

# PROPOSED AMENDMENTS TO AFTERMARKET CATALYTIC CONVERTER TEST PROCEDURES

AIR RESOURCES BOARD

EL MONTE

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# INTRODUCTION

- ARB adopted “California Evaluation Procedures for New Aftermarket Catalytic Converters” (procedures) on October 25, 2007 to update testing requirements for aftermarket catalytic converters.
- The procedures
  - Increased durability criteria from 25,000 miles to 50,000 miles.
  - Required demonstration of compatibility with vehicle on-board diagnostic (OBD) systems.
  - Extended defect warranty from 25,000 miles to 5 years or 50,000 miles.
  - Established quality control checks and required quality control and warranty reporting.

# ISSUES/GOALS

- When the procedures were adopted, LEV I and LEV II were the most stringent emission standards.
- The procedures are not applicable to vehicles certified to the LEV III standards.
- Aftermarket catalytic converters cannot be approved for LEV III vehicles.
- Changes to the procedures are needed to incorporate LEV III standards and test procedures to allow for anti-tampering exemption of catalytic converters for sale and installation on LEV III vehicles.
- ARB's goal is to continue the availability of aftermarket catalytic converters for 2014 and newer model year vehicles.

# PROPOSED AMENDMENTS

## Sections Affected

- Section (c) – Definitions
- Section (e)(4)(A)(2) – Allowable Maintenance
- Section (e)(4)(C)(1) – Emissions Performance Measurement and Evaluation
- Section (e)(4)(A)(3) – Baseline Emission Testing

# Proposed Amendments

## LEV III references

### Section (c) Definitions

“Full useful life” refers to the FTP emission test standard applicable ~~between~~ to the point that the vehicle ~~has passed its interim useful life and the point that it reaches the end of its full useful life as defined in the certification requirements and test procedures incorporated by reference in title 13, CCR sections 1961(d) and 1961.2(d).~~

### Section (e)(4)(A)(2) Allowable Maintenance

Second sentence: Allowable scheduled maintenance shall be conducted according to the maintenance allowed in ARB’s certification procedures for new vehicles referenced in title 13, CCR sections 1961(d) and 1961.2(d) and applicable to the test vehicle.

### Section (e)(4)(C)(1) Emissions Performance Measurement and Evaluation

Two consecutive FTP emission tests shall be performed in accordance with the applicable test procedures (i.e., the procedures applicable to the model year and classification of the test vehicle) referenced in title 13, CCR sections 1960.1(k) and 1961.2(d).

# Proposed Amendments Corrections

## Section (e)(4)(A)(3) Baseline Emission Testing

Table 1. Emissions and Maintenance Criteria

Test Vehicle odometer mileage	Baseline Emissions	Allowable Maintenance
Less than 50,000 miles	Must comply with interim useful life certification standards, <u>if applicable</u>	Only scheduled maintenance allowed.
Over 50,000 but less than full useful life miles	Must comply with full useful life certification standards	Only scheduled maintenance allowed.
Over full useful life miles	Must comply with full useful life certification standards	Scheduled maintenance and any reconditioning or repairs needed to return the vehicle to OEM specifications.

## Section (c) Definitions

“Low Emission Vehicle (LEV) I standard” refers to the LEV vehicle category exhaust emission standards defined in title 13, CCR sections 1956.8(g), 1960.1(g)(1), and 1960.1(h)~~(1)~~(2).

# Next Steps

- Regulatory
  - Formal regulatory process needed to make corrections to the procedures.
  - Industry comments should be received by end of September.
  - Staff will be drafting the regulatory package later this year.
  - Staff expects to present amendments to the Board in 2017.
- Non-Regulatory
  - Manufacturers may continue to submit aftermarket catalytic converter applications for vehicles meeting LEV I, II, and III standards.
  - Staff will continue to evaluate aftermarket catalytic converters for LEV I, II, and III standards.
  - No EOs may be issued for LEV III vehicles until the amendments are approved.

# Questions??





# Back up Information

## § 1960.1. Exhaust Emissions Standards and Test Procedures -1981 through 2006 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

(h)(1) “Tier 1” Exhaust Emission Standards for MDVs. The exhaust emissions from new 1995 through 2003 model Tier 1 medium-duty vehicles shall not exceed:

1995-2003 MODEL-YEAR TIER 1 MEDIUM-DUTY VEHICLE EXHAUST EMISSIONS STANDARDS [FN1,2,3,7,8] (grams per mile)

<i>Test Weight(lbs.)</i>	<i>Durability Vehicle Basis(mi)</i>	<i>Non-Methane Hydrocarbons [FN4]</i>	<i>Carbon Monoxide</i>	<i>Oxides of Nitrogen [FN5]</i>	<i>Particulates [FN6]</i>
0-3,750	50,000	0.25	3.4	0.4	n/a
0-3,750	120,000	0.36	5.0	0.55	0.08
3,751-5,750	50,000	0.32	4.4	0.7	n/a
3,751-5,750	120,000	0.46	6.4	0.98	0.10
5,751-8,500	50,000	0.39	5.0	1.1	n/a
5,751-8,500	120,000	0.56	7.3	1.53	0.12
8,501-10,000	50,000	0.46	5.5	1.3	n/a
8,501-10,000	120,000	0.66	8.1	1.81	0.12
10,001-14,000	50,000	0.60	7.0	2.0	n/a
10,001-14,000	120,000	0.86	10.3	2.77	0.12

[FN1] “n/a” means not applicable. “Test Weight” shall mean the average of the vehicle's curb weight and gross vehicle weight.

[FN2] Manufacturers have the option of certifying engines used in incomplete and diesel medium-duty vehicles from 8501-14,000 pounds, gross vehicle weight to the heavy-duty engine standards and test procedures set forth in section 1956.8(e), Title 13, California Code of Regulations. Manufacturers certifying incomplete or diesel medium-duty vehicles to the heavy-duty engine standards and test procedures shall specify, in the application for certification, an in-use compliance test procedure, as provided in section 2139(c), Title 13, California Code of Regulations.

[FN3] For the 1995 model-year only, manufacturers of medium-duty vehicles may certify a maximum of 50 percent of their vehicles to the applicable 1994 model-year standards and test procedures. For the 1995 model year only, small volume manufacturers may certify 100 percent of their vehicles to the applicable 1994 model-year standards and test procedures. The percentage shall be based upon each manufacturer's projected sales of California-certified medium-duty vehicles.

[FN4] For methanol- and ethanol-fueled vehicles certifying to these standards, including flexible-fueled vehicles when certifying on methanol or ethanol, “Non-Methane Hydrocarbons” shall mean “Organic Material Non-Methane Hydrocarbon Equivalent” (or “OMNMHCE”).

[FN5] The maximum projected emissions of oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR Part 600 Subpart B) shall be not greater than 2.00 times the applicable medium-duty vehicle standards shown in the table. Both the projected emissions and the HWFET standards shall be rounded in accordance with ASTM E29-67 to the nearest 0.1 g/mi before being compared.

[FN6] Particulate standards are only applicable for diesel vehicles and shall be determined on a 120,000 mile basis.

[FN7] In-use compliance testing shall be limited to vehicles with less than 90,000 miles. For the 1995 through 1997 models, alternative in-use compliance is available for medium-duty vehicle manufacturers. A manufacturer may use alternative in-use compliance for up to 100 percent of its fleet in the 1995 and 1996 model years and up to 50 percent of its fleet in the 1997 model year. Small volume manufacturers may use alternative in-use compliance for up to 100 percent of their fleets in the 1995 through 1997 model years. The percentages shall be determined from the manufacturers' projected California sales of medium-duty vehicles. For vehicles certified to the standards and test procedures of this subsection, “alternative in-use compliance” shall consist of an in-use allowance of 25 percent over the applicable 1995 model-year non-methane hydrocarbon, carbon monoxide, and oxides of nitrogen 50,000 mile emission standards and a waiver of the emission standards beyond 50,000 miles.

[FN8] All medium-duty vehicles, except diesel-fueled vehicles and those incomplete and diesel vehicles certifying to heavy-duty engine test procedures, are subject to 50,000 mile and 120,000 mile non-methane hydrocarbon, carbon monoxide, and oxides of nitrogen standards. Diesel-fueled vehicles shall be subject to 120,000 mile non-methane hydrocarbon, carbon monoxide, oxides of nitrogen, and particulate standards only.

**§ 1960.1. Exhaust Emissions Standards and Test Procedures -1981 through 2006 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles. (cont.)**

(h)(2) “LEV I” Exhaust Emission Standards for MDVs. The exhaust emissions from new 1992 through 2006 model-year medium-duty LEV I low-emission vehicles, ultra-low-emission vehicles and super-ultra-low-emission vehicles shall not exceed:

LEV I EXHAUST EMISSION STANDARDS FOR LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES AND SUPER-ULTRA-LOW-EMISSION VEHICLES IN THE MEDIUM-DUTY VEHICLE WEIGHT CLASS [§9.10.11,12,13,14,15,16](#) [grams per mile (or “g/mi”)]

<i>Test Weight (lbs.) [FN1]</i>	<i>Durability Vehicle Basis (mi)</i>	<i>Vehicle Emission Category [FN2]</i>	<i>Non - Methane Organic Gases [FN3,4]</i>	<i>Carbon Monoxide</i>	<i>Oxides of Nitrogen [FN5]</i>	<i>Particulates [FN6,7]</i>		
0-3750	50,000	LEV	0.125	3.4	0.4	n/a		
		ULEV	0.075	1.7	0.2	n/a		
	120,000	LEV	0.180	5.0	0.6	0.08		
		ULEV	0.107	2.5	0.3	0.04		
		3751-5750	50,000	LEV	0.160	4.4	0.4	n/a
			ULEV	0.100	4.4	0.4	n/a	
3751-5750	50,000	SULEV	0.050	2.2	0.2	n/a		
		LEV	0.230	6.4	0.6	0.10		
	120,000	ULEV	0.143	6.4	0.6	0.05		
		SULEV	0.072	3.2	0.3	0.05		
		5751-8500	50,000	LEV	0.195	5.0	0.6	n/a
			ULEV	0.117	5.0	0.6	n/a	
5751-8500	50,000	SULEV	0.059	2.5	0.3	n/a		
		LEV	0.280	7.3	0.9	0.12		
	120,000	ULEV	0.167	7.3	0.9	0.06		
		SULEV	0.084	3.7	0.45	0.06		
		8501-10,000	50,000	LEV	0.230	5.5	0.7	n/a
			ULEV	0.138	5.5	0.7	n/a	
8501-10,000	50,000	SULEV	0.069	2.8	0.35	n/a		
		LEV	0.330	8.1	1.0	0.12		
	120,000	ULEV	0.197	8.1	1.0	0.06		
		SULEV	0.100	4.1	0.5	0.06		
		10,001-14,000	50,000	LEV	0.300	7.0	1.0	n/a
			ULEV	0.180	7.0	1.0	n/a	
10,001-14,000	50,000	SULEV	0.09	3.5	0.5	n/a		
		LEV	0.430	10.3	1.5	0.12		
	120,000	ULEV	0.257	10.3	1.5	0.06		
		SULEV	0.130	5.2	0.7	0.06		

**§ 1960.1. Exhaust Emissions Standards and Test Procedures -1981 through 2006 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles. (cont.)**

(k) The test procedures for determining compliance with these standards are set forth in “California Exhaust Emission Standards and Test Procedures for 1981 through 1987 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” adopted by the state board on November 23, 1976, as last amended May 20, 1987, and in “California Exhaust Emission Standards and Test Procedures for 1988 through 2000 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” adopted by the state board on May 20, 1987, as last amended August 5, 1999, both of which are incorporated herein by reference, and in “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as incorporated by reference in section 1961(d). The test procedures for determining the compliance of 2001 through 2006 model-year hybrid electric vehicles with the standards set forth in this section are set forth in “California Exhaust Emission Standards and Test Procedures for 2005 and Subsequent Model Zero-Emission Vehicles, and 2001 and Subsequent Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck, and Medium-Duty Vehicle Classes, as incorporated by reference in section 1962(h).

**§ 1961. Exhaust Emission Standards and Test Procedures - 2004 through 2019 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

(d) *Test Procedures.* The certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as amended December 6, 2012, the “California Non-Methane Organic Gas Test Procedures,” as amended December 6, 2012, which are incorporated herein by reference. In the case of hybrid electric vehicles and on-board fuel-fired heaters, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001 through 2008 Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962, the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.1, and the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes” incorporated by reference in section 1962.2.

**§ 1961.2. Exhaust Emission Standards and Test Procedures - 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.**

(d) *Test Procedures.* The certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as amended September 2, 2015, the “California Non-Methane Organic Gas Test Procedures for 1993 through 2016 Model Year Vehicles,” as amended September 2, 2015, and the “California Non-Methane Organic Gas Test Procedures for 2017 and Subsequent Model Year Vehicles,” as adopted September 2, 2015, which are incorporated herein by reference. In the case of hybrid electric vehicles and on-board fuel-fired heaters, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the “California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.1, and the “California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes,” incorporated by reference in section 1962.2.