

State of California  
AIR RESOURCES BOARD

Resolution 04-19

June 24, 2004

Agenda Item No.: 04-6-4

WHEREAS, sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (the "Board") 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, in sections 39002 and 39003 of the Health and Safety Code, has charged the Board with the responsibility of systematically addressing the serious air pollution problem caused by motor vehicles;

WHEREAS, sections 43013, 43101, and 43104 of the Health and Safety Code authorize the Board to adopt motor vehicle emission standards, in-use performance standards, and test procedures which it finds to be necessary, cost-effective, and technologically feasible;

WHEREAS, section 43018 of the Health and Safety Code directs the Board to endeavor to achieve the maximum degree of emission reduction possible from motor vehicle sources to accomplish the attainment of state ambient air quality standards by the earliest practicable date;

WHEREAS, section 43806 of the Health and Safety Code directs the Board to adopt emission standards and procedures applicable to new engines used in publicly owned and privately owned public transit buses;

WHEREAS, the United States Environmental Protection Agency has promulgated emission standards and programs to reduce emissions from urban transit buses, and those standards and programs can be found in title 40 of the Code of Federal Regulations, part 86;

WHEREAS, section 43701(b) of the Health and Safety Code requires the Board to adopt regulations that require heavy-duty diesel vehicles to utilize emission control equipment and alternative fuels to reduce emissions to the greatest extent feasible;

WHEREAS, section 39667 of the Health and Safety Code directs the Board to achieve the maximum possible reduction in public exposure to toxic air contaminants

by establishing emission standards for vehicular sources, including new and in-use motor vehicles and fuels;

WHEREAS, on August 27, 1998, following extensive scientific review and public hearings, and consistent with the conclusions of the Scientific Review Panel and the Office of Environmental Health Hazard Assessment, the Board formally identified particulate matter (PM) emissions from diesel-fueled engines as a toxic air contaminant and on September 28, 2000, approved a plan to reduce risk from diesel pollution by reducing harmful PM emissions from diesel engines;

WHEREAS, the Board, through the adoption of Resolution 98-49 on September 24, 1998, called on state, local, and federal agencies to join together to "clean the fleet," supported immediate and continuing efforts to replace diesel-fueled school and public urban transit buses with low-emission alternative-fuel buses, including the provision of necessary infrastructure and technical training, and directed the staff to distribute this resolution to multiple affected parties;

WHEREAS, at a public hearing on February 24, 2000, the Board adopted Resolution 00-2 to achieve near-term and long-term emission reductions from urban transit buses through a multifaceted fleet rule designed to reduce emissions of oxides of nitrogen (NOx) and diesel PM by mandating a lower fleet average of NOx emissions; by requiring engines to be retrofitted with devices to reduce diesel PM emissions by at least 85 percent; by requiring engine manufacturers to significantly reduce the allowable emissions from certified bus engines; by requiring that transit agencies switch to low sulfur (less than 15 parts per million) diesel fuel; and by requiring transit agencies to purchase specified percentages of zero emission buses;

WHEREAS, the Board, through Resolution 00-2, directed the Executive Officer to work with transit agencies during implementation of the regulations, including provisions of the fleet rule, and to report to the Board regularly on transit agencies' progress in implementing the regulations;

WHEREAS, at a public meeting on September 20, 2001, the Board adopted Resolution 01-31 directing the Executive Officer to continue development of a test procedure for the evaluation of hybrid electric bus emissions and to report back to the Board by late 2002 on progress in this effort;

WHEREAS, at a public hearing on October 24, 2002, the Board adopted Resolution 02-30 revising the diesel PM reduction program to ensure that every transit agency fleet will have significantly lower in-use diesel PM emissions by 2007 or 2009, depending on fuel path; allowing transit agencies in the South Coast Air Quality Management District (SCAQMD) to change from the diesel fuel path to the alternative fuel path to align with SCAQMD rules; removing the prohibition for transit agencies on the diesel path from purchasing alternative-fueled engines with NOx emissions in excess of 0.5 grams per brake-horse-power hour (g/bhp-hr) to encourage the use of alternative fuel; adding a new provision allowing a transit

agency with 20 or fewer buses to request an implementation delay from the Executive Officer based on financial hardship; modifying the definitions to clarify the intent and facilitate implementation of the transit bus regulation; allowing heavy-duty pilot ignition engines operating on natural gas and using a small quantity of diesel fuel for ignition to be certified at or below California's standards for alternative fuel engines; repealing the "California Certification Procedures for PM Retrofit Devices for On-Road Heavy-Duty Vehicles" and replacing them with "Diesel Emission Control Strategy Verification Procedure, Warranty and In-Use Compliance Requirements for On-Road, Off-Road, and Stationary Diesel-Fueled Vehicles and Equipment" to ensure heavy-duty vehicle manufacturers follow the same procedures; and adding new interim certification procedures for hybrid-electric vehicles in the urban bus and heavy-duty vehicle classes to account for the emission benefits of the hybrid-electric bus technology;

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, the Board has considered the impact of this proposed regulatory action on the economy of the state;

WHEREAS, the ARB staff conducted public workshops on December 2 and 3, 2004, and March 29 and 30, 2004, as well as public outreach meetings and several focused stakeholder meetings throughout the rulemaking process, in order to include the public and affected stakeholders in the process for regulatory development;

WHEREAS, a staff report and draft regulatory language were published and made available to the public for at least 45 days prior to this Board hearing;

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, based on the information in the public record, including the staff report and testimony provided at the hearing, the Board finds that:

1. On January 1, 2004, the California diesel urban bus engine exhaust emission standard dropped to 0.5 g/bhp-hr NO<sub>x</sub> and no diesel engine manufacturer has certified or plans to certify an engine to this standard; thus no diesel hybrid-electric system manufacturer can certify its product for California.
2. Hybrid-electric buses are technologically able to achieve lower emissions and better fuel economy than an equivalently-sized diesel bus because the hybrid-electric propulsion system combines two motive power sources, an energy

- storage system such as a battery or ultracapacitor, and an internal combustion engine, turbine, or fuel cell functioning as an auxiliary power unit.
3. Since adoption of the interim certification procedure for hybrid electric vehicles in the urban bus and heavy-duty vehicle classes in October 2002, only one 2004 model year hybrid-electric bus has been California-certified for sale and purchase and it is powered by gasoline and certified to the 0.6 g/bhp-hr NO<sub>x</sub>+NMHC alternative-fuel urban bus emission standard.
  4. Transit agencies on the diesel path have indicated a need and desire to purchase diesel hybrid-electric urban buses in order to retire their oldest, dirty diesel buses without having to add a new fuel and the accompanying infrastructure to their fleets.
  5. A 2004-2006 exhaust emission standard of 1.8 g/bhp-hr NO<sub>x</sub> and 0.01 g/bhp-hr PM for diesel hybrid-electric buses (HEBs) will maintain the Board's commitment to bring innovative technology at the lowest technically feasible emission standard to California's marketplace.
  6. Defining a "hybrid-electric bus" will help clarify the Board's intent and will facilitate the implementation of the fleet rule for transit agencies.
  7. A procedure to offset higher NO<sub>x</sub> emissions that will result from the purchase and operation of diesel HEBs that meet a less stringent NO<sub>x</sub> exhaust emission standard is necessary in order to maintain the NO<sub>x</sub> reductions from the fleet rule for transit agencies.
  8. A procedure whereby the Executive Officer can consider and approve transit agency proposal for actions to offset the emission increases that would result from operating diesel HEBs is necessary and appropriate.
  9. In the original rulemaking of the zero-emission bus requirements, the Board anticipated that fuel cells would be developed and deployed in transit buses initially; however, light duty vehicle applications have been the focus of fuel cell providers, resulting in heavy-duty fuel cells that are both more expensive and behind schedule.
  10. Transit agencies have been diligent in attempting to comply with the original fuel cell bus demonstration project requirements and timetable; however, the projects are behind schedule, and the transit agencies will not have the number of concurrent, in-use fuel cell buses in revenue service in time to meet the regulatory deadline.
  11. A revised start date and a reduction in the number of buses required for the Zero-emission Bus Demonstration Project are necessary in order to reflect

the cost and expected availability of the advanced technology required for the delivery of fuel-cell buses.

12. No alternative considered would be more effective, or equally effective and less costly, in achieving the regulatory objectives sought than the proposed amendments.

WHEREAS, pursuant to the requirements of the California Environmental Quality Act and the Board's regulations, the Board further finds that the amendments will achieve reductions of approximately 0.3 tons per day of oxides of nitrogen and 10 lbs per day of diesel PM emission in 2006, thereby providing an air quality benefit.

NOW, THEREFORE, BE IT RESOLVED, that the Board hereby adopts the amendments to sections 1956.1, 1956.2, 1956.3, and 1956.4, title 13, California Code of Regulations, as set forth in Attachment A hereto.

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 amended regulations to the U.S. Environmental Protection Agency with a request either for a waiver of federal preemption pursuant to section 209(b) of the Clean Air Act, or a confirmation that the amendments are within the scope of previous waivers.

BE IT FURTHER RESOLVED that the Board directs staff to return by mid -2005 with a recommendation regarding the need for change to the 2007 urban bus engine exhaust standards.

I hereby certify that the above is a true and correct copy of Resolution 04-19, as adopted by the Air Resources Board.

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Lori Andreoni, Clerk of the Board

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June 24, 2004

Identification of Attachment to the Resolution

Attachment A: Proposed Amendments to the Exhaust Emission Standards and Test Procedures – 1985 and Subsequent Model Year Heavy-duty Urban Bus Engines and Vehicles, the Fleet Rule for Transit Agencies, and Zero-emission Bus Requirements, as set forth in Appendix A to the Staff Report (released May 7, 2004).