State of California
AIR RESOURCES BOARD

Staff Report: Initial Statement of Reasons
for Proposed Rulemaking

PUBLIC HEARING TO CONSIDER DELAYING IMPLEMENTATION OF THE PERIODIC SMOKE SELF-INSPECTION PROGRAM FOR HEAVY-DUTY DIESEL-POWERED VEHICLE FLEETS

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I. INTRODUCTION

California continues to have the most severe air pollution problem in the nation. For instance, California's ambient ozone standard is exceeded in greater Los Angeles on over half the days in a typical year. Hydrocarbon (HC) and oxides of nitrogen (NOx) emissions from mobile sources contribute to the formation of ozone. While ozone is the most pervasive problem in California urban areas, many of these cities are also in violation of air quality standards for particulate matter (PM) and carbon monoxide (CO). Heavy-duty diesel vehicles account for only three percent of the on-road fleet, yet emit 30 percent of the NOx and 75 percent of the PM emitted from all on-road vehicles.

It is clear that heavy-duty diesel vehicles are a major contributor to California's air pollution problems, especially from those buses and trucks that emit excessive exhaust smoke. Excessive exhaust smoke from these vehicles is primarily caused by malmaintenance of the vehicles and emission control system tampering. In 1990, it was estimated that tampering with and/or malmaintenance of heavy-duty diesel vehicles led to excessive emissions of 45 tpd HC, 69 tpd PM, and 32 tpd NOx in California. (At that time, these excess emissions accounted for 42 percent of the HC, 56 percent of the PM, and 6 percent of the NOx emissions from heavy-duty diesel vehicles). Excessive heavy-duty diesel vehicle exhaust smoke also has led to numerous public complaints (up to 18,000 per month) to the Air Resources Board (ARB) and local agencies, such as the South Coast Air Quality Management District (SCAQMD).

In response to these concerns, the Legislature in 1988 enacted California Health and Safety Code (CHSC) section 44011.6. This statute authorizes the ARB, with assistance from the California Highway Patrol, to implement a statewide roadside smoke inspection program for all heavy-duty diesel vehicles with gross vehicle weight ratings of 6,001 pounds or more

and to cite vehicle owners for excessive smoke emissions. The roadside smoke inspection program was adopted by the ARB in November 1990 and is set forth in sections 2180 through 2187 of Title 13 of the California Code of Regulations (CCR).

In order to further remedy concerns regarding excessive smoke emissions from heavy-duty diesel vehicles, the Legislature in 1990 enacted CHSC section 43701(a). This section mandates that the ARB, in consultation with the Bureau of Automotive Repair (BAR) and the Inspection and Maintenance Review Committee, adopt regulations which require that owners or operators of heavy-duty diesel vehicles perform regular inspections of their vehicles for excessive emissions of smoke, i.e., a periodic smoke self-inspection program. In connection with the adoption of this periodic smoke inspection program, the ARB is specifically directed to establish the inspection procedure, standards, and frequencies and to specify the actions which vehicle owners or operators are required to take to remedy excessive smoke emissions.

In response to the statutory mandate, on December 10, 1992, the ARB adopted regulations which established a periodic smoke self-inspection (PSI) program for heavy-duty diesel-powered vehicle fleets. These regulations require that owners and operators of fleets based in California, and which are comprised of two or more heavy-duty diesel vehicles, conduct tests for excessive smoke emissions annually. Furthermore, at that time, the Board directed that the program not be implemented until January 1, 1995. Consequently, this would allow more time for the development and publication of a revised smoke opacity meter sampling methodology for the snap-idle smoke test by a committee of the Society of Automotive Engineers (SAE). The ARB would then study the SAE recommendations and evaluate the new test methods and test instrumentation technology. Additionally, the ARB would conduct a public outreach effort to prepare owners and operators of heavy-duty diesel vehicle fleets and the vehicle repair industry for the PSI program.

Since 1992, the ARB, along with engine manufacturers, smoke meter manufacturers, and the California Trucking Association and others, has worked with the SAE committee to develop an industry-wide smoke test procedure. This procedure is known as "SAE Recommended Practice J1667". Testing conducted in accordance with SAE J1667 is intended to provide an indication of the state of engine maintenance and/or emissions control tampering. The procedure is expected to be of use to regulatory and enforcement authorities responsible for controlling smoke emissions from heavy-duty diesel-powered vehicles, and to heavy-duty vehicle maintenance and repair facilities. The ARB anticipates that smoke opacity meters that will meet SAE J1667 specifications should effectively evaluate the level of smoke emissions. SAE J1667 is expected to be approved by the SAE by the end of this year, but this is approximately a six to eight month delay from when it was originally scheduled to be approved.

The implementation of the PSI program was to begin on January 1, 1995. However, as a result of a delay in the completion and approval of SAE J1667, the ARB staff will be asking the Board to delay implementation of the program until July 1, 1996.

II. BACKGROUND

The current roadside program smoke inspection procedure is technically sound, and has been used successfully in testing over 10,000 heavy-duty vehicles in the roadside program since November 1991. However, in response to trucking industry and heavy-duty engine manufacturers concerns that the roadside smoke test procedure should be refined and standardized in anticipation of numerous other states adopting similar inspection programs, a SAE committee was formed in May 1992 to accomplish this task. Additionally, in September of 1993, Assembly Bill (AB) 584 was passed. This bill modifies the roadside program by specifying criteria relating to the adoption of smoke testing standards, procedures, and measuring equipment. The bill states that the adoption of SAE Recommended Practice J1667, which specifies a standardized procedure to measure smoke emissions from heavy-duty diesel vehicles, would satisfy these criteria.

The ARB is working closely with SAE to develop the SAE J1667 procedure in an effort to comply with the provisions of AB 584. The new procedure is expected to result in a number of improvements: the smoke opacity meter sampling requirements are being revised and will be more precisely specified to ensure a standardized opacity sampling methodology, the test procedure will account for the wide variety of exhaust system configurations in use on heavy-duty diesel vehicles by providing guidelines and opacity correction factors for conducting vehicle opacity tests, and it may include an altitude opacity correction model so that heavy-duty diesel vehicles at higher elevations can be tested to high-altitude-adjusted opacity standards.

The completion of the SAE J1667 work by the SAE committee has unfortunately been delayed due to the delay in the resolution of a number of technical issues primarily related to the specification of a standardized opacity meter sampling methodology. These issues need to be resolved and the SAE must approve J1667 before the PSI program can be implemented. SAE J1667 must be completed for smoke opacity meter manufacturers to provide the properly configured meters on the market for heavy-duty diesel fleets to purchase. As a result of this delay, the ARB has had to delay its work in adopting SAE J1667 into regulations. For these reasons, the PSI program implementation will not be able to occur until after January 1, 1995, the implementation date previously adopted by the Board.

III. SUMMARY OF RECOMMENDED ACTION

The staff recommends that the Board amend section 2190, Title 13, California Code of Regulations as proposed. This amendment would delay the implementation of the periodic smoke inspection program for heavy-duty diesel-powered vehicles from January 1, 1995 to July 1, 1996.

This delay will then allow sufficient time for the SAE to complete and formally approve the SAE J1667 test procedure and for the ARB to adopt it into regulation in early 1995.

IV. ISSUES OF CONTROVERSY

There are no known or anticipated issues of controversy with delaying the implementation of the PSI program until July 1, 1996.

V. REGULATORY ALTERNATIVES

The staff has not identified any alternatives to the proposed delay of the PSI program.

VI. AIR QUALITY AND COST EFFECTIVENESS

The proposed program delay has no effect on the air quality and cost effectiveness values previously estimated for the PSI program. These values will still apply when the program is implemented.

VII. FISCAL AND BUSINESS IMPACT ISSUES

This section evaluates the potential economic impact on California businesses as a result of the proposed implementation delay of the PSI program from January 1, 1995 to July 1, 1996. A recent amendment to Section 11346.53 of the Government Code requires that, in proposing to adopt or amend any administrative regulation, state agencies shall assess not only the potential for adverse economic impacts on California business enterprises and individuals, but also the ability of California businesses to compete with businesses in other states. Also, a new section to the Government Code (Section 11346.54) requires state agencies to assess the potential impact of their regulations on California jobs and on business expansion, elimination, or creation.

In December 1992, the Board adopted the PSI program, and stipulated that it would not commence until January 1, 1995 in order to allow time for a SAE committee to develop new specifications for smoke opacity meters, and subsequently, to allow time for these new meters to become available for heavy-duty vehicle fleets and vehicle repair facilities to purchase in order to comply with the program. In the intervening time, the SAE committee has worked on the new specifications, SAE J1667, but it has been unable to complete its work. Consequently, the new opacity meters will not be available for fleets and repair facilities to purchase in time for starting the PSI program on January 1, 1995. Staff estimates that the earliest the meters will be generally available is July 1, 1996, and is therefore proposing that the PSI program not commence until then.

There are only two identified alternatives that the Board can consider: the first alternative is that the proposed program delay be adopted, and the second alternative is that the program

indeed commence on January 1, 1995 and continue to utilize current opacity meters that would not meet the SAE J1667 specifications. This second approach would allow fleet and repair facilities to use meters meeting the existing specifications until the SAE J1667-based meters are available. However, during the 1992 board hearing to adopt the PSI regulations, the Board recommended that the program should not be implemented until January 1, 1995. The Board felt this start date would allow sufficient time for SAE to develop and finalize SAE J1667 specifications. The Board's overriding concern was that businesses would invest in smokemeter equipment and then soon thereafter, replace this SAE J1243-based equipment with SAE J1667-based smokemeters to comply with the PSI regulations. Such an action would result in a negative economic impact on these repair facilities. It is with this rationale that staff has not adopted this scenario into the implementation of the PSI program and has decided instead to delay the implementation date to July 1, 1996. Staff believes that this delay would have the least negative impact on California businesses.

With the July 1, 1996 implementation date in mind, staff investigated the possibility that smokemeter manufacturers based in California could have a potential for an adverse economic impact as a result of the delay in the finalization of SAE J1667. Meter manufacturers cannot incorporate the SAE J1667 specifications and market these SAE J1667-based meters until the specification itself has been finalized. Staff determined that the two meter manufacturers based in California had invested in the research and development of their own SAE J1667-based meters and planned on marketing these meters to coincide with the implementation of the PSI program. These manufacturers are Telonic Berkeley and Caltest Instruments. Both manufacturers have followed the development of the SAE J1667 specifications closely; it should be noted that both smokemeter manufacturers are voting members of the SAE J1667 committee. Telonic Berkeley estimates that they have invested approximately $50,000 for the initial development of a SAE J1667-based meter; Caltest Instruments has invested approximately $70,000. Staff estimates that as a result of the delay in the PSI implementation date, meter manufacturers based outside of California will also experience a delay in the return of their initial investment by 18 months. It should be noted that this delay in investment return for meter manufacturers would not disadvantage California manufacturers because all meter manufacturers intending to incorporate the SAE J1667 smokemeter specifications would experience a delay in earning a return on their investment. Therefore, this implementation delay will not affect the ability of California smokemeter manufacturers to compete with out-of-state smokemeter manufacturers.

Staff also investigated the potential adverse economic impact experienced by fleet facilities, repair facilities, and transit agencies which may have purchased meters to comply with the original PSI implementation date of January 1, 1995. Staff conducted a phone survey of these facilities; none of the ten facilities contacted had purchased meters for the purpose of complying with the original implementation date. Postponement of purchasing new smokemeters for the PSI program may be attributed to the notice sent to these facilities in August 1994 by the ARB informing regulated and interested parties of the implementation

delay and the fact that new meters with SAE J1667 specifications are not yet available. Staff expects no change in jobs, business expansions, elimination, or creation because the implementation delay has no noticeable impact on the profitability of businesses.

VIII. ENVIRONMENTAL IMPACT

As previously mentioned, when the Board adopted the PSI program in 1992, it directed that the program not commence until January 1, 1995 to allow time for smoke opacity meters meeting the new SAE J1667 specifications to become available for fleets and repair facilities to purchase in order to comply with the program. Since the SAE has not completed the SAE J1667 specifications, and meters meeting these specifications will not be available to fleets and repair facilities by January 1, 1995, staff has proposed that the PSI program be delayed until July 1, 1996 to allow sufficient time for the new meters to be made available on the market.

Staff has identified a negative environmental impact associated with delaying the program implementation from January 1, 1995 until July 1, 1996. The air quality impact is quantified as follows:

Loss of Program Emission Benefits
Tons (%)

	PM	HC	Nox
For 1995:	2920 (10%)	2190 (7%)	1825 (1%)
For 1st half 1996:	1460 (5%)	1095 (3.5%)	913 (0.5%)

This loss of benefits represents an 18-month impact of 4380 tons of PM, 3285 tons of HC, and 2738 tons of NOx. As the percentages in the table show, the greatest impact compared to the overall motor vehicle emission inventory would be for PM with a 10% loss of benefit for 1995 and only a 5% loss for 1996. While the loss of PM benefit is the most noticeable, it is emphasized that this would only be a temporary short-term loss, and the benefits for all three pollutants would be quickly gained when the program would start up in July 1996 as proposed.

As mentioned earlier, staff has identified two alternatives for the Board to consider: adopt the proposed program delay, and commence the program on January 1, 1995 by utilizing existing opacity meters on the market that meet SAE 1243 specifications. The second alternative would not result in a negative environmental impact unlike the first alternative. However, the second alternative would cause a significant negative economic impact on California fleet businesses which staff believes is an overriding concern over the minor environmental impact associated with the first alternative.

The second alternative would require that at least an estimated 2000 fleets and 500 heavy-duty vehicle repair facilities in California would have to purchase opacity meters meeting SAE J1243 specifications to meet the January 1, 1995 program implementation date. The meters cost approximately $4000 each, so the fleet/repair industry would have to spend a minimum of $10 million to comply with the program. Subsequently, in mid-1996, these businesses would have to buy new meters that would meet the SAE J1667 specifications that are being developed by the SAE committee. This would require another expenditure of at least $10 million by the same fleets and repair facilities. The SAE J1667 meters are expected to be technically superior to the SAE J1243 meters, and the ARB will adopt regulations to require the SAE J1667 meters for the roadside smoke inspection program and the PSI program by mid-1996. Consequently, in the space of only 18 months, California fleets and repair businesses would have to purchase two opacity meters, amounting to a $20 million expenditure by the industry, instead of purchasing just one meter if the program would be delayed to July 1996 as proposed.

The negative economic impact of the "two-meter" program alternative substantially overrides the negative environmental impact of the "one-meter" delayed program alternative. As discussed, the maximum air quality impact is with PM: 10% benefits loss for 1995, 5% loss for 1996. Since the loss of air quality benefits occurs only during what would be the first 18 months of the program if the program was delayed, it is reasonable to assign the cost of buying the SAE 1243 meters to the first 18 months of the program that would start up on time. It has been estimated that the PSI program will normally cost about $19 million per year to California fleets. Therefore, if the program were to start up on July 1, 1996, it is estimated that fleets will spend about $9.5 million for the remainder of 1996 and $19 million in 1997 and each year thereafter. Of course, only one smoke meter, meeting SAE J1667 specifications, would be purchased with this alternative. However, if the program were to start up on January 1, 1995, the SAE 1243 meter would have to be purchased right away in addition to the SAE J1667 meter later on. In effect, this would add at least $10 million to the cost of the program, and that cost would only be used for reducing emissions during the first 18 months of the program. So, instead of having program costs of $28.5 million ($19 million plus $9.5 million) during the first 18 months, effectively the program would cost an extra $10 million or $38.5 million total. This would amount to a 35% increase in the program cost; this cost increase is unjustified given only the 10% PM benefit loss in 1995 and the 5% PM benefit loss in 1996.

The cost effectiveness of the two-meter alternative is equally unfavorable; it amounts to $4395 per ton of PM as opposed to $3260 per ton of PM for the one-meter program delay alternative. Again, the cost effectiveness amount is increased by about 35%. Consequently, the cost effects of implementing the program earlier with the two-meter alternative is a substantial overriding concern as compared to the minor 18-month loss of air quality benefits with the staff's proposal to delay the program until July 1,1996.

PROPOSED REGULATORY AMENDMENTS

Amend Subchapter 3.6, Section 2190, Title 13, California Code of Regulations, to read as follows:

[Note: The regulatory amendments proposed in this rulemaking are shown in underline to indicate additions to the text and ~~strikeout~~ to indicate deletions.]

Subchapter 3.6. Heavy-Duty Diesel-Powered Vehicle Periodic Smoke Inspections

2190. These regulations shall be applicable, effective ~~January 1, 1995~~ July 1, 1996, as follows:

(a) Except as provided in subsections (b), (c), (d), (e) and (f), the requirements of this subchapter apply to all heavy-duty diesel-powered vehicles with gross vehicle weight ratings of 6,001 pounds or more which operate on the streets or highways within the State of California.

(b) Heavy-duty diesel-powered vehicles which are not part of a fleet (as defined in section 2191(a)) are excluded from the requirements of this subchapter.

(c) Heavy-duty diesel-powered vehicles which are registered under the International Registration Plan as authorized by Article 4 (commencing with section 8050), Chapter 4, Division 3 of the Vehicle Code and which have established a base state other than California (non-California based vehicles) are excluded from the requirements of this subchapter.

(d) Heavy-duty diesel-powered vehicles which operate in California under the terms of Interstate Reciprocity Agreements as authorized by Article 3 (commencing with section 8000), Chapter 4, Division 3 of the Vehicle Code and which belong to fleets that are not based in California are excluded from the requirements of this subchapter.

(e) Heavy-duty diesel-powered vehicles operating in California under the terms of any other apportioned registration, reciprocity, or bilateral prorate registration agreement between California and other jurisdictions and which belong to fleets that are not based in California are excluded from the requirements of this subchapter.

(f) Heavy-duty diesel-powered vehicles operating in California under short-term vehicle registrations or permits of 90 days or less (including but not limited to 90-day temporary registrations and 4-day permits under Vehicle Code section 4004) are excluded from the requirements of this subchapter.

NOTE: Authority Cited: Sections 39600, 39601, and 43701(a), Health and Safety Code. Reference: Sections 39002, 39003, 39010, 39033, 43000, 43018, 43701(a), and 44011.6, Health and Safety Code.

2191. Definitions.

(a) The definitions of this section supplement and are governed by the definitions set forth in Chapter 2 (commencing with Section 39010), Part 1, Division 26 of the Health and Safety Code. The provisions of this subchapter shall also be governed by the definitions set forth in section 2180.1, Title 13, California Code of Regulations including the following modifications:

(1) "Fleet" means any group of 2 or more heavy-duty diesel-powered vehicles which are owned or operated by the same agency or entity.

(2) "Inspector" means an Air Resources Board employee with the duty of enforcing Health and Safety Code section 43701(a) and Title 13, California Code of Regulations, sections 2190 through 2194.

(3) "Test opacity" means the measurement of smoke opacity from a vehicle for the purpose of determining compliance with the standards referenced in section 2193(c).

(4) "Test procedure" means the smoke meter test procedure as specified in section 2193(c).

NOTE: Authority Cited: Sections 39600, 39601, and 43701(a), Health and Safety Code. Reference: Sections 39002, 39003, 39010, 39033, 43000, 43018, 43701(a), and 44011.6, Health and Safety Code.

2192. Vehicle Inspection Responsibilities.

(a) The owner of a heavy-duty diesel-powered vehicle subject to the requirements of this subchapter shall do all of the following:

(1) Test the vehicle for excessive smoke emissions periodically according to the inspection intervals specified in section 2193 (a) and (b).

(2) Measure the smoke emissions for each test using the test procedure specified in section 2193 (c).

(3) Record the smoke test opacity levels and other required test information as specified in section 2194.

(4) Have the vehicle repaired if it exceeds the applicable smoke opacity standard specified in section 2193 (c).

(5) Record the vehicle repair information as specified in section 2194.

(6) Conduct a post-repair smoke test to determine if the vehicle complies with the applicable smoke opacity standard.

(7) Record the post-repair smoke test results as specified in section 2194.

(8) If the vehicle does not comply with the applicable smoke opacity standard, make additional repairs to achieve compliance, and record the smoke test results as specified in section 2194.

(9) Keep the records specified in section 2194 for two years after the date of inspection.

(10) Permit an Air Resources Board inspector to review the inspection records specified in section 2194 at owner/operator designated fleet locations by appointment.

NOTE: Authority Cited: Sections 39600, 39601, and 43701(a), Health and Safety Code. Reference: Sections 39002, 39003, 39033, 43000, 43018, 43701(a), and 44011.6, Health and Safety Code.

2193. Smoke Opacity Inspection Intervals, Test Procedures, and Standards.

(a) Vehicles which are subject to the requirements of this subchapter on the effective date of these regulations shall be tested for smoke opacity (and repaired if the applicable smoke opacity standard is exceeded) in accordance with the requirements of section 2192 pursuant to the following schedule: at least 25 percent of the fleet's vehicles within 90 calendar days of the effective date of these regulations; at least 50 percent of the fleet's vehicles within 180 calendar days of the effective date of these regulations; at least 75 percent of the fleet's vehicles within 270 calendar days of the effective date of these regulations; and the remaining fleet's vehicles no later than 365 calendar days after the effective date of these regulations. For fleet of 2 to 4 vehicles, at least one vehicle must be tested in each 90 calendar day period, beginning with the initial 90 calendar day period, until all vehicles in the fleet have been tested. Fleets which become subject to the requirements of the subchapter

subsequent to the effective date of these regulations should be tested in accordance with the above schedule beginning on the date they become subject to these regulations.

(b) After the initial smoke opacity testing under subsection (a), vehicles which are subject to the requirements of this subchapter shall be tested for smoke opacity (and repaired if the applicable smoke opacity standard is exceeded) in accordance with the requirements of section 2192 at least once every 365 days.

(c) The smoke opacity test procedure and applicable opacity standards shall be as specified in section 2182(a) to (e), (g), and (h), and section 2185(b), Title 13, California Code of Regulations.

NOTE: Authority Cited: Sections 39600, 39601, 43013, 43701(a), Health and Safety Code. Reference: Sections 39002, 39003, 39033, 43000, 43013, 43018, 43701(a), and 44011.6, Health and Safety Code.

2194. Record Keeping Requirements.

(a) The owner of a vehicle subject to the requirements of this subchapter shall record the following information when performing the smoke opacity testing:

(1) The brand name and model of the opacity meter.

(2) The brand name and model of the strip chart recorder.

(3) The dates of last calibration of the opacity meter and chart recorder.

(4) The name of the smoke meter operator who conducted the test.

(5) The name and address of the contracted smoke test facility or vehicle repair facility that conducted the test (if applicable).

(6) The applicable smoke opacity standard for the tested vehicle.

(7) Vehicle identification number, vehicle's engine year, engine make, and engine model, and test date. Fleet-designated vehicle identification numbers are also acceptable.

(8) The initial smoke test opacity levels (for three successive test readings).

(9) An indication of whether the vehicle passed or failed the initial smoke test.

(10) The post-repair test date.

(11) The post-repair smoke test opacity levels (for three successive test readings).

(12) An indication of whether the vehicle passed or failed the post-repair smoke test.

(13) For vehicles that have failed the smoke test and have been repaired, the vehicle repair information specified in section 2186(a), Title 13, California Code of Regulations.

NOTE: Authority Cited: Sections 39600, 39601, and 43701(a), Health and Safety Code. Reference: Sections 39002, 39003, 39033, 43000, 43018, 43701(a), and 44011.6, Health and Safety Code.