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roads, bridges, or tunnels may be excluded without regard to population.

(2) Outside of ozone transport regions, programs shall nominally cover at least the entire urbanized area, based on the 1990 census. Exclusion of some urban population is allowed as long as an equal number of non-urban residents of the MSA containing the subject urbanized area are included to compensate for the exclusion.

(3) Emission reduction benefits from expanding coverage beyond the minimum required urban area boundaries can be applied toward the reasonable further progress requirements or can be used for offsets, provided the covered vehicles are operated in the non-attainment area, but not toward the enhanced I/M performance standard requirement.

(4) In a multi-state urbanized area with a population of 200,000 or more that is required under paragraph (a) of this section to implement I/M, any State with a portion of the area having a 1990 Census-defined population of 50,000 or more shall implement an I/M program. The other coverage requirements in paragraph (b) of this section shall apply in multi-state areas as well.

(5) Notwithstanding the limitation in paragraph (b)(3) of this section, in an ozone transport region, States which opt for a program which meets the performance standard described in § 51.351(h) and claim in their SIP less emission reduction credit than the basic performance standard for one or more pollutants, may apply a geographic bubble covering areas in the State not otherwise subject to an I/M requirement to achieve emission reductions from other measures equal to or greater than what would have been achieved if the low enhanced performance standard were met in the subject I/M areas. Emissions reductions from non-I/M measures shall not be counted towards the OTR low enhanced performance standard.

(c) *Requirements after attainment.* All I/M programs shall provide that the program will remain effective, even if the area is redesignated to attainment status, until the State submits and EPA approves a maintenance plan, under section 175A, which convincingly demonstrates that the area can main-

tain the relevant standard for the maintenance period without benefit of the emission reductions attributable to the I/M program. The State shall commit to fully implement and enforce the program throughout such period, and, at a minimum, for the purposes of SIP approval, legislation authorizing the program shall not sunset prior to the attainment deadline.

(d) *SIP requirements.* The SIP shall describe the applicable areas in detail and, consistent with § 51.372 of this subpart, shall include the legal authority or rules necessary to establish program boundaries.

[57 FR 52987, Nov. 5, 1992, as amended at 60 FR 48034, Sept. 18, 1995; 61 FR 39036, July 25, 1996]

§ 51.351 Enhanced I/M performance standard.

(a) Enhanced I/M programs shall be designed and implemented to meet or exceed a minimum performance standard, which is expressed as emission levels in area-wide average grams per mile (gpm), achieved from highway mobile sources as a result of the program. The emission levels achieved by the State's program design shall be calculated using the most current version, at the time of submittal, of the EPA mobile source emission factor model or an alternative model approved by the Administrator, and shall meet the minimum performance standard both in operation and for SIP approval. Areas shall meet the performance standard for the pollutants which cause them to be subject to enhanced I/M requirements. In the case of ozone nonattainment areas subject to enhanced I/M and subject areas in the Ozone Transport Region, the performance standard must be met for both oxides of nitrogen (NO_x) and volatile organic compounds (VOCs), except as provided in paragraph (d) of this section.

(1) *Network type.* Centralized testing.

(2) *Start date.* For areas with existing I/M programs, 1983. For areas newly subject, 1995.

(3) *Test frequency.* Annual testing.

(4) *Model year coverage.* Testing of 1968 and later vehicles.

(5) *Vehicle type coverage.* Light duty vehicles, and light duty trucks, rated

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up to 8,500 pounds Gross Vehicle Weight Rating (GVWR).

(6) *Exhaust emission test type.* Transient mass-emission testing on 1986 and later model year vehicles using the IM240 driving cycle, two-speed testing (as described in appendix B of this subpart S) of 1981–1985 vehicles, and idle testing (as described in appendix B of this subpart S) of pre-1981 vehicles is assumed.

(7) *Emission standards.* (i) Emission standards for 1986 through 1993 model year light duty vehicles, and 1994 and 1995 light-duty vehicles not meeting Tier 1 emission standards, of 0.80 gpm hydrocarbons (HC), 20 gpm CO, and 2.0 gpm NO_x;

(ii) Emission standards for 1986 through 1993 light duty trucks less than 6000 pounds gross vehicle weight rating (GVWR), and 1994 and 1995 trucks not meeting Tier 1 emission standards, of 1.2 gpm HC, 20 gpm CO, and 3.5 gpm NO_x;

(iii) Emission standards for 1986 through 1993 light duty trucks greater than 6000 pounds GVWR, and 1994 and 1995 trucks not meeting Tier 1 emission standards, of 1.2 gpm HC, 20 gpm CO, and 3.5 gpm NO_x;

(iv) Emission standards for 1994 and later light duty vehicles meeting Tier 1 emission standards of 0.70 gpm HC, 15 gpm CO, and 1.4 gpm NO_x;

(v) Emission standards for 1994 and later light duty trucks under 6000 pounds GVWR and meeting Tier 1 emission standards of 0.70 gpm HC, 15 gpm CO and 2.0 gpm NO_x;

(vi) Emission standards for 1994 and later light duty trucks greater than 6000 pounds GVWR and meeting Tier 1 emission standards of 0.80 gpm HC, 15 gpm CO and 2.0 gpm NO_x;

(vii) Emission standards for 1981–1985 model year vehicles of 1.2% CO, and 220 ppm HC for the idle, two-speed tests and loaded steady-state tests (as described in appendix B of this subpart S); and

(viii) Maximum exhaust dilution measured as no less than 6% CO plus carbon dioxide (CO₂) on vehicles subject to a steady-state test (as described in appendix B of this subpart S).

(8) *Emission control device inspections.* Visual inspection of the catalyst and

fuel inlet restrictor on all 1984 and later model year vehicles.

(9) *Evaporative system function checks.* Evaporative system integrity (pressure) test on 1983 and later model year vehicles and an evaporative system transient purge test on 1986 and later model year vehicles.

(10) *Stringency.* A 20% emission test failure rate among pre-1981 model year vehicles.

(11) *Waiver rate.* A 3% waiver rate, as a percentage of failed vehicles.

(12) *Compliance rate.* A 96% compliance rate.

(13) *Evaluation date.* Enhanced I/M programs shall be shown to obtain the same or lower emission levels as the model program by 2000 for ozone non-attainment areas and 2001 for CO non-attainment areas, and for severe and extreme ozone nonattainment areas, on each applicable milestone and attainment deadline, thereafter. Milestones for NO_x shall be the same as for ozone.

(b) *On-road testing.* The performance standard shall include on-road testing of at least 0.5% of the subject vehicle population, or 20,000 vehicles whichever is less, as a supplement to the periodic inspection required in paragraphs (f) and (g) of this section. Specific requirements are listed in § 51.371 of this subpart.

(c) *On-board diagnostics (OBD).* The performance standard shall include inspection of all 1996 and later light-duty vehicles and light-duty trucks equipped with certified on-board diagnostic systems, and repair of malfunctions or system deterioration identified by or affecting OBD systems as specified in § 51.357.

(d) *Modeling requirements.* Equivalency of the emission levels which will be achieved by the I/M program design in the SIP to those of the model program described in this section shall be demonstrated using the most current version of EPA's mobile source emission model, or an alternative approved by the Administrator, using EPA guidance to aid in the estimation of input parameters. States may adopt alternative approaches that meet this performance standard. States may do so through program design changes that affect normal I/M input parameters to the mobile source emission factor

model, or through program changes (such as the accelerated retirement of high emitting vehicles) that reduce in-use mobile source emissions. If the Administrator finds, under section 182(b)(1)(A)(i) of the Act pertaining to reasonable further progress demonstrations or section 182(f)(1) of the Act pertaining to provisions for major stationary sources, that NO_x emission reductions are not beneficial in a given ozone nonattainment area, then NO_x emission reductions are not required of the enhanced I/M program, but the program shall be designed to offset NO_x increases resulting from the repair of HC and CO failures.

(e) [Reserved]

(f) *High Enhanced Performance Standard.* Except as provided in paragraph (g) of this section, the model program elements for the enhanced I/M performance standard shall be as follows:

(1) *Network type.* Centralized testing.

(2) *Start date.* For areas with existing I/M programs, 1983. For areas newly subject, 1995.

(3) *Test frequency.* Annual testing.

(4) *Model year coverage.* Testing of 1968 and later vehicles.

(5) *Vehicle type coverage.* Light duty vehicles, and light duty trucks, rated up to 8,500 pounds Gross Vehicle Weight Rating (GVWR).

(6) *Exhaust emission test type.* Transient mass-emission testing on 1986 and later model year vehicles using the IM240 driving cycle, two-speed testing (as described in appendix B of this subpart S) of 1981-1985 vehicles, and idle testing (as described in appendix B of this subpart S) of pre-1981 vehicles is assumed.

(7) *Emission standards.* (i) Emission standards for 1986 through 1993 model year light duty vehicles, and 1994 and 1995 light-duty vehicles not meeting Tier 1 emission standards, of 0.80 gpm hydrocarbons (HC), 20 gpm CO, and 2.0 gpm NO_x;

(ii) Emission standards for 1986 through 1993 light duty trucks less than 6000 pounds gross vehicle weight rating (GVWR), and 1994 and 1995 trucks not meeting Tier 1 emission standards, of 1.2 gpm HC, 20 gpm CO, and 3.5 gpm NO_x;

(iii) Emission standards for 1986 through 1993 light duty trucks greater

than 6000 pounds GVWR, and 1994 and 1995 trucks not meeting the Tier 1 emission standards, of 1.2 gpm HC, 20 gpm CO, and 3.5 gpm NO_x;

(iv) Emission standards for 1994 and later light duty vehicles meeting Tier 1 emission standards of 0.70 gpm HC, 15 gpm CO, and 1.4 gpm NO_x;

(v) Emission standards for 1994 and later light duty trucks under 6000 pounds GVWR and meeting Tier 1 emission standards of 0.70 gpm HC, 15 gpm CO, and 2.0 gpm NO_x;

(vi) Emission standards for 1994 and later light duty trucks greater than 6000 pounds GVWR and meeting Tier 1 emission standards of 0.80 gpm HC, 15 gpm CO and 2.5 gpm NO_x;

(vii) Emission standards for 1981-1985 model year vehicles of 1.2% CO, and 220 gpm HC for the idle, two-speed tests and loaded steady-state tests (as described in appendix B of this subpart S); and

(viii) Maximum exhaust dilution measured as no less than 6% CO plus carbon dioxide (CO₂) on vehicles subject to a steady-state test (as described in appendix B of this subpart S); and

(viii) Maximum exhaust dilution measured as no less than 6% CO plus carbon dioxide (CO₂) on vehicles subject to a steady-state test (as described in appendix B of this subpart S).

(8) *Emission control device inspections.*

(i) Visual inspection of the catalyst and fuel inlet restrictor on all 1984 and later model year vehicles.

(ii) Visual inspection of the positive crankcase ventilation valve on 1968 through 1971 model years, inclusive, and of the exhaust gas recirculation valve on 1972 through 1983 model year vehicles, inclusive.

(9) *Evaporative system function checks.* Evaporative system integrity (pressure) test on 1983 and later model year vehicles and an evaporative system transient purge test on 1986 and later model year vehicles.

(10) *Stringency.* A 20% emission test failure rate among pre-1981 model year vehicles.

(11) *Waiver rate.* A 3% waiver rate, as a percentage of failed vehicles.

(12) *Compliance rate.* A 96% compliance rate.

(13) *Evaluation date.* Enhanced I/M program areas shall be shown to obtain

the same or lower emission levels as the model program described in this paragraph by 2000 for ozone nonattainment areas and 2001 for CO nonattainment areas, and for severe and extreme ozone nonattainment areas, on each applicable milestone and attainment deadline, thereafter. Milestones for NO_x shall be the same as for ozone.

(g) *Alternate Low Enhanced I/M Performance Standard.* An enhanced I/M area which is either not subject to or has an approved State Implementation Plan pursuant to the requirements of the Clean Air Act Amendments of 1990 for Reasonable Further Progress in 1996, and does not have a disapproved plan for Reasonable Further Progress for the period after 1996 or a disapproved plan for attainment of the air quality standards for ozone or CO, may select the alternate low enhanced I/M performance standard described below in lieu of the standard described in paragraph (f) of this section. The model program elements for this alternate low enhanced I/M performance standard are:

- (1) *Network type.* Centralized testing.
- (2) *Start date.* For areas with existing I/M programs, 1983. For areas newly subject, 1995.
- (3) *Test frequency.* Annual testing.
- (4) *Model year coverage.* Testing of 1968 and newer vehicles.
- (5) *Vehicle type coverage.* Light duty vehicles, and light duty trucks, rated up to 8,500 pounds GVWR.
- (6) *Exhaust emission test type.* Idle testing of all covered vehicles (as described in appendix B of subpart S).
- (7) *Emission standards.* Those specified in 40 CFR part 85, subpart W.
- (8) *Emission control device inspections.* Visual inspection of the positive crankcase ventilation valve on all 1968 through 1971 model year vehicles, inclusive, and of the exhaust gas recirculation valve on all 1972 and newer model year vehicles.
- (9) *Evaporative system function checks.* None.
- (10) *Stringency.* A 20% emission test failure rate among pre-1981 model year vehicles.
- (11) *Waiver rate.* A 3% waiver rate, as a percentage of failed vehicles.
- (12) *Compliance rate.* A 96% compliance rate.

(13) *Evaluation date.* Enhanced I/M program areas subject to the provisions of this paragraph shall be shown to obtain the same or lower emission levels as the model program described in this paragraph by 2000 for ozone nonattainment areas and 2001 for CO nonattainment areas, and for severe and extreme ozone nonattainment areas, on each applicable milestone and attainment deadline, thereafter. Milestones for NO_x shall be the same as for ozone.

(h) *Ozone Transport Region Low-Enhanced Performance Standard.* An attainment area, marginal ozone area, or moderate ozone area with a 1980 Census population of less than 200,000 in the urbanized area, in an ozone transport region, that is required to implement enhanced I/M under section 184(b)(1)(A) of the Clean Air Act, but was not previously required to or did not in fact implement basic I/M under the Clean Air Act as enacted prior to 1990 and is not subject to the requirements for basic I/M programs in this subpart, may select the performance standard described below in lieu of the standard described in paragraph (f) or (g) of this section as long as the difference in emission reductions between the program described in paragraph (g) and this paragraph are made up with other measures, as provided in § 51.350(b)(5). Offsetting measures shall not include those otherwise required by the Clean Air Act in the areas from which credit is bubbled. The program elements for this alternate OTR enhanced I/M performance standard are:

- (1) *Network type.* Centralized testing.
- (2) *Start date.* January 1, 1999.
- (3) *Test frequency.* Annual testing.
- (4) *Model year coverage.* Testing of 1968 and newer vehicles.
- (5) *Vehicle type coverage.* Light duty vehicles, and light duty trucks, rated up to 8,500 pounds GVWR.
- (6) *Exhaust emission test type.* Remote sensing measurements on 1968-1995 vehicles; on-board diagnostic system checks on 1996 and newer vehicles.
- (7) *Emission standards.* For remote sensing measurements, a carbon monoxide standard of 7.5% (with at least two separate readings above this level to establish a failure).

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(8) *Emission control device inspections.* Visual inspection of the catalytic converter on 1975 and newer vehicles and visual inspection of the positive crankcase ventilation valve on 1968-1974 vehicles.

(9) *Waiver rate.* A 3% waiver rate, as a percentage of failed vehicles.

(10) *Compliance rate.* A 96% compliance rate.

(11) *Evaluation dates.* Enhanced I/M program areas subject to the provisions of this paragraph shall be shown to obtain the same or lower VOC and NO_x emission levels as the model program described in this paragraph by January 1, 2000, 2003, 2006, and 2007. Equality of substituted emission reductions to the benefits of the low enhanced performance standard must be demonstrated for the same evaluation dates.

[57 FR 52987, Nov. 5, 1992, as amended at 58 FR 59367, Nov. 9, 1993; 59 FR 32343, June 23, 1994; 60 FR 48035, Sept. 18, 1995; 61 FR 39036, July 25, 1996; 61 FR 40945, Aug. 6, 1996; 63 FR 24433, May 4, 1998]

§ 51.352 **Basic I/M performance standard.**

(a) Basic I/M programs shall be designed and implemented to meet or exceed a minimum performance standard, which is expressed as emission levels achieved from highway mobile sources as a result of the program. The performance standard shall be established using the following model I/M program inputs and local characteristics, such as vehicle mix and local fuel controls. Similarly, the emission reduction benefits of the State's program design shall be estimated using the most current version of the EPA mobile source emission model, and shall meet the minimum performance standard both in operation and for SIP approval.

(1) *Network type.* Centralized testing.

(2) *Start date.* For areas with existing I/M programs, 1983. For areas newly subject, 1994.

(3) *Test frequency.* Annual testing.

(4) *Model year coverage.* Testing of 1968 and later model year vehicles.

(5) *Vehicle type coverage.* Light duty vehicles.

(6) *Exhaust emission test type.* Idle test.

(7) *Emission standards.* No weaker than specified in 40 CFR part 85, subpart W.

(8) *Emission control device inspections.* None.

(9) *Stringency.* A 20% emission test failure rate among pre-1981 model year vehicles.

(10) *Waiver rate.* A 0% waiver rate.

(11) *Compliance rate.* A 100% compliance rate.

(12) *Evaluation date.* Basic I/M programs shall be shown to obtain the same or lower emission levels as the model inputs by 1997 for ozone nonattainment areas and 1996 for CO nonattainment areas; and, for serious or worse ozone nonattainment areas, on each applicable milestone and attainment deadline, thereafter.

(b) *Oxides of nitrogen.* Basic I/M testing in ozone nonattainment areas shall be designed such that no increase in NO_x emissions occurs as a result of the program. If the Administrator finds, under section 182(b)(1)(A)(i) of the Act pertaining to reasonable further progress demonstrations or section 182(f)(1) of the Act pertaining to provisions for major stationary sources, that NO_x emission reductions are not beneficial in a given ozone nonattainment area, then the basic I/M NO_x requirement may be omitted. States shall implement any required NO_x controls within 12 months of implementation of the program deadlines required in § 51.373 of this subpart, except that newly implemented I/M programs shall include NO_x controls from the start.

(c) *On-board diagnostics (OBD).* The performance standard shall include inspection of all 1996 and later light-duty vehicles and light-duty trucks equipped with certified on-board diagnostic systems, and repair of malfunctions or system deterioration identified by or affecting OBD systems as specified in § 51.357.

(d) *Modeling requirements.* Equivalency of emission levels which will be achieved by the I/M program design in the SIP to those of the model program described in this section shall be demonstrated using the most current version of EPA's mobile source emission model and EPA guidance on the estimation of input parameters. Areas