apply to the USEPA for an extension of the January 2002 start date of up to 12 additional months, establishing an alternative start date of no later than January 1, 2003; and, 3) states can take advantage of a one-time phase-in of the mandatory OBD testing requirements which would defer for one test cycle the repair requirement for OBD-failing vehicles capable of passing a subsequent tailpipe test. In addition, according to the USEPA OBD rulemaking, the time extension for implementation could be combined with the phase-in option, allowing, for states like New Jersey with a two year inspection cycle, an extension to the start of full time mandatory OBD inspections until January 1, 2005.

On October 9, 2001, NJDEP Commissioner Robert C. Shinn, Jr. sent a letter to the USEPA informing them of the New Jersey's plan to request a one year deferral of the January 1, 2002 start date for an additional 12-months and outlining the State's plan to phase in its mandatory OBD inspection program. This proposed SIP revision provides the formal request to extend the start date from January 1, 2002 to January 1, 2003, as well as the documentation to support New Jersey's request as necessary to ensure the successful implementation the OBD portion of its enhanced I/M program. In addition,

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[††] 66 Fed. Reg. 18155 (April 5, 2001).

this proposed SIP revision includes a formal request to the USEPA to allow New Jersey to phase in the integration of OBD inspections into its overall enhanced I/M program. The program design for phasing in OBD inspections in New Jersey is detailed in the NJDEP's proposed amendments to its enhanced I/M rules, attached as Appendix I.

Finally, this proposed SIP revision submits for incorporation as part the enhanced I/M SIP the NJDEP's proposed amendments to its rules governing test procedures and standards for the implementation of its enhanced I/M program. These proposed amendments and new rules make the following major modifications to N.J.A.C. 7:27-15 (Control and Prohibition of Air Pollution from Gasoline-Fueled Motor Vehicles) and N.J.A.C. 7:27B-5 (Air Test Method 5: Testing Procedures for Gasoline-Fueled Motor Vehicles):

- modify the framework, procedures and testing schedule by which 1996 and newer model year vehicles will be subject to OBD inspections;
- extend the end date for the current initial ASM5015 standards for all 1981 and newer LDGVs, LDGT1s and LDGT2s from December 31, 2001 to December 31, 2002.
- replace the final standards for the ASM5015 exhaust emission test for all model year 1994 and newer Tier I light-duty gasoline-fueled trucks 1 and 2 (LDGT1 and LDGT2s), currently scheduled for implementation on January 1, 2002, with new "interim" standards that will go into effect on January 1, 2003;
- replace the final standards for the ASM5015 exhaust emission test for all pre-1996 non-Tier I LDGT1s and LDGT2s, and for all 1981 and newer light-duty gasoline-fueled vehicles (LDGVs) with the current initial ASM 5015 standards for those vehicles, and changes the implementation date from January 1, 2002 to January 1, 2003;
- remove all references to the evaporative pressure and purge tests, and;
- change the test procedure requirements for those gasoline-fueled motor vehicles registered as school buses by the NJDMV, and subject to inspection by the NJDMV's School Bus Inspection Unit.

I. Introduction:

A. Background

In accordance with the requirements of the Clean Air Act (CAA), the State of New Jersey implemented an enhanced inspection and maintenance (I/M) program on December 13, 1999. The implementation of this program is an integral part of New Jersey's plan to attain and maintain compliance with the health-based National Ambient Air Quality Standards (NAAQS) for ozone and for carbon monoxide (CO). According to the State's 1996 Emission Inventory, gasoline-fueled motor vehicles contributed approximately 29 percent of the volatile organic compounds (VOC), 34 percent of the oxides of nitrogen (NO_x) and 45 percent of the summertime carbon monoxide. NO_x and VOC are precursors to the formation of ozone. Currently, the State does not meet the health-based ozone NAAQS. As such, any measure aimed at reducing the emission of these pollutants will help the State in its efforts to improve its air quality, protect the health and welfare of its citizens and attain and maintain the NAAQS for ozone and carbon monoxide.

The enhanced I/M program is designed to detect gasoline-fueled motor vehicles operating with excessive emissions under test conditions that represent more realistic driving conditions than New Jersey's basic I/M program. In addition, the enhanced program is designed to detect excess emissions of oxides of nitrogen (NO_x), a category of pollutants not previously detected as part of the basic I/M program.[2] Over the past two years, New Jersey's enhanced I/M program has effectively identified vehicles operating with emissions in excess of the State's standards. In response, the motorists of New Jersey had these failed vehicles repaired and those repairs resulted in overall reductions of 55 percent for HC, 58 percent for NO_x and 84 percent for carbon monoxide.[3]

New Jersey's enhanced I/M program design is a hybrid network system that consists of both centralized, test-only and decentralized test-and-repair facilities. A private

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[2] VOCs are a subset of the hydrocarbons (HCs) category of pollutants, and HCs are directly measured by the enhanced I/M test analyzers. Similarly, nitric oxide (NO), a subset of the NO_x category of pollutants, is measured by the enhanced I/M test analyzers.

[3] The State of New Jersey Department of Environmental Protection, Enhanced Inspection and Maintenance (I/M) Program for the State of New Jersey, Final National Highway Systems Designation Act (NHSDA) Submittal and Revised Performance Standard Modeling, SIP Revision, August 20, 2001. This SIP submittal analyzed data from July 1, 2000 to December 31, 2000.

contractor, Parsons Infrastructure and Technology Group (PI&TG), operates the centralized portion of the inspection network. The decentralized network is comprised of over 1,400 Private Inspection Facilities (PIFs) that are privately owned and operated, and licensed by the NJDMV to perform vehicle inspections on behalf of the State. This hybrid network design gives motorists a choice as to where to have their vehicles inspected and, if necessary, re-inspected.

B. Purpose

The purpose of this document is to propose the following revisions to the State of New Jersey's enhanced I/M SIP:

1) formally request a deferral of the mandatory implementation date for inclusion of On-Board Diagnostic (OBD) inspections into state I/M programs from January 1, 2002 to January 1, 2003;
2) formally request that the State be allowed to phase-in the mandatory OBD inspection portion of its enhanced I/M program, and;
3) submit for inclusion as part of the SIP proposed revisions to those Department of Environmental Protection's (NJDEP) rules which establish the necessary test procedures and standards for implementation of an enhanced I/M program for gasoline-fueled motor vehicles in New Jersey.

II. History of New Jersey's I/M SIP

A. Basic I/M SIP

In 1974, New Jersey, under commitments made in its basic I/M SIP, implemented its basic I/M program. At that time, the State's basic I/M SIP consisted of an annual inspection program whereby all gasoline-fueled motor vehicles, unless specifically exempt through law or regulation, were subject to an idle exhaust emission test. Although several subsequent revisions were made to the State's basic I/M SIP, the core program remained unchanged. Major changes in the State's basic I/M program over time included: 1) the addition of a visual inspection for the presence of a catalytic converter, 2) the addition of an inlet restrictor test to determine whether a vehicle's fuel inlet was sufficiently narrow as to preclude use of a leaded gasoline nozzle, thereby preventing the use of leaded fuel, and 3) modification of the program network design to allow for private inspection facilities. This third major change expanded the inspection facility network to include non-state operated inspection facilities that could do both inspections and repairs. Although these private facilities were originally only allowed to perform re-inspections, their responsibilities were later augmented to included initial inspection as well.

B. Enhanced I/M SIP

The Clean Air Act requires the implementation of enhanced I/M programs for areas meeting one or more of the following criteria:

1) designated as a serious, severe or extreme ozone non-attainment area with urbanized populations of 200,000 or more[4];

2) designated as a carbon monoxide non-attainment area that exceeds a 12.7 ppm design value with urbanized populations of 200,000 or more[5]; or,

3) part of a Metropolitan Statistical Area with a population of 100,000 or more in the Northeast Ozone Transport Region (OTR)[6].

New Jersey met all three of these criteria for required implementation of an enhanced I/M program. As part of this requirement, Congress established performance specifications that were further elucidated by the USEPA. Specifically, the USEPA's promulgated rules and established guidance, including a performance standard and program administration features, for the implementation of enhanced I/M programs. The USEPA's final rule on Inspection/Maintenance Program Requirements was promulgated on November 5, 1992.[7] Subsequently, on June 29, 1995, New Jersey submitted a SIP to the USEPA that described its enhanced I/M program design. This SIP described an inspection program whereby all 1968 and newer gasoline fueled motor vehicles, unless specifically exempt through law or regulation, would be subject to a steady-state dynamometer-based exhaust emission test known as the ASM5015. In addition, all 1975 and newer vehicles would receive evaporative pressure and purge tests designed to detect any malfunctions with the vehicle's evaporative emission control system. All pre-1968 vehicles would continue to be subject to the idle exhaust emission test. New Jersey's enhanced I/M SIP also accounted for a hybrid (i.e., both centralized, test-only and decentralized, test-and-repair facilities) inspection network, similar to the one established for New Jersey's basic I/M program. This SIP stated that once the enhanced I/M program was fully implemented, all subject motor vehicles would be inspected at least once every two years (i.e., biennially).

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[4] 42 U.S.C.A. §7511a (c)(3).
[5] 42 U.S.C.A. §7512a(a)(6).
[6] 42 U.S.C.A. §7511c(b)(1)(A).
[7] 40 C.F.R. '51, 57 Fed. Reg. 52950 (November 5, 1992).

C. Enhanced I/M SIP Revision - March 27, 1996

On March 27, 1996, New Jersey submitted a revision to its June 29, 1995 enhanced I/M SIP, modifying its enhanced I/M program design to take advantage of the additional flexibility afforded states by Congress in designing their enhanced I/M programs. Specifically, the National Highway System Designation Act of 1995, P.L. 104-59 [S.440], (NHSDA) prohibited the USEPA from automatically discounting decentralized program formats by 50 percent, as had previously been prescribed in the USEPA's final rule on I/M program requirements.[8] Rather, the NHSDA allowed states to claim any reasonable amount of credit for their decentralized programs that they deemed appropriate, so long as 18 months from the approval of their enhanced I/M SIP the State could show six months of full implementation enhanced I/M program data substantiating their credit claim. Consistent therewith, as part of its March 27, 1996 enhanced I/M SIP revision, New Jersey claimed 80 percent credit for the decentralized portion of its enhanced I/M program. Refer to Section E. for more information on New Jersey's analyses to substantiate its 80 percent credit claim.

In addition to taking advantage of the flexibility afforded by the NHSDA, the March 27, 1996 enhanced I/M SIP revision modified the model year coverage of the ASM5015 exhaust emission test and evaporative system pressure and purge tests to the following: all 1981 and newer light-duty vehicles, other than low annual mileage and full-time four-wheel drive vehicles, would be subject to the steady-state dynamometer-based exhaust emission test known as the ASM5015, as well as evaporative system pressure and purge tests. Vehicles 1980 and older would continue to be subject to the basic idle exhaust emission test, as well as a gasoline cap pressure test for those vehicles with sealed gas cap systems.

Finally, as part of this March 27, 1996 revision to the State's enhanced I/M SIP, the test frequency of the State's current inspection process was slightly modified in connection with an enhanced demonstration phase. During this demonstration phase, vehicles that successfully passed a voluntary enhanced exhaust emission test would receive an inspection sticker valid for two years.

On May 14, 1997, the USEPA granted conditional interim approval to New Jersey's enhanced I/M SIP.[9] This conditional interim SIP approval, which became effective on June 13, 1997, addressed both the State's original June 29, 1995 enhanced I/M SIP submittal and its subsequent March 27, 1996 SIP revision. New Jersey subsequently satisfied the conditions of this approval by rectifying the two major deficiencies in its enhanced I/M SIP identified by the USEPA (New Jersey cured the first major enhanced

[8] 40 C.F.R. '51.353, 57 Fed. Reg. 52990 (November 5, 1992).
[9] 40 C.F.R. 52, 62 Fed. Reg. 26401 (May 14, 1997).

I/M SIP deficiency by providing final and complete test equipment specifications, test procedures and emission standards to the USEPA by January 31, 1997[10]; and cured the second major enhanced I/M SIP deficiency by providing enhanced I/M performance standard modeling to the USEPA by February 1, 1998[11]). In addition, on December 14, 1998, New Jersey cured the eight (8) de minimis deficiencies identified by the USEPA[12], even though the satisfaction of those de minimis deficiencies had no effect on the USEPA's interim approval.[13]

D. Enhanced I/M SIP Revision - June 5, 1998

On June 5, 1998, New Jersey submitted a revision to its I/M SIP, clarifying the testing frequency during the transition between the basic I/M program and the full implementation of the enhanced I/M program. Although the previous SIP revisions clearly define the testing frequency of both New Jersey's basic and enhanced I/M programs, they did not definitively specify the testing frequency during the transition period between the two programs.

As part of the June 5, 1995 SIP revision, the State determined that during the transition period, the basic I/M program would continue to operate, but on a biennial, rather than annual, test frequency. This was done to accommodate the decreased availability of centralized inspection lanes while they were being retrofitted for enhanced testing. To make this modification to the basic I/M program's test frequency, this SIP revision quantified the emission reduction losses anticipated from this modification and provided an equivalency demonstration showing the State plan to offset those losses in emission reduction benefit. Specifically, to compensate for the loss in VOC emission reduction benefit from modifying the basic I/M program's test frequency, New Jersey: 1) began administering fuel cap pressure tests as part of its basic I/M program in its centralized inspection facilities, and 2) began fuel cap/evaporative emission control system visual inspections as part of its basic I/M program in its decentralized inspection facilities. The loss in carbon monoxide emission reduction benefit from modifying the basic I/M

[10] These documents were submitted as an attachment to a letter dated January 31, 1997 from Commissioner Robert C. Shinn, Jr., New Jersey Department of Environmental Protection, to Jeanne M. Fox, Regional Administrator, USEPA, Region II.

[11] This modeling and its supporting documentation were submitted as an attachment to a letter dated January 30, 1998 from Commissioner Robert C. Shinn, Jr., New Jersey Department of Environmental Protection to William J. Muszynski, P.E., Deputy Regional Administrator, USEPA, Region II.

[12] The State of New Jersey Department of Environmental Protection, Revision to the State Implementation Plan (SIP) for the Inspection and Maintenance (I/M) Program for the State of New Jersey, December 14, 1998.

[13] 61 Fed. Reg. 56172, (October 31, 1996).

program's test frequency was offset by taking credit for emission reduction benefits gained through vehicle fleet turnover which had not already been claimed by the State in its carbon monoxide SIP.[14] Vehicle fleet turnover results when newer vehicles with more advanced emission controls replacing older, less advanced vehicles within the State vehicle population. The State submitted modeling analyses showing that both of the above strategies more than compensated for the loss in VOC and carbon monoxide emission reduction benefits from modifying the basic I/M program's test frequency. The USEPA approved the State's June 5, 1998 revision to its enhanced I/M SIP on August 26, 1998.[15]

E. Enhanced I/M SIP Revision - August 31, 2001

On December 13, 2000, in compliance with its NHSDA credit claim, New Jersey submitted to the USEPA a qualitative analysis of four month of data showing the effectiveness of the decentralized portion of its enhanced I/M program relative to its centralized test-only network. Subsequently, on May 4, 2001, New Jersey proposed its final report for NHSDA compliance, which evaluated six full months of program implementation data using various data analysis methodologies. On August 31, 2001,[16] the State of New Jersey submitted to the USEPA a revision to its enhanced I/M SIP which included:

1) the State's final submittal for compliance with the National Highway Systems Designation Act (NHSDA); and,
2) a revision to New Jersey's enhanced I/M performance standard modeling.

The first part of this SIP revision included New Jersey's final NHSDA report. This report was designed to support the claim New Jersey made in its March 27, 1996 enhanced I/M SIP revision that its decentralized network (the private inspection facilities, or PIFs) is at least 80 percent as effective as its centralized network (the centralized inspection facilities, or CIFs). The NHSDA report showed that both New Jersey's centralized test-only and decentralized test-and-repair program networks are effectively identifying vehicles with unacceptably high levels of emissions, and that the State-registered

[14] The New Jersey State Implementation Plan (SIP) Revision for the Attainment and Maintenance of the Carbon Monoxide National Ambient Air Quality Standard, November 17, 1994. The State, on July 10, 1997, proposed a revision to this SIP. A hearing on this proposal took place on August 11, 1997 and the comment period closed on August 20, 1997. This SIP revision was submitted to the USEPA on August 7, 1998. To date, the USEPA has taken no action on New Jersey's submittal.

[15] 63 Fed. Reg. 45402 (August 26, 1998).

[16] Although this document was submitted to the USEPA on August 31, 2001, the date on the SIP submittal document is August 20, 2001.

Emission Repair Facilities (ERFs) are significantly reducing vehicle emissions through effective repairs. Specifically, the NHSDA analyses show overall emission reductions from repaired motor vehicles of 55 percent for HC, 58 percent for NO_x and 84 percent for carbon monoxide from the vehicles repaired after failing inspection. These analyzes show relatively uniform emission reductions attributable to both network types of New Jersey's enhanced I/M program, demonstrating that the PIFs are clearly 80 percent as effective as the CIFs. In fact, the analyses show that the State was conservative in this original credit estimation.

The second part of the August 20, 2001 enhanced I/M SIP revision addressed the State's performance standard modeling for its enhanced I/M program. The State originally submitted its performance standard modeling to the USEPA on January 30, 1998, to satisfy a condition of the USEPA's conditional interim approval of New Jersey's enhanced I/M program SIP.[17] At that time, the State had not yet implemented its enhanced I/M program, requiring the NJDEP to make certain assumptions about the program, such as the expected date for the implementation of final standards. Since the State is now implementing its enhanced I/M program, the USEPA requested that the State update its performance standard modeling to more accurately reflect the program as implemented. The revised performance standard modeling demonstrates that for an evaluation year of 2002, the State exceeds the applicable enhanced performance standard.

On September 11, 2001, the USEPA proposed to: 1) approve New Jersey's August 20, 2001 SIP revision; and, 2) give final approval to New Jersey's enhanced I/M program. Currently, the State's enhanced I/M SIP has interim approval from the USEPA.

III. On-Board Diagnostic (OBD) Inspection Integration and Schedule

On September 20, 2000, the USEPA released a Notice of Proposed Rulemaking (NPRM) for amendments to its OBD requirements. These amendments proposed to defer the deadline for requiring mandatory OBD inspections on model year 1996 and newer, OBD-equipped vehicles from January 1, 2001 to January 1, 2002. However, in addition to this blanket deferral of the start date for all implementing states, the USEPA also solicited comment on whether a slightly longer delay was necessary, given the states' possible need to revise rules, software, test procedures and SIPs to address the proposed amendments. In response, the USEPA received numerous and varied comments concerning the mandatory start up date for OBD inspections.

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[17] 40 C.F.R. 52, 62 Fed. Reg. 26401 (May 14, 1997).

New Jersey submitted comments on the USEPA's September 20, 2000 NPRM, suggesting that the USEPA delay mandatory start-up for OBD inspections until January 1, 2005. New Jersey felt this longer extension for start-up was needed to allow states to prepare for OBD inspections on three fronts: 1) software development for both centralized and decentralized I/M program network designs (both of which exist as part of New Jersey's I/M program); 2) training for the emission repair community; and, 3) public communication to prepare and educate the motoring public. In addition, New Jersey saw this additional time as an opportunity for the USEPA to finalize its guidance document on OBD implementation and gather additional information on the in-use effectiveness of the OBD inspections. However, recognizing that some states may want to move forward with OBD inspections in the interim, New Jersey also commented that the USEPA should allow and encourage states without existing I/M programs to begin to utilize OBD inspections prior to the mandatory start-up date, but not at the expense of existing traditional inspection programs.

On April 5, 2001, the USEPA finalized and promulgated the amendments to its OBD requirements, entitled "Amendments to Vehicle Inspection Maintenance Program Requirements Incorporating the Onboard Diagnostic Check Final Rule. [18] As part of this rulemaking, the USEPA attempted to address the various commenter concerns received on its proposed NPRM regarding the mandatory start date for integration of OBD inspections into state I/M programs. Specifically, the USEPA's April 5, 2001 promulgated rule amendments for OBD implementation allow for two flexibility options regarding an OBD inspection start date, in addition to the blanket one year deferral for all states which moves the start date from January 1, 2001 to January 1, 2002. The first of these additional start up options allows states to further defer mandatory OBD inspections for up to 12 months, provided the state could show just cause to the USEPA that up to 12 months beyond the January 1, 2002 date was "the best a state can reasonably do" in terms of integrating OBD inspections into their existing I/M programs. In accordance with the USEPA's promulgated rules, any request to further defer mandatory OBD inspections beyond the January 1, 2003 start date would be subject to approval by the USEPA and any approval or disapproval by the USEPA of these requests would be subject to notice-and-comment rulemaking.

The second of the additional start up options allowed for by the USEPA's April 5, 2001 OBD rulemaking gives states with existing tailpipe programs the opportunity to adopt a phase-in approach to OBD testing to help facilitate the introduction of full mandatory OBD inspections on model year 1996 and newer, OBD-equipped vehicles. This phase-in option can be used for one complete test cycle, which for a biennial program like New Jersey's is two years. States opting to phase-in their OBD testing program as allowed

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[18] 66 Fed. Reg. 18155 (April 5, 2001).

for by the USEPA would use the OBD inspection as a screen to help identify vehicles that are clean and for which no additional exhaust testing is required beyond the OBD test. However, if a vehicles fails the OBD inspection, it would then be given a second-chance tailpipe test to determine if the fault identified by the OBD inspection has reached a point where the vehicle's current emission performance is adversely effected. Only if the vehicle fails this second-chance tailpipe test would it then fail inspection.

In accordance with the USEPA's April 5, 2001 OBD rulemaking, the up to 12 month deferral of the start up of OBD inspections can be combined with the phase-in option, effectively delaying mandatory OBD inspections for up to 3 additional years beyond the January 1, 2002 mandatory start date for states like New Jersey with a biennial inspection cycle. On October 9, 2001, the NJDEP Commissioner Robert C. Shinn, Jr. sent a letter to William J. Muszynski, P.E., Acting Regional Administrator of Region II-USEPA informing the USEPA of the State's intent to utilize both of these start up flexibility options in integrating OBD inspections into its overall enhanced I/M program. As such, the remainder of this section: 1) presents the State's formal request for a 12 month (1 year) deferral of the start-up date for mandatory OBD inspections, and provides New Jersey's justifications for needing such a delay; and 2) presents the State's formal request to be allowed to phase in its OBD inspection program.

A. Formal Request to Defer the Start Up of Mandatory OBD Inspections

The State carefully reviewed all the various tasks needed to integrate an OBD inspection program into its already existing enhanced I/M program, and determined that it cannot successfully complete all of those tasks by January 1, 2002. Specifically, the State considered timing for inspection equipment modifications and integration; data management modifications and integration; SIP revisions and rule amendments; the need for additional training for inspectors, repair technicians, and auditors; changes to the current public outreach and education plan; and evolving technical issues regarding the use of OBD as an inspection process. Each of these items are discussed in more detail below. Although all of these tasks will be completed in parallel, the time involved in successfully completing each of these tasks has resulted in New Jersey's determination that it will need an additional 12 months (1 year) to introduce OBD testing into the State's I/M program. As such, the State requests a deferral to begin its OBD inspection program on January 1, 2003, instead of January 1, 2002.

Inspection Equipment Modifications and Integration:

The most important task to insure a successful integration of OBD testing into New Jersey's I/M program is updating the current emission testing equipment to allow for

OBD inspections and insuring that these updates perform as designed. Unlike those states with either a centralized or decentralized enhanced I/M program network design, New Jersey employs an inspection program design that is hybrid in nature; that is, the program includes both centralized test-only inspection facilities (hereinafter referred to as CIFs) and private test-and-repair inspection facilities (hereinafter referred to as PIFs) that conduct both emission and safety inspections on behalf of the State. Although this hybrid design allows for motorist choice in determining where to have their vehicles inspected and, if necessary, re-inspected, it does make equipment upgrades and programmatic changes more complicated.

There are currently five (5) different analyzer systems in the PIF community, each of which needs specific upgrades to allow for the implementation of OBD inspections. In addition, the CIFs also need to be upgraded to allow for OBD testing. The State is currently in the process of finalizing its specifications for OBD testing. Once finalized, both the CIF and PIF equipment manufacturers will begin working on the modifications to their systems needed to implement OBD inspections. It should be noted that although the equipment manufacturers have responsibilities to the testing facilities in New Jersey, they also have responsibilities in other states which are also trying to integrate OBD inspections into their I/M programs. It is the State's understanding that these companies usually work on a "first come, first serve" basis; that is to say, the number of other states working to upgrade their I/M programs to include OBD inspections within the same timeframe as New Jersey will impact the development time needed for the equipment manufacturers to address New Jersey's new specifications.

All equipment upgrades must meet the State's equipment specifications, and pass stringent acceptance testing protocols, prior to installation in each of the testing facilities. Typically, each submittal goes through multiple rounds of acceptance testing to insure that the system is functioning properly, and returning the correct data to the State's Vehicle Inspection Database (VID). This process involves coordination between the State, its centralized contractor and the various equipment manufacturers, and is time consuming. In addition, installation of the OBD inspection software must be carefully coordinated to insure that the current I/M program is not adversely impacted during roll out of the new software versions.

The State estimates that the entire equipment upgrade will take approximately 10-12 months following the completion of the acceptance testing for the current 3.0 PIF software upgrade. Since the State does not expect to release the final equipment specification until the end of this year (2001), it follows that program start up could not begin prior to January 1, 2003.

<u>Data Management Modifications and Integration</u>:

In addition to the various analyzer upgrades needed to insure that the equipment can properly perform OBD inspections, the data management software will need to be upgraded to allow for the collection of the OBD inspection data. This requires determining where to store the various pieces of information collected by the OBD inspection process, and how to integrate that data into the already existing data that is collected for the current program. Communication protocols between the inspection analyzers and the VID also need to be updated and tested. Also, the State's data reporting application software will need to be modified to provide the necessary statistics on OBD inspections for inclusion in the State's annual reports on the enhanced I/M program status to the USEPA. The State has determined that all these data management-related tasks will take approximately 6-8 months after the release of the final OBD equipment specifications, which, as noted previously, are not expected until the end of this year (2001).

SIP Revisions and Rule Amendments:

In compliance with the USEPA's previous requirements regarding the integration of OBD inspections into state I/M programs, the NJDEP's rules governing the implementation of the enhanced I/M program currently require integration of an OBD inspection component into the overall enhanced I/M program by January 1, 2000. However, the test procedures and standards for this component of the inspection process are reserved, since, at the time the NJDEP's rules were adopted, the USEPA had not yet released its rules or final guidance on the implementation of OBD testing. As discussed previously, on April 5, 2001, the USEPA promulgated new requirements for the integration of OBD inspections into state inspection programs. Also, in June of 2001, the USEPA released its final guidance on performing OBD inspections. As such, the NJDEP is now moving forward with a proposal to amend its enhanced I/M rules to reflect the currently-anticipated start date of the OBD inspection component, as well as to incorporate the testing procedures and requirements for OBD testing. The proposed amendments and new rules to N.J.A.C. 7:27-15 and N.J.A.C. 7:27B-5 are included as part of this proposed SIP revision as Appendix I. After a public hearing and comment period, the NJDEP will review and address any comments pertaining to either the rule proposal or the proposed SIP revision and formally submit this SIP revision to the USEPA, at which point the USEPA will need to review and, if appropriate, approve this SIP revision.

Since New Jersey's enhanced I/M program is jointly administered by both the NJDEP and the NJDMV, it is possible that the NJDMV will need to amend its rules for the implementation of the enhanced I/M program to allow for the integration of OBD inspections as well. Currently, the NJDMV is reviewing its regulations to determine what impact the integration of OBD inspections will have on their regulations, and if

amendments are needed. If it is determined that the NJDMV also needs modifications to its rules to allow for OBD inspections in New Jersey, the NJDMV will propose rule amendments and the NJDEP will propose a SIP revision to address these proposed amendments.

Additional Training:

As with the implementation of any new or revised I/M program component, the success or failure of the overall program hinges on the ability of the vehicle repair community to properly repair vehicles that fail the inspection and to insure that those repaired vehicles are operating in compliance with their appropriate in-use emission standards. This is especially true for OBD inspections, which constitute a fundamental change in emissions testing protocol. The State is in the process of updating its Emission Technician Education Program (ETEP) to include training and re-certification requirements for repairing to OBD standards. As with the original ETEP requirements, the State expects to endorse a standardized model training program including OBD as the specification for what each training program needs to include. ETEP providers will then submit their ETEP plans to the NJDEP for review and approval for use in New Jersey. Emission technicians may also choose the testing option of ETEP by successfully passing the ASE L1 test, which continues to incorporate OBD repair questions. Once the updated version of ETEP is finalized, the State will submit it to the USEPA as a revision to its enhanced I/M SIP. The NJDEP anticipates the finalization of this new OBD update to the ETEP module by no later than March 2002, so that the ETEP providers can have their plans approved by the State in time for inclusion into the Fall 2002 training semester. It should be noted that although the State has not yet completed its OBD update to the ETEP program, many technicians in the State are already familiar with OBD inspections and repairs, since the current OBDII technology has existed on vehicles since model year 1996, and less advanced OBD systems existed prior to model year 1996. In addition, many New Jersey technicians, in keeping their ASE status updated, have already successfully passed the L1 examination which contains questions on OBD repairs.

Besides the training of repair technicians, the State needs to be concerned with the training and testing of inspectors, both in the CIFs and the PIFs. The NJDMV is responsible for the training, testing and licensing of inspectors. Because the new inspection requirements for OBD will be different from the current inspection process, the NJDMV will need to have all inspectors re-trained and re-certified to insure that they understand and can properly perform the new OBD testing procedures. There are currently 4,500 inspectors licensed by the NJDMV to perform both emission and safety inspections in New Jersey. The NJDMV estimates that it will take approximately nine (9) months to re-train and re-certify all of these inspectors for OBD inspections.

Finally, all state auditors will need to be re-trained to be able to properly audit the OBD testing equipment. The NJDMV personnel audit the PIFs and the NJDEP personnel audit the CIFs. The NJDMV has 100 auditors and the NJDEP has six (6) auditors, all of whom will need some additional training prior to the implementation of the OBD component to the enhanced I/M program. It is estimated that this training will take approximately two (2) months.

Public Outreach and Education Plan:

The key to the success of any program which impacts the public is a good communications plan. Although the motorists in New Jersey are already familiar with vehicle inspection and maintenance programs, and have had to meet some I/M requirement for over 30 years, the OBD inspection program is unlike any of the testing programs the public has experienced in the past, or currently. The OBD test protocol is quite different than the traditional tailpipe emissions test, with the inspector having to enter the vehicle and, in some cases, remove original vehicle equipment, such as dashboard covers, to gain access to the OBD data link connector (DLC). Obviously, this new protocol needs to be properly explained to the public. The Vehicle Inspection Report (VIR) the motorist receives following an OBD inspection will contain more and different information (e.g., state of monitor readiness) then it did previously under a tailpipe only inspection process. This new information will require additional explanation through a comprehensive public outreach and education campaign prior to OBD program start-up.

For these reasons, the public must be properly informed before the start of OBD inspections regarding the components of an OBD inspection and how the vehicle's OBD system works to insure that the vehicle's emission control systems are functioning properly. The State has determined that a public relations campaign specific to the OBD portion of the inspection program must begin approximately six (6) months prior to the start up of inspections.

Consideration of Evolving Technical Issues:

The evolving nature of OBD as an I/M test procedure is another reason supporting a delay and phasing-in of OBD inspections in New Jersey. Several technical issues regarding the use of OBD as an I/M test have just recently surfaced as a result of pilot programs and early implementation of OBD in other states. For example, information from other states has clarified the issues surrounding OBD "readiness." Although the USEPA recognized that "readiness" could be an issue for states requiring OBD

inspection, they believed it was a minor issue that could be worked around. However, Oregon's OBD-I/M program recently found that the vast majority of vehicles are returning for re-inspection following an OBD failure for catalyst DTC with an unset readiness monitor for the catalyst. In reaction to this, the USEPA subsequently amended their technical guidance in June of 2001 to recommend that states modify their re-inspection procedures for these particular vehicles. This modification to the USEPA's technical guidance, and any similar modifications which might result from future reactions to OBD technical issues, could involve amendments to the State's rules governing the enhanced I/M program. In addition, these modifications could require additional changes to their inspection test software. All of these state-level changes would take time to implement.

Obviously, New Jersey cannot indefinitely delay finalizing its software/hardware specifications. It appears prudent, however, to delay finalizing the specifications to deal effectively with as many of these evolving technical issues as possible and to build flexibility into the specifications to deal with potential problems in the future.

B. Formal Request to Phase-In Approach for OBD Inspections

New Jersey also plans to take advantage of the additional flexibility afforded to states by the USEPA in its April 5, 2001 rulemaking by deferring the repair requirement for OBD-failing vehicles capable of passing a subsequent tailpipe test. As was evident from New Jersey's comments on the USEPA's September 20, 2000 NPRM for OBD implementation, the State has several concerns regarding the use of OBD inspections as an equivalent replacement for traditional tailpipe testing. Although New Jersey agrees with the USEPA that the use of OBD as part of a vehicle inspection program for newer motor vehicles seems promising, the State believes that the diagnostic monitoring of vehicle technology needs to be more thoroughly evaluated to insure that switching to an OBD-based inspection program will not jeopardize the real emission reductions currently being achieving through the use of traditional tailpipe testing. These concerns have also been raised in the recent findings on I/M programs by the National Research Council (NRC)[19], and warrant further investigation by the USEPA. Keeping all this in mind, New Jersey plans a careful approach to the implementation of its OBD inspection program, which includes phasing in mandatory OBD inspections.

The NJDEP's proposed amendments to its enhanced I/M rules at N.J.A.C. 7:27-15 and N.J.A.C. 7:27B-5 incorporates OBD inspections into the State's enhanced I/M program.

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[19] "Evaluating Vehicle Emissions Inspection and Maintenance Programs", National Research Council, July 2001.

The basis and background document which accompanies these proposed amendments details how these OBD inspections will be administered. The NJDEP's proposed rulemaking, including the basis and background document, is attached as Appendix I to this proposed SIP revision. As required by USEPA guidance,[20] the State, as part of this proposed SIP revision, is formally requesting permission from the USEPA to be allowed to phase-in to its mandatory OBD program as detailed by this proposed rulemaking.

The State will conduct additional random confirmatory sampling using the applicable tailpipe tests for vehicles both passing and failing the initial OBD inspection. The data from these confirmatory tests will be used by the State to evaluate how OBD is functioning as an inspection mechanism and to substantiate the in-use effectiveness of OBD inspections. This type of data is needed to support a transition to an fully mandated OBD-based inspection program for 1996 and newer vehicles. In addition, all re-inspections on the 1996 and newer population will include a confirmatory OBD inspection, again for data collection purposes only. All of these confirmatory test tests will have no impact on the vehicle's overall pass/fail determination. The confirmatory test performed during initial inspections will be done on at the CIFs; however, the re-inspection confirmatory testing will be on all applicable vehicle re-inspections, in both the CIFs and the PIFs.

IV. Proposed NJDEP Amendments and New Rules

This SIP revision proposes to incorporate, as part the enhanced I/M SIP, the NJDEP's proposed amendments to its rules governing test procedures and standards for the implementation of its enhanced I/M program. These proposed amendments make the following major modifications to N.J.A.C. 7:27-15 (Control and Prohibition of Air Pollution from Gasoline-Fueled Motor Vehicles) and N.J.A.C. 7:27B-5 (Air Test Method 5: Testing Procedures for Gasoline-Fueled Motor Vehicles):

- modify the framework, procedures and testing schedule by which 1996 and newer model year vehicles will be subject to OBD inspections;
- extend the end date for the current initial ASM5015 standards for all 1981 and newer LDGVs, LDGT1s and LDGT2s from December 31, 2001 to December 31, 2002.
- replace the final standards for the ASM5015 exhaust emission test for all model year 1994 and newer Tier I light-duty gasoline-fueled trucks 1 and 2 (LDGT1 and LDGT2s), currently scheduled for implementation on January 1, 2002, with new "interim" standards that will go into effect on January 1, 2003;

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[20] "OBD-I/M SIP Policy Guidance," August 21, 2001, page 2.

- replace the final standards for the ASM5015 exhaust emission test for all pre-1996 non-Tier I LDGT1s and LDGT2s, and for all 1981 and newer light-duty gasoline-fueled vehicles (LDGVs) with the current initial ASM 5015 standards for those vehicles, and changes the implementation date from January 1, 2002 to January 1, 2003;
- remove all references to the evaporative pressure and purge tests, and;
- change the test procedure requirements for those gasoline-fueled motor vehicles registered as school buses by the NJDMV, and subject to inspection by the NJDMV's School Bus Inspection Unit.

For specific information regarding the proposed rulemaking, and the social, economic and environmental impacts attributable to these proposed amendments, please refer to the basis and background portion of the proposed rulemaking, attached as Appendix I to this proposed SIP revision.

The State's proposed decisions not to implement either the evaporative pressure or purge tests (the State will continue implementation of the evaporative gas cap test) or the final standards for the ASM5015 exhaust emission test, but instead to include phased-in OBD inspections and new interim standards for certain ASM5015 exhaust emission testable vehicles, requires re-modeling of the projected emission reductions for the enhanced I/M program design in future years. As such, the NJDEP needs to re-model the program without the benefits of these tests and standards, but including the benefits from phased-in OBD testing and the new interim ASM standards, to more accurately estimate the actual benefits attributable to the implementation of the revised enhanced I/M program design should these proposed amendments be adopted. However, the State has chosen to defer an estimation of the emission reduction impact of the proposed rule amendments at this time. Instead, the State has determined to wait for the formal release of the latest version of the USEPA's mobile source emission model, MOBILE6, which is expected before the end of this year.

In the past, the NJDEP has modeled the emission reduction benefits from its enhanced I/M program using MOBILE5a-H, an emission model developed by the USEPA for use by states in determining the hydrocarbon, carbon monoxide, and NO_x emission factors for gasoline-fueled and diesel-powered highway motor vehicles. In completing these estimations, the NJDEP modeled the benefits from all adopted components of New Jersey's enhanced I/M program, including an evaporative pressure and purge test and final standard implementation for the ASM5015 exhaust emission test. In the meantime, however, the USEPA has been working to update this mobile model and is currently in the process of finalizing the next version. A draft version of MOBILE6 and its users' guide are already available to states to familiarize them with this new tool.

The new MOBILE6 model will incorporate the benefits expected from OBD inspections. MOBILE6 will also address new research regarding vehicle deterioration rates. Specifically, the USEPA determined that newer (post-1990 model year) vehicles deteriorate at a slower rate than initially predicted by earlier versions of the MOBILE model. As such, these vehicles pollute less than initially expected. With the assumption of increased durability of the newer motor vehicles' emission controls, the projected benefits from New Jersey's I/M program are expected to be less than originally predicted. By incorporating this new information regarding the in-use emissions-related performance of motor vehicles into the development of the MOBILE6 model, the USEPA believes MOBILE6 gives a more realistic picture of the benefits that can be expected from in-use enhanced I/M programs.

While this new information demonstrates a positive environmental trend by showing that newer motor vehicles are more durable than initially anticipated, on-road vehicles continue to be a significant source of air pollution in New Jersey. Although it is true that the newer vehicles are not deteriorating as quickly as previously anticipated, no vehicle can remain "clean" indefinitely without periodic maintenance and/or repair. In addition, the fact that the fraction of older vehicles in the fleet has been rising steadily, possibly due to increased vehicle durability and the cost of newer vehicles, emphasizes the need for a continuous verification process to insure that vehicle emission control systems are working properly and actually achieving the durability levels determined by this new research. The continued use of an I/M program, particularly one that uses some form of tailpipe testing, would work well as part of this verification process. As such, the USEPA, as well as the NRC in its recently-released report on I/M program effectiveness, still supports I/M programs as one of the most significant control strategies states use in the their pollution reduction plans.

With the impending release of the MOBILE6 model, which the USEPA expects to release for official use in January of 2002, the State of New Jersey determined that completing a re-modeling exercise with the previous version of the model would not be advisable. Since MOBILE6 will incorporate, among other things, updated emission factors regarding vehicle deterioration rates and the effectiveness of I/M programs including OBD, the State felt that performing calculations with the MOBILE5a-H model would provide little useful information beyond the State's current calculations. As such, the State has determined to wait and utilize MOBILE6 for this exercise once it was released. MOBILE6 will allow the State to develop a more realistic estimation of the benefits associated with the new program design as proposed in the NJDEP's current rulemaking.

New Jersey has already committed to incorporate the effects of the MOBILE6 model on emission estimates into its transportation conformity budgets within one year of the new

model's release. The State now further commits to evaluate the impact these proposed rule changes will have on the overall emission reduction potential of the I/M program and their impact to the State's Rate of Progress (ROP) Plans and One-Hour Ozone Attainment Demonstration. If after this evaluation, the State can no longer meet the goals outlined in these plans, the State commits to addressing any shortfall.