Appendix II

PROPOSED 15-DAY MODIFICATIONS

California Code of Regulations, Title 13, Division 3

Chapter 14. Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines

Note: The pre-existing regulation text is set forth below in normal type. The originally proposed amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions. The proposed 15-day modifications are shown in double underline to indicate additions and ~~double strikeout~~ to indicate deletions. Asterisks indicate no change to the existing regulation.

Amend sections 2701, 2702, 2703, 2704, 2705, 2706, 2707, and adopt section 2711, Title 13, California Code of Regulations, to read as follows:

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§ 2701. Definitions.

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(16) "Diesel-fueled auxiliary power system" or "APU" means any device that is permanently dedicated to the vehicle on which it is installed and provides electrical, mechanical, or thermal energy to the primary diesel engine, truck cab, and/or sleeper berth, bus passenger compartment or any other commercial vehicle's cab, as an alternative to idling the primary diesel engine.

~~(16)~~(17) "Distributor" means any person or entity to whom a diesel emission control strategy is sold, leased or supplied for the purposes of resale or distribution in commerce.

~~(17)~~(18) "Donor Vehicle/engine" means any vehicle/engine whose installed ~~DECS~~ diesel emission control strategy device has been removed for the purpose of re-designation or component swapping.

~~(18)~~(19) "Durability" means the ability of the applicant's diesel emission control strategy to maintain a level of emissions below the baseline and maintain its physical integrity over some period of time or distance determined by the Executive Officer pursuant to these regulations. The minimum durability testing periods contained herein are not necessarily meant to represent the entire useful life of the diesel emission control strategy in actual service.

~~(19)~~(20) "Emergency Standby Engine" means a diesel engine operated solely for emergency use, except as otherwise provided in airborne toxic control measures adopted by the ARB.

~~(20)~~(21) "Emergency Use" means using a diesel engine to provide electrical power or mechanical work during any of the following events and subject to the following conditions:

(A) The failure or loss of all or part of normal electrical power service or normal natural gas supply to the facility,

(B) The failure of a facility's internal power distribution system,

(C) The pumping of flood water or sewage to prevent or mitigate a flood or sewage overflow,

(D) The pumping of water for fire suppression or protection,

(E) The powering of ALSF-1 and ALSF-2 airport runway lights under category II or III weather conditions,

(F) Other conditions as specified in airborne toxic control measures adopted by the ARB.

~~(21)~~(22) "Emission control group" means a set of diesel engines and applications determined by parameters that affect the performance of a particular diesel emission control strategy. The exact parameters depend on the nature of the diesel emission control strategy and may include, but are not limited to, certification levels of engine emissions, combustion cycle, displacement, aspiration, horsepower rating, duty cycle, exhaust temperature profile, and fuel composition. Verification of a diesel emission control strategy and the extension of existing verifications are done on the basis of emission control groups.

~~(22)~~(23) "End user" means any individual or entity that owns or operates a vehicle or piece of equipment that has a verified diesel emission control system installed.

~~(23)~~(24) "Executive Officer" means the Executive Officer of the Air Resources Board or the Executive Officer's designee.

~~(24)~~(25) "Executive Order" means the document signed by the Executive Officer that specifies the verification level of a diesel emission control strategy for an emission control group and includes any enforceable conditions and requirements necessary to support the designated verification.

~~(25)~~(26) "Fuel Additive" means any substance designed to be added to fuel or fuel systems or other engine-related systems such that it is present in-cylinder during combustion and has any of the following effects: decreased emissions, improved fuel economy, increased performance of the entire vehicle or one of its component parts, or any combination thereof; or assists diesel emission control strategies in decreasing emissions, or improving fuel economy or increasing performance of a vehicle or component part, or any combination thereof. Fuel additives used in conjunction with diesel fuel may be treated as an alternative diesel fuel. See Section 2701 (a)(3) .

~~(26)~~(27) "Hot Start" means the start of an engine within four hours after the engine is last turned off. The first hot start test run should be initiated 20 minutes after the cold start for Federal Test Procedure testing

following Section 86.1327-90 of the Code of Federal Regulations, Title 40, Part 86.

~~(27)~~(28) "Installer" means any individual or entity that equips any vehicle, engine or equipment with a diesel emission control strategy.

(29) "Locomotive" means a self-propelled piece of on-track equipment designed for moving or propelling cars that are designed to carry freight, passengers or other equipment, but which itself is not designed or intended to carry freight, passengers (other than those operating the locomotive) or other equipment.

(30) "Marine Engine" means a compression ignition engine designed and used to provide propulsion or auxiliary power on water craft such as recreational boats, ocean going vessels, or commercial harbor craft.

~~(28)~~(31) "Portable Engine" means an engine designed and capable of being carried or moved from one location to another, except as defined in section 2701(a)(33). Engines used to propel mobile equipment or a motor vehicle of any kind are not portable. Indicators of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. A portable engine cannot remain at the same facility location for more than 12 consecutive rolling months or 365 rolling days, whichever occurs first, not including time spent in a storage facility. If it does remain at the facility for more than 12 months, it is considered to be a stationary engine. The definitions in Title 13 California Code of Regulations section 2452(g) and section 2452(x) are incorporated by reference herein.

~~(29)~~(32) "Re-designation" means the ~~movement~~ removal, within the same common ownership fleet, of a complete used verified ~~DECS~~ diesel emission control strategy from an appropriate engine in a vehicle/application and installation to another appropriate engine in a vehicle/application that meets the terms and conditions of the diesel emission control strategy ~~DECS~~ Executive Order. ~~meeting the terms and conditions of the DECS Executive Order within the same common ownership fleet.~~

~~(30)~~(33) "Regeneration" in the context of diesel particulate filters, means the periodic or continuous combustion of collected particulate matter that is trapped in a particulate filter through an active or passive mechanism. Active regeneration requires a source of heat other than the exhaust itself to regenerate the particulate filter. Examples of active regeneration strategies include, but are not limited to, the use of fuel burners and electrical heaters. Passive regeneration does not require a source of heat for regeneration other than the exhaust stream itself. Examples of passive regeneration strategies include, but are not limited to, the use of fuel additives and the catalyst-coated particulate filter. In the context of NOx reduction strategies, "regeneration" means the desorption and reduction of NOx from NOx adsorbers (or NOx traps) during rich operation conditions.

(34) "Repower" means to replace the engine in a vehicle or piece of equipment with another engine that meets a subsequent engine emissions standard (e.g., replacing a Tier 1 engine with a Tier 3 or later engine).

~~(31)~~(35) "Revoke" means to cancel the verification status of a diesel emission control strategy. If a diesel emission control strategy's verification status is revoked by the Executive Officer, the applicant must immediately cease and desist selling the diesel emission control strategy to end-users.

~~(32)~~(36) "Seller" means any person or entity that sells, leases or supplies a diesel emission control strategy.

~~(33)~~(37) "Stationary Engine" means an engine that is designed to stay in one location, or remains in one location. An engine is stationary if any of the following are true:

(A) The engine or its replacement is attached to a foundation, or if not so attached, will reside at the same location for more than 12 consecutive months. Any engine that replaces engine(s) at a location, and is intended to perform the same or similar function as the engine(s) being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of all engine(s), including the time between the removal of the original engine(s) and installation of the replacement engine(s), will be counted toward the consecutive time period; or

(B) The engine remains or will reside at a location for less than 12 consecutive months if the engine is located at a seasonal source and operates during the full annual operating period of the seasonal source, where a seasonal source is a stationary source that remains in a single location on a permanent basis (at least two years) and that operates at that single location at least three months each year; or

(C) The engine is moved from one location to another in an attempt to circumvent the residence time requirements [Note: The period during which the engine is maintained at a storage facility shall be excluded from the residency time determination.] The definitions in Title 13 California Code of Regulations Section 2452(g) and Section 2452(x) are incorporated by reference herein.

(38) "Transport Refrigeration Unit (TRU)" means a refrigeration system powered by an integral internal combustion engine designed to control the environment of temperature sensitive products that are transported in trucks and refrigerated trailers. TRUs may be capable of both cooling and heating.

~~(34)~~(39) "Unidirectional Device Design and Installation" means that an emission control device must be appropriately designed, manufactured and labeled to prevent reverse flow installation.

~~(35)~~(40) “Used Verified Device” means any verified ~~DECS~~ diesel emission control strategy which has been sold or leased to an end user and installed on an engine/application.

~~(36)~~(41) “Verification" means a determination by the Executive Officer that a diesel emission control strategy meets the requirements of this Procedure. This determination is based on both data submitted or otherwise known to the Executive Officer and engineering judgment.

~~(37)~~(42) “Warrantable Condition” means any condition of the diesel emission control strategy, vehicle, or engine which triggers the responsibility of the applicant to take corrective action pursuant to Section 2707.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2702. Application Process.

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(b) Preliminary Verification Application. Before formally submitting a final application for the verification of a diesel emission control strategy, the applicant must submit a preliminary verification application at the Executive Officer’s discretion. The Executive Officer shall use the information in the preliminary verification application to help determine whether the strategy relies on sound principles of science and engineering to control emissions, the need for additional analyses, and the appropriateness of allowing alternatives to the prescribed requirements. The preliminary verification application must follow the format shown in Section 2702(d) and at a minimum provide the information required in sections 1. through 5., and section 8.A.5, where applicable. In addition, the preliminary verification application must include the following information:

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(5) A brief statement that the applicant acknowledges and agrees to do the following:

(A) Provide a warranty pursuant to the requirements of Section 2707.

(B) Submit in-use compliance information pursuant to the requirements of Section 2709.

(C) Keep records until the in-use compliance requirements are completed that contain information per Section 2702 (m) including:

1. Updated end user contact information.

2. A description of the vehicles or equipment on which the applicant's products are installed.
3. A description of the engines on which the applicant's products are installed.

(D) Provide all maintenance information for the diesel emission control strategy to the owner pursuant to Section 2706 (h)(2).

(c) When an applicant submits a preliminary verification application, the Executive Officer shall, within 30 days of its receipt, determine whether the applicant has identified the information necessary to support an application for verification and notify the applicant in writing that it may submit an application for verification. The Executive Officer may suggest modifications to the proposed preliminary verification application to facilitate verification of the diesel emission control strategy. All applications, correspondence, and reports, with the exception of applications based on the use of fuel additives or alternative diesel fuels, locomotive applications, transport refrigeration units and marine applications, must be submitted in writing to:

Chief, Heavy-Duty Diesel In-Use Strategies Branch
Air Resources Board
~~1001 I Street~~
~~Sacramento, CA 95814~~
9480 Telstar Avenue, Suite 4
El Monte, CA 91731

All applications, correspondence, and reports for systems utilizing any form of fuel additive or alternative diesel fuel or intended for locomotives, must be submitted in writing to:

Chief, Criteria Pollutants Branch
Air Resources Board
1001 I Street
Sacramento, CA 95814

All applications, correspondence, and reports for systems intended for transport refrigeration units or marine applications must be submitted in writing to:

Chief, Emissions Assessment Branch
Air Resources Board
1001 I Street
Sacramento, CA 95814

(d) Application Format. The preliminary and final verification applications must be submitted in writing to the address shown in subsection (c) above. Electronic mail and verbal submissions do not constitute acceptable application formats. Supporting data in electronic format may be accepted as part of the application at the discretion of the Executive Officer. The preliminary and final verification applications for a diesel emission control strategy must follow the format shown below. If a section asks for information that is not applicable to the diesel emission control strategy, the applicant must indicate "not applicable." If the Executive Officer concurs with the applicant's judgment that a section is not applicable, the Executive Officer may waive the requirement to provide the information requested in that section. Final verification applications must include all of the information provided in the preliminary verification application as described in Section 2702(b), including any additional information, updates, or changes, and all additional information shown below.

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2.8 Complete discussion of the ~~i~~installation requirements *(e.g., appropriate system placement, space requirements, visibility, device orientation, engine oil consumption limits, etc.)*

2.9 Pre-installation compatibility assessment procedures

2.~~9~~10 Maintenance requirements

2.~~9.1~~10.1 Detailed description of all normal maintenance requirements for the diesel emission control strategy ~~system~~

2.~~9.2~~10.2 A copy of the language that will instruct the end user of proper handling of spent components and/or materials cleaned from the diesel emission control strategy ~~system~~, identify any hazardous materials, and provide procedures for resetting any backpressure monitors after maintenance procedures are completed.

2.1~~0~~1 Description of noise level control compliance

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8. Appendices

A. Laboratory test report information *(for all tests, including incomplete, aborted and failed tests)*

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A.5 Testing equipment information and indication that testing equipment meets specifications and calibrations given in procedures required by sections 2703, 2704 and 2710 as appropriate. ~~the Code of Federal Regulations, Title 40, Part 86 (See Sections 2703(m), 2706(a)(2))~~

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B. ~~Third-party letters or questionnaires describing in-field performance~~ Field test information
   B.1 Engine backpressure and exhaust temperature data (as described in Sections 2704(d)(2) and 2705(c)(1))
   B.2 Third-party letters or questionnaires describing in-field performance
C. Diesel emission control strategy ~~system~~ label
D. Copy of the Owner's ~~m~~Manual (as described in Section 2706 (l))
E. Copy of the Installation Manual
F. Sample diesel emission control strategy ~~system~~ label (See Section 2706(j))
G. Other supporting documentation

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(h) Conditional Extensions of an Existing Verification for On-road Applications. If an applicant has an ARB verified diesel emission control strategy and wishes to extend the verification to include new on-road emission control groups, the applicant may apply to receive a conditional extension. If the Executive Officer determines that the diesel emission control strategy is technologically sound and appropriate for the intended application, the applicant may be granted a conditional extension for up to one year. Upon receiving a conditional extension, the applicant may sell the diesel emission control strategy as a verified product for the duration of the conditional extension period. To obtain full verification, the applicant must complete the requirements set forth by the Executive Officer according to the requirements of the regulation. In granting a conditional extension, the Executive Officer may consider all relevant information including, but not limited to, the following: the design of the diesel emission control strategy, original test data, other relevant test data, the duty cycle of the prospective emission control group, and field experience. For the time period it is effective, a conditional extension is equivalent to a verification for the purposes of satisfying the in-use compliance requirements. Diesel e~~E~~mission control strategies that are conditionally verified for off-road and stationary applications are not eligible for conditional extensions (See Section 2704(k)).

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(j) Verification Transfers. If an applicant wishes to sell, lease, or supply another manufacturer's previously verified diesel emission control strategy ~~system~~, the applicant must do the following:

(1) Submit a letter of consent from the manufacturer that legally holds the original verification. The letter must give the applicant the right to hold a verification for the diesel emission control strategy ~~system~~ and, if applicable, to use information that was previously submitted as support in the application for the original verification.

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(k) Emission Control Strategies ~~Systems~~ Approved under Other Verification Programs. Any applicant with a diesel emission control strategy ~~system~~ that is verified under another diesel emission control verification program that wishes to receive ARB verification must submit an application that contains the information requested in part (d) above. Pre-existing data and information submitted in support of verification approval from other programs may be submitted, but the applicant must meet requirements that are unique to this Procedure including, but not limited to, a system label compliant with Section 2706(j), a California owner's manual compliant with Section 2706(l), a warranty compliant with Section 2707, in-use compliance requirements per Section 2709, and multimedia evaluation if applicable. The Executive Officer may evaluate all information submitted including additional information required by this Procedure to determine if a diesel emission control strategy merits ARB verification.

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(m) Recordkeeping Requirements. Both applicants and diesel emission control strategy installers are responsible for keeping records as described below.

(1) Applicants that receive a verification~~s~~, a conditional verification~~s~~ ~~(See Section 2704(k)~~, or a conditional extension~~s~~ must keep records that have valid end user contact information (name, address, phone number), a description of the vehicles or equipment the units are applied to (type of vehicle/equipment, make, model year, vehicle identification number), and a description of the engines the units are applied to (make, model, model year, engine serial number, engine family name). The applicant must keep these records for each diesel emission control strategy family until the in-use compliance requirements of the diesel emission control strategy family are completed. Applicants that receive a conditional extension~~s~~ or conditional verification~~s~~ must submit these records to the Executive Officer one year after receiving the conditional extension or conditional verification. Applicants that receive verifications must submit these records upon request by the Executive Officer to an agent or employee of ARB. The Executive Officer may request that such records be made available at any time. The applicant must provide these records

within 30 days of the request by the ARB. Failure to submit these records may result in revocation or suspension of the verification and/or any other remedy available under Part 5, Division 26 of the Health and Safety Code.

(2) Installers must keep all pre-installation compatibility assessment records as described in Section 2706(t)(3).

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(o) Applicants that receive a verification~~s~~, a conditional verification~~s~~, or a conditional extension~~s~~ must demonstrate sales or the active pursuit of sales of their diesel emission control strategies ~~systems~~ in California upon request of the Executive Officer. If an applicant fails to provide such proof, the Executive Officer will evaluate whether the verification should be revoked.

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(q) The Executive Officer may lower the verification level or revoke the verification status of a verified diesel emission control strategy family, a conditionally verified strategy ~~system~~, or a strategy ~~system~~ with a conditional extension or suspend all review of pending verification applications if the Executive Officer determines that there are errors, omissions, inaccurate information, fraudulent submittals, or a deficiency of required submittals, in the application for verification, supporting information, warranty report, or in-use compliance testing. Additionally, penalties may be assessed under Part 5, Division 26 of the Health and Safety Code. The Executive Officer may suspend the review of all other applications sent by an applicant if that applicant fails to submit warranty reports or other requested information. The ~~e~~Executive Officer may also seek remedial action against the applicant if it is determined that the verified diesel emission control strategy does not comply with the requirements or provisions of the Executive Order.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5, Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2703. Emission Testing Requirements.

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(c) Diesel Emission Control Strategy ~~System~~ Pre-conditioning. The engine or vehicle installed with a diesel emission control strategy ~~system~~ must be operated for a break-in period of between 25 and 125 hours before emission testing. Note that special pre-conditioning requirements may apply. See section 2706(a)(4) for details.

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(e) Test Cycle. The diesel emission control strategy must be tested using the test cycles indicated in subparagraphs 1-3 below (summarized in Table 2) or with an alternative cycle(s) approved by the Executive Officer pursuant to subsection (f) below. The Executive Officer may require the applicant to conduct additional testing if such information is necessary for a complete evaluation of the control technology.

Table 2. Test Cycles for Emission Reduction Testing

Test Type	On-Road	Off-Road (including portable engines)	Stationary (including TRUs and APUs)	Marine	Locomotives
Engine	FTP Heavy-duty Transient Cycle (1 cold-start and 3 hot-starts)	~~Steady-state test cycle from ARB off-road regulations until December 31, 2008 with Executive Officer approval, otherwise; Transient test cycle from ARB off-road regulations (3 hot-starts either cycle)~~ NRTC, or if appropriate, a discrete mode test cycle as required in Section 2703 (e)(2) (3 hot starts)	Discrete mode test cycle from ARB off-road regulations or another test cycle approved by the Executive Officer (3 hot-starts)	Discrete mode test cycles identified in the ISO 8178 test procedure, Part 4, August 15, 1996, Section 8.5, Test Cycles type E "Marine applications" (3 hot-starts)	40 CFR Part 92 (Subpart B) or 40 CFR Part 1033 (Subpart F)

Chassis	UDDS (3 hot-starts) and a low-speed test cycle per 2703 (e)(1)(B)2. (3 hot-starts).	Not Applicable	Not Applicable	Not Applicable	Not Applicable

FTP = Federal Test Procedure; UDDS = Urban Dynamometer Driving Schedule
ISO = International Standards Organization; NRTC = Nonroad Transient Composite Cycle

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(2) Off-road Engines and Equipment (including portable engines). For off-road diesel-fueled vehicles and equipment, the applicant must follow the transient test procedures outlined in the ARB off-road regulations (California Code of Regulations, Title 13, Section 2423 and the incorporated California Exhaust Emissions Standards and Test Procedures for New 2008 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-C). For all variable speed engines, a minimum of three hot-start tests must be conducted using the Nonroad Transient Composite Cycle (NRTC).

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(C) An applicant with a strategy ~~system~~ verified after October 19, 2007 using the steady state test procedure outlined in the ARB off-road regulations (California Code of Regulations, Title 13, Section 2423 and the incorporated California Exhaust Emission Standards and Test Procedures for New 2000 and Later Tier 1, Tier 2, And Tier 3 Off-Road Compression-Ignition Engines, Part I-B) must submit emissions test data using the NRTC by January 1, 2013. The Executive Officer will reassess and potentially revise the verification status of the strategy ~~system~~, claimed emissions reductions, and compliance with NO_2 emissions requirements based on the submitted data. Appropriate testing must include a pre-conditioned unit, an aged unit, and a baseline test. If such data are not received and approved by the Executive Officer by January 1, 2013, the verification will be revoked. A verification awarded prior to October 19, 2007, is not subject to this requirement. A verification for which the Executive Officer determines the NRTC is not appropriate per section 2703(e)(2)(A) is not subject to this requirement.

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(3) Stationary Engines. For stationary, transport refrigeration unit, and auxiliary power system engines, the applicant must follow the discrete mode test procedures outlined in the ARB off-road regulations (as referenced in (2) or (2)(B) above). A minimum of three hot-start tests must be conducted using the specified test cycle. Applicants may request that the Executive Officer consider alternative test cycles and methods, as described in subsection (f).

(4) Marine Engines. For marine propulsion engines, the applicant must follow the discrete mode test procedures outlined in the ARB off-road regulations (as referenced in (2) or (2)(B) above), but use the test cycles identified in the International Standards Organization (ISO) 8178 test procedure, Part 4, August 15, 1996, Section 8.5, Test Cycles type E "Marine applications". A minimum of three hot-start tests must be conducted using the specified test cycle. Applicants may request that the Executive Officer consider alternative test cycles and methods, as described in subsection (f).

(5) Locomotives. Applicants must follow the test procedures as specified in 40 CFR Part 92 (Subpart B) or 40 CFR Part 1033 (Subpart F).

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(h) Emissions During Particulate Filter Regeneration Events. For any diesel emission control strategy that has a distinct regeneration event, emissions that occur during the event must be measured and taken into account when determining the net emission reduction efficiency of the system. If a regeneration event will not occur during emission testing, applicants may pre-load the diesel emission control strategy ~~system~~ with diesel PM to force such an event to occur during testing, subject to the approval of the Executive Officer. Applicants must provide data or engineering analysis indicating when events occur on test cycles and in actual operation (e.g., backpressure data).

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(l) Quality Control of Test Data. The applicant must provide information on the test facility, test procedure, and equipment used in the emission testing. For data gathered using on-road and off-road test cycles and methods, applicants must provide evidence establishing that the test equipment used meets the specifications and calibrations given in the applicable test procedures ~~Code of Federal Regulations, Title 40, Part 86, subpart N~~. The testing information must be approved by the Executive Officer.

(m) The Executive Officer may, with respect to any diesel emission control strategy sold, leased, offered for sale, or manufactured for sale in California, order the applicant or strategy manufacturer to make available for testing and/or inspection a reasonable number of diesel emission control strategies

~~systems~~, and may direct that they be delivered at the applicant's expense to the state board at the Haagen-Smit Laboratory, 9528 Telstar Avenue, El Monte, California or where specified by the Executive Officer. The Executive Officer may also, with respect to any diesel emission control strategy being sold, leased, offered for sale, or manufactured for sale in California, have an applicant test and/or inspect a reasonable number of units at the applicant or manufacturer's facility or at any test laboratory under the supervision of the Executive Officer.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5 Health and Safety Code; Title 17 California Code of Regulations Section 93000.

§ 2704. Durability Testing Requirements

(a) The applicant must demonstrate, to the satisfaction of the Executive Officer, the durability of the applicant's diesel emission control strategy through an actual field or laboratory-based demonstration combined with chassis or engine dynamometer-based emission tests. If the applicant chooses a laboratory-based durability demonstration, an additional field demonstration will be required to demonstrate in-field compatibility (pursuant to Section 2705). If the applicant has demonstrated the durability of the identical <u>strategy</u> ~~system~~ in a prior verification or has demonstrated durability through field experience, the applicant may request that the Executive Officer accept the previous demonstration in fulfillment of this requirement. In evaluating such a request, the Executive Officer may consider all relevant information including, but not limited to, the similarity of baseline emissions and application duty cycles, the relationship between the emission control group used in previous testing and the current emission control group, the number of engines tested, evidence of successful operation and user acceptance, and published reports.

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(d) Service Accumulation. The durability demonstration consists of an extended service accumulation period in which the diesel emission control strategy is implemented in the field or in a laboratory accepted by the Executive Officer, with emission reduction testing before and after the service accumulation. Service accumulation begins after the first emission test and concludes before the final emission test. The pre-conditioning period required in Section 2703 (c) cannot be used to meet the service accumulation requirements.
(1) Minimum Durability Demonstration Periods. The minimum durability demonstration periods are shown in Table 3, below.

Table 3. Minimum Durability Demonstration Periods

Engine Type	Minimum Durability Demonstration Period
On-Road	50,000 miles or 1000 hours
Off-Road (including portable engines) ~~and~~ Stationary, Marine, Locomotives, TRUs, and APUs	1000 hours
Stationary Emergency Standby Engines	500 hours

(2) Temperature and Backpressure Measurement Requirements. For strategies that include exhaust aftertreatment, engine backpressure, ~~and~~ exhaust temperature, and engine speed must be measured and recorded for 1000 hours or over the entire durability period (whichever is shorter). The applicant must propose a measurement and recording protocol for approval by the Executive Officer. The protocol may include, but is not limited to, measurement and recording of values once every few seconds, or higher frequency measurement with recording of averages, minima, and maxima over longer time intervals. The data must include an accurate date and time stamp that corresponds with periods of actual engine operation. Data must be submitted electronically in columns as a text file or another format approved by the Executive Officer.

(3) NOx Emissions Measurement Requirements. For strategies that include exhaust aftertreatment to reduce emissions of NOx, the mass emissions of NOx both upstream and downstream of the aftertreatment device must be measured and recorded for at least the first and last 100 hours of the durability period. The applicant must propose a measurement method for approval by the Executive Officer. The method may include, but is not limited to, the use of NOx sensors before and after the device. Measurements of NOx emissions must occur on at least a 1 Hertz basis. Data must be recorded as averages over time intervals no greater than 10 seconds. The data must include an accurate date and time stamp that corresponds with periods of actual engine operation. Data must be submitted electronically in columns as a text file or another format approved by the Executive Officer.

(4) Fuel for Durability Demonstrations. The fuel used during durability demonstrations should be equivalent to the test fuel, or a fuel with properties less favorable to the durability of the emission control strategy. Durability demonstrations may, at the applicant's option and with the

Executive Officer's approval, include intentional misfueling events so that data on the effects of misfueling may be obtained.

(5) Industrial Safety Requirements. The installation of a diesel emission control strategy on an off-road vehicle or piece of equipment used for a durability demonstration within California must conform to all applicable industrial safety regulations (California Code of Regulations, Title 8, Division 1, Chapter 4). If all off-road durability demonstrations are conducted outside of California, at least one must conform to these regulations.

(6) Photographic Documentation. For each durability demonstration, the applicant must submit digital photographs in electronic format of the following:

(A) The vehicle or piece of equipment before installation of the diesel emission control strategy. Photographs must show:

1. The entire vehicle or piece of equipment.
2. A close-up of the location in which the diesel emission control strategy will be installed.
3. All available vehicle or equipment identification including the make, model, license plate, and vehicle number.
4. All available engine identification including the make, model, and engine label.

(B) The vehicle or piece of equipment after installation of the diesel emission control strategy. Photographs must show:

1. The entire vehicle or piece of equipment showing the diesel emission control strategy installed, if possible.
2. A close-up of the installed diesel emission control strategy.
3. All available diesel emission control strategy identification including labels and logos.

(C) For a filter-based diesel emission control strategy, the outlet face of the filter after completing the durability demonstration.

(e) Third-Party Statement for In-field Durability Demonstrations. For in-field durability demonstrations, the applicant must provide a written statement from an Executive Officer approved third party, such as the owner or operator of the vehicle or equipment used, at the end of the durability period. The statement must describe overall performance, maintenance required, problems encountered, and any other relevant comments. The results of a visual inspection conducted by the third party at the end of the demonstration period must also be described. The description should comment on whether the diesel emission control strategy is physically intact, securely mounted, leaking any fluids, and should include any other evaluative observations. The third party statement must clearly identify the demonstration engine and vehicle or equipment using a unique identifier such as a vehicle identification number and engine serial number along with the engine family name, and must provide the name and contact information of the third party.

(f) Test Cycle. Testing requirements are summarized in Table 4. Note that the same cycle(s) must be used for both the initial and final tests.

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(2) Off-road and Stationary Applications <u>(including marine, locomotives, transport refrigeration units and auxiliary power units)</u>. The applicant must use the same cycle for the emission reduction testing as defined in Section 2703. A minimum of three hot-start tests is required. <u>If an applicant obtained a conditional verification prior to December 31, 2008, the applicant may fulfill the emission test requirements for full verification using the same discrete mode test cycle that was used to support the conditional verification.</u>

(g) Test Run. The requirements for emissions reduction testing are summarized in Table 4, below. Note that special pre-conditioning requirements may apply. See section 2706(a)(4) for details.

(1) The diesel emission control strategy must undergo one set of emission tests before beginning and after completion of the service accumulation. Baseline testing with test repetitions as indicated in Table 4 must be conducted before and after the service accumulation. If baseline testing after the service accumulation is not technically feasible, the applicant may request the Executive Officer to waive the requirement. If there are substantial test data from previous field studies or field demonstrations, applicants may request that the Executive Officer consider these in place of the initial emission tests.

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Table 4. Emission Tests Required for Durability Demonstrations

Application	Test Type	Initial Test (prior to service accumulation) Final Test (after completion of 100% of the service accumulation)
On-Road	Engine	FTP Heavy-duty Transient Cycle (1 cold and 3 hot-starts)
	Chassis	UDDS (3 hot-starts) and a low-speed cycle per 2703 (e)(1)(B)2.(3 hot-starts)
Off-Road and portable engines	Engine	~~Steady-state test cycle from ARB off-road regulations or an alternative cycle~~ NRTC, or if appropriate, a discrete mode test cycle as required in Section 2703 (e)(2) (3 hot-starts)
Stationary (including APUs~~,~~ ~~transport refrigeration units~~ and TRUs ~~auxiliary power systems~~)	Engine	Steady-state test cycle from ARB off-road regulations or another test cycle approved by the Executive Officer ~~an alternative cycle~~ (3 hot-starts)
Marine	Engine	Discrete mode test cycles identified in the ISO 8178 test procedure, Part 4, August 15, 1996, Section 8.5, Test Cycles type E "Marine applications" (3 hot-starts)
Locomotive	Engine	40 CFR Part 92 (Subpart B) or 40 CFR Part 1033 (Subpart F)

(h) Maintenance During Durability Demonstration. Except for emergency engine repair, only scheduled maintenance on the engine and diesel emission control strategy ~~system~~ and re-fill of additives (if any) may be performed during the durability demonstration. If normal maintenance includes replacement of any component of the diesel emission control strategy ~~system~~, the time (miles, years, or hours) between component change or refill must be reported with the results of the demonstration.

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(j) Performance Requirements. The diesel emission control strategy must meet the following requirements throughout the durability demonstration period:
  (1) If the applicant claims a percent emission reduction, the percent emission reduction must meet or exceed the initial verified percent emission reduction level.
  (2) If the applicant claims to achieve 0.01 g/bhp-hr for PM, the PM emission level must not exceed 0.01 g/bhp-hr.
  (3) The diesel emission control strategy ~~system~~ must maintain its physical integrity. Its physical structure and all of its components not specified for regular replacement during the durability demonstration period must remain intact and fully functional.
  (4) The diesel emission control strategy must not cause any damage to the engine, vehicle, or equipment.
  (5) The backpressure caused by the diesel emission control strategy should not exceed the engine manufacturer's specified limits, or must not result in any damage to the engine.
  (6) No maintenance of the diesel emission control strategy ~~system~~ beyond that specified in its owner's manual will be allowed without prior Executive Officer approval.

(k) Conditional Verification for Off-road and Stationary Applications. If the Executive Officer determines that the diesel emission control strategy is technologically sound and appropriate for the intended application, he may grant a conditional verification for off-road and stationary applications upon completion of 33 percent of the minimum durability period. In making this determination, the Executive Officer may consider all relevant information including, but not limited to, the following: the design of the diesel emission control strategy ~~system~~, filter and catalyst substrates used, similarity of the strategy ~~system~~ under consideration to verified strategies ~~systems~~, the intended application of the diesel emission control strategy ~~system~~, other relevant testing data, and field experience. Where conditional verification is granted, full verification must be obtained by completing the durability testing and all other remaining requirements. These requirements must be completed within a year after receiving conditional verification. For the aforementioned time period, conditional verification is equivalent to verification for the purposes of satisfying the requirements of in-use emission control regulations.

(l) Failure During the Durability Demonstration Period. If the diesel emission control strategy fails to maintain its initial verified percent emission reduction or emission level for any reason, the Executive Officer may downgrade the strategy to the verification level which corresponds to the lowest degraded performance observed in the durability demonstration period. If the diesel emission control strategy fails to maintain at least a 25 percent PM reduction or 25 percent NOx reduction at any time during the durability period, the diesel

emission control strategy will not be verified. If the diesel emission control strategy fails, requires repair or maintenance, suffers any type of component failure, or the demonstration is aborted at any point in the course of the durability demonstration period, the applicant must submit a report explaining the circumstances ~~of the failure~~ within ~~90~~ 45 days of the ~~failure~~ occurrence. The Executive Officer may then determine whether to deny verification or allow the applicant to correct the failed diesel emission control strategy and either continue the durability demonstration or begin a new durability demonstration.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5 Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2705. Field Demonstration Requirements.

(a) The applicant must demonstrate compatibility of its diesel emission control strategy in the field with at least one vehicle or piece of equipment belonging to the initial emission control group for which it seeks verification. Note that if the durability demonstration selected by the applicant is in-field, it may be used to satisfy the field demonstration requirement for that emission control group.
  (1) Compatibility is determined by the Executive Officer based on the third-party statement (see part (c) of this section) and any other data submitted including backpressure data. A diesel emission control strategy is compatible with the chosen application if it:
    (A) Does not cause damage to the engine or engine malfunction
    (B) Does not cause backpressure outside of the engine manufacturer's specified limits or which results in any damage to the engine
    (C) Does not hinder or detract from the vehicle or equipment's ability to perform its normal functions
    (D) Is physically intact and well mounted with no signs of leakage or other visibly detectable problems
  (2) To determine whether additional emission control groups require separate field demonstrations, the Executive Officer may consider all relevant information, including, but not limited to existing field experience and engineering justification and analysis.
  (3) Industrial Safety Requirements. The installation of a diesel emission control strategy on an off-road vehicle or piece of equipment used for a field demonstration within California must conform to all applicable industrial safety regulations (California Code of Regulations, Title 8, Division 1, Chapter 4). If all off-road field demonstrations are conducted outside of California, at least one must conform to these regulations.
(b) Test Period.
  (1) For on- and off-road engines, ~~and~~ stationary engines not used in emergency generators, marine, transport refrigeration unit, and auxiliary power system engines, a vehicle or piece of equipment must be operated

with the diesel emission control strategy installed for a minimum period of 200 hours or 10,000 miles, whichever occurs first.

(2) For stationary emergency standby engines, the emission control system must remain in the field for at least 30 days and operation must include:

(A) 12 maintenance runs (allowing for engine cool down between runs), and

(B) a minimum of two separate 4 hour sessions where the engine is operated under load (allowing engine cool down between runs).

(c) Reporting Requirements.

(1) Temperature and Backpressure Measurement Requirements. For strategies that include exhaust aftertreatment, engine backpressure, ~~and~~ exhaust temperature, and engine speed must be measured and recorded over the entire demonstration period. The applicant must propose a measurement and recording protocol for approval by the Executive Officer. The protocol may include, but is not limited to, measurement and recording of values once every few seconds, or higher frequency measurement with recording of averages, minima, and maxima over longer time intervals. The data must include an accurate date and time stamp that corresponds with periods of actual engine operation. Data must be submitted electronically in columns as a text file or another format approved by the Executive Officer.

(2) NOx Emissions Measurement Requirements. For strategies that include exhaust aftertreatment to reduce emissions of NOx, the mass emissions of NOx both upstream and downstream of the aftertreatment device must be measured and recorded over the entire demonstration period. The applicant must propose a measurement method for approval by the Executive Officer. The method may include, but is not limited to, the use of NOx sensors before and after the device. Measurements of NOx emissions must occur on at least a 1 Hertz basis. Data must be recorded as averages over time intervals no greater than 10 seconds. The data must include an accurate date and time stamp that corresponds with periods of actual engine operation. Data must be submitted electronically in columns as a text file or another format approved by the Executive Officer.

(3) Third Party Statement. The applicant must provide a written statement from a third party approved by the Executive Officer, such as the owner or operator of the vehicle or equipment used in the field demonstration. The written statement must be provided at the end of the test period and must describe the following aspects of the field demonstration: overall performance of the test application and the diesel emission control strategy, maintenance performed, problems encountered, and any other relevant information. The results of a visual inspection conducted by the third party at the end of the demonstration period must also be described. The description should comment on whether the diesel emission control strategy is physically intact, securely mounted, leaking any fluids, and should include any other evaluative

observations. The third party statement must clearly identify the demonstration engine and vehicle or equipment using a unique identifier such as a vehicle identification number and engine serial number along with the engine family name, and must provide the name and contact information of the third party.

(4) Photographic Documentation. For each field demonstration, the applicant must submit digital photographs in electronic format of the following:
(A) The vehicle or piece of equipment before installation of the diesel emission control strategy. Photographs must show:
1. The entire vehicle or piece of equipment.
2. A close-up of the location in which the diesel emission control strategy will be installed.
3. All available vehicle or equipment identification including the make, model, license plate, and vehicle number.
4. All available engine identification including the make, model, and engine label.
(B) The vehicle or piece of equipment after installation of the diesel emission control strategy. Photographs must show:
1. The entire vehicle or piece of equipment showing the diesel emission control strategy installed, if possible.
2. A close-up of the installed diesel emission control strategy.
3. All available diesel emission control strategy identification including labels and logos.
(C) For a filter-based diesel emission control strategy, the outlet face of the filter after completing the field demonstration.

(d) Failure During the Field Demonstration. If the diesel emission control strategy fails, requires repair or maintenance, suffers any type of component failure, or the demonstration is aborted at any point in the course of the field demonstration, the applicant must submit a report explaining the circumstances ~~of the failure~~ within 45 ~~90~~ days of the ~~failure~~ occurrence. The Executive Officer may then determine whether to deny verification or allow the applicant to correct the failed diesel emission control strategy and either continue the field demonstration or begin a new demonstration.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600 and 43700, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107 and 43204-43205.5 Health and Safety Code; and Title 17 California Code of Regulations Section 93000.

§ 2706. Other Requirements.

(a) Limit and Procedure for Measuring Nitrogen Dioxide (NO_2).

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(4) Pre-conditioning requirements. If the Executive Officer determines that a diesel emission control strategy ~~system~~ has a propensity to increase emissions of NO_2 and that NO_2 emissions from a diesel emission control strategy ~~system~~ could be affected by the presence of particulate matter or ash (as with a catalyzed diesel particulate filter), the strategy ~~system~~ must be preconditioned according to the following procedure:

* * * * *

(c) Fuel Additives. Diesel emission control strategies that use fuel additives must comply with Section 2710 and meet the following additional requirements for verification. Fuel additives must be used in combination with a level 3 diesel particulate filter unless they can be proven to the satisfaction of the Executive Officer to be safe for use alone. In addition, the applicant must meet the following requirements:

* * * * *

(2) Diesel emission control strategies ~~systems~~ employing the dosing of an additive in conjunction with a diesel particulate filter must include an on-board monitor of the additive level in the reservoir, integrated with the diesel particulate filter. The on-board monitor for fuel additive must include indicators to notify the operator when the additive level becomes low and when the additive tank is empty. In addition, the on-board monitor must be capable of shutting off the supply of additive, if there is a detected diesel particulate filter problem,

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~~(f) Engine Backpressure and Monitoring. During the emission and durability testing, the applicant must demonstrate that the backpressure caused by its diesel emission control system is within the engine manufacturer's specified limits, or will not result in any damage to the engine. Furthermore,~~

~~(1) If operation of the engine with the diesel emission control system installed will result in a gradual build-up of backpressure exceeding the engine's specified limits over time (such as due to the accumulation of ash in a filter), information describing how the backpressure will be reduced must be included.~~

~~(2) All filter-based diesel emission control systems must be installed with a backpressure monitor to notify the operator when the high backpressure limit, as specified by the engine manufacturer or included in the verification, is approached. The notification must occur and be clearly visible to the operator while the vehicle or equipment is in use. The applicant must identify the high backpressure limits of the system in its application for verification.~~

~~(3) The Executive Officer reserves the right to require monitors that identify low backpressure limits in those cases where failures leading to low backpressure are unlikely to be detected, or have the potential to cause environmental damage beyond that caused by the engine prior to being equipped with the emission control strategy (e.g., systems that introduce additives into the fuel).~~

(f) Operational Data Monitoring and Storage Requirements. The following requirements apply to all diesel emission control strategies that include exhaust aftertreatment:

(1) During emissions and durability testing, the applicant must:

(A) Measure and record exhaust backpressure and temperature pursuant to sections 2703 and 2704.

(B) Demonstrate that the backpressure caused by its diesel emission control strategy is within the engine manufacturer's specified limits, or will not result in any damage to the engine.

(2) If operation of the engine with the diesel emission control strategy installed will result in a gradual build-up of backpressure exceeding the engine's specified limits over time (such as due to the accumulation of ash in a filter), the applicant must submit information describing how to reduce the backpressure.

(3) All filter-based diesel emission control strategies must be installed with a backpressure monitor to notify the operator when the high backpressure limit, as specified by the engine manufacturer or included in the verification application, is approached. The notification must occur and be clearly visible to the operator while the vehicle or equipment is in use. The applicant must identify the high backpressure limits of the strategy in its application for verification.

(4) The Executive Officer reserves the right to require monitors that identify low backpressure limits in those cases where failures leading to low backpressure are unlikely to be detected, or have the potential to cause environmental damage beyond that caused by the engine prior to being equipped with the emission control strategy (e.g., systems that introduce additives into the fuel).

(5) If the Executive Order for a diesel emission control strategy includes an exhaust temperature requirement, the strategy must include an electronic device that is able to do the following:

(A) Measure and record exhaust backpressure and exhaust gas temperature data. Each record must include the date and time of measurement.

(B) Have the capacity to record exhaust backpressure and exhaust temperature data for a period of at least 200 hours of actual engine operation without overwriting any stored data. Data must be recorded at least once every 30 seconds.

(C) Have the capacity to record error codes for a period of at least 500 hours of actual engine operation without overwriting any stored data.

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(h) Maintenance Requirements. The applicant must provide information on maintenance of the diesel emission control strategy as follows:

(1) The applicant must identify all normal maintenance requirements for the diesel emission control ~~system~~ strategy. The applicant must specify the recommended intervals for cleaning and/or replacing components. Any components to be replaced within the defects warranty period must be covered with the original diesel emission control system package or provided free of charge to the customer at the appropriate maintenance intervals. Any normal maintenance items that the applicant does not intend to provide free of charge must be approved by the Executive Officer (the applicant is not required to submit cost information for these items). In addition, the applicant must specify procedures for proper handling of spent components and/or materials cleaned from the diesel emission control strategy ~~system~~. If any such materials are hazardous, the applicant must identify them as such in the owner's manual. For filter-based diesel emission control strategies, the applicant must include procedures for resetting any backpressure monitors after maintenance procedures are completed.

(2) The applicant must provide detailed maintenance information for a verified diesel emission control strategy to the owner upon delivery of the diesel emission control strategy. The information provided must be sufficient to enable an owner to ~~properly maintain~~ conduct proper routine maintenance on the diesel emission control strategy without requiring ~~services~~ that routine maintenance be provided exclusively by the applicant or the applicant's distributor. The required information includes, but is not limited to:

(A) Specific routine maintenance and cleaning procedures and timeframes.

(B) All performance criteria used to determine a proper state of maintenance, such as the pressure drop across a fully-cleaned diesel particulate filter.

(C) Any prohibitions or specific maintenance practices which may result in damage to the diesel emission control strategy.

(i) Component Swapping and Re-Designation Practices

(1) ~~End User Device~~ Component Swapping Practices.

Applicants may authorize ~~end users to move~~ that components of ~~their~~ a verified control strategy ~~systems~~ be moved from the original ~~installed configuration~~ installation and transferred ~~them on~~ to ~~other~~ another vehicle~~s~~ or equipment~~, but only within a common ownership fleet~~, provided the following provisions are met:

(A) Identical components that have the same part number may only be swapped between diesel emission control strategies that share a common diesel emission control strategy family name.

~~(A)~~(B) Applicants must first receive written approval outlining the specific component eligible to be moved from the Executive Officer prior to approving any transfers.

~~(B)~~(C) Recipient vehicle must be fitted with the same diesel emission control strategy ~~DECS~~.

~~(C)~~(D) Component swapping must also comply with the requirements as described in subsection (i)(3).

~~(D)~~(E) Donor vehicle/engine whose component has been moved must remain in compliance with the terms and conditions of the applicable Executive Order and have all diesel emission control strategy ~~DECS~~ components present and functional.

(2) Device Re-Designation Practices. Applicants may authorize ~~end users to~~ the complete~~ly remove~~ removal of a ~~their~~ verified diesel emission control strategy ~~systems~~ from the original ~~installed~~ installation ~~configuration and install them on other~~ to another vehicle~~s~~ or equipment within the end user's commonly owned fleet, provided the following provisions are met:

(A) Applicants must receive written approval from the Executive Officer prior to approving a diesel emission control strategy ~~DECS~~ re-designation.

(B) Any party which removes a verified diesel emission control strategy ~~DECS~~ from an engine/application must remove the verified diesel emission control strategy ~~DECS~~ engine label. If the engine label cannot be removed whole, it must be destroyed.

(C) Any party which re-designates a device to another engine/application which was never previously retrofit with that exact diesel emission control strategy ~~DECS~~ must obtain and properly install an appropriate diesel emission control strategy ~~DECS~~ engine label.

(D) Any party which removes a verified diesel emission control strategy ~~DECS~~ from an engine/application must ensure the engine/application returns to its original factory configuration.

(E) Diesel emission control strategies ~~DECS~~ which are more than 10 years old based on the month and date of manufacture listed on the device label, or devices of unknown age, are not legal candidate systems for re-designation to a new engine/application.

(F) Diesel emission control strategy ~~DECS~~ system re-designation must also comply with the requirements as described in subsection (i)(3).

(G) A diesel emission control strategy installed on a vehicle or piece of equipment that is repowered (see section 2701 (a)(34)) may remain installed provided:

1. The replacement engine meets all the terms and conditions of the diesel emission control strategy Executive Order,

2. The diesel emission control strategy is not more than 10 years old (based on month and date of manufacture ~~listed on device label~~), and

3. The appropriate diesel emission control strategy engine label is installed on the replacement engine.

(3) Additional Component Swapping and Re-designation Requirements. In addition to the specific requirements in subparts (1) and (2), the following requirements must be met prior to the approval of a component swap or device re-designation:

(A) Applicants must provide written information to the Executive Officer on approved swapping and re-designation practices and~~,~~ how the applicant intends to satisfy ~~compliance with~~ warranty and in-use compliance~~,~~ requirements.

(B) Applicants must provide instructions for assessing if the system still meets its verified emissions reductions (for PM and/or NOx), instructions for device movement to prevent installation on an inappropriate vehicle, and other information required by the ~~EO~~ Executive Officer to assess the request.

(C) The end user and installer must verify that the new recipient vehicle ~~is within the scope~~ meets the terms of the original verification.

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(E) The applicant must agree to honor the original product warranty and warranty period (see sections 2702 and 2707) and must provide a written statement to the ~~EO~~ Executive Officer confirming continued support of the original product warranty.

(F) The installer must agree to honor the original installation warranty and warranty period (see section 2707). If the installer of either a swapped component or re-designated diesel emission control strategy is not the same as the installer who did the original installation of the diesel emission control strategy, the new installer must assume the installation warranty responsibilities defined in section 2707 for the remainder of the original warranty period or until another installer swaps the component or re-designates the diesel emission control strategy. If the original installation warranty has expired or has less than one year remaining, the installer must issue a new warranty to guard against potential installation defects. The new installation warranty must meet the requirements of section 2707 except that the minimum period is reduced to one year from the date of installation. Any transfer of a diesel emission control strategy or component by an installer that does not offer this installation warranty is not considered a valid installation.

(G) No party shall advertise, sell, lease, or offer for sale or lease, a used verified diesel emission control strategy.

~~(4) Any device installed under the device re-designation provisions above must be compliant with the warranty requirements in section 2707 of the verification procedure. However, if the original device warranty has expired, the installer must issue a warranty to guard against potential installation defects for a period of one year from the date of installation (see section~~

~~2707). Any transfer of a device by an installer that does not offer this installation warranty will not be considered a valid installation. No party shall advertise, sell, lease, or offer for sale or lease, a used verified DECS.~~

(j) System Labeling.

(1) The applicant must ensure that identical, legible, and durable labels are affixed on both the diesel emission control strategy ~~system~~ and the engine (or an alternate location approved by the Executive Officer) on which the verified diesel emission control strategy ~~system~~ is installed except as noted in (3) below. The required labels must identify the name, address, and phone number of the manufacturer, the diesel emission control strategy family name (defined in (2) below) of the installed system, a unique serial number, and the month and year of manufacture. The month and year of manufacture are not required on the label if this information can be readily obtained from the applicant by reference to the serial number. The applicant and installer must ensure that the label is affixed such that it is resistant to tampering and degradation from the conditions of its environment. The applicant and/or installer must ensure that the label is visible after installation. In the event that the original strategy ~~system~~ label is damaged or destroyed by the end-user, the device manufacturer shall issue a replacement. The replacement label must be identical to the original label with the exception of the words "REPLACEMENT LABEL" which must be included at the bottom line of information. A sample scale drawing of the original and replacement labels must be submitted with the verification application. All labels must be approved by the Executive Officer and must only be used with an ARB verified diesel emission control strategy. Unless an alternative is approved by the Executive Officer, the label information must be in the following format:

* * * * *

(2) Diesel Emission Control Strategy Family Name. Each diesel emission control strategy shall be assigned a family name defined as below:

CA/MMM/YYYY/PM#/N##/APP~~P~~/XXXXX

CA: Designates a diesel emission control strategy verified in California

MMM: Manufacturer code (assigned by the Executive Officer)

YYYY: Year of verification

PM#: PM verification level 0, 1, 1+, 2, 2+, 3, or 3+ (e.g., PM3 means a level 3 PM emission control system).

N##: NOx verified reduction level in percent, if any (e.g., N25

means NOx reduction of 25 percent).

APP: Verified application ~~which may~~ that includes ~~a combination of~~ one of the following: On-road (ON),Off-road (OF),or Stationary (ST), Marine (MA), Locomotive (LO), Transport Refrigeration Unit (TR), or Auxiliary Power System (AP)

XXXXX: Five alphanumeric character code issued by the Executive Officer

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(l) Owner's Manual. The applicant must provide a copy of the diesel emission control strategy ~~system~~ owner's manual to the Executive Officer and, upon delivery of the diesel emission control strategy, to the end-user, which must clearly specify at least the following information:

(1) Warranty statement including the warranty period over which the applicant is liable for any defects.

(2) Installation procedure and maintenance requirements for the diesel emission control strategy ~~system~~.

(3) Possible backpressure range imposed on the engine.

(4) Fuel consumption penalty, if any.

(5) Fuel requirements including sulfur limit, if any.

(6) Handling and supply of additives, if any.

(7) Instructions for reading and resetting the backpressure monitor.

(8) Requirements for lubrication oil quality and maximum lubrication oil consumption rate.

(9) The following ~~statement~~ statements must be included verbatim in the owner's manual:

YOUR RIGHT TO MAINTENANCE INFORMATION

The Air Resources Board requires that (Applicant's name) provide detailed maintenance information for the diesel emission control system upon delivery to the ~~owner~~ end-user pursuant to section 2706(h)(2), Title 13, California Code of Regulations, at no additional cost to the owner. If you do not already have this information, contact (Applicant's chosen contact) at 1-800-xxx-xxxx.

THE IMPORTANCE OF ENGINE MAINTENANCE

Proper engine maintenance is critical for the proper functioning of your diesel emission control strategy. Failure to document proper engine maintenance, including oil consumption records, may be grounds for denial of a warranty claim for a failed component of a diesel emission control strategy.

THE IMPORTANCE OF PROPERLY MAINTAINING A DIESEL EMISSION CONTROL STRATEGY

Proper maintenance is critical for the diesel emission control strategy to function as intended. Failure to document proper diesel emission control strategy maintenance, including cleaning and/or ash removal of the system, replacement of consumables, and replacement of broken/failed parts, may be grounds for denial of a warranty claim for a failed component of a diesel emission control strategy.

~~(9)~~(10) Contact information for replacement components and cleaning agents.

~~(10)~~(11) Contact information to assist an end-user to determine proper ways to dispose of waste generated by the diesel emission control strategy (e.g., ash accumulated in filter-based systems). At a minimum, the owner's manual should indicate that disposal must be in accordance with all applicable Federal, State and local laws governing waste disposal.

~~(11)~~(12) Appropriate methods of removing the diesel emission control strategy ~~system~~ from the original installed configuration and installing the strategy ~~system~~ on a different vehicle or piece of equipment, if such practices are allowed. The applicant must state possible repercussions to the end user if such practices are done in an inappropriate manner. (See section 2706(i))

(13) Appropriate methods of swapping identical components in strategies that share the same diesel emission control strategy family name.

~~(12)~~(14) Parts List. Those parts not covered by the warranty provisions of section 2707 must be specifically identified by a common description and part number.

(15) Notification of potential safety concerns associated with the operation of the diesel emission control strategy.

(m) Noise Level Control. Any diesel emission control strategy ~~system~~ that replaces a muffler must continue to provide at a minimum the same level of exhaust noise attenuation as the muffler with which the vehicle was originally equipped by the vehicle or engine manufacturer. Applicants must ensure that the diesel emission control strategy ~~system~~ complies with all applicable noise limits contained in Part 205, Title 40, Code of Federal Regulations and California Vehicle Code, Sections 27150, 27151 and 27200 through 27207, for the gross vehicle weight rating and year of manufacture of the vehicle for which the diesel emission control strategy is intended. All diesel emission control strategies ~~systems~~ must be in compliance with applicable local government requirements for noise control.

(n) Installation Manual. The applicant must provide the Executive Officer, a copy of the diesel emission control strategy ~~system~~ installation manual that the applicant intends to provide to installers and/or owners.

(o) Parts List. The applicant must include a list of all of the component parts of the diesel emission control strategy ~~system~~. All primary components must be listed, including, but not limited to, substrates, electronic control units, sensors, injectors, pumps, blowers, storage tanks, and notification lights. ~~Brackets, fasteners, and wiring need not be included.~~ For each listed component, the applicant must give a description and identification number. The applicant must also clearly specify which parts, if any, are not covered by the warranty. Parts that may be excluded from warranty coverage are subject to approval by the Executive Officer.

(p) Multimedia Assessment for Fuel Strategies. Diesel emission control strategies which rely on fuel changes either through use of additives or through use of alternative diesel fuels must undergo an evaluation of the multimedia effects. No diesel emission control strategy that relies on the use of an additive or an alternative fuel may be verified unless a multimedia evaluation of the additive or alternative fuel has been conducted and the California Environmental Policy Council established by Public Resources Code section 71017 has determined that such use will not cause a significant adverse impact on the public health or the environment, pursuant to Health and Safety Code section 43830.8. No person shall sell, offer for sale, supply or offer for supply an alternative fuel or a diesel fuel in California that contains an additive for use in a verified diesel emission control strategy unless such a multimedia evaluation has been conducted and resulted in a determination that use of the alternative fuel or additive will not cause a significant adverse impact on the public health and the environment. The applicant shall bear the expense of conducting the multimedia assessment.

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~~(r) Aftertreatment Devices. Any control strategy that is installed on or after January 1, 2010 that includes an aftertreatment device such as a diesel particulate filter, must be designed such that the aftertreatment device can only be installed on the application in one unique direction. Any new aftertreatment device installed in the period between February 19, 2009 and December 31, 2009 must indicate the proper direction of exhaust flow so the end user or installer can clearly see how to properly install the device.~~

(r) Directionality Requirements for Diesel Emission Control Strategies.

(1) Every diesel emission control strategy must be installed as designed and specified by the manufacturer. For a diesel emission control strategy comprised of multiple exhaust aftertreatment parts, each aftertreatment part must be installed in the proper order relative to the exhaust flow ~~along the exhaust stream~~.

(2) Diesel emission control strategies installed between February 19, 2009, and January 1, 2010

(A) The diesel emission control strategy must indicate the proper direction of exhaust flow so the end user or installer can clearly see how to properly install the device.

(3)Diesel emission control strategies installed on or after January 1, 2010

(A) The proper direction for exhaust to flow through the aftertreatment part of the diesel emission control strategy must be clearly indicated on the outside surface of the aftertreatment part using an arrow imprinted on or affixed to the aftertreatment part which is clearly visible and durable.

(B) The aftertreatment part must be constructed such that it can only be installed into the diesel emission control strategy in one unique direction relative to the exhaust flow and cannot be reversed.

(C) A diesel emission control strategy not meeting these requirements may be installed after January 1, 2010, provided that the diesel emission control strategy:

(i) Has a date of manufacture no later than December 31, 2009,

(ii) Complies with (r)(1) and (r)(2) above, and

(iii) Is installed no later than December 31 ~~July 1~~, ~~2010~~ 2011.

(D) Except for an aftertreatment part that reduces PM via a physical trapping mechanism, such as a diesel particulate filter, the applicant may request that the Executive Officer waive the requirements that an aftertreatment part indicate the flow direction and have unidirectional construction. In reviewing the request, the Executive Officer may consider all relevant information including, but not limited to, the symmetry of the aftertreatment part, potential for impaired performance as a result of different orientations relative to exhaust flow, and interaction with other parts.

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(t) Pre-Installation Compatibility Assessment. The applicant, distributor, or installer (i.e., the party conducting the pre-installation compatibility assessment) must be able to demonstrate, to the satisfaction of the Executive Officer, that a candidate engine being considered for retrofit is compatible with the verified diesel emission control strategy.

(1)For diesel emission control strategies that have exhaust gas temperature requirements for successful operation, the applicant, distributor, or installer (i.e., the party conducting the pre-installation compatibility assessment) must measure and record the exhaust gas temperature for each candidate engine to determine if the temperature requirements are satisfied. In lieu of logging data for each candidate engine, the applicant may choose to data-log a representative number of candidate engines, provided the following requirements are met:

(A) The diesel emission control strategy is verified to reduce emissions of diesel particulate matter only,

(B) At least 5 representative engines must be data-logged from within each group of similar engines, or 10 percent of each group, whichever is

larger. All engines in a group of 5 or fewer engines must be data-logged. Data from engines outside the group cannot be used to support retrofit of engines within the group. A group of engines is similar if:

1. All engines belong to the same common ownership fleet.
2. All engines have the same make and model.
3. All engines are certified to the same PM emissions standard.
4. The maximum power ratings of all engines fall within a range that does not exceed 100 horsepower. For example, all engines are rated to between 250 and 350 horsepower.
5. None of the engines have exhaust gas recirculation, or all of the engines have external exhaust gas recirculation, or all of the engines have internal exhaust gas recirculation.
6. All engines are installed in similar vehicles or equipment that perform a like function and have similar duty cycles. Examples of vehicle or equipment groups considered similar include solid waste collection vehicles, transit buses, class 8 tractors, excavators, wheel loaders, and back-up emergency generators.

(C) If the diesel emission control strategy is determined to be compatible with the candidate engine in its current application, the applicant, distributor, or installer (i.e., the party conducting the pre-installation compatibility assessment) must provide a written statement to the end user no later than the date of installation and, upon request, to the Executive Officer within 30 calendar days of the request, that includes:

1. A statement that the exhaust gas temperature profile of the candidate engine was found to satisfy the requirements of the diesel emission control strategy's Executive Order,
2. The date of this determination,
3. The name and contact information of the owner of the common ownership fleet,
4. The Executive Order number and the diesel emission control strategy family name,
5. The engine family name, engine make and model, and power rating of each candidate engine along with a unique identifier such as a vehicle identification number or an engine serial number,
6. A description of the vehicle or equipment type for each candidate engine,
7. Identification of which candidate engines were data-logged and the groups they represent,
8. Identification of the parameters used to define each group of similar engines, and
9. The name of the installer and the date of installation, if applicable.

(D) In cases where representative sampling is selected, the party conducting the pre-installation compatibility assessment is still responsible for ensuring that all diesel emission control strategy installs comply with all the terms and conditions of the Executive Order.

(2) Data must be measured and recorded using a stand-alone data logging system that is independent of the diesel emission control strategy and must adhere to the following criteria:

(A) The measured and recorded data must be representative of the actual duty cycle and operation of the candidate engine as best it can be anticipated at the time.

(B) The exhaust gas temperature of the candidate engine must be measured at a point in the exhaust system that is within 6 inches of the proposed location of the inlet of the diesel emission control strategy.

(C) The recorded exhaust gas temperature must have an accuracy of at least ±4 degrees Celsius. The temperature sensor must have a range sufficient to accommodate the highest exhaust gas temperature measured plus 10 percent without exceeding the sensor's full scale rating while ensuring that 90 percent of the measured values fall between 10 and 90 percent of the sensor's full scale rating.

(D) The exhaust gas temperature of the candidate engine must be measured and recorded for a period that is long enough to determine the exhaust gas temperature profile associated with the candidate engine's duty cycle, but not less than 24 hours of representative, actual engine run time. The data logging strategy must include a means to accurately determine when the engine is actually running. This may include use of a data logging system that starts automatically when the engine starts and stops automatically when the engine stops, or a means to identify and remove data that correspond to the engine being off such as by simultaneously logging data from an engine RPM sensor or applying a temperature threshold that corresponds to a temperature just below the idle temperature of the engine.

(E) The memory of the data logging system must be of sufficient size to ensure that data are not overwritten prior to retrieval.

(F) All data must be recorded at a frequency of at least once every 5 seconds (0.2 Hertz)

(G) At a minimum, the following parameters must be measured and recorded:

1. Exhaust gas temperature in degrees Celsius
2. Time and date for each data point
3. Other parameters deemed necessary by the Executive Officer to meet the terms and conditions of the Executive Order.

(3) At the Executive Officer's request, the applicant must submit all data used to determine the suitability of a candidate engine with a verified diesel emission control strategy. All logged data must be submitted electronically in Microsoft Excel or another format approved by the Executive Officer. The installer must keep a record of the data used to determine the suitability of the candidate engine for the duration of the warranty period of the diesel emission control strategy and make the data available to the applicant and

the Executive Officer upon request. These data must include all logged data, the date of the determination, the name and contact information of the end user, the date of installation, the name and contact information of the installer, the Executive Order number, the diesel emission control strategy family name, and clearly identify the candidate engine and vehicle or equipment using a unique identifier such as a vehicle identification number and an engine serial number along with the engine family name.

(4) Prior to installation of a diesel emission control strategy, the installer must ~~ensure that the~~ conduct a basic assessment of each candidate engine's ~~is well maintained, in good working condition,~~ state of maintenance to ensure that it ~~and~~ is appropriate for use with the diesel emission control strategy. ~~In particular, the installer must review the engine's oil consumption records to ensure that it is not consuming lubrication oil at a rate greater than that specified by the engine manufacturer.~~ The installer must maintain a record of all documentation used to make the determination that the candidate engine was appropriate for use with the diesel emission control strategy.~~, including oil consumption records at time of installation and that manufacturer recommended parts replacement schedules were followed. Subsequent to installation of a diesel emission control strategy, the owner must continue to maintain oil consumption records for each retrofitted engine.~~ All such records maintained by the installer ~~and the owner~~ must be made available to the Executive Officer within thirty days upon written request. For this basic assessment, the installer must at a minimum do the following:

(A) Review oil consumption and engine maintenance records if available,
(B) Obtain a fuel sample from the fuel tank and visually inspect the sample for contamination,
(C) Inspect the engine for signs of poor maintenance including oil leaks,
(D) Inspect the tailpipe for signs of oil contamination, and
(E) Inspect the exhaust plume for signs of high PM emissions and oil burning.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600, 43700 and 43830.8, Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107, 43204-43205.5 and 43830.8, Health and Safety Code; Section 71017, Public Resources Code; and Title 17 of Regulations Section 93000.

§ 2707. Warranty Requirements.

(a) (1) Product Warranty.

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(2) Installation Warranty

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(B) For each engine type and size listed in Table 5, the minimum defects warranty period is terminated by that listed event whichever occurs first. ~~The extent of the warranty coverage provided by installers must be the same as the warranty provided by the applicant as established in subsection (a)(1) and the same exclusions must apply.~~ The warranty must cover the full repair or replacement cost of the diesel emission control strategy, including parts and labor.

(C) The warranty coverage provided by installers must be the same as the warranty provided by the applicant as established in subsection (a)(1)(C) - (E) and the same exclusions must apply.

Table 5. Minimum Warranty Periods

Engine Type	Engine Size	Minimum Warranty Period
On-Road	Light heavy-duty, 70 to 170 hp, Gross Vehicle Weight Rating (GVWR) less than 19,500 lbs.	5 years or 60,000 miles
	Medium heavy-duty, 170 to 250 hp, GVWR from 19,500 lbs. to 33,000 lbs.	5 years or 100,000 miles
	Heavy heavy-duty, exceeds 250 hp, GVWR exceeds 33,000 lbs.	5 years or 150,000 miles
	Heavy heavy-duty, exceeds 250 hp, GVWR exceeds 33,000 lbs., and the truck is: 1. Typically driven over 100,000 miles per year, and 2. Has less than 300,000 miles on the odometer at the time of installation.	2 years, unlimited miles
Off-Road (includes portable engines), ~~and~~ Stationary, Marine, Locomotives, TRU, and APU	Under 25 hp, and for constant speed engines rated under 50 hp with rated speeds greater than or equal to 3,000 rpm	3 years or 1,600 hours
	At or above 25 hp and under 50 hp	4 years or 2,600 hours
	At or above 50 hp	5 years or 4,200 hours

(b)(1) Product Warranty Statement. The applicant must furnish a copy of the following statement in the owner's manual, a copy of which must be provided to each owner upon delivery of the diesel emission control

strategy. The applicant may include descriptions of circumstances that may result in a denial of warranty coverage, but these descriptions shall not limit warranty coverage in any way.

* * * * *

(c) Diesel Emission Control Strategy Warranty Report. The applicant must submit a warranty report to the Executive Officer annually by April 1 of each calendar year for each verified system with ~~as defined by~~ a unique diesel emission control strategy family name. The applicant must also submit a warranty report within 30 calendar days ~~at any time~~ if, at any time, warranty claims exceed four percent of the number of diesel engines using the diesel emission control strategy. Where warranty claims exceed four percent, the Executive Officer may modify, revoke or suspend the existing verification. The warranty report must include the following information:

(1) Annual and cumulative sales, and annual and cumulative leases of diesel emission control systems (California only).

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- NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600, 43700 and 43830.8 Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107, 43204-43205.5 and 43830.8, Health and Safety Code; Section 71017, Public Resources Code, and Title 17 California Code of Regulations Section 93000.

§ 2711 Compliance

(a) No person shall sell, offer to sell, or introduce into commerce an ARB verified diesel emission control strategy unless all of the conditions of the governing Executive Order and this Chapter are met.

(b) The Executive Officer may modify, revoke or suspend an existing verification for any violation of the governing Executive Order or the procedures of this Chapter and seek any other remedy available under Part 5, Division 26 of the Health and Safety Code.

(c) No person shall represent a device as being an ARB verified diesel emission control strategy unless it has received verification pursuant to this article.

NOTE: Authority cited: Sections 39002, 39003, 39500, 39600, 39601, 39650-39675, 40000, 43000, 43000.5, 43011, 43013, 43018, 43105, 43600, 43700 and 43830.8 Health and Safety Code. Reference: Sections 39650-39675, 43000, 43009.5, 43013, 43018, 43101, 43104, 43105, 43106, 43107, 43204-43205.5 and 43830.8, Health and Safety Code; Section 71017, Public Resources Code, and Title 17 California Code of Regulations Section 93000.