

# The California Low-Emission Vehicle Regulations

(With Amendments Effective January 1, 2006)

The California low-emission vehicle (LEV) regulations are administered by the California Air Resources Board (ARB) and apply to passenger cars, light-duty trucks and medium-duty vehicles. They are contained in various sections of chapter 1 (Motor Vehicle Pollution Control Devices), division 3 (Air Resources Board), title 13, California Code of Regulations (CCR), which commences with section 1900. The LEV exhaust emission standards were originally adopted in a 1990-1991 rulemaking, and generally became applicable in the 1994 model year. The LEV program also includes requirements for the introduction of zero-emission vehicles (ZEVs).

Following a November 5, 1998 hearing, the ARB adopted the California "LEV II" regulations, which generally become applicable with the 2004 model year (although earlier certification to the LEV II standards is permitted). The LEV II rulemaking also included the adoption of Compliance Assurance Program "CAP 2000" amendments which establish new motor vehicle certification and in-use test requirements – developed jointly with the U.S. Environmental Protection Agency – applicable to 2001 and subsequent model motor vehicles. The LEV II regulations were formally adopted August 5, 1999 and became operative November 27, 1999. The original LEV standards are now referred to as the "LEV I" standards. Amendments adopted December 27, 2000 require manufacturers to market federally-certified vehicle models in California in those instances where the federal model is certified to a set of federal "Tier 2" exhaust emissions standards that are more stringent than the set of California LEV exhaust emission standards to which the manufacturer would otherwise certify the equivalent California model.

## The LEV I Regulations

The LEV I standards are contained primarily in section 1960.1, which includes all of the California exhaust emission standards for 1981 through 2003 model-year passenger cars, light-duty trucks and medium-duty vehicles. The key portions of section 1960.1 pertaining to the LEV I program are:

- § 1960.1(e)(2) Formaldehyde exhaust emission standards for 1993-2003 model methanol-fueled passenger cars, light-duty trucks and medium-duty vehicles.
- § 1960.1(e)(3) Formaldehyde exhaust emission standards for 1992-2006 model LEV I TLEVs, LEVs, ULEVs and SULEVs in the passenger car, light-duty truck, and medium-duty vehicle classes.
- § 1960.1(f)(2) The non-LEV so-called "Tier 1" standards for 1995 through 2003 model passenger cars and light-duty trucks.
- § 1960.1(g)(1) The "LEV I" TLEV, LEV and ULEV standards for passenger cars and light-duty trucks.
- § 1960.1(g)(2) The fleet average non-methane organic gas (NMOG) requirements for passenger cars and light-duty trucks for the 1994 through 2000 model years (the fleet average NMOG requirements for the 2001-2003 model years are now in section 1961(b)(1)(A)). The fleet average NMOG mechanism requires manufacturers to introduce an incrementally cleaner mix of Tier 1, TLEV, LEV, ULEV and ZEV vehicles each year, with the fleet average NMOG value for passenger cars and lighter light-duty trucks decreasing from 0.25 gram/mile in the 1994 model year to 0.062 gram/mile in the 2003 model year.
- § 1960.1(h)(1) The non-LEV so-called "Tier 1" standards for 1995-2003 medium-duty vehicles.
- § 1960.1(h)(2) The "LEV I" LEV, ULEV and SULEV standards for medium-duty vehicles (the phase-in requirements are in note (10) to the table in section 1960.1(h)(2)).
- § 1960.1(p) The cold temperature carbon monoxide standards for 1996-2000 model vehicles.

In addition, section 1960.1(q) and (r) contain the following Supplemental Federal Test Procedure (SFTP) standards which apply to both LEV I and LEV II vehicles:

- §1960.1(q) The SFTP standards for 2001 and subsequent model passenger cars and light-duty trucks other than LEVs, ULEVs, and ZEVs (the phase-in requirements are in note (9) to the table in §1960.1(q)).
- §1960.1(r) The SFTP exhaust emission standards for 2001 and subsequent model LEVs and ULEVs in the passenger cars and light-duty truck classes, and 2003 and subsequent LEVs, ULEVs, and SULEVs in the medium-duty classes (the phase-in requirements are in note (10) to the table in §1960.1(r)).

Section 1956.8, which establishes exhaust emission standards for heavy-duty vehicles, contains two subsections containing optional standards for engines used in incomplete medium-duty vehicles or diesel engines used in medium-duty vehicles. Engines subject to this option are tested in accordance with the heavy-duty test procedures incorporated by reference in section 1956.8(b) and (d).

- §1956.8(g) Tier 1 exhaust emission standards for 1995 and subsequent model engines used in incomplete medium-duty vehicles.
- §1956.8(h) LEV, ULEV, SULEV standards for engines used in incomplete medium-duty vehicles, and for diesel engines used in medium-duty LEVs, ULEVs and SULEVs.

The LEV I standards in the subsections of section 1960.1 listed above are also contained in a comprehensive document incorporated by reference in section 1960.1(k) – the “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles.” This complete 135-page document is available on the ARB’s Internet site. To reduce testing burdens, ARB has to the extent feasible based the California test procedures on the corresponding federal test procedures administered by U.S. EPA. The Standards and Test Procedures document accordingly incorporates the federal test procedures contained in subparts A, B, and C, Part 86, Title 40, Code of Federal Regulations with modifications for the California program.

All 2001 and subsequent model passenger cars, light-duty trucks and medium-duty vehicles certified to the LEV I or LEV II standards will be subject to the CAP 2000 certification procedures – the “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” incorporated by reference in section 1961(d). This document is also available on the ARB’s Internet site, and incorporates the federal test procedures contained in subparts B, C and S, Part 86, Title 40, Code of Federal Regulations with modifications for the California program.

### **The ZEV Regulation**

The LEV I regulations also included standards for ZEVs, and requirements that specified percentages of 1998 and subsequent model passenger cars and light-duty trucks with a loaded vehicle weight of 0-3750 lbs. be certified as ZEVs. As originally adopted in the 1990-1991 LEV I rulemaking, the percentages were 2% for 1998-2000 model vehicles, 5% for 2001-2002 model vehicles, and 10% for 2003 and subsequent model vehicles. In a 1996 rulemaking, the ARB eliminated the requirements for the 1998-2002 model years, but maintained the 10% requirements for the 2003 and subsequent model years. The ZEV requirements were originally contained in note (9) of the table in section 1960.1(g)(2). In the LEV II rulemaking, the ARB moved all of the ZEV provisions to new section 1962, and added provisions pertaining to partial ZEV credits. At a January 25, 2001 hearing, the ARB approved major amendments to the ZEV requirements that significantly reduced the number of full function ZEVs required in the initial years of the program starting with the 2003 model year. These 2001 ZEV amendments were finally adopted on April 12, 2002, were approved by OAL on May 24, 2002, and became operative July 24, 2002. On June 11, 2002, a federal district court judge issued a preliminary injunction that enjoins the ARB’s Executive Officer from enforcing the 2001 ZEV Amendments with respect to the sale of new motor vehicles in the 2003 or 2004 model years, pending final resolution of the case. The ARB appealed issuance of the preliminary injunction to

the U.S. Court of Appeals for the Ninth Circuit, where oral argument was conducted February 13, 2003. Following March 27-28 2003 and April 24, 2003 hearings, on December 19, 2003 the ARB adopted amendments to the ZEV regulation which included a restart of the program in the 2005 model year with substantial additional revisions. These amendments were approved by California's Office of Administrative Law on February 25, 2004, and became effective March 26, 2004.

Section 1962(h) incorporates by reference the "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," available on the ARB's Internet site.

### **The LEV II Regulations**

The LEV II exhaust emission standards and requirements are contained in section 1961, and will be phased in over the 2004 through 2007 model years. One of the major changes made by the LEV II standards is that all light-duty trucks will be subject to the same emission standards as passenger cars, and vehicles under 8500 lbs. gross vehicle weight (including sport utility vehicles) that had previously been treated as medium-duty vehicles will start to be treated as light-duty trucks. Section 1961 includes the following subsections:

- § 1961(a) The LEV II exhaust emission standards.
- § 1961(b) The LEV II emissions standards phase-in requirements (including fleet average NMOG requirements for passenger cars and light-duty trucks in section 1961(b)(1), a schedule containing the minimum percentages of 2004-2007 passenger cars and light-duty trucks that must be certified to the LEV II rather than LEV I standards in section 1961(b)(2), and medium-duty vehicle phase-in requirements in section 1961(b)(3)). The amendments adopted in December 2001 on the instances in which federally-certified Tier 2 vehicles are required in California are contained largely in section 1961(a)(14).
- § 1961(c) Calculation of NMOG credits and debits.
- § 1961(d) Test Procedures, incorporating the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" and, with respect to hybrid-electric vehicles, reference the "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," both of which are available on the ARB's Internet site.
- § 1961(e) Abbreviations.

Another element of the LEV II regulations is the LEV II evaporative emission standards, which are contained in section 1976(b)(1)(F) and are phased in during the 2004 - 2006 model years. The preexisting evaporative emission standards are in section 1976(b)(1)(B) and (C).

### **The Greenhouse Gas Regulations**

In September 2004, the ARB approved regulations to control greenhouse gas emissions from new LEV II vehicles beginning with the 2009 model year. These Greenhouse Gas Regulations add four greenhouse gas air contaminants to the vehicular criteria and toxic air contaminant emissions that California was already regulating – carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and hydrofluorocarbons (air conditioner refrigerants). The Rulemaking established a declining fleet average standard for these gases, with separate standards for the lighter and heavier portions of the passenger vehicle fleet. The greenhouse gas regulations delay compliance for small, independent low volume, and intermediate size manufacturers. The regulations also provide alternative compliance methods including credit generation from alternatively-fueled vehicles, and averaging, banking, and trading of credits within and among manufacturers. To ensure compliance with the adopted standards, the Rulemaking also requires additional certification emissions testing for the covered greenhouse gases.

The Greenhouse Gas Regulations, approved by OAL on September 15, 2005, consist primarily of a new section 1961.1 that becomes effective January 1, 2006. Section 1961.1 includes the following subsections:

- § 1961.1(a) The Greenhouse Gas Emission Requirements (including fleet average greenhouse gas requirements for passenger cars, light-duty trucks, and medium-duty passenger vehicles in section 1961.1(a)(1)(A), procedures for calculating fleet average greenhouse gas values in section 1961.1(a)(1)(B), requirements specific to intermediate volume manufacturers in section 1961.1(a)(1)(C), and requirements specific to small volume manufacturers and independent low volume manufacturers in section 1961.1(a)(1)(D)).
- § 1961.1(b) Calculation of Greenhouse Gas credits and debits.
- § 1961.1(c) Test Procedures, referencing the incorporated “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” and, with respect to hybrid-electric vehicles and on-board fuel-fired heaters, referencing the incorporated “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,” both of which are available on the ARB’s Internet site.
- § 1961.1(d) Abbreviations.
- § 1961.1(e) Definitions specific to section 1961.1
- § 1961.1(f) Severability.
- § 1961.1(g) Effective date of section 1961.1

### **Related Requirements**

In addition to the LEV exhaust emission standards in sections 1960.1 and 1961, and the fleet average greenhouse gas emission standards in section 1961.1, a number of other ARB requirements apply to LEVs. Included in this document are title 13, California Code of Regulations, sections 1965 (Emission Control and Smog Index Labels - 1979 and Subsequent Model-Year Motor Vehicles), 1978 (Standards and Test Procedures for Vehicle Refueling Emissions), 2062 (Assembly-Line Test Procedures - 1998 and Subsequent Model Years), and 2101 (Compliance Testing and Inspection - New Vehicle Selection, Evaluation, and Enforcement). Other requirements not set forth in this document include requirements for on-board diagnostic (OBDII) systems (§§1968.1, 1968.2 and 1968.5), fill pipes (§2235), emission warranties (§§2037 and 2038), recalls (§§2111 and following) and related provisions.