

not exceed the applicable cold temperature CO standard of 10.0 grams per mile for an intermediate useful life of 50,000 miles, as measured and calculated under the provisions set forth in subpart C of this part. This standard applies under both low and high altitude conditions. At the manufacturer's option, the manufacturer may combine the sales of gasoline-fueled light-duty vehicles and gasoline-fueled light-duty trucks in determining compliance with the required 1994 and 1995 model year phase-in percentages as included in table A94-16.

(2)(i) Sales percentages for the purposes of determining compliance with paragraph (k)(1) of this section shall be based on total actual and, at the manufacturer's option, combined U.S. sales of light-duty vehicles, light light-duty trucks, and heavy light-duty trucks of the applicable model year by a manufacturer to a dealer, distributor, fleet operator, broker, or any other entity which comprises the point of first sale.

(ii) The manufacturer may petition the Administrator to allow actual volume produced for U.S. sales to be used in lieu of actual U.S. sales for purposes of determining compliance with the implementation schedule sales percentages of table A94-16. Such petition shall be submitted within 30 days of the end of the model year the Manufacturers Operations Division. For the petition to be granted, the manufacturer must establish to the satisfaction of the Administrator that actual production volume is functionally equivalent to actual sales volume.

(iii) The manufacturer may count towards the sales percentages those light-duty vehicles, light light-duty trucks, and heavy light-duty trucks of the applicable model year sold in the state of California or in jurisdictions which have adopted the California emission standards under section 177 of the Clean Air Act if those light-duty vehicles, light light-duty trucks, and heavy light-duty trucks certified have been to meet the federally mandated cold CO standards. If this option is taken, all light-duty vehicles, light light-duty trucks, and heavy light-duty trucks sold in California and such jurisdictions shall be counted toward the total upon which the sales percentage

is based. If this option is not taken, light-duty vehicles, light light-duty trucks, and heavy light-duty trucks sold in California or such jurisdictions are to be excluded from counting toward either the total upon which the sales percentage is based or the sales percentage itself.

(iv) Small volume manufacturers, as defined in § 86.092-14(b) (1) and (2), are exempt from the implementation schedules of table A94-16 for model years 1994 and 1995. This exemption does not apply to small volume engine families as defined in § 86.092-14(b)(5).

(v) The manufacturer must state at the time of applying for the Certificate, based on projected U.S. sales or projected production for U.S. sale, which engine families will be used to attain the required implementation schedule sales percentages.

[56 FR 25740, June 5, 1991, as amended at 57 FR 31898, July 17, 1992; 59 FR 48494, Sept. 21, 1994; 62 FR 47120, Sept. 5, 1997]

§ 86.094-9 Emission standards for 1994 and later model year light-duty trucks.

(a)(1) *Standards*—(i) *Light light-duty trucks.* Exhaust emission from 1994 and later model year light light-duty trucks shall meet all standards in Tables A94-8, A94-9, A94-11 and A94-12 in the rows designated with the applicable fuel type and loaded vehicle weight, according to the implementation schedule in Tables A94-7 and A94-10 as follows (optional for 1994 through 1996 model year gaseous-fueled light light-duty trucks):

(A)(1)(i) A minimum of the percentage shown in table A94-7 of a manufacturer's sales of the applicable model year's light light-duty trucks shall not exceed the applicable Tier 1 standards in table A94-8 and shall not exceed the applicable Tier 1 standards in table A94-9. The remaining vehicles shall not exceed the applicable Tier 0 standards in table A94-9.

(ii) Optionally, a minimum of the percentage shown in table A94-7 of a manufacturer's combined sales of the applicable model year's light-duty vehicles and light light-duty trucks shall not exceed the applicable Tier 1 standards. Under this option, the light-duty vehicles shall not exceed the applicable

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Tier 1 standards in table A94-2 of § 86.094-8 and shall not exceed the applicable Tier 1 standards in table A94-3 of § 86.094-8. Further, the light light-duty trucks shall not exceed the applicable Tier 1 standards in table A94-8 and shall not exceed the applicable Tier 1 standards of table A94-9. The remaining percentage of the manufacturer's combined sales of the applicable model year's light-duty vehicles and light

light-duty trucks shall not exceed the corresponding Tier 0 standards.

(2) A minimum of the percentage shown in table A94-10 of a manufacturer's sales of the applicable model year's light light-duty trucks shall not exceed the applicable Tier 1 standards in table A94-11 and shall not exceed the applicable Tier 1 standards in table A94-12. The remaining vehicles shall not exceed the applicable Tier 0 standards in table A94-12.

TABLE A94-7—IMPLEMENTATION SCHEDULE FOR LIGHT LIGHT-DUTY TRUCKS FOR HCS, CO, AND NO_x

	Model year	Tier 1 percentage
1994		40
1995		80
After 1995		100

TABLE A94-8—INTERMEDIATE USEFUL LIFE STANDARDS (G/MI) FOR LIGHT LIGHT-DUTY TRUCKS FOR HCS, CO AND NO_x

Fuel	LVW (lbs)	Standards	THC	NMHC	THCE	NMHCE	CO	NO _x
Gasoline	0-3750	Tier 0 .....	.....	.....	.....	.....	.....	.....
Gasoline	0-3750	Tier 1 .....	.....	0.25	.....	.....	3.4	0.4
Gasoline	3751-5750	Tier 0 .....	.....	.....	.....	.....	.....	.....
Gasoline	3751-5750	Tier 1 .....	.....	0.32	.....	.....	4.4	0.7
Diesel	0-3750	Tier 0 .....	.....	.....	.....	.....	.....	.....
Diesel	0-3750	Tier 1 .....	.....	0.25	.....	.....	3.4	1.0
Diesel	3751-5750	Tier 0 .....	.....	.....	.....	.....	.....	.....
Diesel	3751-5750	Tier 1 .....	.....	0.32	.....	.....	4.4	.....
Methanol	0-3750	Tier 0 .....	.....	.....	.....	.....	.....	.....
Methanol	0-3750	Tier 1 .....	.....	.....	.....	0.25	3.4	0.4
Methanol	3751-5750	Tier 0 .....	.....	.....	.....	.....	.....	.....
Methanol	3751-5750	Tier 1 .....	.....	.....	.....	0.32	4.4	0.7
Natural Gas	0-3750	Tier 0 .....	.....	.....	.....	.....	.....	.....
Natural Gas	0-3750	Tier 1 .....	.....	0.25	.....	.....	3.4	0.4
Natural Gas	3751-5750	Tier 0 .....	.....	.....	.....	.....	.....	.....
Natural Gas	3751-5750	Tier 1 .....	.....	0.32	.....	.....	4.4	0.7
LPG	0-3750	Tier 0 .....	.....	.....	.....	.....	.....	.....
LPG	0-3750	Tier 1 .....	.....	0.25	.....	.....	3.4	0.4
LPG	3751-5750	Tier 0 .....	.....	.....	.....	.....	.....	.....
LPG	3751-5750	Tier 1 .....	.....	0.32	.....	.....	4.4	0.7

TABLE A94-9—FULL USEFUL LIFE STANDARDS (G/MI) FOR LIGHT LIGHT-DUTY TRUCKS FOR HCS, CO AND NO_x

Fuel	LVW (lbs)	Standards	THC ¹	NMHC	THCE ¹	NMHCE	CO	NO _x
Gasoline	0-3750	Tier 0	0.80	.....	.....	.....	10	1.2
Gasoline	0-3750	Tier 1	0.80	0.31	.....	.....	4.2	0.6
Gasoline	3751-5750	Tier 0	0.80	.....	.....	.....	10	1.7
Gasoline	3751-5750	Tier 1	0.80	0.40	.....	.....	5.5	0.97
Diesel	0-3750	Tier 0	0.80	.....	.....	.....	10	1.2
Diesel	0-3750	Tier 1	0.80	0.31	.....	.....	4.2	1.25
Diesel	3751-5750	Tier 0	0.80	.....	.....	.....	10	1.7
Diesel	3751-5750	Tier 1	0.80	0.40	.....	.....	5.5	0.97
Methanol	0-3750	Tier 0 .....	.....	.....	0.80	.....	10	1.2
Methanol	0-3750	Tier 1 .....	.....	.....	0.80	0.31	4.2	0.6
Methanol	3751-5750	Tier 0 .....	.....	.....	0.80	.....	10	1.7
Methanol	3751-5750	Tier 1 .....	.....	.....	0.80	0.40	5.5	0.97
Natural Gas	0-3750	Tier 0 .....	.....	0.67	.....	.....	10	1.2
Natural Gas	0-3750	Tier 1 .....	.....	0.31	.....	.....	4.2	0.6
Natural Gas	3751-5750	Tier 0	0.67	10	1.7
Natural Gas	3751-5750	Tier 1	0.40	5.5	0.97

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TABLE A94-9—FULL USEFUL LIFE STANDARDS (G/MI) FOR LIGHT LIGHT-DUTY TRUCKS FOR HCS, CO AND NO_x—Continued

Fuel	LVW (lbs)	Standards	THC ¹	NMHC	THCE ¹	NMHCE	CO	NO _x
LPG	0-3750	Tier 0	0.80	.....	.....	.....	10	1.2
LPG	0-3750	Tier 1	0.80	0.31	.....	.....	4.2	0.6
LPG	3751-5750	Tier 0	0.80	.....	.....	.....	10	1.7
LPG	3751-5750	Tier 1	0.80	0.40	.....	.....	5.5	0.97

¹ Full useful life is 11 years or 120,000 miles, whichever occurs first.

TABLE A94-10—IMPLEMENTATION SCHEDULE FOR LIGHT LIGHT-DUTY TRUCKS FOR PM

Model year	Tier 1 Percentage
1994	0
1995	40
1996	80
After 1996	100

TABLE A94-11—INTERMEDIATE USEFUL LIFE STANDARDS (G/MI) FOR LIGHT LIGHT-DUTY TRUCKS FOR PM

Fuel	LVW (lbs)	Standards	PM
Gasoline	0-3750	Tier 0 .....	.....
Gasoline	0-3750	Tier 1	0.08
Gasoline	3751-5750	Tier 0 .....	.....
Gasoline	3751-5750	Tier 1	0.08
Diesel	0-3750	Tier 0 .....	.....
Diesel	0-3750	Tier 1	0.08
Diesel	3751-5750	Tier 0 .....	.....
Diesel	3751-5750	Tier 1	0.08
Methanol	0-3750	Tier 0 .....	.....
Methanol	0-3750	Tier 1	0.08
Methanol	3751-5750	Tier 0 .....	.....
Methanol	3751-5750	Tier 1	0.08
Natural Gas	0-3750	Tier 0 .....	.....
Natural Gas	0-3750	Tier 1	0.08
Natural Gas	3751-5750	Tier 0 .....	.....
Natural Gas	3751-5750	Tier 1	0.08
LPG	0-3750	Tier 0 .....	.....
LPG	0-3750	Tier 1	0.08
LPG	3751-5750	Tier 0 .....	.....
LPG	3751-5750	Tier 1	0.08

TABLE A94-12—FULL USEFUL LIFE STANDARDS (G/MI) FOR LIGHT LIGHT-DUTY TRUCKS FOR PM

Fuel	LVW (lbs)	Standards	PM
Gasoline	0-3750	Tier 0 .....	.....
Gasoline	0-3750	Tier 1	0.10
Gasoline	3751-5750	Tier 0 .....	.....
Gasoline	3751-5750	Tier 1	0.10
Diesel	0-3750	Tier 0	0.26
Diesel	0-3750	Tier 1	0.10
Diesel	3751-5750	Tier 0	0.13
Diesel	3751-5750	Tier 1	0.10
Methanol	0-3750	Tier 0	¹ 0.26
Methanol	0-3750	Tier 1	0.10
Methanol	3751-5750	Tier 0	¹ 0.13
Methanol	3751-5750	Tier 1	0.10
Natural Gas	0-3750	Tier 0	¹ 0.26
Natural Gas	0-3750	Tier 1	0.10
Natural Gas	3751-5750	Tier 0	¹ 0.13
Natural Gas	3751-5750	Tier 1	0.10
LPG	0-3750	Tier 0	¹ 0.26
LPG	0-3750	Tier 1	0.10
LPG	3751-5750	Tier 0	¹ 0.13
LPG	3751-5750	Tier 1	0.10

¹ Applicable only to diesel-cycle vehicles.

(B)(1)(i) Sales percentages for the purposes of determining compliance with paragraph (a)(1)(i)(A) of this section shall be based on total actual U.S. sales of light light-duty trucks of the applicable model year by a manufacturer to a dealer, distributor, fleet operator, broker, or any other entity which comprises the point of first sale. If the option of paragraph (a)(1)(i)(A)(1)(ii) of this section is taken, such sales percentages shall be based on the total actual combined U.S. sales of light-duty vehicles and light light-duty trucks of the applicable model year by a manufacturer to a dealer, distributor, fleet operator, broker, or any other entity which comprises the point of first sale.

(ii) The manufacturer may petition the Administrator to allow actual volume produced for U.S. sales to be used in lieu of actual U.S. sales for purposes of determining compliance with the implementation schedule sales percentages of tables A94-7 and A94-10 of this section. Such petition shall be submitted within 30 days of the end of the model year to the Manufacturers Operations Division. For the petition to be granted, the manufacturer must establish to the satisfaction of the Administrator that actual production volume is functionally equivalent to actual sales volume.

(iii) The manufacturer may count toward the sales percentages light light-duty trucks of the applicable model year that meet certain standards for that same model year contained in Title 13, "California Code of Regulations, Section 1960.1, and the incorporated California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles." (Copies may be obtained from Barclays Law Publishers, P.O. Box 3066, San Francisco, CA 94080.) The relevant standards from that source are those that are designated as phase-in standards for selected pollutants and were first applied in the 1993 model year, as well as those for all remaining pollutants that require compliance at the one hundred percent level. If this option is taken, all light light-duty trucks sold in jurisdictions adopting such standards shall be counted toward

the total upon which the sales percentage is based. If this option is not taken, light light-duty trucks sold in such jurisdictions are to be excluded from counting toward either the total upon which the sales percentage is based or the sales percentage itself.

(iv) Small volume manufacturers, as defined in § 86.092-14(b) (1) and (2), are exempt from the implementation schedules of table A94-7 of this section for model years 1994 and 1995 and from the implementation schedules of table A94-10 of this section for model years 1995 and 1996. For small volume manufacturers, the Tier 0 standards of table A94-9 continue to apply until model year 1996, and the Tier 0 standards of table A94-12 continue to apply until model year 1997, when one hundred percent compliance with the Tier 1 standards of tables A94-8, A94-9, A94-11, and A94-12 is required. This exemption does not apply to small volume engine families as defined in § 86.092-14(b)(5).

(2)(i) Where the required implementation schedule sales percentages for in-use purposes, as prescribed in subpart H of this part, are the same in a given model year as the required implementation schedule sales percentages for certification purposes, as prescribed in this section, the same engine families must comprise the respective percentages.

(ii) Where the required implementation schedule sales percentages for in-use purposes differ from implementation schedule sales percentages for certification purposes in a particular model year, the manufacturer must designate, at the time of Application for Certification, which families will meet each applicable in-use phase-in percentage.

(3) The manufacturer must state at the time of Application for Certification, based on projected U.S. sales or projected production for U.S. sale, which families will be used to attain the required implementation schedule sales percentages for certification purposes.

(4) A manufacturer can not use one set of engine families to meet its intermediate useful life standards and another to meet its full useful life standards. The same families which are used to meet the intermediate useful life

standards will be required without deviation to meet the corresponding full useful life standards.

(ii) *Heavy light-duty trucks.* Exhaust emissions from 1994 and later model year heavy light-duty trucks shall meet all standards in Tables A94-14 and A94-15 in the rows designated with the applicable fuel type and loaded vehicle weight or adjusted loaded vehicle weight, as applicable, according to the implementation schedule in Table A94-13, as follows (optional for 1994 through

1996 model year gaseous-fueled heavy light-duty trucks):

(A) A minimum of the percentage shown in table A94-13 of a manufacturer's sales of the applicable model year's heavy light-duty trucks shall not exceed the applicable Tier 1 standards in table A94-14 and shall not exceed the applicable Tier 1 standards in table A94-15. The remaining vehicles shall not exceed the applicable Tier 0 standards in table A94-15.

TABLE A94-13—IMPLEMENTATION SCHEDULE FOR HEAVY LIGHT-DUTY TRUCKS FOR HCS, CO, NO_x AND PM

Model year	Tier 1 percentage
1994	0
1995	0
1996	50
after 1996	100

TABLE A94-14—INTERMEDIATE USEFUL LIFE STANDARDS (G/MI) FOR HEAVY LIGHT-DUTY TRUCKS FOR HCS, CO, NO_x AND PM

Fuel	ALVW (lbs)	Standards	THC	NMHC	THCE	NMHCE	CO	NO _x	PM
Gasoline	3751-5750	Tier 0							
Gasoline	3751-5750	Tier 1		0.32			4.4	0.7	
Gasoline	> 5750	Tier 0							
Gasoline	> 5750	Tier 1		0.39			5.0	1.1	
Diesel	3751-5750	Tier 0							
Diesel	3751-5750	Tier 1		0.32			4.4		
Diesel	> 5750	Tier 0							
Diesel	> 5750	Tier 1		0.39			5.0		
Methanol	3751-5750	Tier 0							
Methanol	3751-5750	Tier 1				0.32	4.4	0.7	
Methanol	> 5750	Tier 0							
Methanol	> 5750	Tier 1				0.39	5.0	1.1	
Natural Gas	3751-5750	Tier 0							
Natural Gas	3751-5750	Tier 1		0.32			4.4	0.7	
Natural Gas	> 5750	Tier 0							
Natural Gas	> 5750	Tier 1		0.39			5.0	1.1	
LPG	3751-5750	Tier 0							
LPG	3751-5750	Tier 1		0.32			4.4	0.7	
LPG	> 5750	Tier 0							
LPG	> 5750	Tier 1		0.39			5.0	1.1	

TABLE A94-15—FULL USEFUL LIFE STANDARDS (G/MI) FOR HEAVY LIGHT-DUTY TRUCKS FOR HCS, CO, NO_x AND PM

Fuel	LVW (lbs)	ALVW (lbs)	Standards	THC	NMHC	THCE	NMHCE	CO	NO _x	PM
Gasoline	0-3750		Tier 0	0.80				10	1.2	
Gasoline	>3750		Tier 0	0.80				10	1.7	
Gasoline		3751-5750	Tier 1	0.80	0.46			6.4	0.98	0.10
Gasoline		>5750	Tier 1	0.80	0.56			7.3	1.53	0.12
Diesel	0-3750		Tier 0	0.80				10	1.20	0.26
Diesel	>3750		Tier 0	0.80				10	1.7	0.13
Diesel		3751-5750	Tier 1	0.80	0.46			6.4	0.98	0.10
Diesel		>5750	Tier 1	0.80	0.56			7.3	1.53	0.12
Methanol	0-3750		Tier 0			0.80		10	1.2	¹ 0.26
Methanol	>3750		Tier 0			0.80		10	1.7	¹ 0.13
Methanol		3751-5750	Tier 1			0.80	0.46	6.4	0.98	0.10
Methanol		>5750	Tier 1			0.80	0.56	7.3	1.53	0.12
Natural Gas	0-3750		Tier 0		0.67			10	1.2	¹ 0.26

TABLE A94-15—FULL USEFUL LIFE STANDARDS (G/MI) FOR HEAVY LIGHT-DUTY TRUCKS FOR HCS, CO, NO_x AND PM—Continued

Fuel	LVW (lbs)	ALVW (lbs)	Standards	THC	NMHC	THCE	NMHCE	CO	NO _x	PM
Natural Gas	>3750	.....	Tier 0	.....	0.67	.....	.....	10	1.7	¹ 0.13
Natural Gas	.....	3751-5750	Tier 1	.....	0.46	.....	.....	6.4	0.98	0.10
Natural Gas	.....	>5750	Tier 1	.....	0.56	.....	.....	7.3	1.53	0.12
LPG	0-3750	.....	Tier 0	0.80	.....	.....	.....	10	1.2	¹ 0.26
LPG	>3750	.....	Tier 0	0.80	.....	.....	.....	10	1.7	¹ 0.13
LPG	.....	3751-5750	Tier 1	0.80	0.46	.....	.....	6.4	0.98	0.10
LPG	.....	>5750	Tier 1	0.80	0.56	.....	.....	7.3	1.53	0.12

¹ Applicable only to diesel-cycle vehicles.

(B)(1)(i) Sales percentages for the purposes of determining compliance with paragraph (a)(1)(ii)(A) of this section shall be based on total actual U.S. sales of heavy light-duty trucks of the applicable model year by a manufacturer to a dealer, distributor, fleet operator, broker, or any other entity which comprises the point of first sale.

(ii) The manufacturer may petition the Administrator to allow actual volume produced for U.S. sale to be used in lieu of actual U.S. sales for purposes of determining compliance with the implementation schedule sales percentages of table A94-13 of this section. Such petition shall be submitted within 30 days of the end of the model year to the Manufacturers Operations Division. For the petition to be granted, the manufacturer must establish to the satisfaction of the Administrator that actual production volume is functionally equivalent to actual sales volume.

(iii) The manufacturer may count toward the sales percentages heavy light-duty trucks of the applicable model year that meet certain standards for that same model year contained in Title 13, California Code of Regulations, Section 1960.1, and the incorporated "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles." The relevant standards from that source are those that are designated as phase-in standards for selected pollutants and were first applied in the 1995 model year, as well as those for all remaining pollutants that require compliance at the one hundred percent level. If this option is taken, all heavy light-duty trucks sold in jurisdictions adopting such standards

shall be counted toward the total upon which the sales percentage is based. If this option is not taken, heavy light-duty trucks sold in such jurisdictions are to be excluded from counting toward either the total upon which the sales percentage is based or the sales percentage itself.

(iv) Small volume manufacturers, as defined in §86.092-14(b) (1) and (2), are exempt from the implementation schedule of table A94-13 of this section for model year 1996. For small volume manufacturers, the Tier 0 standards of table A94-15 continue to apply until model year 1997, when one hundred percent compliance with the Tier 1 standards of tables A94-14 and A94-15 is required. This exemption does not apply to small volume engine families as defined in §86.092-14(b)(5).

(2)(j) Where the required implementation schedule sales percentages for in-use purposes, as prescribed in subpart H of this part, are the same in a given model year as the required implementation schedule sales percentages for certification purposes, as prescribed in this section, the same engine families must comprise the respective percentages.

(ii) Where the required implementation schedule sales percentages for in-use purposes differ from implementation schedule sales percentages for certification purposes in a particular model year, the manufacturer must designate, at the time of Application for Certification, which families will meet each applicable in-use phase-in percentage.

(3) The manufacturer must state at the time of Application for Certification, based on projected U.S. sales or projected production for U.S. sale, which families will be used to attain

the required implementation schedule sales percentages for certification purposes.

(4) A manufacturer cannot use one set of engine families to meet its intermediate useful life standards and another to meet its full useful life standards. The same families which are used to meet the intermediate useful life standards will be required without deviation to meet the corresponding full useful life standards.

(iii) Exhaust emissions of carbon monoxide from 1994 and later model year light-duty trucks shall not exceed 0.50 percent of exhaust gas flow at curb idle at a useful life of 11 years or 120,000 miles, whichever first occurs (for Otto-cycle, and methanol- and gaseous-fueled diesel light-duty trucks only—optional for 1994 through 1996 model year gaseous-fueled light-duty trucks).

(iv)(A) A manufacturer may elect to include all or some of its light-duty truck engine families subject to the Tier 0 standards in the NO_x averaging program, provided that it does not elect to pay an NCP for noncompliance with any emission standard applicable to that light-duty truck family. Trucks produced for sale in California or in designated high-altitude areas may be averaged only within each of those areas. Petroleum-fueled and methanol-fueled engine families may not be averaged together. Otto-cycle and diesel engine families also may not be averaged together. If the manufacturer elects to participate in the NO_x averaging program, individual family NO_x emission limits may not exceed 2.3 grams per mile. If the manufacturer elects to average together NO_x emissions of light-duty trucks subject to different standards based on GVWR and loaded vehicle weight, its composite NO_x standard applies to the combined fleets of light-duty trucks of all weight categories included in the average, and is calculated as defined in § 86.088-2.

(B) A manufacturer may elect to include any diesel light-duty truck engine families subject to the Tier 0 standards in the appropriate particulate averaging program (petroleum or methanol), provided that it does not elect to pay an NCP for noncompliance with any emission standard applicable to that light-duty truck family. Trucks

produced for sale in California or in designated high-altitude areas may be averaged only within each of those areas, and light-duty trucks greater than 3,750 lbs loaded vehicle weight may be averaged only with other light-duty trucks greater than 3,750 lbs loaded vehicle weight. Averaging is not permitted between fuel types. If the manufacturer elects to average both light-duty trucks 3,750 lbs loaded vehicle weight or less and light-duty vehicles together in the appropriate particulate averaging program, its composite particulate standard applies to the combined set of light-duty vehicles and light-duty trucks included in the average and is calculated as defined in § 86.088-2.

(2) The standards set forth in paragraphs (a)(1)(i) and (a)(1)(ii) of this section refer to the exhaust emitted over a driving schedule as set forth in subpart B of this part and measured and calculated in accordance with those procedures. The test weight basis for light light-duty trucks, and for heavy light-duty trucks certified to the Tier 0 standards of this section, for the purposes of determining equivalent test weight as prescribed in § 86.129-94, shall be loaded vehicle weight. The test weight basis for heavy light-duty trucks certified to the Tier 1 standards of this section, for the purposes of determining equivalent test weight as prescribed in § 86.129-94, shall be adjusted loaded vehicle weight. The standard set forth in paragraph (a)(1)(iii) of this section refers to the exhaust emitted at curb idle and measured and calculated in accordance with the procedures set forth in subpart P of this part.

(b) Fuel evaporative emissions from 1994 and later model year light-duty trucks shall not exceed:

(1) *Hydrocarbons (for gasoline-fueled light-duty trucks)*. 2.0 grams per test.

(2) *Total Hydrocarbon Equivalent (for methanol-fueled light-duty trucks)*. 2.0 grams per test.

(3) The standards set forth in paragraphs (b) (1) and (2) of this section refer to a composite sample of the fuel evaporative emissions collected under the conditions set forth in subpart B of this part and measured in accordance with those procedures.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any 1994 and later model year light-duty truck. This requirement is optional for 1994 through 1996 model year gaseous-fueled light-duty trucks.

(d) The CO, NO_x, and particulate standards set forth in paragraphs (d)(1)(ii)(A), (d)(1)(iii), and (d)(1)(iv) of this section, respectively, are applicable only to model year 1994 light-duty trucks certified to the Tier 0 standards of paragraphs (a)(1)(i) and (a)(1)(ii) of this section. The HC, THCE, and idle CO standards set forth in paragraphs (d)(1)(i)(A), (d)(1)(i)(B) and (d)(1)(ii)(B) of this section, respectively, are applicable only to model year 1994 light-duty trucks.

(1) Model year 1994 light-duty trucks sold for principal use at a designated high-altitude location shall be capable of meeting the following exhaust emission standards when tested under high-altitude conditions:

(i)(A) *Hydrocarbons (for Otto-cycle and diesel light-duty trucks when fueled with petroleum fuel and/or liquefied petroleum gas)*. 1.0 grams per vehicle mile (0.62 grams per vehicle kilometer).

(B) *Total Hydrocarbon Equivalent (for methanol-fueled Otto-cycle and diesel light-duty trucks)*. 1.0 gram per vehicle mile (0.62 gram per vehicle kilometer).

(C) *Nonmethane hydrocarbons (for Otto-cycle and diesel light-duty trucks when fueled with natural gas)*. 0.83 gram per vehicle mile (0.52 gram per vehicle kilometer).

(ii) *Carbon Monoxide*. (A) 14 grams per vehicle mile (8.7 grams per vehicle kilometer).

(B) 0.50 percent of exhaust gas flow at curb idle (for Otto-cycle and methanol-fueled diesel light-duty trucks only).

(iii) *Oxides of Nitrogen*. (A) For light-duty trucks up to and including 3,750 lbs. loaded vehicle weight, 1.2 grams per vehicle mile (0.75 grams per vehicle kilometer).

(B) For light-duty trucks 3,751 lbs. and greater loaded vehicle weight, 1.7 grams per vehicle mile (1.1 grams per vehicle kilometer).

(iv) *Particulate (for diesel light-duty trucks only)*. (A) For light-duty trucks up to and including 3,750 lbs. loaded ve-

hicle weight, 0.26 gram per vehicle mile (0.16 gram per vehicle kilometer).

(B) For light-duty trucks 3,751 lbs. and greater loaded vehicle weight, 0.13 gram per vehicle mile (0.08 gram per vehicle kilometer).

(2) The standards set forth in paragraphs (d)(1)(i), (d)(1)(ii)(A), (d)(1)(iii), and (d)(1)(iv) of this section refer to the exhaust emitted over a driving schedule as set forth in subpart B of this part and measured and calculated in accordance with those procedures. The standard set forth in paragraph (d)(1)(ii)(B) of this section refers to the exhaust emitted at curb idle and measured and calculated in accordance with the procedures set forth in subpart P of this part.

(e) Fuel evaporative emissions from 1994 model year light-duty trucks sold for principal use at a designated high-altitude location, when tested under high-altitude conditions, shall not exceed:

(1) *Hydrocarbons (for gasoline-fueled light-duty trucks)*. 2.6 grams per test.

(2) *Total Hydrocarbon Equivalent (for methanol-fueled light-duty trucks)*. 2.6 grams per test.

(3) The standards set forth in paragraphs (e) (1) and (2) of this section refer to a composite sample of the fuel evaporative emissions collected under the conditions set forth in subpart B of this part and measured in accordance with those procedures.

(f) No crankcase emissions shall be discharged into the ambient atmosphere from any 1994 model year light-duty trucks sold for principal use at a designated high-altitude location.

(g)(1) Any model year 1994 light-duty truck that a manufacturer wishes to certify for sale at low altitude must be capable of meeting high-altitude emission standards (specified in paragraphs (d) through (f) of this section). The manufacturer may specify vehicle adjustments or modifications to allow the vehicle to meet high-altitude standards but these adjustments or modifications may not alter the vehicle's basic engine, inertia weight class, transmission configuration, and axle ratio.

(i) A manufacturer may certify unique configurations to meet the

high-altitude standards but is not required to certify these vehicle configurations to meet the low-altitude standards.

(ii) Any adjustments or modifications that are recommended to be performed on vehicles to satisfy the requirements of paragraph (g)(1) of this section:

(A) Shall be capable of being effectively performed by commercial repair facilities, and

(B) Must be included in the manufacturer's application for certification.

(2) Any model year 1995 and later light-duty truck and optionally model year 1994 light-duty truck that a manufacturer wishes to certify for sale shall meet the emission standards of paragraphs (a) through (c) of this section under both low- and high-altitude conditions as specified in § 86.082-2, except as provided in paragraphs (h) and (i) of this section. Vehicles shall meet emission standards under both low- and high-altitude conditions without manual adjustments or modifications. Any emission control device used to meet emission standards under high-altitude conditions shall initially actuate (automatically) no higher than 4,000 feet above sea level.

(h) The manufacturer may exempt 1994 and later model year light-duty trucks from compliance at high altitude with the emission standards set forth in paragraphs (a) and (b) of this section, and may exempt 1994 model year light-duty trucks from compliance with the high-altitude emission standards set forth in paragraphs (d) and (e) of this section, if the vehicles are not intended for sale at high altitude and if the requirements of paragraphs (h)(1) and (2) of this section are met.

(1) A vehicle configuration shall only be considered eligible for exemption under paragraph (h) of this section if the requirements of any of paragraphs (h)(1) (i), (ii), (iii), or (iv) of this section are met.

(i) Its design parameters (displacement-to-weight ratio (D/W) and engine speed-to-vehicle-speed ratio (N/V)) fall within the exempted range for that manufacturer for that year. The exempted range is determined according to the following procedure:

(A) The manufacturer shall graphically display the D/W and N/V data of all vehicle configurations it will offer for the model year in question. The axis of the abscissa shall be D/W (where (D) is the engine displacement expressed in cubic centimeters and (W) is the gross vehicle weight (GVW) expressed in pounds), and the axis of the ordinate shall be N/V (where (N) is the crankshaft speed expressed in revolutions per minute and (V) is the vehicle speed expressed in miles per hour). At the manufacturer's option, either the 1:1 transmission gear ratio or the lowest numerical gear ratio available in the transmission will be used to determine N/V. The gear selection must be the same for all N/V data points on the manufacturer's graph. For each transmission/axle ratio combination, only the lowest N/V value shall be used in the graphical display.

(B) The product line is then defined by the equation, $N/V = C(D/W)^{-0.9}$ where the constant, C, is determined by the requirement that all the vehicle data points either fall on the line or lie to the upper right of the line as displayed on the graphs.

(C) The exemption line is then defined by the equation, $N/V = C(0.84 D/W)^{-0.9}$ where the constant, C, is the same as that found in paragraph (h)(1)(i)(B) of this section.

(D) The exempted range includes all values of N/V and D/W which simultaneously fall to the lower left of the exemption line as drawn on the graph.

(ii) Its design parameters fall within the alternate exempted range for that manufacturer that year. The alternate exempted range is determined by substituting rated horsepower (hp) for displacement (D) in the exemption procedure described in paragraph (h)(1)(i) of this section and by using the product line $N/V = C(\text{hp}/W)^{-0.9}$.

(A) Rated horsepower shall be determined by using the Society of Automotive Engineers Test Procedure J 1349 (copies may be obtained from SAE, 400 Commonwealth Dr., Warrendale, PA 15096), or any subsequent version of that test procedure. Any of the horsepower determinants within that test procedure may be used, as long as it is

used consistently throughout the manufacturer's product line in any model year.

(B) No exemptions will be allowed under paragraph (h)(1)(ii) of this section to any manufacturer that has exempted vehicle configurations as set forth in paragraph (h)(1)(i) of this section.

(iii) Its acceleration time (the time it takes a vehicle to accelerate from 0 to a speed not less than 40 miles per hour and not greater than 50 miles per hour) under high-altitude conditions is greater than the largest acceleration time under low-altitude conditions for that manufacturer for that year. The procedure to be followed in making this determination is:

(A) The manufacturer shall list the vehicle configuration and acceleration time under low-altitude conditions of that vehicle configuration which has the highest acceleration time under low-altitude conditions of all the vehicle configurations it will offer for the model year in question. The manufacturer shall also submit a description of the methodology used to make this determination.

(B) The manufacturer shall then list the vehicle configurations and acceleration times under high-altitude conditions of all those vehicle configurations which have higher acceleration times under high-altitude conditions than the highest acceleration time at low altitude identified in paragraph (h)(1)(iii)(A) of this section.

(iv) In lieu of performing the test procedure of paragraph (h)(1)(iii) of this section, its acceleration time can be estimated based on the manufacturer's engineering evaluation, in accordance with good engineering practice, to meet the exemption criteria of paragraph (h)(1)(iii) of this section.

(2) A vehicle shall only be considered eligible for exemption under this paragraph if at least one configuration of its model type (and transmission configuration in the case of vehicles equipped with manual transmissions, excluding differences due to the presence of overdrive) is certified to meet emission standards under high-altitude conditions as specified in paragraphs (a) through (g) of this section. The Certificate of Conformity (the Certificate)

covering any exempted configuration(s) will also apply to the corresponding non-exempt configuration(s) required under this subparagraph. As a condition to the exemption, any suspension, revocation, voiding, or withdrawal of the Certificate as it applies to a non-exempt configuration for any reason will result in a suspension of the Certificate as it applies to the corresponding exempted configuration(s) of that model type, unless there is at least one other corresponding non-exempt configuration of the same model type still covered by the Certificate. The suspension of the Certificate as it applies to the exempted configuration(s) will be terminated when any one of the following occurs:

(i) Another corresponding non-exempt configuration(s) receive(s) coverage under the Certificate; or

(ii) Suspension of the Certificate as it applies to the corresponding non-exempt configuration(s) is terminated; or

(iii) The Agency's action(s), with respect to suspension, revocation, voiding or withdrawal of the Certificate as it applies to the corresponding non-exempt configuration(s), is reversed.

(3) The sale of a vehicle for principal use at a designated high-altitude location that has been exempted as set forth in paragraph (h)(1) of this section will be considered a violation of section 203(a)(1) of the Clean Air Act.

(i)(1) The manufacturers may exempt 1994 and later model year light-duty trucks from compliance at low altitude with the emission standards set forth in paragraphs (a) and (b) of this section if the vehicles:

(i) Are not intended for sale at low altitude; and

(ii) Are equipped with a unique, high-altitude axle ratio (rear-wheel drive vehicles) or a unique, high-altitude drivetrain (front-wheel drive vehicles) with a higher N/V ratio than other configurations of that model type which are certified in compliance with the emission standards of paragraphs (a) and (b) of this section under low-altitude conditions.

(2) The sale of a vehicle for principal use at low altitude that has been exempted as set forth in paragraph (i)(1)

of this section will be considered a violation of section 203(a)(1) of the Clean Air Act.

(j) Any light-duty truck that a manufacturer wishes to certify for sale under the provisions of paragraphs (h) or (i) of this section is subject to the provisions of subpart Q of this part.

(k) *Cold Temperature Carbon Monoxide (CO) Standards*—(1) *Light light-duty trucks.* Exhaust emissions from 1994 and later model year gasoline-fueled light light-duty trucks with a loaded vehicle weight of 3,750 lbs or less shall meet a cold temperature CO standard of 10.0 grams per mile and gasoline-fueled light light-duty trucks with a loaded vehicle weight of greater than 3,750 lbs shall meet a cold temperature CO standard of 12.5 grams per mile, both for an intermediate useful life of 50,000 miles and according to the implementation schedule in table A94-16. This standard applies under both high and low altitude conditions. At the manufacturer's option, the manufacturer may combine the sales of gasoline-fueled light-duty vehicles, light-duty trucks, and heavy light-duty trucks in determining compliance with the required 1994 and 1995 model year phase-in percentages as included in table A94-16.

TABLE A94-16—IMPLEMENTATION SCHEDULE FOR COMBINED SALES OF LIGHT-DUTY VEHICLES AND LIGHT-DUTY TRUCKS FOR COLD CO

Model year	Sales percentage
1994	40
1995	80
After 1995	100

(2) *Heavy light-duty trucks.* Exhaust emissions from 1994 and later model year gasoline-fueled heavy light-duty trucks shall meet a cold temperature CO standard of 12.5 grams per mile for an intermediate useful life of 50,000 miles and according to the implementation schedule in table A94-16. This standard applies under both low and high altitude conditions. At the manufacturer's option, the manufacturer may combine the sales of gasoline-fueled light-duty vehicles, light light-duty trucks, and heavy light-duty trucks in determining compliance with the required 1994 and 1995 model year

phase-in percentages as included in table A94-16.

(3)(i) Sales percentages for the purposes of determining compliance with paragraphs (k)(1) and (k)(2) of this section shall be based on total actual and, at the manufacturer's option, combined U.S. sales of light-duty vehicles, light light-duty trucks, and heavy light-duty trucks of the applicable model year by a manufacturer to a dealer, distributor, fleet operator, broker, or any other entity which comprises the point of first sale.

(ii) The manufacturer may petition the Administrator to allow actual volume produced for U.S. sales to be used in lieu of actual U.S. sales for purposes of determining compliance with the implementation schedule sales percentages of table A94-16. Such petition shall be submitted within 30 days of the end of the model year to the Manufacturers Operations Division. For the petition to be granted, the manufacturer must establish to the satisfaction of the Administrator that actual production volume is functionally equivalent to actual sales volume. Approval of the use of production data will be presumed unless otherwise notified by the Agency within 30 days of submittal of the petition.

(iii) The manufacturer may count towards the sales percentages those light-duty vehicles, light light-duty trucks, and heavy light-duty trucks of the applicable model year sold in the state of California or in jurisdictions which have adopted the California emission standards under section 177 of the Clean Air Act if those light-duty vehicles, light light-duty trucks, and heavy light-duty trucks have been certified to meet the federally mandated cold CO standards. If this option is taken, all light-duty vehicles, light light-duty trucks and heavy light-duty trucks sold in California and such jurisdictions shall be counted toward the total upon which the sales percentage is based. If this option is not taken, light-duty vehicles, light light-duty trucks, and heavy light-duty trucks sold in California or such jurisdictions are to be excluded from counting toward either the total upon which the sales percentage is based or the sales percentage itself.

(iv) Small volume manufacturers, as defined in § 86.092-14(b) (1) and (2), are exempt from the implementation schedules of table A94-16 for model years 1994 and 1995. This exemption does not apply to small volume engine families as defined in § 86.092-14(b)(5).

(v) The manufacturer must state at the time of applying for the Certificate, based on projected U.S. sales or projected production for U.S. sale, which engine families will be used to attain the required implementation schedule sales percentages.

[56 FR 25742, June 5, 1991, as amended at 57 FR 31899, July 17, 1992; 59 FR 48495, Sept. 21, 1994; 60 FR 34335, June 30, 1995; 62 FR 47120, Sept. 5, 1997]

§ 86.094-11 Emission standards for 1994 and later model year diesel heavy-duty engines and vehicles.

(a)(1) Exhaust emissions from new 1994 and later model year diesel heavy-duty engines shall not exceed the following (optional for 1994 through 1996 model year new natural gas- and liquefied petroleum gas-fueled heavy-duty engines):

(i)(A) *Hydrocarbons (for diesel engines fueled with either petroleum-fuel or liquefied petroleum gas)*. 1.3 grams per brake horsepower-hour (0.48 gram per megajoule), as measured under transient operating conditions.

(B) *Total Hydrocarbon Equivalent (for methanol-fueled diesel engines)*. 1.3 grams per brake horsepower-hour (0.48 gram per megajoule), as measured under transient operating conditions.

(C) *Nonmethane hydrocarbons (for natural gas-fueled diesel engines)*. 1.2 grams per brake horsepower-hour (0.45 gram per megajoule), as measured under transient operating conditions.

(ii) *Carbon monoxide*. (A) 15.5 grams per brake horsepower-hour (5.77 grams per megajoule), as measured under transient operating conditions.

(B) 0.50 percent of exhaust gas flow at curb idle (methanol-, natural gas- and liquefied petroleum gas-fueled diesel only).

(iii) *Oxides of nitrogen*. (A) 5.0 grams per brake horsepower-hour (1.9 grams per megajoule), as measured under transient operating conditions.

(B) A manufacturer may elect to include any or all of its diesel heavy-duty

engine families in any or all of the NO_x averaging, trading, or banking programs for heavy-duty engines, within the restrictions described in § 86.094-15. If the manufacturer elects to include engine families in any of these programs, the NO_x FELs may not exceed 6.0 grams per brake horsepower-hour (2.2 grams per megajoule). This ceiling value applies whether credits for the family are derived from averaging, trading or banking programs.

(iv) *Particulate*. (A) For diesel engines to be used in urban buses, 0.07 gram per brake horsepower-hour (0.026 gram per megajoule), as measured under transient operating conditions.

(B) For all other diesel engines only, 0.10 gram per brake horsepower-hour (0.037 gram per megajoule), as measured under transient operating conditions.

(C) A manufacturer may elect to include any or all of its diesel heavy-duty engine families in any or all of the particulate averaging, trading, or banking programs for heavy-duty engines, within the restrictions described in § 86.094-15. If the manufacturer elects to include engine families in any of these programs, the particulate FEL may not exceed:

(1) For engine families intended for use in urban buses, 0.25 gram per brake horsepower-hour (0.093 gram per megajoule).

(2) For engine families *not* intended for use in urban buses, 0.60 gram per brake horsepower-hour (0.22 gram per megajoule).

(3) The ceiling values in paragraphs (a)(1)(iv)(C) (1) and (2) of this section apply whether credits for the family are derived from averaging, trading, or banking programs.

(b)(1) The opacity of smoke from new 1994 and later model year diesel heavy-duty engines shall not exceed (optional for 1994 through 1996 model year gas-fueled diesel heavy-duty engines):

(i) 20 percent during the engine acceleration mode.

(ii) 15 percent during the engine lugging mode.

(iii) 50 percent during the peaks in either mode.

(2) The standards set forth in paragraph (b)(1) of this section refer to exhaust smoke emissions generated