

# EXHAUST EMISSION CERTIFICATION STANDARDS Federal Test Procedure (FTP) Federal and California Programs Light-Duty Vehicles (Passenger Cars) and Light Light-Duty Trucks (grams/mile)

	Vehicle	Emission Category		Vehicle Useful Life															
	Type				5 Year	s / 50,000 N	Ailes			10 Years / 100,000 Miles									
			THC [2,5]	NMHC [3] N	VMOG [1]	CO	NOx	PM	НСНО	THC [2,5]	NMHC [3]	NMOG [1]	CO	NOx	PM	НСНО			
Federal	LDV	Tier 0	0.41	[6]	-	3.4	1.0	[4]	-										
		Tier 1	0.41	$0.34^{0.25}$	-	3.4	[7]	0.20.08	-	-	0.31	-	4.2	[9]	0.10	-			
	LDT1	Tier 0 [26]					0.4			0.80	[6]	-	10	0.6 1.2	[4]	-			
		Tier 1	-	0.25	-	3.4	[7]	0.08	-	[26]	0.60.31	-	4.2	[9]	0.26.10	-			
	LDT2	Tier 0 [26]					0.4			0.80.80	[6]	-	10	0.6 1.7	[4]	-			
		Tier 1	-	0.32	-	4.4	[8]	0.08	-	[26]	0.60.40	-	5.5	0.97	0.130.10	-			
California	PC	Tier 0	-	0.39	-	7.0	0.7 0.4	[10]	0.015	0.80									
		Tier 1	-	0.25	-	3.4	0.4	[10]0.08	0.015	-	0.31	-	4.2	0.6	-	-			
		TLEV	-	-	0.125	3.4	0.4	80.0	0.015	-	-	0.156	4.2	0.6	[10]	0.018			
		LEV	-	-	0.075	3.4	0.2	-	0.015	-	-	0.090	4.2	0.3	[10]0.08	0.018			
		ULEV	-	-	0.040	1.7	0.2	-	0.008	-	-	0.055	2.1	0.3	[10]0.08	0.011			
		ZEV	0.00	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.000	0.000	0.0	0.0	0.00.00	0.000			
	LDT1	Tier 0	-	0.39	-	9.0	0.4	[10]	0.015										
		Tier 1	-	0.25	-	3.4	0.4	[10]0.08	0.015	-	0.31	-	4.2	0.6	-	-			
		TLEV	-	-	0.125	3.4	0.4	80.0	0.015	-	-	0.156	4.2	0.6	[10]	0.018			
		LEV	-	-	0.075	3.4	0.2	-	0.015	-	-	0.090	4.2	0.3	[10]0.08	0.018			
		ULEV	-	-	0.040	1.7	0.2	-	0.008	-	-	0.055	2.1	0.3	[10]0.08	0.011			
		ZEV	0.00	0.00	0.000	0.0	0.0	0.00	0.000	0.00	0.000	0.000	0.0	0.0	0.00.00	0.000			
	LDT2	Tier 0	-	0.50	-	9.0	1.0	[10]	0.018										
		Tier 1	-	0.32	-	4.4	0.7	[10]0.08	0.018	-	0.40	-	5.5	0.97	-	-			
		TLEV	-	-	0.160	4.4	0.7	80.0	0.018	-	-	0.200	5.5	0.9	[10]	0.023			
		LEV	-	-	0.100	4.4	0.4	-	0.018	-	-	0.130	5.5	0.5	[10]0.10	0.023			
		ULEV	-	-	0.050	2.2	0.4	1	0.009	-	-	0.070	2.8	0.5	[10]0.10	0.013			

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#### **EXHAUST EMISSION CERTIFICATION STANDARDS**

### **Federal Test Procedure (FTP)**

# **Federal and California Programs**

# Heavy Light-Duty Trucks (federal) and Medium-Duty Vehicles (California) (grams/mile)

	Vehicle	Emission	Vehicle Useful Life														
	Type	Category			5 Years / 50	,000 Miles			11 Years / 120,000 Miles								
			NMHC [3]	NMOG [1]	CO	NOx	PM	НСНО	THC [2,5]	NMHC [3]	NMOG [1]	CO	NOx	PM	НСНО		
Federal	LDT3	Tier 0							0.80	[6]	-	10	1.7	[4]	-		
		Tier 1	0.32	-	4.4	[8]	-	-	0.80	$0.67^{0.46}$	-	6.4	0.98	$0.26^{0.10}$	-		
	LDT4	Tier 0				<sub>[8]</sub> 0.7			0.80		-	10	1.7		-		
		Tier 1	0.39	-	5.0	[8]0.7	-	-	0.80	$0.67^{0.56}$	-	7.3	1.53	0.130.12	-		
California	MDV1	Tier 0	0.39	-	9.0	1.1 0.4	[10]	[11]									
		Tier 1	0.25	-	3.4	0.4	0.08	[11]0.015	-	0.36	-	5.0	0.55	[10]	-		
		LEV	-	0.125	3.4	0.4	-	$0.015_{15}$	-	-	0.180	5.0	0.6	$^{_{[10]}}0.08$	0.022		
		ULEV	-	0.075	1.7	0.2	-	0.008	1	-	0.107	2.5	0.3	0.08	0.012		
	MDV2	Tier 0	0.50	-	9.0	1.0	[10]	[11]						0.04			
		Tier 1	0.32	-	4.4	0.7	0.08	[11]0.018	-	0.46	-	6.4	0.98		-		
		LEV		0.160	4.4	[13]	-	0.01818	-	-	0.230	6.4	[14]	[10] 0.10	0.027		
		ULEV	-	0.100	4.4	$0.4^{-0.4}$	1	0.009	1	-	0.143	6.4	0.6	0.10	0.013		
		SULEV	-	0.050	2.2	0.2	-	0.004	-	-	0.072	3.2	0.3	0.05	0.006		
	MDV3	Tier 0	0.60	-	9.0	1.5	[10]	[11]						0.05			
		Tier 1	0.39	-	5.0	1.1	0.08	[11]0.022	1	0.56	-	7.3	1.53		-		
		LEV	-	0.195	5.0	[15]	1	0.02.622	1	-	0.280	7.3	[16]	[10] 0.12	0.032		
		ULEV	-	0.117	5.0	$0.6^{-0.6}$	-	0.011	-	-	0.167	7.3	0.9 0.9	0.12	0.016		
		SULEV	-	0.059	2.5	0.3	-	0.006	-	-	0.084	3.7	0.45	0.06	0.008		
	MDV4	Tier 1	0.46	-	5.5	1.3	-	[11]	-	0.66	-	8.1	1.81	0.00	-		
		LEV	-	0.230	5.5	[17]	-	0.02828	-	-	0.330	8.1	[18]	[10] 0.12	0.040		
		ULEV	-	0.138	5.5	$0.7^{-0.7}$	-	0.014	-	-	0.197	8.1	1.0 1.0	0.12	0.021		
		SULEV	-	0.069	2.8	0.35	-	0.007	-	-	0.100	4.1	0.5	0.06	0.010		
	MDV5	Tier 1	0.60	-	7.0	2.0	-	[11]	-	0.86	-	10.3	2.77		-		
		LEV	-	0.300	7.0	[19]	•	0.03636	1	-	0.430	10.3	[20]	[10] 0.12	0.052		
		ULEV	-	0.180	7.0	1.0 1.0	-	0.018	-	-	0.257	10.3	1.5 1.5	0.12	0.026		
		SULEV	-	0.090	3.5	0.5	-	0.009	-	-	0.130	5.2	0.7	0.06	0.013		

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#### **EXHAUST EMISSION CERTIFICATION STANDARDS**

#### **Supplemental Federal Test Procedure (SFTP)**

### Federal and California Programs

# Light-Duty Vehicles (Passenger Cars), Light-Duty Trucks, and Medium-Duty Vehicles (grams/mile)

	Vehicle	Emission		4,000	Miles			5 Years / 50,	000 Miles		10 Years / 100,000 Miles					
	Туре	Category	US06 TEST		A/C TEST		COMPOSITE	A/C TEST	US06	COMPOSITE	COMPOSITE	A/C TEST	US06	COMPOSITE		
			NMHC+NOx	СО	NMHC+NOx	CO	NMHC+NOx	CO	CO	CO	NMHC+NOx	CO	СО	СО		
Federal	LDV	Tier 1 [27]					[21]	3.0	9.0	3.4	[22]	3.7	11.1	4.2		
	LDT1	Tier 1 [27]					0.65	3.0	9.0	3.4	0.91	3.7	11.1	4.2		
	LDT2	Tier 1					0.65 1.02	3.9	11.6	4.4	0.91 1.37	4.9	14.6	5.5		
	LDT3	Tier 1					1.02	3.9	11.6	4.4		[26]	[26]	[26] .4		
	LDT4	Tier 1 [12]					1.49	4.4	13.2	5.0	1.44	5.6	<sup>[26]</sup> 16.9	6 .3		
California	PC	Tier 1/TLEV [27]					[21]	3.0	9.0	3.4		6.4 3.7	19.3 11.1	7 4.2		
		LEV/ULEV	0.14	8.0	0.20	2.7	0.65				0.91					
	LDT1	Tier 1/TLEV [27]					[21]	3.0	9.0	3.4	[22]	3.7	11.1	4.2		
		LEV/ULEV	0.14	8.0	0.20	2.7	0.65				0.91					
	LDT2	Tier 1/TLEV [12]					1.02	3.9	11.6	4.4	1.37	4.9	14.6	5.5		
		LEV/ULEV	0.25	10.5	0.27	3.5										
	MDV1						N/A									
	MDV2	LEV/ULEV/SULEV	0.40	10.5	0.31	3.5										
	MDV3	LEV/ULEV/SULEV	0.60	11.8	0.44	4.0										
	MDV4						N	/A								
	MDV5						N	-/A								



#### EXHAUST EMISSION STANDARDS IMPLEMENTATION SCHEDULE

#### **Federal and California Programs**

# Light-Duty Vehicles (Passenger Cars), Light-Duty Trucks, and Medium-Duty Vehicles

	Vehicle	Test	Emission	Model Year														
	Type	Procedure	Category	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Federal	LDV	FTP	Tier 0	100%	100%	60% Max	20% Max	0%										
	&		Tier 1 [24]			40% Min	80% Min	100%	$\rightarrow$	1	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	τ	Jndetermine	d
	LDT1	SFTP [25]	Tier 1									40% Min	80% Min	100%	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$
	LDT2	FTP	Tier 0	100%	100%	60% Max	20% Max	0%										
			Tier 1			40% Min	80% Min	100%	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$		J <b>ndetermine</b>	d
		SFTP [25]	Tier 1									40% Min	80% Min	100%	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$
	LDT3	FTP	Tier 0	100%	100%	100%	100%	50% Max	0%									
	&		Tier 1					50% Min	100%	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	$\rightarrow$	<u>→</u> τ	Indetermine		
	LDT4	SFTP	Tier 1											40% Min	80% Min	100%	$\uparrow$	$\rightarrow$
California	PC	FTP	Tier 0	100%	60% Max	20% Max	0%											
	&		Tier 1		40% Min	<b>№ 80% Min</b>	1	$\wedge$	<b>M</b>	$\wedge$	Λ	M	<b>^</b>	<b>/</b>	Λ			
	LDT1		TLEV			0.250	0.231	0.225	0.202	0.157	0.113	0.073	0.070	0.068	0.062			
			LEV			NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	τ	Indetermine	d
			ULEV			Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.			
		SFTP	ZEV			V	V	V	V	V	V	V	V A 050/ 3.51	V ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	10% Min	1000/		
			Tier 1 TLEV										<b>1 25% Min</b>	<b>↑ 50% Min</b>	<b>1 85% Min</b>	100%	$\rightarrow$	$\rightarrow$
			LEV [23]										<b>V</b> ↑ 25% Min	∛ ∱ 50% Min	∛ 1 85% Min	<u>√</u> 100%		
			ULEV [23]										V 23/6 WIIII	V 30 % WIIII	V 65 % WIIII	/ 100%	$\rightarrow$	$\rightarrow$
	LDT2	FTP	Tier 0	100%	60% Max	20% Max	0%									<u>,                                      </u>		
			Tier 1		40% Min	80% Min	٨	٨	Λ .	٨	<b>M</b>	Λ.	Λ	Λ	Λ			
			TLEV			0.320	0.295	0.287	0.260	0.205	0.150	0.099	0.098	0.095	0.093	Ţ	Jndetermine	d
			LEV			NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	NMOG	NMOG			
		1051	ULEV			Fleet Avg.	Fleet Avg.	√Fleet Avg.	Fleet Avg.	√Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.	Fleet Avg.			
		SFTP [25]	Tier 1										<b>1 25% Min</b>	<b>↑ 50% Min</b>	<b>1 85% Min</b> 1 € 1 € 1 € 1 € 1 € 1 € 1 € 1 € 1 € 1	100%	$\rightarrow$	$\rightarrow$
			TLEV										<u>V</u>	Ņ.	V I	V		
			LL V										<b>1 25% Min</b>	↑ 50% Min	<b>№ 85% Min</b>	\ 100%	$\rightarrow$	$\rightarrow$
	MDV1		ULEV [23] Tier 0	100%	100%	100%	50% Max	0%					V	V	V	V		
	MIDVI	FIF	Tier 0	100%	100%	100%	50% Max 50% Min	100%	100%	73% Max	48% Max	23% Max	0%					
	MDV5		LEV [23]				JU /6 IVIIII	100 /6	10076	25% Min	50% Min	75% Min	80% Max	70% Max	60% Max	60% Max	60% Max	60% Max
	WIDVO		C ULEV [23]							2% Min	2% Min	2% Min	20% Min	30% Min	40% Min	40% Min	40% Min	40% Min
			C SULEV [23]							£ /0 IVIIII	2.70 IVIIII	270 IVIIII	2070 WIII	30 /0 IVIIII	40 /0 WIII	40 /0 WIII	40 /0 IVIIII	40 /0 IVIIII
	MDV2	SFTP	C LEV [23]												M	1	M	
	&		C ULEV [23]												25% Min	50% Min	100%	$\rightarrow$
	MDV3		SULEV [23]												\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V	V	· [
Last Modified:																•	,	



# Footnotes, Abbreviations, and Definitions

#### FOOTNOTES TO THE TABLES OF EMISSION STANDARDS

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- 1. NMHC FOR DIESEL-FUELED VEHICLES
- 2. THCE FOR METHANOL VEHICLES
- 3. THCE FOR TIER 0 METHANOL VEHICLES, NMHCE FOR OTHER ALCOHOL VEHICLES
- 4. APPLIES TO DIESEL VEHICLES ONLY
- 5. DOES NOT APPLY TO CNG VEHICLES
- 6. CNG VEHICLES ONLY
- 7. 1.0 FOR DIESEL-FUELED VEHICLES THROUGH 2003 MODEL YEAR
- 8. DOES NOT APPLY TO DIESEL-FUELED VEHICLES
- 9. 1.25 FOR DIESEL-FUELED VEHICLES THROUGH 2003 MODEL YEAR
- 10. DIESEL-FUELED VEHICLES ONLY
- 11. METHANOL AND ETHANOL VEHICLES ONLY
- 12. GASOLINE VEHICLES ONLY
- 13. 0.7 THROUGH MODEL YEAR 1997
- 14. 1.0 THROUGH MODEL YEAR 1997
- 15. 1.1 THROUGH MODEL YEAR 1997
- 16. 1.5 THROUGH MODEL YEAR 1997
- 17. 1.3 THROUGH MODEL YEAR 1997
- 18. 1.8 THROUGH MODEL YEAR 1997
- 19. 2.0 THROUGH MODEL YEAR 1997
- 20.~2.8~THROUGH~MODEL~YEAR~1997
- 21. 1.48 FOR DIESEL-FUELED VEHICLES
- 22. 2.07 FOR DIESEL-FUELED VEHICLES

23. OTHER EQUIVALENT SCHEDULES ALLOWED.

- 24. PC/LDV & LDT1 COMBINED WITH LDT2 FOR TIER 1 PHASE-IN
- 25. PC/LDV & LDT1 COMBINED WITH LDT2 FOR SFTP PHASE-IN
- 26. STANDARDS APPLY AT A USEFUL LIFE OF 11 YEARS / 120,000 MILES
- 27. GASOLINE AND DIESEL VEHICLES ONLY

# Footnotes, Abbreviations, and Definitions

#### ABBREVIATIONS USED IN THE TABLES OF EMISSION STANDARDS

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ALVV Adjusted Loaded Vehicle Weight

CO Carbon Monoxide

FTP Federal Test Procedure

**GVW Gross Vehicle Weight Rating** 

**HCH Formaldehyde** 

HDV Heavy-duty Vehicle [California definition] [federal definition]

**HLD** Heavy Light-duty Truck

LDT Light-duty Truck [California definition] [federal definition]

LDT1 Light-duty Truck 1

LDT2 Light-duty Truck 2

LDT3 Light-duty Truck 3

LDT4Light-duty Truck 4

LDV Light-duty Vehicle

LLD7Light Light-duty Truck

LEV Low Emission Vehicle

LVW Loaded Vehicle Weight

MDV Medium-duty Vehicle

NMH Non-methane Hydrocarbon

NMC Non-methane Organic Gases

NOx Nitrogen Oxides

PC Passenger Car

PM Particulate Matter

SFTP Supplemental Federal Test Procedure

SULF Super-Ultra-Low-Emission Vehicle

THC Total Hydrocarbon

TLEV Transitional Low-Emission Vehicle

TW Test Weight

ULE\Ultra-Low-Emission Vehicle

ZEV Zero-Emission Vehicle

## Footnotes, Abbreviations, and <u>Definitions</u>

#### FEDERAL DEFINITIONS

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#### Adjusted Loaded Vehicle Weight (ALVW)

The numerical average of vehicle curb weight and GVWR. (40 CFR 86.094-2)

[Note: The federal "adjusted loaded vehicle weight" definition is identical to the California definition for "test weight."]

#### **Approach Angle**

the automobile is standing and a line tangent to the front tire static loaded radius arc and touching the underside of the automobile forward of the front tire. (40 CFR 86.084-2)

#### **Axle Clearance**

The vertical distance from the level surface on which an automobile is standing to the lowest point on the axle differential of the automobile. (40 CFR 86.084-2)

#### **Basic Vehicle Frontal Area**

The area enclosed by the geometric projection of the basic vehicle along the longitudinal axis, which includes tires but excludes mirrors and air deflectors, onto

a plane perpendicular to the longitudinal axis of the vehicle. (40 CFR 86.082-2)

#### **Breakover Angle**

The supplement of the largest angle, in the plan side view of an automobile, that can be formed by two lines tangent to the front and rear static loaded radii arcs and intersecting at a point on the underside of the automobile. (40 CFR 86.084-2)

#### Departure Angle

the automobile is standing and a line tangent to the rear tire static loaded radius arc and touching the underside of the automobile rearward of the rear tire. (40 CFR 86.084-2)

#### Federal Test Procedure (FTP)

The test procedure as described in 40 CFR 86.130-00 paragraphs (a) through (d) and (f) which is designed to measure urban driving tail pipe exhaust emissions and

evaporative emissions over the Urban Dynamometer Driving Schedule as described in 40 CFR part 86 appendix I. (40 CFR 86.000-2)

#### Gross Vehicle Weight Rating (GVWR)

The value specified by the manufacturer as the maximum design loaded weight of a single vehicle. (40 CFR 86.082-2)

#### Heavy Light-Duty Truck (HLDT)

Heavy light-duty truck means any light-duty truck rated greater than 6,000 lbs GVWR. (40 CFR 86.094-2)

#### Heavy-Duty Vehicle (HDV)

Any motor vehicle rated at more than 8,500 pounds GVWR or that has a vehicle curb weight of more than 6000 pounds or that has a basic vehicle frontal area in excess of 45 square feet. (40 CFR 86.082-2)

#### Incomplete Truck

Any truck which does not have the primary load carrying device or container attached. (40 CFR 86.082-2)

## Footnotes, Abbreviations, and Definitions

#### FEDERAL DEFINITIONS - CONTINUED

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#### Light Light-Duty Truck (LLDT)

Light light-duty truck means any light-duty truck rated up through 6,000 lbs GVWR. (40 CFR 86.094-2)

[Note: The definition for this category of trucks is essentially identical to the California definition for "light-duty truck.")

#### Light-Duty Truck (LDT)

Any motor vehicle rated at 8,500 pounds GVWR or less which has a vehicle curb weight of 6,000 pounds or less and which has a basic vehicle frontal area of 45 square feet or

less, which is:

- (1) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or
- (2) Designed primarily for transportation of persons and has a capacity of more than 12 persons, or
- (3) Available with special features enabling off-street or off-highway operation and use. (40 CFR 86.082-2)

#### Light-Duty Truck 1 (LDT1)

Any light light-duty truck up through 3,750 lbs loaded vehicle weight. (40 CFR 86.094-2)

#### Light-Duty Truck 2 (LDT2)

Any light light-duty truck greater than 3,750 lbs loaded vehicle weight. (40 CFR 86.094-2)

#### Light-Duty Truck 3 (LDT3)

Any heavy light-duty truck up through 5,750 lbs adjusted loaded vehicle weight. (40 CFR 86.094-2)

#### Light-Duty Truck 4 (LDT4)

Any heavy light-duty truck greater than 5,750 lbs adjusted loaded vehicle weight. (40 CFR 86.094-2)

#### Light-Duty Vehicle (LDV)

A passenger car or passenger car derivative capable of seating 12 passengers or less.

[Note: The federal "light-duty vehicle" definition is essentially identical to the California definition for "passenger car."]

#### Loaded Vehicle Weight (LVW)

The vehicle curb weight plus 300 pounds. (40 CFR 86.082-2)

#### SC03 Cycle

The test cycle, described in 40 CFR 86.160-00 and listed in appendix I, paragraph (a), of 40 CFR part 86, which is designed to represent driving immediately following startup. (40 CFR 86.000-2)

# **Exhaust Emission Standards Footnotes, Abbreviations, and Definitions**

#### FEDERAL DEFINITIONS - CONTINUED

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#### Special Features Enabling Off-Street Or Off-Highway Operation And Use

A vehicle:

- (1) That has 4-wheel drive; and
- (2) That has at least four of the following characteristics calculated when the automobile is at curb weight, on a level surface, with the front wheels parallel to the vehicle's

longitudinal centerline, and the tires inflated to the manufacturer's recommended pressure;

- (i) Approach angle of not less than 28 degrees;
- (ii) Breakover angle of not less than 14 degrees;
- (iii) Departure angle of not less than 20 degrees;
- (iv) Running clearance of not less than 8 inches;
- (v) Front and rear axle clearances of not less than 7 inches each. (40 CFR 86.084-2)

#### Supplemental Federal Test Procedure

The additional test procedures designed to measure emissions during aggressive and microtransient driving, as described in 40 CFR 86.159-00 over the US06 cycle, and also the test procedure designed to measure urban driving emissions while the vehicle's air conditioning system is operating, as described in 40 CFR 86.160-00 over the SC03 cycle. (40 CFR 86.000-2)

#### US06

The test cycle, described in 40 CFR 86.159-00 and listed in appendix 1, paragraph (g) of 40 CFR part 86, which is designed to evaluate emissions during aggressive and microtransient driving. (40 CFR 86.000-2)

#### Vehicle Curb Weight (VCW)

The actual or the manufacturer's estimated weight of the vehicle in operational status with all standard equipment, and weight of fuel at nominal tank capacity, and the weight of optional equipment computed in accordance with 40 CFR 86.082-24; incomplete light-duty trucks shall have the curb weight specified by the manufacturer. (40 CFR 86.082-2)

## Footnotes, Abbreviations, and Definitions

#### **CALIFORNIA DEFINITIONS**

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#### Heavy-Duty Vehicle (HDV)

Any motor vehicle having a manufacturer's gross vehicle weight rating greater than 6000 pounds, except passenger cars.

#### **Incomplete Vehicle**

Any vehicle which does not have the primary load carrying device or container attached. In situations where individual marketing relationships makes the status of the vehicle questionable, the Executive Officer shall determine whether a specific model complies with the definition of incomplete vehicle.

#### Light-Duty Truck (LDT)

Any motor vehicle, rated at 6000 pounds gross vehicle weight or less, which is designed primarily for purposes of transportation of property or is a derivative of such a vehicle, or is available with special features enabling off-street or off-highway operation and use.

[Note: The California "light-duty truck" definition is essentially identical to the federal definition for "light light-duty truck."]

#### **Light-Duty Truck 1 (LDT1)**

Any light-duty truck up through 3,750 lbs loaded vehicle weight.

[Note: California does not use the terms "light-duty truck 1" and "light-duty truck 2" in an official sense. However, they subdivide their light-duty trucks of less than 6000 pounds GVWR based on LVW in exactly the same way the federal regulations do, so these terms are applied to California emission standards to facilitate comparison.]

#### Light-Duty Truck 2 (LDT2)

Any light-duty truck greater than 3,750 lbs loaded vehicle weight.

[Note: California does not use the terms "light-duty truck 1" and "light-duty truck 2" in an official sense. However, they subdivide their light-duty trucks of less than 6000 pounds GVWR based on LVW in exactly the same way the federal regulations do, so these terms are applied to California emission standards to facilitate comparison.]

#### Low-Emission Vehicle (LEV)

Any vehicle certified to low-emission standards.

#### Medium-Duty Vehicle (MDV)

Any pre-1995 model year heavy-duty vehicle having a manufacturer's gross vehicle weight rating of 8,500 pounds or less, any 1992 and subsequent model year heavy-duty low-emission, ultra-low-emission, super-ultra-low-emission or zero-emission vehicle

having a manufacturer's gross vehicle weight rating of 14,000 pounds or less, or any 1995 and subsequent model year heavy duty vehicle having a manufacturer's gross vehicle weight rating of 14,000 pounds or less. Medium-duty vehicles are subdivided into

five classes (MDV1-MDV5) based on vehicle test weight.

#### Non-Methane Organic Gases (NMOG)

The total mass of oxygenated and non-oxygenated hydrocarbon emissions.

#### Passenger Car (PC)

Any motor vehicle designed primarily for transportation of persons and having a design capacity of 12 persons or less.

[Note: The California "passenger car" definition is essentially identical to the federal definition for "light-duty vehicle."]

# **Exhaust Emission Standards Footnotes, Abbreviations, and <u>Definitions</u>**

#### **CALIFORNIA DEFINITIONS - CONTINUED**

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#### Super-Ultra-Low-Emission Vehicle (SULEV)

Any medium-duty vehicle certified to super-ultra-low-emission standards.

#### Test Weight (TW)

The average of the vehicle's curb weight and gross vehicle weight.

[Note: The California "test weight" definition is identical to the federal definition of "adjusted loaded vehicle weight."]

#### Transitional Low-Emission Vehicle (TLEV)

Any vehicle certified to transitional low-emission standards.

#### **Ultra-Low-Emission Vehicle (ULEV)**

Any vehicle certified to ultra-low emission standards.

#### Zero-emission vehicle (ZEV)

Any vehicle certified to zero-emission standards.