

State of California  
AIR RESOURCES BOARD

Resolution 98-53

November 5, 1998

Agenda Item No.: 98-12-1

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (the Board or ARB) to adopt standards, rules and regulations and to do such acts as may be necessary for the proper execution of the powers and duties granted to and imposed upon the Board by law;

WHEREAS, in section 43000 of the Health and Safety Code, the Legislature has declared that the emission of air pollutants from motor vehicles is the primary cause of air pollution in many parts of the State, and sections 39002 and 39003 of the Health and Safety Code charge the Board with the responsibility of air pollution control from motor vehicles;

WHEREAS, sections 43013, 43101, and 43104 of the Health and Safety Code authorize the Board to adopt emission standards and test procedures to control air pollution caused by motor vehicles;

WHEREAS, section 43018(a) of the Health and Safety Code directs the Board to endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of state ambient air quality standards at the earliest practicable date;

WHEREAS, section 43018(c) of the Health and Safety Code provides that in carrying out section 43018, the Board shall adopt standards and regulations that will result in the most cost-effective combination of control measures on all classes of motor vehicles and motor vehicle fuel, including but not limited to reductions in motor vehicle exhaust and evaporative emissions, and reductions in in-use vehicular emissions through durability and performance improvements;

WHEREAS, in a 1990-1991 rulemaking, the Board adopted the California Low-Emission Vehicle (LEV) regulations, which established the most stringent exhaust regulations ever for light- and medium-duty vehicles; the regulations include three primary elements: (1) tiers of exhaust emission standards for increasingly more stringent categories of low-emission vehicles, (2) a mechanism requiring each manufacturer to phase-in a progressively cleaner mix of vehicles from year to year with the option of credit trading, and (3) a requirement that a specified percentage of passenger cars and lighter light-duty trucks be ZEVs, vehicles with no emissions;

WHEREAS, under the LEV program there are four low-emission vehicle categories to which a passenger car or lighter light-duty truck may be certified: Transitional Low-Emission Vehicle (TLEV), Low-Emission Vehicle (LEV), Ultra Low-Emission Vehicle (ULEV) and ZEV; for heavier light-duty trucks and medium-duty vehicles, there are four categories: LEV, ULEV, Super Ultra Low-Emission Vehicle (SULEV) and ZEV;

WHEREAS, while all passenger cars are subject to the same low-emission vehicle standards regardless of weight, all but the lightest light-trucks, sport utility vehicles (SUVs) and minivans are subject to less stringent exhaust emission standards that vary depending on the weight classification of the vehicle, and allow the heavier vehicles to emit increasing amounts of air pollutants;

WHEREAS, the LEV regulations require manufacturers to phase in an increasingly cleaner passenger car and light-duty truck fleet each year from the 1994 through the 2003 model years, after which the vehicles must continue to meet the 2003 model-year fleet-wide standards; the low-emission vehicle standards for chassis-certified medium-duty vehicles are phased in between the 1998 and the 2004 model years, after which time a manufacturer must certify at least 60% LEVs and 40% ULEVs;

WHEREAS, the LEV regulations as originally adopted required that specified percentages of the passenger cars and lightest light-duty trucks produced by each of the seven largest manufacturers be ZEVs (with a marketable credits system), starting with 2% ZEVs required for the 1998-2000 model years, 5% for the 2001-2002 model years, and for all but small-volume manufacturers, 10% ZEVs for 2003 and subsequent model years; in 1996 the Board eliminated the regulatory ZEV requirements applicable prior to the 2003 model year;

WHEREAS, the Board administers enhanced evaporative emission requirements that were originally adopted in 1990 and have been phased in over the 1995-1997 model years; the evaporative emission standards for passenger cars and light-duty trucks are 2.0 grams of hydrocarbon for a 3-day diurnal-plus-hot-soak test, 2.5 grams of hydrocarbon for a 2-day diurnal-plus-hot-soak test, and 0.05 g/mi for running losses;

WHEREAS, based on U.S. Environmental Protection Agency (U.S. EPA) certification requirements, the ARB has for many years required that the manufacturer of a vehicle model submit extensive test data to the ARB demonstrating that the vehicle meets the applicable standards prior to production;

WHEREAS, ARB staff have since 1995 worked with U.S. EPA and the automobile industry to develop a streamlined motor vehicle certification process coupled with an enhanced in-use compliance program, collectively called the "Compliance Assurance Program" or "CAP 2000", and on July 23, 1998 U.S. EPA published its proposed CAP 2000 amendments;

WHEREAS, the State Implementation Plan (SIP) for ozone adopted by the Board in 1994 and approved by U.S. EPA in 1995 contains Mobile Source Measure M2, which calls for the adoption of technology-based emission control strategies for light-duty vehicles to be implemented beginning with the 2004 model year and identifies a reduction of 25 tons per day (tpd) reactive organic gases (ROG) plus oxides of nitrogen (NOx); in addition, the SIP recognizes that the greater Los Angeles area may need to rely on the development of additional technology measures to meet an additional 75 tpd ROG plus NOx emission reduction target — a target often referred to as the “Black Box”;

WHEREAS, in conjunction with a public hearing notice dated September 8, 1998, the staff has proposed a comprehensive set of amendments — referred to as “LEV II” — to the low-emission vehicle regulations, along with amendments establishing the CAP 2000 program; these amendments include the following primary elements:

Restructuring vehicle weight classifications so that all current light-duty trucks, and all current medium-duty vehicles having a gross vehicle weight (GVW) of less than 8,500 lbs., would generally be subject to the same TLEV, LEV and ULEV standards as passenger cars; only the very heaviest SUVs and pick-up trucks would remain subject to separate medium-duty vehicle standards;

New more stringent “LEV II” exhaust emission standards for the current TLEV, LEV, ULEV and SULEV categories, which would be phased in from the 2004 to 2007 model years; the changes include reducing the NOx standard for passenger cars and light-duty trucks certified to the LEV and ULEV standards to 0.05 g/mi from the current 0.2 g/mi level, equivalent NOx reductions for medium-duty vehicles, more stringent particulate emission standards for diesel vehicles, increasing the useful life for passenger cars and light-duty trucks from the current 100,000 miles to 120,000 miles, a new light-duty SULEV category would be created with an NMOG standard less than one-fourth of the level for ULEVs, and a manufacturer option of certifying any TLEV, LEV, ULEV or SULEV to a 150,000 mile certification standard, resulting in greater NMOG credits as long as the manufacturer provides an 8-year/100,000-mile warranty for high-cost parts rather than for the normal 7 years/70,000 miles;

Continuing yearly reductions in the fleet average NMOG requirements from model years 2004 through 2010, when the fleet average NMOG requirement for passenger cars would be 0.035 g/mi; there would be a separate phase-in schedule for the heavier light-duty trucks in the new LDT2 class, and for medium-duty vehicles the requirement of a 60/40 mix of LEVs and ULEVs in 2004 and subsequent model years would be changed to 40/60;

A new “partial ZEV allowance” mechanism under which advanced technology vehicles could provide partial credits towards satisfying a manufacturer’s ZEV requirement; in

order to receive any ZEV allowance, a vehicle would have to qualify for the “baseline ZEV allowance” of 0.2 by meeting the SULEV standard at 150,000 miles, satisfying applicable second generation on-board diagnostics requirements (OBD II), having “zero” evaporative emissions, and carrying an emission warranty covering all malfunctions identified by the OBD II system for 15 years or 150,000 miles; an additional allowance would be provided based on the potential for realizing zero-emission VMT (e.g., capable of some all-electric operation traceable to energy from off-vehicle charging), up to a maximum of 0.6; and a vehicle that uses fuel with very low fuel-cycle emissions could receive a ZEV allowance of up to 0.2; a large volume manufacturer would have to meet at least 40% of its ZEV requirement with true ZEVs or vehicles with a 1.0 ZEV allowance;

More stringent evaporative emission standards for the 3-day diurnal-plus-hot-soak test and the 2-day diurnal-plus-hot-soak test, applicable to both fuel and non-fuel vehicle emissions and for a useful-life of 15 years or 150,000 miles, whichever first occurs; certification to the new standards would be required for 40% of a manufacturer’s vehicles in the 2004 model year, 80% in the 2005 model year, and 100% in the 2006 model year, with an optional alternative phase-in mechanism; and

“CAP 2000” amendments which would significantly reduce the emission testing and reporting requirements for new vehicle certification, and substitute new requirements that manufacturers conduct more extensive compliance tests of in-use vehicles that have accumulated substantial mileage;

WHEREAS, the California Environmental Quality Act and Board regulations require that no project which may have significant adverse environmental impacts be adopted as originally proposed if feasible alternatives or mitigation measures are available to reduce or eliminate such impacts;

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of Chapter 3.5 (commencing with section 11340), Part 1, Division 3, Title 2 of the Government Code;

WHEREAS, the Board has considered the effect of the proposed amendments on the economy of the State;

WHEREAS, the Board finds that:

Although significant strides have been made toward improving California’s air quality, health-based state and federal air quality standards continue to be exceeded in regions throughout California; the federal 1-hour ozone standard is exceeded in the South Coast Air Basin, San Diego County, the San Joaquin Valley, the Southeast Desert, the greater

Sacramento area and Ventura County, and more areas of the State are likely to be designated as being in nonattainment of the new federal eight-hour ozone standard;

Ozone in the lower atmosphere is created by the photochemical reaction of ROG and NOx, and leads to harmful respiratory effects including lung damage, chest pain, coughing, and shortness of breath, especially affecting children and persons with compromised respiratory systems;

While the more lenient gram per mile emission standards for light trucks and vehicles derived from light trucks were established to account for heavier loads and a potentially more rigorous duty cycle of work trucks, it is now very common for trucks and SUVs to be used primarily for personal transportation (i.e., as passenger cars), and light trucks (including SUVs) have increased from 20% of the vehicle market in 1980 to almost 46% in 1997;

Manufacturers will have considerable lead time to achieve compliance with the more stringent LEVII exhaust emission standards, since required compliance with those standards is phased in from the 2004 to 2007 model years; given that lead time, technological feasibility is demonstrated if the ARB identifies the control technologies that would achieve compliance with the new standards, answers any theoretical objections to the projected technologies, identifies the major steps necessary for refinement of the technologies, and offers plausible reasons for believing that each of these steps can be completed in the time available;

The four basic strategies to achieve the stringent exhaust emission standards are more precise fuel control, improved fuel delivery, better catalytic converter performance, and reduced base engine-out levels;

The rigorous test program conducted by staff on two large SUVs (Ford Expeditions), equipped with aged catalysts and oxygen sensors and tested at their highest test weights, demonstrates that advanced emission control technologies in use today, coupled with the most advanced catalysts now available from suppliers and an only partially optimized fuel delivery system, can achieve emissions meeting the proposed more stringent LEV standard; proper fuel tailoring by the manufacturer through reprogramming the engine computer will result in better catalyst conversion and further emission reductions;

The Staff Report identifies a number of other control technologies that were not available to staff during the test program but could be used by industry; these technologies can further reduce emissions to provide additional headroom and compliance with the LEVII ULEV standard prior to the 2007 model-year deadline;

The element of the approved amendments that allows a manufacturer to certify up to 4% of its truck sales in the LDT2 category to a marginally higher NOx emission standard will satisfy a manufacturer's need to engineer some of its heavier trucks for more rigorous duty;

The staff's test program involving five 1997 and 1998 model-year passenger cars, modified by the addition of advanced catalysts, have also shown that the LEV II standards can be achieved with a reasonable margin;

Based on the evaporative emissions test program conducted by staff, the approved new evaporative emission standards are technologically feasible through the application of relatively simple improvements to current evaporative and fuel systems, notwithstanding the impact of emissions from a vehicle's paint, interior and tires;

The many market-based flexibilities built into the approved amendments contribute significantly to the technological feasibility and cost-effectiveness of the program, because they allow each manufacturer to the mechanisms in ways best suited to the manufacturer's operations;

The approved amendments pertaining to partial ZEV allowances are necessary and appropriate to recognize that a variety of advanced technologies have been developed since 1990 which are capable of extremely low levels of emissions, while at the same time true ZEVs continue to have the important advantage of inherent emission durability;

The remaining elements of the approved amendments are necessary, appropriate, and technologically feasible;

The two instances in the approved amendments requiring that manufacturers receiving credits for vehicles certified to optional longer-life standards must provide emissions warranties for longer periods than are specified in statutes are necessary and appropriate in that they provide additional incentives to assure that these vehicles are especially durable, and are authorized because they apply only under optional mechanisms which no manufacturer is required to use;

The independent automobile service and aftermarket parts industry believes the staff proposal intended to increase emission system durability by extending the warranty on emission-related parts will have an adverse impact on independent, non-dealership automotive repair businesses in California because warranty repairs can be performed only at automotive dealerships;

The CAP 2000 elements of the approved amendments will allow manufacturers to divert significant resources presently devoted to vehicle certification and redirect them toward

in-use compliance in order to provide greater assurance that vehicles are actually complying with the standards in-use; the amendments will also result in cost savings for manufacturers of from \$36 million to \$57 million per year;

While the California motor vehicle emissions regulations as amended herein are different from the federal regulations administered by U.S. EPA, the California regulations approved herein are authorized by State law; and

The approved amendments will not affect the creation or elimination of jobs within the State of California, the creation of new businesses or the elimination of existing businesses within California, the expansion of businesses currently doing business within California, or the ability of California businesses to compete with businesses in other states;

WHEREAS, the Board further finds that:

The amendments approved herein will not have any significant adverse impacts on the environment;

The amendments approved herein will result in 2010 South Coast Air Basin emission reductions of approximately 57 tpd ROG + NOx; this meets the SIP requirements of M2 and achieves a substantial portion of the Black Box emission reductions for the South Coast Air Basin; and

The projected costs to comply with the amendments approved herein are expected to range from about \$68 to \$206 per vehicle, with an average of about \$107; the estimated cost-effectiveness ranges from \$0.50 to \$1.39 per pound of ROG + NOx reduced (about \$1 per pound overall), which compares very favorably to the typical cost-effectiveness values for current air pollution control measures.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves the amendments to title 13, California Code of Regulations, set forth in Attachment A hereto, the amendments to (and adoption of) the documents incorporated by those regulations as set forth in Attachments B through M hereto, with the modifications set forth in Attachment N hereto other than those pertaining to TLEV standards, and with the additional modification of eliminating the TLEV categories in the LEV II standards and, starting in the 2004 model year, in the LEV I standards.

BE IT FURTHER RESOLVED that the Board directs the Executive Officer to incorporate into the approved amendments the modifications described above, with such other conforming modifications as may be appropriate, and then to adopt the modified amendments, after making the modified regulatory language available for public comment for a period of 15 days, provided that the Executive Officer shall consider such written comments regarding the modified text as may be submitted during this period, shall make modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if he determines that this is warranted.

BE IT FURTHER RESOLVED that in continuation of the mechanism established with the adoption of the original LEV regulations, the Executive Officer is directed to report to the Board at least biennially on the status of implementation of the amendments approved herein, identifying any significant problems and proposing any appropriate regulatory modifications; the regulated public and other interested parties shall be consulted in the preparation of the reports and the public shall be provided an opportunity to make oral and written comments to the Board in conjunction with the reports.

BE IT FURTHER RESOLVED that the ARB staff shall work with representatives of the independent automobile service and aftermarket parts industry and other interested parties, to assess the degree to which this industry may be adversely impacted by the extended warranties, and to report back to the Board within 18 months with its findings and proposals, and if appropriate, to help mitigate any adverse impacts so that the independent automotive service and aftermarket parts industry may continue to contribute to the State's efforts to reduce smog and to continue to provide our State's twenty-six million vehicle owners with a competitive automotive repair marketplace for their service-related needs.

BE IT FURTHER RESOLVED that the Board hereby determines that the regulations approved herein will not cause California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards.

BE IT FURTHER RESOLVED that the Board hereby finds that separate California emission standards and test procedures are necessary to meet compelling and extraordinary conditions.

BE IT FURTHER RESOLVED that the Board finds that the California emission standards and test procedures as approved herein will not cause the California requirements to be inconsistent with section 202(a) of the Clean Air Act and raise no new issues affecting previous waiver determinations of the Administrator of the Environmental Protection Agency pursuant to section 209(b) of the Clean Air Act.

BE IT FURTHER RESOLVED that the Executive Officer shall, upon adoption, forward the regulations to the U.S. EPA with a request for a waiver of federal preemption pursuant to section 209(b) of the Clean Air Act.

I hereby certify that the above is a true and correct copy of Resolution 98-53, as adopted by the Air Resources Board.

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Pat Hutchens, Clerk of the Board

## **Resolution 98-53**

November 5, 1998

### Identification of Attachments to the Resolution

- Attachment A:** Proposed Regulation Order, as set forth in Appendix A of the Staff Report: Initial Statement of Reasons
- Attachment B:** Proposed Amendments to the “California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” as set forth in Appendix B-2 of the Staff Report: Initial Statement of Reasons
- Attachment C:** Proposed new “California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” as set forth in Appendix B-3 of the Staff Report: Initial Statement of Reasons
- Attachment D:** Proposed new “California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” as set forth in Appendix B-4 of the Staff Report: Initial Statement of Reasons
- Attachment E:** Proposed Amendments to the “California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Motor Vehicles,” as set forth in Appendix C-2 of the Staff Report: Initial Statement of Reasons
- Attachment F:** Proposed new “California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” as set forth in Appendix C-3 of the Staff Report: Initial Statement of Reasons
- Attachment G:** Proposed Amendments to the “California Refueling Emission Standards and Test Procedures for 1998 and Subsequent Model Motor Vehicles,” as set forth in Appendix D-2 of the Staff Report: Initial Statement of Reasons
- Attachment H:** Proposed new “California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles,” as set forth in Appendix D-3 of the Staff Report: Initial Statement of Reasons
- Attachment I:** Proposed Amendments to the “California Assembly-line Test Procedures for 1998 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-

Duty Vehicles,” as set forth in Appendix E-2 of the Staff Report: Initial Statement of Reasons

**Attachment J:** Proposed new “California Assembly-Line Test Procedures for 2001 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” as set forth in Appendix E-3 of the Staff Report: Initial Statement of Reasons

**Attachment K:** Proposed Amendments to the “California New Vehicle Compliance Test Procedures,” as set forth in Appendix F-1 of the Staff Report: Initial Statement of Reasons

**Attachment L:** Proposed Amendments to the “California Motor Vehicle Emission Control and Smog Index Label Specifications,” as set forth in Appendix G-2 of the Staff Report: Initial Statement of Reasons

**Attachment M:** Proposed Amendments to the “California Non-Methane Organic Gas Test Procedures,” as set forth in Appendix H-2 of the Staff Report: Initial Statement of Reasons

**Attachment N:** Staff’s Suggested Changes to the Original Proposal, distributed at the hearing on November 5, 1998 (as corrected 11/5/98)