

**State of California  
AIR RESOURCES BOARD**

**PUBLIC HEARING TO CONSIDER THE PROPOSED CALIFORNIA EVALUATION  
PROCEDURE FOR NEW AFTERMARKET DIESEL PARTICULATE FILTERS INTENDED  
AS MODIFIED PARTS FOR 2007 THROUGH 2009 MODEL YEAR ON-ROAD HEAVY-  
DUTY DIESEL ENGINES**

**Final Statement of Reasons**

**September 2016**

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**Final Statement of Reasons for Rulemaking,  
Including Summary of Comments and Agency Response**

PUBLIC HEARING TO CONSIDER THE PROPOSED CALIFORNIA EVALUATION PROCEDURE FOR NEW AFTERMARKET DIESEL PARTICULATE FILTERS INTENDED AS MODIFIED PARTS FOR 2007 THROUGH 2009 MODEL YEAR ON-ROAD HEAVY-DUTY DIESEL ENGINES

Public Hearing Date: April 22, 2016  
Agenda Item No.: 16-4-2

**I. GENERAL**

**A. Action Taken in This Rulemaking**

Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(a)(6), the Executive Officer has determined that the proposed regulatory action would not create costs or savings to any State agency or in federal funding to the State, costs or mandate to any local agency or school district, whether or not reimbursable by the State pursuant to Government Code, title 2, division 4, part 7 (commencing with section 17500), or other nondiscretionary cost or savings to State or local agencies.

The Staff Report: Initial Statement of Reasons for Rulemaking (staff report), entitled, "Proposed California Evaluation Procedure for New Aftermarket Diesel Particulate Filters Intended as Modified Parts for 2007 through 2009 Model Year On-Road Heavy-Duty Diesel Engines," released March 1, 2016 and revised and re-released March 3, 2016, is incorporated by reference herein. The staff report contained a description of the rationale for the proposed amendments. On March 1, 2016, all references relied upon and identified in the staff report were made available to the public.

On April 22, 2016, Air Resources Board (ARB or Board) held a public hearing to consider approving for adoption the proposed amendment to California's regulation regarding aftermarket parts (Title 13, California Code of Regulations (CCR), Section 2222), and the proposed incorporated document "California Evaluation Procedure for New Aftermarket Diesel Particulate Filters Intended as Modified Parts for 2007 Through 2009 Model Year On-Road Heavy-Duty Diesel Engines" (Procedure).

California Vehicle Code (VC) Section 27156 generally prohibits the sale, offer for sale, advertisement, or installation of any devices that alter the design or performance of any required motor vehicle pollution control device or system. ARB has the statutory authority to exempt non-original equipment components from this prohibition if it determines that such components will not reduce the effectiveness of any required pollution control device nor cause vehicle emissions to exceed applicable standards. Under this authority, ARB has adopted regulations applicable to aftermarket parts and has adopted provisions specifically applicable to aftermarket catalytic converters for

passenger cars and light-and medium-duty vehicles, and to aftermarket critical emission control parts for on-highway motorcycles. Aftermarket devices to control emissions from on-road heavy-duty diesel engines and vehicles have not been previously addressed. Consequently, ARB's existing aftermarket parts provisions are not directly applicable to non-original equipment manufacturer (OEM) aftermarket emission control devices for on-road heavy-duty diesel engines, like diesel particulate filters (DPFs), diesel oxidation catalysts (DOCs), and selective catalytic reduction (SCR).

In this rulemaking action, ARB staff proposes the Board adopt an evaluation procedure that establishes the criteria for assessing whether aftermarket DPFs for 2007 through 2009 model year on-road heavy-duty diesel engines meet the criteria to be exempted from the anti-tampering prohibitions of VC Section 27156. The Procedure will provide companies that elect to manufacture aftermarket DPFs a legal pathway to market and sell such devices in California and is expected to provide consumers lower cost options than purchasing new OEM DPFs. Although participation in this program would be voluntary, in that no manufacturers would be required to make aftermarket DPFs, several companies have already expressed interest in the proposal.

Because of the unique characteristics of DPFs, the proposed Procedure not only considers the basic concepts of modified parts but requires robust testing and consumer protections as well. DPF testing requirements ensure that aftermarket DPFs are effective emission control devices, are durable, and are compatible with engines and their corresponding on-board diagnostics ("OBD" in the form of Engine Manufacturer Diagnostics (EMD)). In addition, the Procedure: uses a detailed submission, review, and approval process; addresses safety considerations; requires pre-installation assessment and authorized installers; and provides additional protections for the end user, including warranty, audit, and recall with required recordkeeping.

The most significant benefit to this Procedure is to the end users, which include those regulated by ARB diesel fleet rules. The proposed regulatory amendment would introduce flexibility to the marketplace by allowing end users more choice in obtaining a replacement for their OEM DPF. Due to marketplace competition, aftermarket DPFs are expected to sell for a lower price than OEM DPFs, thus providing a cost savings to the end user. The availability of lower cost DPFs may result in more timely replacement of failed DPFs, ensuring continued emission reductions to benefit the environment and public health.

At the hearing, the Board received oral comments. At the conclusion of the hearing, the Board adopted Resolution 16-4, in which it approved the proposed regulation.

## **B. Mandates and Fiscal Impacts to Local Governments and School Districts**

ARB has determined that this regulatory action will not result in a mandate to any local agency or school district the costs of which are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, title 2 of the Government Code.

## **C. Consideration of Alternatives**

For the reasons set forth in the Staff Report, in staff's comments and responses at the hearing, and in this FSOR, the Board determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective as and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law than the action taken by the Board.

## **II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL**

### **A. Modifications Approved at the Board Hearing and Provided for in the 15-Day Comment Period**

No modifications were made to the proposal.

### **B. Non-Substantial Modifications**

Subsequent to the board hearing mentioned above, staff identified the following additional non-substantive changes to the "California Evaluation Procedure for New Aftermarket Diesel Particulate Filters Intended as Modified Parts For 2007 Through 2009 Model Year On-Road Heavy-Duty Diesel Engines," incorporated by reference in 2222(k),:

1. Section (b) Definitions, "Used DPF". The reference to the definition of a "Replacement part" in Title 13, CCR, Section 1900(b)(23) has been changed to Section 1900(b)(20), to reflect recent amendments to the regulatory text that were made as part of another rulemaking action. Section 1900(b) was renumbered following the July 25, 2016 repeal of subsections (b)(3)-(5).
2. Section (d)(9)(C). The word "application" was deleted to correct a grammatical error.
4. Section (d)(14). The last sentence was changed to add a comma and verb to correct grammatical errors.
5. Section (f)(6)(A)1. The word "in" was changed to "on" to correct a grammatical error.
6. Section (f)(11)(B). An inconsistent capitalization was corrected.

7. Section (h)(5). The reference to Section I (capitalized, "Approval Criteria for Testing") was changed to Section i (lower case) for consistency of format and to avoid confusion with Section I (lower case, "Warranty").
8. Section (j)(5)(A). An extra parenthesis was removed to correct a typographical error.
9. Section (l)(1)(H)(5). An extra comma was removed to correct a typographical error.
10. Section (l)(1)(I). A comma was added after "e.g." to correct a typographical error.
11. Section (l)(2)(L). A period was added, separating two sentences, to correct a typographical error.
12. Appendix 4, Section 2.2. A comma was added after "e.g." to correct a typographical error.

The above described modifications constitute non-substantial changes because they reflect the original intent of the regulation, do not materially alter the requirements or conditions of the proposed rulemaking action and do not alter the analysis or conclusions regarding environmental and economic impacts of the regulation.

### **III. DOCUMENTS INCORPORATED BY REFERENCE**

The regulation and the incorporated documents, test methods, and standard operating protocols adopted by the Executive Officer incorporate by reference the following documents:

1. *California Evaluation Procedure for New Aftermarket Diesel Particulate Filters Intended as Modified Parts for 2007 through 2009 Model Year On-Road Heavy-Duty Diesel Engine*, Title 13, CCR, Section 2222(k);
2. ARB SOP No. MLD 102/103, *Procedure for the Determination of C<sub>2</sub> to C<sub>12</sub> Hydrocarbons in Automotive Exhaust Samples by Gas Chromatography* (March 15, 2007), Procedure: Table 2-2;
3. ARB SOP No. MLD 104, *Standard Operating Procedure for the Determination of Aldehyde and Ketone Compounds in Automotive Source Samples by High Performance Liquid Chromatography* (April 1, 2006), Procedure: Table 2-2;
4. ARB SOP No. MLD 148, *Procedure for the Analysis of C<sub>3</sub> to C<sub>12</sub> Hydrocarbons in Automotive Exhaust by Gas Chromatography/Mass Spectrometry with Pre-Concentration System* (March 2009), Procedure: Table 2-2;

5. American Society for Testing and Materials (ASTM) International, *Standard Specification for Diesel Fuel Oils* (1982), ASTM D975-81, West Conshohocken, PA (May 1982), Procedure: Section (b);
6. ASTM, *Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)*, ASTM D287-82, West Conshohocken, PA (August 27, 1982), Procedure: Table 1-1;
7. ASTM, *Standard Test Method for Density and Relative Density of Liquids by Digital Density Meter*, ASTM D4052-96, West Conshohocken, PA (May 2002), Procedure: Table 1-1;
8. ASTM, *Standard Test Method for Determination of the Aromatic Content and Polynuclear Aromatic Content of Diesel Fuels and Aviation Turbine Fuels by Supercritical Fluid Chromatography*, ASTM D5186-03, West Conshohocken, PA (April 15, 2009), Procedure: Table 1-1;
9. ASTM, D5453-93, *Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Motor Fuels and Oils by Ultraviolet Fluorescence*, ASTM D5453-93, Philadelphia, PA (September 15, 1993), Procedure: Table 1-1;
10. ASTM, *Standard Test Method for Distillation of Petroleum Products*, ASTM D86-96, West Conshohocken, PA (April 10, 1996), Procedure: Table 1-1;
11. ASTM, *Standard Test Method for Evaluation of Diesel Engine Oils in the T-11 Exhaust Gas Recirculation Diesel Engine*. ASTM D7156-13, West Conshohocken, PA (May 1, 2013), Procedure: Appendix 4, Section 2.2;
12. ASTM, *Standard Test Methods for Flash Point by Pensky-Martens Closed Tester*, ASTM D93-80, Philadelphia, PA (August 29, 1980), Procedure: Table 1-1;
13. ASTM, *Standard Test Method for Ignition Quality of Diesel Fuels by the Cetane Method*, ASTM D613-84, West Conshohocken, PA (January 3, 1984), Procedure: Table 1-1;
14. ASTM, *Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)*, ASTM D445-83, Philadelphia, PA (October 28, 1983), Procedure: Table 1-1;
15. ASTM, *Standard Test Method for Trace Nitrogen in Liquid Petroleum Hydrocarbons by Syringe/Inlet Oxidative Combustion and Chemiluminescence Detection*, ASTM D4629-96, West Conshohocken, PA (April 10, 1996), Procedure: Table 1-1;

16. United States Environmental Protection Agency (U.S. EPA), 2006b. *Alternative Heavy-Duty Highway Guidance for Infrequent Regeneration of Diesel Particulate Filters*, CISD-06-22 (November 6, 2006), Procedure: Section (f)(5)(B)(4);
17. U.S. EPA, *Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures*, CFR, Title 40, Part 86, Subpart N, §86.1327-90 (September 5, 1997), Procedure: Sections (b) and (f)(5)(B)(2);
18. U.S. EPA, *Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures*, CFR, Title 40, Part 86, Subpart N, §86.1334-84 (January 18, 2001), Procedure: Sections (b) and (f)(5)(B)(2);
19. U.S. EPA, *Emission Regulations for New Otto-Cycle and Diesel Heavy-Duty Engines; Gaseous and Particulate Exhaust Test Procedures*, CFR, Title 40, Part 86, Subpart N, §86.1335-90 (September 5, 1997), Procedure: Sections (b) and (f)(5)(B)(2);
20. U.S. EPA, Code of Federal Regulations (CFR), (2014). *Equipment Specifications*. CFR, Title 40, Part 1065 Subpart B (as it existed on February 12, 2016), Procedure: Table 2-2;
21. U.S. EPA, 2014c. *Exhaust Test Procedures for Heavy-duty Engines*, CFR, Title 40, part 86, Subpart N (as it existed on February 12, 2016), Procedure: Sections (b), (f)(4)(E), (f)(5)(B)(6), (f)(5)(B)(8), (f)(8)(B), (f)(8)(C), (g)(1)(B), and Table 3-1;
22. U.S. EPA, 2014, *Compliance with Emission Standards*, CFR, Title 40, Part 86, Subpart A, §86.004-28(i) (as it existed on February 13, 2016), Procedure: Section (f)(5)(B)(5);
23. U.S. EPA, 2006a. *Heavy-Duty Highway Guidance for Infrequent Regeneration of Diesel Particulate Filters*, Compliance and Innovative Strategies Division (CISD)-06-17 (August 7, 2006), Procedure: Section (f)(5)(B)(4);
24. U.S. EPA, *Maintenance*, CFR, Title 40, Part 86, Subpart A, §86.004-25 (as it existed on February 13, 2016), Procedure: Section (d)(7)(4.3.2.7.1);
25. U.S. EPA, 2014b. *Methods for Unregulated and Special Pollutants*, CFR, Title 40, part 1065, Subpart L (as it existed on February 12, 2016), Procedure: Table 2-2;
26. U.S. EPA. *Motor Vehicle Diesel Fuel, Nonroad, Locomotive, and Marine Diesel Fuel; and ECA Marine Fuel*, CFR, Title 40, Part 80, Subpart I (as it existed on February 12, 2016), Procedure: Sections (e)(1)(B)(1) and (e)(1)(C)(1).

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the California Code of Regulations. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed without violating the licensing agreements. The documents are lengthy and highly technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the California Code of Regulations is not needed because the Procedure is voluntary and does not force participation and has a very limited interested audience of the technical staff of some device manufacturers and testing facilities, most of whom are already generally familiar with these methods and documents. Also, the incorporated documents were made available by ARB upon request during the rulemaking action and will continue to be available in the future. The documents are also available from college and public libraries, or may be purchased directly from the publishers.

## IV.SUMMARY OF COMMENTS AND AGENCY RESPONSE

### A. List of Commenters

Table IV-1 below lists commenters that either submitted written comments on the proposed amendments during the 45-day public comment period or submitted oral comments at April 22, 2016 Board hearing. It also identifies the form of their comment and shows the abbreviation assigned to each.

**Table IV-1**

<b>Abbreviation</b>	<b>Commenter</b>	<b>45-Day</b>	<b>Hearing</b>
MECA	Rasto Brezny, Manufacturers of Emission Controls Association	✓	✓
ESW	Patrick Barge, ESW Group	✓	✓
HUG	Peter Bruenke, Hug Engineering	✓	
EMA	Roger Gault , Truck and Engine Manufacturers Association	✓	
JM	David A. Cetola, Johnson Matthey, Inc.	✓	
DCL	Joe Aleixo, DCL International, Inc.	✓	
Cummins	Mike Cooper, Cummins, Inc.	✓	
CDTi	Ian MacDonald, Clean Diesel Technologies, Inc.	✓	
Genovese	Andrew J. Genovese, No affiliation listed		✓
H&H	Lorin Hutnick, H&H Excavation, California Trucks Against		✓

Abbreviation	Commenter	45-Day	Hearing
	CARB		
Lindsteelt	Sean Lindsteelt, All Truckers		✓
CAB	Hank de Carbonel, California Alliance for Business		✓
Roudebush	Larry Roudebush, No affiliation listed		✓

Set forth below is a summary of each public comment made regarding the specific amendment proposed, together with an explanation of how the proposed action has been changed to accommodate each objection or recommendation, or the reasons for making no change. Only objections or recommendations directed at the agency’s proposed action or the procedures followed by the agency in proposing or adopting the action are summarized as permitted by Code of California Regulations, Title 2, Section 11346.9. The comments have been grouped by topic whenever applicable. Repetitive comments have been aggregated and responded to as a group. Comments that are “irrelevant,” i.e., not specifically directed at the agency’s proposed action or to the procedures followed by the agency in proposing or adopting the action, have been grouped and the reasons for being considered outside the scope of the rulemaking provided.

All comments are taken verbatim from documents submitted during the 45-day comment period, or from the April 22, 2016 Board hearing transcript. In some cases, a brief summary introduces a comment or group of comments for clarity. Acronyms exclusively used by commenters have been defined by [brackets] throughout this section.

**B. Comments of Support**

1. Comment: General support of the rulemaking. ARB received numerous comments supporting the overall concept of a procedure to allow for the assessment and approval of aftermarket DPFs intended for use with 2007 through 2009 model year engines. (CDTi, DCL, ESW, Hug, MECA)

By not allowing free market options for DPF replacements, 2007 and newer vehicle owners are obliged to purchase only the DPF available from the Original Equipment Manufacturer (OEM), who clearly has no price pressure or normal market forces in this scenario. As such, we support the introduction of this procedure to help lower operating costs for California diesel fleet and vehicle owners, while not compromising any of the emission reduction goals of the ARB and the people of the State of California. (CDTi)

It is a strong rule that will ensure that aftermarket DPFs introduced into California will effectively control the emissions from heavy duty diesel vehicles, operate safely, and function in a manner equivalent to the OEM part. The rule will provide strong consumer

protection, while at the same time lowering the cost of DPFs for the vehicle owners of California...DCL strongly supports the rule and urges the Board to adopt the rule without delay. (DCL)

There is an important need for the rule, as it will ensure that the aging fleet of model year 2007-2009 heavy duty diesel vehicles continue to have options available for high quality, new DPF cores. (DCL)

As the proposed rule is limited in scope and addresses only vehicles on the road for seven or more years (i.e., model year 2007-2009 heavy duty vehicles), the current absence of any rule for aftermarket diesel emission components is a concern to DCL. Given the age of the vehicles, owners are faced with increasingly short supply [f]or new replacement parts, extra downtime, and limited support from the OEM. Therefore DCL believes that aftermarket DPF parts are important both for maintaining low emissions and reducing cost of ownership. DCL encourages the Board to approve the proposal without delay and to direct staff to begin immediately with processing applications for certification. (DCL)

ESW is convinced that an appropriately regulated aftermarket program will bring high quality and competitively priced new DPFs to a replacement parts market that is often dominated by overly expensive and/or remanufactured components. (ESW)

Although ESW believes that the proposed regulation still requires modification we think that an aftermarket regulation is timely, ensures that aftermarket products match the performance and durability of the OEM replacement parts, offers ample protection to the end user and reasonably balances technical rigor with the very costly certification test burden. (ESW)

We share ARB's concern that there may be a significant number of model year '07 to '09 and newer heavy-duty vehicles operating with damaged DPFs emitting excessive levels of particulate matter. And we commend ARB's efforts to create a common sense regulatory structure for after-market DPFs. We are convinced that this regulation will help improve California's air quality and protect public health. (ESW)

ESW believes that an appropriately regulated after-market program is timely. It will introduce high quality and competitively priced new diesel particulate filters to a replacement parts market that is often dominated by overly expensive and/or remanufactured components. In addition, certified after-market DPFs may feel a need in application where end users have reported that they cannot get new replacement parts. (ESW)

[I]t has come to our attention that in some instances end users have reported that they cannot get new replacement parts, and that OEMs offer remanufactured used replacement parts to be sold in the CA market. The creation of a market for new suppliers, that offer competitively priced parts as well as new parts to replace those that

are not supported by the OEMS, will enable truck owners to replace their DPFs as soon as there is trouble. (ESW)

ESW strongly supports an aftermarket regulation. We think that once most of the key concerns are addressed, it is technically sound, protects the end user and provides affordable high quality aftermarket parts to the market place. (ESW)

Considering that currently some original equipment manufactured replacement parts are not made available and replaced by remanufactured parts, we believe that the rule is timely and we urge the board to consider early adoption. (ESW)

We had the opportunity to comment on and provide data towards the proposed rule during its making. And in our opinion, the staff has carefully reviewed and considered the industry's and our input, and we believe that the proposed rule is a workable compromise. (ESW)

We think that the proposed after-market regulation is timely. It ensures that the after-markets product match the performance and durability of the OEM parts, and offer ample protection to the end user. (ESW)

We support extensive testing and verification of any aftermarket DPF presented to the Air Resources Board. (HUG)

We support the broad objectives of the proposal to ensure availability of cost-effective aftermarket choices for end users. (MECA)

MECA supports the need for establishing a well-defined process by which the performance and durability of DPF aftermarket modified parts (AMP) can be demonstrated and approved for installation on 2007-2009 OEM DPF-equipped heavy-duty trucks after the manufacturer's warranty has expired. MECA commends ARB on its efforts to receive stakeholder input over the past sixteen months and revise the requirements in order to achieve a balanced framework that ensures aftermarket DPF part alternatives that are durable and effective. MECA and our members have been actively engaged with ARB during this process. (MECA)

[W]e support this proposal and we thank ARB for its leadership in setting defined testing and durability protocols for diesel after-market DPFs. I want to thank your staff for their hard work in pulling together a lot of comments from a diverse group of stakeholders. (MECA)

Agency Response: ARB appreciates support for the proposed rulemaking.

2. Comment: General support of technical aspects of the procedure. ARB received several comments supporting various aspects of the testing requirements for the aftermarket DPF procedure (DCL, ESW, MECA).

It is our assessment that the technical requirements of the certification, including accelerated aging, in-use trials, and emission testing at different stages, will ensure that the aftermarket part is functionally equivalent to the OEM part, and we commend ARB staff for their hard work and collaboration with industry in the development of the standards. (DCL)

We believe the technical requirements will ensure the aftermarket part to be functionally equivalent to the OEM part. (DCL)

The testing regimen in the regulation, which encompasses emissions, durability and field testing, will ensure that aftermarket DPFs have the equivalent emissions performance to the OEM and will be suitably durable. We appreciate the opportunity to rapidly-age our replacement part candidates using a validated scientific approach to rapid aging. The field testing requirements are reasonable and will ensure that replacement parts are fully compatible with the applications. In short the regulation will ensure that the aftermarket part matches the OEM replacement part in performance, form, fit and function. (ESW)

We believe that the testing and field demonstration requirements in this proposal will ensure that after-market DPFs will perform and are compatible with vehicles in the marketplace. (MECA)

We believe that the proposed testing and evaluation procedure that combines engine aging and dynamometer testing in a laboratory followed by field demonstration on three different vehicles from the same emission control group will insure that aftermarket DPF modified parts will be durable and compatible. (MECA)

MECA supports robust laboratory and field testing requirements of aftermarket modified parts as well as the inclusion of a DPF catalyst activity evaluation on the degreened and final engine-aged plus field-aged AMP devices. The combination of engine aging, laboratory emission testing and field demonstration on three different vehicles and applications is an appropriate comprehensive process to ensure performance and compatibility of aftermarket DPFs across engine families. (MECA)

Agency Response: ARB appreciates the support for various aspects of the testing procedure for the evaluation of aftermarket DPFs.

3. Comment: The requirement for an assessment of the vehicle prior to installation of the aftermarket DPF, including checks on engine maintenance, fault codes, etc., is a positive step. Maintenance problems with the engine are often the root cause for a failure of the DPF. (DCL)

Agency Response: ARB appreciates support for the pre-installation assessment requirements.

4. Comment: Support of Emission Control Groups (ECGs).

We also support ARB's approach to require individual applications and testing based upon manufacturer and technology specific control groups. These control groups encompass the majority of the heavy duty diesel engine population and technology in use in California and is sufficiently broad to lessen the impact of the certification cost on the aftermarket products. (ESW)

We thank staff for critically reviewing all of the data provided from a broad group of stakeholders to establish a methodology to ensure that aftermarket DPFs are designed and tested for specific groups of engine applications. (MECA)

Agency Response: ARB appreciates support for the ECGs as defined in the Procedure.

5. Comment: Support of used DPF clarification.

DCL supports the rule's ban of remanufactured (i.e., used) DPFs from being sold in California. Such parts are currently sold and installed in without restriction, and we believe these practices are not in the interest of California's air quality goals. (DCL)

Our concern with the current proposal is that aftermarket DPFs will have to compete with the other replacement DPF options from which truck and fleet owners have to choose. MECA supports banning the sale of used or remanufactured DPFs in California. Used catalytic converters were banned under the gasoline aftermarket converter regulation due the uncertainty in performance and durability of used emission control parts that have an unknown history. The banning of the sale and installation of used emission control products is a critical step to achieving a level playing field and ensuring that all aftermarket modified parts are tested under a rigorous and defined procedure, and we strongly support staff's inclusion of this provision in this proposal. Because remanufactured parts are cleaned OEM DPFs and indistinguishable from other OEM parts, we believe that aftermarket modified parts would still have to compete with these cheapest untested DPF options. (MECA)

Agency Response: ARB appreciates support for the staff's clarification regarding the sale of used DPFs in California.

6. Comment: The consumer is more than adequately protected by a warranty requirement that exceeds the OEM replacement warranty coupled with an installation warranty and tracking provisions. (ESW)

Agency Response: ARB appreciates support for the warranty, and tracking provisions of the Procedure.

## C. Engines, ECGs, DPFs, and Knowledge of OEM Technology

### 7. Comment: Engine selection - Insufficient definition of a “worst case” engine

The Proposal offers to group an Emission Control Group (ECG) by OEM, as specified in the Procedure. The Procedure requires an aftermarket DPF manufacturer (AMM) to select a “worst case” engine within a single OEM for laboratory testing and field demonstrations of compatibility...In JM’s view, the Proposal has not adequately established a framework which will ensure AM [aftermarket] part compatibility (especially across all of the engine families for which the AMMs will most likely be seeking certification) and appropriate durability. It is not clear how the Procedure assesses various engines within the ECG to identify the “worst case” engine choice within a single OEM [(original equipment manufacturer)] for testing as well as field demonstrations of compatibility. Seemingly, worst case is a subjective term that lies with the discretion of the AMM applicant, who is not incentivized to select a challenging application. (JM)

ARB should clarify their definition of a “worst case” engine within an emission control group as this term may be interpreted in many ways and based on properties such as emission characteristics, horsepower range or type of application. The uncertainty added by this inexplicit terminology could lead to delays for applicants when working with ARB staff to select an appropriate test engine. MECA encourages ARB to allow some level of flexibility in engine selection, which may be necessary due to the limited availability of engines meeting the testing criteria as 2007-2009 trucks get older. (MECA)

Agency Response: Staff does not agree with this comment because the Procedure is designed to be flexible on this score. The aftermarket DPF is not identical to the original OEM part and the Procedure is therefore designed to assess how a DPF different from the original OEM DPF may interact with an engine. Testing a “worst case” engine is required to demonstrate compatibility across the ECG. Aftermarket stakeholders argued for broader ECGs to help reduce costs. Engines within a single ECG can have differences (e.g., different horsepower, displacement, etc.) and the various ECGs are inherently different from each other (e.g., engine design, regeneration strategies, DPFs, etc.). ARB allowed for these differences based on a technical review of the engines, and by structuring the Procedure to address the broader ECG by ensuring testing captured this new breadth. For the most part, robust emissions and field testing of a single DPF from an ECG, coupled with a broader field trial of two additional DPFs, will allow sufficient demonstration to apply that DPF across all engine families from that single manufacturer. Different sizes of the same filter design will be needed for engines with different horsepower and displacement. Given the breadth of the ECG, the engine must represent the most challenging conditions the device may experience; otherwise, engines which are not compatible with the device may exist within the ECG. Allowing for an engine other than “worst case” would make the durability demonstrations and emissions testing

requirements of the Procedure insufficient to evaluate the aftermarket DPF's compatibility across the breadth of the ECG.

Since all of the engines and applications within an ECG are not identical, they can interact differently with a given aftermarket DPF, depending on its design. Additionally, the different ECGs have significant differences in engine and DPF operation such that a "worst case" for one ECG or DPF may not be for another. Also, the DPFs submitted for review by different aftermarket DPF manufacturers can vary in design. In other words, different DPFs may have different worst case engines and applications depending on design features specific to an individual DPF. Given that ARB cannot control the range or type of DPF designs submitted for review and that different ECGs can have different worst case engines, the evaluation Procedure was designed to allow ARB to work with manufacturers to identify the most appropriate engine(s) and application based on each specific DPF design in question and the desired ECG. In theory, several different engines may satisfy a worst case requirement, allowing applicants flexibility in complying with this requirement.

Section (d) of the Procedure requires applicants to submit a formal application which includes detailed information on the DPF design, and desired ECG. As part of the preliminary application, the applicant must propose a worst case engine based on the guidelines and criteria set forth in the Procedure and ARB will evaluate it on that basis. ARB staff will work with applicants to identify worst case engines and applications.

The applicant must submit a preliminary application which includes a test plan (Section (d)(1)(G)). The test plan requirements are given in Sections (d)(3)(G) and (e) through (i) and include the selection of the engine (Section (d)(3)(G)(1)) and the reasons for that selection (Section (d)(3)(G)(2)). The test plan must be approved by ARB (Section (d)(1)(G)) before testing can commence. Specifically, the engine must be determined by ARB to be appropriate (Section (f)(1)(B)) before the test plan can be approved.

The Procedure provides descriptions and/or parameters for determining for the "worst case engine" and "worst case engine configuration" (Sections (d)(7)(3.1.10), (d)(7)(3.1.11), (f)(1)(B), (f)(1)(E), (g)(3)(A)(3)), as well as for the "worst case application" (Sections (d)(7)(3.2.4) and (d)(7)(3.2.5)), and the "test engines and testing conditions that are representative of the least favorable conditions within the requested emission control group" (Section (d)(3)(G)(1)). The Procedure further requires applicants to provide information on how these were determined by the applicant, so that ARB can review them for appropriateness (Sections (d)(7)(3.1.10), (d)(7)(3.1.11), (f)(1)(E), and (d)(3)(G)(2)). Some parameters listed to help determine the worst case engine, worst case engine configuration, worst case application, and least favorable test engines and testing conditions include, but are not limited to:

- the engine configuration's effect on the aftermarket DPF with respect to potential durability ramifications and the effect on emission compliance (certified and secondary);
- the effects of the aftermarket DPF on the engine/engine parts (including but not limited to other emission control components, engine control unit (ECU) behavior, and active regeneration components) with respect to potential durability ramifications and the effect on emission compliance (certified and secondary);
- e.g., largest engine displacement;
- e.g., oxides of nitrogen (NOx)/particulate matter (PM) ratios;
- the product's failure modes;
- the product's impact on engine;
- the product's impact on regeneration;
- the product's impact on emissions profile of the engine;
- the product's potential for secondary emissions;
- the product's engine characteristics (e.g., including but not limited to displacement, horsepower, operating temperature, engine configuration, emissions profile, NOx emission levels, exhaust gas recirculation (EGR), infrequent regeneration events, other aftertreatment components, other engine design characteristics, etc.); and
- application differences.

The above parameters provide sufficient guidance for selecting an engine and developing a preliminary application.

ARB staff will review applications and provide appropriate feedback, as necessary. The application process may be an iterative progression during which ARB will help the applicant identify the worst case engine, depending on the nature of their product and the ECG selected. More than one engine could potentially satisfy this requirement so there is inherent flexibility in the regulation. To ensure the program is successful and protects the consumer, engines and applications which challenge the aftermarket DPF must be part of the testing, thereby demonstrating that the aftermarket DPF is robust and appropriate for all engines and applications within the ECG. Staff is committed to working with manufacturers on a timely basis to help develop and finalize all aspects of their test plans, including engine selection.

8. Comment: Engine selection - Criteria for engine selection for the two additional field trials is not clear

[The procedure] does require other engines be field trialed with an aftermarket part, but it is not clear that they must be from different applications or span across different engine families. (JM)

Agency Response: The purpose of the two additional field trials is to demonstrate compatibility of the aftermarket DPF with a range of engines and applications within the selected ECG. Staff will work with applicants to finalize their test plans, including

ensuring that their field trial engine selections cover different engines/applications to demonstrate their products' compatibility across the breadth of the ECG. The Procedure intentionally allows for flexibility in choosing candidate engines and applications as this can help to reduce testing burdens, including costs, for applicants. Staff cannot predict the availability to applicants of various vehicles and duty cycles, and additionally, variously engines and duty cycles may be equally acceptable in fulfilling this requirement. The exact nature of the aftermarket DPF design and desired ECG can also influence choice. Staff recognized this when developing the Procedure and therefore incorporated the requirement that applicants work with staff to obtain an approved test plan, which specifies test engines and vehicles, prior to conducting testing.

9. Comment: Insufficient knowledge of OEM ECU behavior and regeneration strategies to select the worst case application within the ECG.

....in the Procedure Sec. (d)(7)3.2.4, applicants are required to identify the "worst case" application within the ECG from the perspective of the effects of the AM DPF on the engine, including, among other things, ECU behavior and active regeneration. As described above, many AMMs will not likely have experience working with the OEMs on the original 2007-2009 systems, so we are unsure how many of the AMMs could provide credible information on how the AM DPFs will impact ECU behavior. AMMs must also address "AECD and infrequent regeneration events," which JM understands is not publicly available and would require EPA [U.S. EPA], CARB [California Air Resources Board] or the OEMs to disclose this information to the applicant prior to the application submission. JM agrees that the considerations described in (d)(7)3.2.4 are important to proving the compatibility of an AM DPF to an engine's control and AECD strategy; however, these are best remediated by having robust field testing requirements in the evaluation procedure. As described in the preceding section of our comments, implementing application-specific ECG definitions would naturally build such safe-guards into the procedure. (JM)

Agency Response: ARB expects applicants to demonstrate a basic understanding of the desired ECG, including possible impacts due to AECDs and infrequent regeneration events, but does not expect applicants to have the same level of understanding as the OEM. ARB expects an applicant to address this as part of the application process and to demonstrate that the aftermarket DPF can successfully operate regardless of AECDs and account for emissions contributions of infrequent regeneration events. ARB expects robust engineering arguments, data, and other relevant information to support this, but does not expect the level of detail that the OEM would need to supply as part of a certification process. ARB also designed the Procedure to assess compatibility with the engine and application via the field trials and laboratory aging. If a major incompatibility were to exist between the engine and DPF, ARB anticipates that data over the course of the testing should highlight this.

The AECD and infrequent regeneration event requirements are specific to demonstrating compatibility between the aftermarket DPF and the engine and application. The Procedure does not require applicants to have the same level of knowledge of the engines as that possessed by OEM manufacturers, but does expect that applicants will exercise due diligence and will conduct appropriate research and development regarding the engines within the desired ECG. Applicants should therefore have a basic understanding of, and experience with, the engines within the ECG and be able to explain how the aftermarket DPFs are expected to interact with the engines, including addressing AECDs and infrequent regeneration events. Applicants can obtain this information without requiring ARB, U.S. EPA or engine OEMS to disclose AECD and infrequent regeneration event information, such as by performing engineering analyses or field trials on trucks within a specified ECG.

Applicants must discuss the effects of the aftermarket DPF on the engine/engine parts (including but not limited to other emission control components, ECU behavior, and active regeneration) as part of the application process. The Procedure requires in-field demonstrations to prove out compatibility with various engines and applications within the ECG and this information can also be used to assess impacts on AECDs and infrequent regeneration events.

10. Comment: Proposed ECGs are not appropriate

Unfortunately, the defined ECGs encompass an extremely broad range of engine families, displacements, customer applications, calibration tunings and DPF characteristics (e.g., backpressure profile, soot loading, washcoat and precious metal loading). Cummins has provided ARB confidential business information showing the differences of the varying DPF design and performance impacts for our MY2007 – MY2009 engines. A single test engine does not adequately evaluate compatibility for an entire ECG as differing DPF critical properties (substrate, washcoat, PGM loading, etc.) influence engine system performance, such as exhaust backpressure, that lead to engine specific models to ensure proper and timely regeneration of the DPF. Furthermore, the proposed single test engine lacks sufficient evidence that the aftermarket DPF specifications (e.g., wall thickness, porosity) are “similar enough” to the OEM DPF for each engine platform within an ECG. Without evaluation of the aftermarket DPF for a given platform, an unintended consequence may be introduction of an aftermarket DPF that is not compatible with some of the engine platforms within an ECG. ARB should consider defining an ECG, at a minimum, based on each engine platform (e.g., displacement) for an OEM as a reasonable alternative to their proposed ECG found in Appendix A of the evaluation procedure. (Cummins)

The discussion of an Emission Control Group (ECG), as described in the proposed application process, identifies significant factors that an applicant must utilize to restrict the use of specific aftermarket DPFs to those engines with common engine design, engine programming, duty-cycles, and applications to avoid unnecessary

safety or emission related risks. However, the proposal proceeds to identify ECGs in an overly-broad manner, allowing for a single ECG for the full product line offered by an OEM or even by a group of manufacturers (see Appendix B, Appendix 1). (EMA)

It is not clear if the determination of such a broad ECG includes all related OEM incorporated sensors associated with the pressures and temperatures that are critical to the integration of a DPF into a viable engine system. OEM DPF designs vary across their respective product offerings in regard to those sensors, in addition to engine design and the other factors noted above. (EMA)

Accordingly, allowing one ECG per manufacturer, as currently proposed, is not adequate. EMA instead recommends increasing the minimum number of ECGs to one per OEM engine displacement group, in the event that increasing the number of ECGs to one per engine family is considered an unacceptable burden for the manufacturers of aftermarket DPFs. (EMA)

The test plan requirements as specified in the proposed application process include critical parameters (such as failure modes and regeneration) and engine characteristics (such as displacement, horsepower, operating temperature, emissions profile, EGR operation, infrequent regeneration events, and application differences). However, as noted above, the overly-broad ECG determination – that would allow the use of one ECG for all of an OEM's product line – appears to undermine those requirements. (EMA)

The testing described in the proposed application process includes laboratory and field testing to demonstrate durability and compatibility, which seems appropriate, except that the testing requirements are limited to a particular ECG that, as described above, does not adequately address the diversity of products due to the use of just one ECG per OEM or group of OEM's as proposed under Appendix B, Appendix 1. (EMA)

[I]n our vast experience developing many of the original MY2007- 2009 emission control systems, including DPF washcoat formulations, and working with our OEM partners for the better part of a decade, JM believes that limiting ECG by OEM only does not strike the appropriate balance between “[p]roved[ing] flexibility in the marketplace for end users seeking to purchase a replacement for their out-of-OEM-warranty DPFs” and “[e]nsur[ing] that the aftermarket part does not reduce the effectiveness of any required pollution control device nor cause the vehicle emissions to exceed the applicable standards.” (JM)

As Staff pointed out at the April 7, 2015 workshop (and JM agreed), if an OEM certified a DPF with a different part number, it did so because the DPF operates and interacts with engine system differently. JM, as a first-fit DPF washcoat supplier for many of the 2007-2009 vehicles, can confirm that there are significant differences in washcoat formulation, production and performance across DPF part numbers. With Staff's decision to limit the ECG by single OEM only, the Proposal now ignores this

critical point and, as a result, significantly increases the chances that an AMM could introduce incompatible aftermarket (AM) DPFs into the market. (JM)

In JM's view, the Proposal has not adequately established a framework which will ensure AM part compatibility (especially across all of the engine families for which the AMMs will most likely be seeking certification) and appropriate durability. (JM)

For the reasons outlined above, JM believes that Staff's original April 7, 2015 draft proposal to limit the definition of an ECG by single OEM *and* by OEM DPF part number is a more suitable approach. However, we understand that such a program could result in over 40 ECGs to cover the entire complement of 2007-2009 engines. We understand that AMMs are concerned that this outcome would be too costly for them to participate in the Program. In response to this argument, JM would like to emphasize that it costs first-fit suppliers tens of millions of dollars and requires significant resources to properly support our OEM partners to certify each and every engine family and individual configuration. So, we fully appreciate the costs involved with developing and commercializing compatible and reliable emission control technologies, but recognize that this is the nature of business. Nevertheless, as a compromise, JM believes that there could be merit in having Staff investigate limiting ECGs by OEM *and* OEM engine size. While such a program would continue to ignore the different tunings and calibrations that led the OEM to certify more than one configuration for each engine size (and, in several instances, utilize different DPF washcoats), it would still better reflect some of the major differences spanning across an OEM's suite of engine families. Under this paradigm, JM understands that an AMM would have to certify between 20-25 different ECGs to cover the entire complement of 2007-2009 heavy-duty engines. In our view, an ECG classification limited by OEM and engine size would produce a more equitable outcome for all interested stakeholders and allow the Board to implement a robust program that better mitigates the risk of incompatible aftermarket DPFs coming to market. (JM)

[I]n JM's view, it is critical for the AMM to test the AM DPF on each OEM engine family for which it is seeking certification to ensure compatibility with the different engine control strategies which vary across an OEM's suite of engine families. The Proposal incorrectly does not include this requirement. If the Proposal is adopted without modification, the resulting regulatory regime could allow incompatible and less-durable AM DPFs to come to market, which could precipitate a multitude of negative, longer-term consequences. (JM)

JM also would like to highlight an important consideration related to the competitive landscape. The OEMs' first-fit DPF business is an extremely competitive environment. Suppliers, like JM, must show "best in class" technology with a strong emphasis on reducing costs wherever possible. Competitive forces dictate that first-fit suppliers, in this case, drive technology innovation to the fewest DPF variants as possible to effectively operate across an OEM's engine families. Typically, we have found that, for MY2007-2009, some OEMs have between 5-10 different and distinct DPF part numbers. In contrast, the Proposal creates a program where an AMM

[aftermarket manufacturer], with relatively limited supporting data and no interaction with the OEM, can certify one aftermarket DPF to operate across an OEM's entire suite of engine families. Given the competitive landscape, it is reasonable to assume that the first-fit technology competition process would have produced a "one size fits all" DPF if it was truly compatible, and sufficiently reliable and robust to apply across all of an OEM's applications. (JM)

First, as described above, incompatible AM DPFs could cause upstream, engine-related malfunction, which will lead to significant truck downtime. Second, as we have explained above, incompatible AM DPFs could easily lead to the Board not realizing the PM and greenhouse gas emission reductions that it anticipates (and has modeled) from the 2007-2009 heavy-duty truck fleet. Additionally, in more extreme cases, real public safety concerns could result if the AM DPF causes the significant build-up of ash and soot. Third, incompatible AM DPFs could lead to more frequent than necessary DPF replacements, engine failures, engine damage, truck downtime, and reduced fuel efficiency. (JM)

Agency Response: The Procedure is designed to address the issues discussed in these comments. Staff used pertinent attributes of both the engine and application to create appropriate "emission control groups." These parameters depend on the nature of the aftertreatment technology and engines and applications within the ECG chosen. These attributes can include, but are not limited to engine size, engine displacement, engine after treatment design, regeneration method, DPF design (including but not limited to porosity, maximum soot loading capacity, median pore size, pore size distribution, cell density, wall thickness, method of sealing or plugging cell ends (e.g., pinched versus plugged), channel shape and symmetry, method of canning including type of matting used, grade and specification of can material thermal expansion/shock, melting temperature, catalyst coating/composition, washcoat, etc.).

The Procedure is designed to assess how the aftermarket DPF compares to the OEM as far as ensuring that the engine maintains its emissions compliance and the DPF does not negatively impact the engine. Originally, staff proposed a conservative approach to ECGs based on unique part numbers (about 40) but aftermarket part manufacturers argued that this was overly restrictive and is unnecessarily burdensome and not based on valid technical differences between engines of a given manufacturer. Based on these comments, staff did a more comprehensive investigation of the 2007 through 2009 engines, paying particular attention to the aftertreatment (i.e. DPF, DOC, regeneration components etc.) design and associated system components (e.g., control logic, sensors, etc.). Staff did an exhaustive review of literature and certification documents, held numerous meetings with aftermarket and OEM manufacturers and, based on all information, determined that the differences within an engine manufacturer were not significant enough to warrant ECGs based on part number. However, in order to maintain a protective position in the event that an engine within an ECG is dissimilar in its interaction with an aftermarket DPF than other engines within the ECG, staff's proposal allows for a

more narrow ECG scope if additional information indicates this is warranted. The Procedure also includes strong protections in the form of warranty requirements, audit requirements, record keeping requirements, and potential recall actions.

OEMs maintain that the ECG categories are too broad and that the engines within those ECGs have significant differences in engine and DPF design, necessitating a part-by-part approval of any aftermarket substitute DPF. Staff requested specific information and data supporting this assertion but received only limited, incomplete information and as such could not conclude that there were enough differences between engines and applications within the proposed ECGs that would pose a problem based on the testing structure. Staff again reviewed all of the provided information, including the additional data, and did not find it persuasive to suggest a more restrictive ECG was warranted.

The Procedure is designed to prohibit gross differences between the aftermarket and OEM DPF by requiring like-for-like substrates (i.e., constructed of the same materials, e.g., cordierite for cordierite, silicon carbon for silicon carbon, etc.) and the aftermarket DPF must have a similar overall morphology to the OEM part (including but not limited to similar channel design, cells per square inch, dimensions, etc.) Staff's proposal ensures applicants must work with ARB to identify appropriate test engines and vehicles which will represent the scope of the desired ECG. This allows flexibility for potential candidate engines as it is possible multiple engines may suffice depending on the exact design of the aftermarket DPF and desired ECG.

The Procedure requires the applicant to have an understanding of the engines within the desired ECG and to fully explain the aftermarket DPF and how it will interact with engines and applications within the ECG. The applicant must conduct a robust accelerated aging protocol, conduct certification type emissions testing, and deploy the aftermarket DPFs on actual in-field vehicles to demonstrate compatibility. This approach is similar to three-way catalyst and other aftermarket part programs where a single part is tested and can be approved for a variety of like vehicles/engines. Depending on the nature of the aftermarket DPF ARB can ask for additional testing (e.g., secondary emissions) if, based on sound principles of science and engineering, staff determine it is warranted.

11. Comment: ECGs do not compensate for different duty cycles with different regeneration strategies

There are significant differences between pre-2007 and MY2007-2009 heavy-duty trucks that alter the manner in which DPFs operate on these trucks. The DPFs designed for pre-2007 trucks (i.e., retrofit market) rely primarily on passive regeneration systems and involve a great deal of pre-assessment work to ensure that a particular customer's duty cycle will allow the retrofit DPF to operate effectively. In contrast, MY2007-2009 DPFs almost exclusively rely on active regeneration strategies due, in part, because the OEMs have limited ability to effectively evaluate an individual customer's duty cycle. As a result, the OEMs had to ensure that DPFs would work in all possible scenarios over a wide range of

applications (thus, leading to the OEMs' reliance on active regeneration strategies). (JM)

Agency Response: The Procedure is designed to assess an aftermarket DPF for compatibility with engines, regeneration method, and applications within an ECG. The aftermarket part must be similar enough to successfully pass all testing, including accelerated aging, emissions testing, and field compatibility. Additionally, the applicant, via the research and development process, is expected to have a basic appreciation for the types of applications and regeneration methods that exist within an ECG and design the aftermarket DPF accordingly. ARB expects the applicant to address compatibility as part of the application process and demonstrate that the aftermarket DPF can successfully operate regardless of duty cycle or method of regeneration (passive versus active). If a major incompatibility were to exist between the engine and DPF, ARB anticipates that the testing requirements of the Procedure will reveal this.

The Verification Procedure<sup>1</sup>, for pre-2007 vehicles, is a different program designed to acknowledge emissions reductions of NOx and PM from in-use diesel engines which did not come OEM equipped with DPFs. Many devices have been verified and a significant number of these retrofit DPF based systems do in fact use active regeneration. Staff used past experience from this program, in addition to multiple other sources of information (including OBD and certification programs, literature review, etc.) when developing this aftermarket DPF Procedure.

12. Comment: [I]t will take much more detailed specific calibration to each engine for an AM DPF to be truly compatible. For example, coating formulation changes have significant impact on backpressure calibration and inherent backpressure is controlled, in large part, by the type of washcoat that is applied and how the washcoat is applied to the substrate. Therefore, an AMM simply trying to reverse engineer and approximate first-fit DPF metal loadings will not reliably ensure compatibility. (JM)

Agency Response: This evaluation procedure is designed to test and prove the aftermarket DPFs' effectiveness, durability, and compatibility with the ECG. The aftermarket, or "modified part", DPF is not intended to be functionally identical to the original equipment part in all respects which in any way affect emissions, according to its definition in Title 13, CCR 1900(b)(14); therefore, the Procedure does not require it to be identical to the OEM part. The aftermarket DPF manufacturers may use different catalysts and/or washcoats, but still could achieve compliance with emission standards, durability, effectiveness in PM reduction, and compatibility with the engines and engines' EMD system. This Procedure for aftermarket DPFs not only considers the basic concepts of modified parts (i.e., that the aftermarket DPF

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<sup>1</sup> ARB, *Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines*, 2002.

causes no reduction to engine/vehicle effectiveness and does not cause emissions to exceed applicable standards), but also includes: safety considerations; pre-installation assessment and authorized installer requirements; a detailed submission, review, and approval process; and protections for the end user, which include warranty, audit, and recall with required recordkeeping.

13. Comment: The proposal to allow aftermarket DPFs that have an independent engine control unit (ECU) is incompatible with the vitally important requirement that any aftermarket device not adversely affect the OEM's engine ECU. OEM development of ECUs is a very intensive process that takes into account a significant number of parameters as described in the original certification documentation provided to CARB at the time of certification, including, but not limited to, the interaction with auxiliary emission control devices (AECDs) and CARB's requirement for Engine Monitoring and Diagnostics (EMD) and on-board diagnostics (OBD). It seems inconceivable that an aftermarket ECU associated with a replacement DPF could perform its anticipated functions without in some ways impacting the OEM ECU. Determining whether such interactions are adverse to the OEMs' ECUs is highly complex and EMA members are concerned that such interactions will not be adequately evaluated to protect the customer and the OEM from the unintended consequences of such interactions. (EMA)

Agency Response: ARB's proposal does not interfere with the engine ECU. The aftermarket DPF should not interfere with the normal engine operation or OEM engine ECU behavior and this is strictly prohibited by the Procedure. If the aftermarket DPF product (including an ECU) were to affect or alert engine or OEM ECU behavior, it would be deemed incompatible and not a candidate for exemption from the anti-tampering provisions of Vehicle Code Section 27156. ARB provides the option that the new aftermarket DPF may include an independent ECU (i.e., not OEM engine ECU) but this is not intended to control, alter, or otherwise impact or interact with the OEM engine ECU. It is intended to be a passive system which simply monitors conditions like a datalogger and potentially stores data and/or aftermarket DPF fault codes. Given the warranty and potential recall provisions of the Procedure staff anticipated that some aftermarket DPF manufacturers may wish to deploy an independent system which could store information about engine and device conditions to assist with warranty claim investigations.

14. Comment: Regeneration, soot loading capacity/design of OEM DPF are all incorporated into the ECU programming for engine behavior

Additionally, with post-2007 DPFs, OEMs, among other things, are looking to minimize the frequency of active regeneration events so as to control emissions and preserve fuel economy. OEM control schemes closely monitor DPF sensors to determine if the backpressure is triggering a threshold limit. An AM DPF's trigger can be biased if it is inherently more or less restrictive than the OEM part. OEMs use regeneration timers to make sure they clean at least every so often, which means the passive regeneration behavior is important to make sure the upper end of the timing interval is still within a safe particulate matter (PM) loading level on the DPF

such that an inappropriate or “runaway” regeneration event is not triggered. The engine controls will routinely make assumptions on how much ash is being stored on the DPF. So, if the AM DPF is not able to store ash in a manner consistent with the OEM part, then the contribution of the ash build-up to the DPF's backpressure profile is altered and the engine controls may not initiate the active regeneration at the appropriate time. Such a condition can lead to burned-through DPFs if there is more PM than expected, or it could lead the engine controls to initiate regeneration events more often than necessary leading to decreased fuel economy and increased greenhouse gas emissions. So, the engine ECU is expecting certain behavior from the DPF and if an AM DPF is not completely compatible, it could cause poor performance or even lead to DPF failure.

Similarly, the DPF's ability to oxidize and store soot is also programmed into the engine ECU. This allows the ECU to track how much accumulated soot and ash are contributing to the backpressure of the DPF and ultimately allows the ECU to determine when to initiate a regeneration event. The DPF's ash level in the ECU is determined by comparing the backpressure across the DPF to a programmed reference value after a regeneration event has removed all the soot. However, if the soot does not oxidize at the same rate on the AM DPF because the catalyzed coating on the aftermarket DPF is different than the OEM part, then the AM DPF may not clean completely before the ECU terminates the regeneration event. The ECU could then incorrectly assume that the AM DPF is loaded with inert ash when it actually could still be loaded with soot. Such a result could bias the ECU's soot estimate to be lower than the actual soot level which could lead to a burned-through DPF if the ECU delays the next regeneration beyond the DPF's safe soot threshold. It should also be noted that copying the physical characteristics of the OEM's bare substrate to the aftermarket part is not enough to duplicate the backpressure response when it is loaded with soot and ash. If the physical characteristics of the AM DPF's coated substrate (e.g., porosity, wall thickness, and channel dimensions) are different than the OEM part, then the soot storage between regeneration events may provide a different backpressure response to the ECU, thereby introducing another opportunity to bias the ECU's soot estimate on the DPF. Also, the interaction of the applied washcoat can modify the effective porosity and channel dimensions of the substrate and similarly alter the backpressure response of the DPF. (JM)

Agency Response: The Procedure addresses these concerns through the robust laboratory aging, emission testing, and field compatibility requirements as well as the additional indirect protections in the form of the audit, reporting, recall and warranty provisions. The aftermarket DPF is designed to be a direct replacement for the OEM DPF and must prove that it is functionally similar, although not identical, to the OEM DPF. The Procedure requires the applicant to have familiarity with the ECG engines, including a basic understanding of the regeneration intervals. Staff expects companies, as part of routine product development, will have invested in appropriate research and development and will also obtain additional information via field trials. The aftermarket DPFs should not interrupt any OEM engine ECU's operation and

should be similar in behavior to the OEM part. Additionally, the ECU monitors the DPF backpressure and determines when and how long the active regeneration shall be performed so the aftermarket DPF should have the same trigger thresholds if it is in fact similar. In addition, the temperature and backpressure of DPF during the emission testing are required to be within a certain percentage of OEM DPF values providing an appropriate comparison to the OEM's behavior when the robust laboratory aging and field compatibility requirements are also considered.

The catalytic activity test demonstrates that the aftermarket DPF regenerates in a manner that is similar to the OEM DPF. This requirement, in combination with the robust laboratory aging, temperature and backpressure monitoring during the testing, and the datalogging required during the multiple field trials, will serve to demonstrate that the aftermarket DPF is compatible with the engine and regenerates in a manner functionally similar to the OEM DPF.

15. Comment Also, the Proposal does not require the AMM to use the OEM's engine control regeneration strategy in the regeneration emissions measurement portion of the testing protocol, instead the Proposal allows applicants to recommend regeneration methods for measuring emissions during DPF regeneration events. Yet, the Procedure notes that "[a]s these modified parts are not part of the original system, it is essential to evaluate their ability to function with the engine and ECU to properly regenerate." By not requiring the use of the OEM's engine control strategy, it will be extremely difficult to determine whether the AM part is compatible with the temperature ramp rates and ensure that any hydro-carbon slip is similar to that of OEM's in real-world applications. (JM)

Agency Response: During the field demonstration, the aftermarket DPF must use the OEM's engine control strategy, which will determine whether the aftermarket DPF is compatible with engine regeneration in real-world applications. The emission testing including the active regeneration is to evaluate whether the aftermarket DPF is in compliance with emission standards.

16. Comment: Allowing different washcoats and/or catalyst loading is not consistent with an identical OE filter replacement.

The proposed regulation currently allows a catalytic or wash coat formulation change and mandates a "like-for-like" approach for the substrate material requiring that the aftermarket DPF must be of the same material and equivalent physical dimension, segmentation, cell density, and shape as the OE DPF. With this focus on a "like-for-like" substrate and neglecting the impact on emission performance of the wash coat formulation and any precious metal loadings, we believe that the current approach of the proposed regulation is not consistent with an identical OE filter replacement since it already allows changes in the chemical makeup of the filter technology. (HUG)

Agency response: The aftermarket DPFs are modified parts, not replacement parts. A modified part is defined in Title 13, CCR Section 1900(b)(14) as any aftermarket part intended to replace an original equipment emission-related part and which is not functionally identical to the original equipment part in all respects which in any way affect emissions, excluding a consolidated part. Therefore, the washcoat and precious metal loadings need not be exactly identical to the OEM DPF, but the effects are not neglected. ARB's proposed Procedure includes robust testing requirements, including catalytic activity testing, to ensure these cores with the washcoating and precious metal loadings are emission compliant, durable, and engine compatible.

17. Comment: Request out-of-kind substitution. A change in the wash coat formulation along with precious metal loadings will affect the performance of the filter greater than a substrate material change. A DPF passing all requirements of Procedure and having documented field performance should be allowed.

In our assessment and based on the knowledge that we have gained over the years in manufacturing substrate material and wash coat technologies, a change in the wash coat formulation along with precious metal loadings will affect the performance of the filter greater than a substrate material change. Hug Engineering is therefore requesting consideration for using alternative substrates in respect to physical material (not size or cell density) in place of the original OE substrate material (Summary of section (d)(1)(C). This subsection is requiring that the aftermarket DPF must be of the same material and possess equivalent physical dimension, segmentation, and shape as the OE DPF). We request the regulation to allow alternative substrate materials since the proposed regulation already allows different wash coat formulations, understanding that the alternative substrates must meet or exceed the OE substrates in performance and durability without any effect on the OE engine or other emission systems.

Once the data is presented, the Air Resources Board would have the final approval on the verification. Hug Engineering does not see any detrimental effects caused by adopting this change in language since 1) any substrate change must meet or exceed the OE standards 2) testing and verification results would need to be approved by the Air Resources Board prior to being offered for sale in the California market and 3) proven technology exists supporting improved performance substrate manufacturing along with extensive in field operating data. We believe that the proposed language change will improve the regulation and will allow access of new and improved future technologies being developed with even better performance factors. (HUG)

Agency response: The "like-for-like" substrate requirement is based on common industrial practices and good engineering judgment. The entire Procedure is predicated on the fact that the aftermarket DPF core is grossly similar to the OEM core. Different types of substrates have significant differences in durability, thermal tolerances, porosity, soot loading, regeneration behavior, interaction with coatings

and catalysts, etc. The OEM engine should not be altered to accommodate the aftermarket DPF. Therefore, the aftermarket DPF needs to be functionally similar to the OEM DPF from the perspective of how the engine interacts with the DPF. For example, an out-of-kind core may not be the same physical dimensions due to performance differences (e.g., backpressure) as the OEM part, which would confound the ability to simply replace the OEM part with a substitute without having to alter other aspects of the engine. This also means a far more involved installation. Additionally, common industry practice is to use the same basic type of core for replacement parts and this requirement is consistent with other programs such as Verification. ARB staff researched this issue by conducting an exhaustive review of certification information, published literature, and by speaking with industry experts, including OEMs.

The assessment of out-of-kind cores would also require appreciably more testing than that required by the current Procedure. This would be necessary to demonstrate the durability, emissions compliance, and compatibility of the aftermarket DPF with all the engines in the ECG and to ensure that the aftermarket DPF would not cause any adverse operational or emissions effects. The existing testing requirements are not sufficient when dealing with an out-of-kind core, where use of that DPF on different engines within the ECG might have unexpected results. The current Procedure would only be able to demonstrate that the out-of-kind core worked on the exact engine and application that the aftermarket applicant used for testing. The Procedure would need to be radically changed to include additional testing to ensure the different core material would work with all engines within the ECG. Additionally, accommodating an out-of-kind core may also result in narrower ECGs, thereby increasing the overall testing burden. The Procedure is not setting up a “sole source” type of situation, as there are several different manufacturers of the substrate materials used by the OEMs (i.e., these cores are readily available in the marketplace).

#### **D. Testing Requirements**

##### **18. Comment: Catalytic Activity – Nitrogen dioxide (NO<sub>2</sub>) measurement acceptance criteria**

MECA proposed a soot accumulation method for evaluating the passive soot oxidation on the DPF as an industry accepted test for evaluating passive soot regeneration performance on the DPF. In this proposal ARB included the soot regeneration as well as an NO<sub>2</sub> test as two options that AMP manufacturers could use. MECA continues to believe that the NO<sub>2</sub> test is not a robust method for the purpose of comparing two DPFs. The competing mechanisms of NO<sub>2</sub> formation and consumption across DOC + DPF systems is discussed in SAE paper 2013-01-0526. NO<sub>2</sub> measurement across a DPF is dependent on the backpressure sensitivity of the engine calibration, aging condition of the DOC, engine-out NO<sub>x</sub> emissions, as well as the soot and ash loading in the DPF at the time of the measurement. The experience of our members gained in the retrofit verification program has shown that

it is difficult to obtain repeatable NO<sub>2</sub> results across a DPF due to the number of variables that influence the chemical reactions on the catalyst. Because of the multiple sources of variability in this measurement, we believe that trying to match the NO<sub>2</sub> activity between two DPFs to within 15% is extremely difficult. (MECA)

Agency Response: The Procedure does not require the applicant to use the NO<sub>2</sub> based method to comply with its catalytic activity requirements. Staff addressed industry's concern, which was brought to ARB's attention during the rulemaking process, by including a second, alternative method, that of soot accumulation. This allows applicants to choose whichever method they are most comfortable with, and may provide financial benefits by allowing flexibility. Staff does not want to limit this option and remove this flexibility by striking the NO<sub>2</sub> testing path. Additionally, staff disagrees with industry's evaluation of NO<sub>2</sub> testing path. The purpose of the catalytic activity test is to show that the filter is designed so that it will regenerate (oxidize soot) in a manner that is similar to the OEM part. Staff comprehends the factors which influence NO<sub>2</sub> production and the NO<sub>2</sub> testing is based on robust principles of science and engineering in part obtained by 15 years of experience with NO<sub>2</sub> testing as part of the Verification Program.

19. Comment: Catalytic Activity - NO<sub>2</sub> emissions should be measured at each step

To check catalytic activity, section (f)(2)(C) allows manufacturers to either measure NO<sub>2</sub> (see section (f)(5)(B)) or perform soot accumulation testing as defined in section (f)(5)(C). However, providing these testing options contradict the need to evaluate NO<sub>2</sub> emissions after each aging sequence for "Mod Part #1" as suggested by sections (f)(10)(B)-(D). To fully evaluate catalytic activity and degradation, NO<sub>2</sub> should be evaluated during each emissions test sequence in Figure 1 and ARB should clarify this requirement. (Cummins)

Agency Response: The Procedure does include instructions to measure NO<sub>2</sub> emissions after each stage. For the first stage of testing, after degreening, Section (f)(5)(B)(6) lists the compounds that must be measured (including NO<sub>2</sub>) and Sections (f)(5)(B)(7) and (f)(5)(B)(8) provide instruction for NO<sub>2</sub> measurement. Sections (f)(6)(B)(4) and (f)(7)(B)(4), which specify the pollutants to be measured following the laboratory aging and field testing, respectively, both state, "The emission testing results and the instruments/devices for pollutants are specified in section (f)(5)(B)6-8." Section (f)(2)(C) provides an alternative to NO<sub>2</sub> measurement, should the applicant choose. The reference within Section (f)(2)(C) to Section (f)(5)(B), that provides the instructions of how to measure NO<sub>2</sub>, does not negate the requirements of Sections (f)(6)(B) and (f)(7)(B), each of which require NO<sub>2</sub> analysis by the method explained in (f)(5)(B)(7) and (f)(5)(B)(8).

20. Comment: Catalytic Activity – Soot accumulation test should be done at each step

Similarly, if the soot accumulation method is valid for checking catalyst activity and will be used by applicants, this evaluation method and additional acceptance criteria

should be required for emission testing after 300 hours of lab aging and 500 hours of field testing. (Cummins)

Agency Response: Performing a soot accumulation test after a lengthy lab aging and/or field testing could introduce error due to an incomplete DPF cleaning. The purpose of testing is not to determine if a company can correctly clean a DPF but to ensure the DPF is compatible with the intended ECG. Additionally, the proposed Procedure for measuring catalyst activity is not solely relying on the NO<sub>2</sub> measurements or soot accumulation testing, but also on other evidence and information (e.g., the regeneration interval, DPF operation conditions, etc.). The effort and cost to ensure the DPF was back in its original state is not worth the incremental additional information provided.

21. Comment: The laboratory aging temperature window ( $700 \pm 50$  °C) is too large and may have inconsistent results, as the temperature extremes (650 °C, 750 °C) will result in different aging characteristics.

Finally, the proposed aging cycle requires 100 hours at 700 C +/- 50C for the A100 Ramped-Modal Cycle Supplemental Emissions Test (RMCSET) operating point for the worst-case test engine of the ECG. The +/- 50 C creates a temperature control range that is too large to allow for a consistent and fair comparison test, as the temperature extremes (650 C, 750 C) will result in different aging characteristics. DPF degradation is mainly a function of temperature and to have a realistic comparison of DPF performance, all DPFs should undergo aging at the same temperature and time. The DPF degradation rate will be different between an aged part at 650 C versus an aged part at 750 C, where manufacturers could purposely perform their testing at the lower temperature range to ensure likelihood of certification. Even consideration of the time (see Appendix 3, Section 3.1), via ARB's proposed Arrhenius effective aging expression, may not properly account for the temperature effects on catalyst aging under the proposed temperature extremes. For these reasons, the temperature range should be narrow in order to make sure that the comparison is realistic and representative of the difference between the varying aftermarket designs. As such, a more appropriate temperature range would be +/- 10 C. (Cummins)

Agency Response: The proposed Procedure measures DPF bed temperatures which can be variable and hard to control. The window is necessary to allow compliance but is still extremely hot and challenging (given it is accelerated aging) for a DPF. On the other hand, the inlet temperature is easier to control and has a more restrictive window ( $620^{\circ}\text{C} \pm 20$  °C) in the proposed Procedure. In addition, the fixed effective aging time is based on a reference temperature. If the lower temperature in the DPF is reached during the accelerated aging process, the longer time is required, and vice versa. This effective aging time requirement helps to ensure consistency. In summary, a narrower window of tolerances (+/- 10) is extremely difficult and unnecessary to achieve and would significantly increase

testing burdens. Staff arrived at these conditions after an exhaustive review of certification information, literature review, and discussions with industry experts.

22. Comment: The Procedure's emission testing requirements are substantially less than those for certification of OEMs.

The proposed emission test cycles (Reference Table 2-1) consisting of 1 FTP [Federal Test Procedure] group (cold start and 3 hot starts) at three test points [degreened, 300 hours, and 500 hours] is substantially less testing and aging than CARB requires for OEMs to certify their engines as originally equipped with a DPF. (EMA)

All of these outcomes perpetuate an unfortunate rhetoric that emission control systems do not work properly, which unfairly tarnishes those in the industry, like JM, that have (i) worked extremely hard to build a positive image of U.S. EPA 2007 and 2010 systems; and (ii) invested tens of millions of dollars to ensure that emission controls significantly reduce criteria pollutant and greenhouse gas emissions all while not coming at an unreasonable cost, not damaging engines, not leading to truck downtime, and not undermining fuel efficiency. Moreover, a distrust of the emission control industry also undermines the Board's credibility to uphold existing emission regulations, and to implement new regulations in the future that will be necessary to meet the state's aggressive and vitally important criteria pollutant and greenhouse gas objectives. (JM)

Agency Response: The testing required by this Procedure is robust and designed specifically to assess an aftermarket DPF, not to certify an engine. Therefore, the Procedure's requirements are not the same as new engine certification requirements.

The Procedure was specifically designed to evaluate a modified part, defined in Title 13, CCR Section 1900(b)(14) as any aftermarket part intended to replace an original equipment emission-related part and which is not functionally identical to the original equipment part in all respects which in any way affect emissions, excluding a consolidated part. The requirements for exempting an aftermarket emission control device are set forth in VC 27156: that the device will not reduce the effectiveness of any required pollution control device nor cause vehicle emissions to exceed applicable standards. Therefore, the Procedure's testing focuses on both emission compliance and the comparison of the aftermarket DPF to the OEM DPF. It also ensures that the device is durable and compatible with the ECG.

The Procedure does require that the aftermarket DPF demonstrate its filtration efficiency, catalytic activity, thermal stability, emissions compliance, durability and engine compatibility. ARB's proposal of 300 hours of laboratory aging is an accelerated aging which is a more cost effective method for evaluating durability and deterioration than a prolonged field test. This accelerated aging includes not only thermal aging but also chemical aging, which simulates an average of 4,260 hours

(or 191,700 miles) of engine/truck operation in the field. Field testing is essential to demonstrate that the aged DPF is compatible and functions well as an integrated part of the entire system in a real-world application (e.g., does not cause engine damage, show inappropriate regeneration behavior, trigger fault or error codes, or experience loss of physical integrity). The Procedure is sufficiently robust to test the aftermarket DPF, while not imposing the same, extensive requirements of an engine certification.

ARB appreciates the effort that JM and other companies have put into ensuring DPFs are robust and successful technologies. ARB shares the goal of ensuring DPFs are used and deployed appropriately

23. Comment: In addition, the requirement to qualify the engine utilizing 1 set of 3 hot start SET [Supplemental Emissions Test] test cycles, which are never evaluated with the aftermarket DPF, appears to provide a significant disparity in operational requirements for the qualification of the aftermarket DPF when compared to the requirements for OEMs, or even compared with the aftermarket retrofit emission control requirements set forth in California CCR Title 13 Section 2704. (EMA)

Agency Response: The SET testing is to qualify the engine and since the engine was certified with an OEM DPF, the OEM DPF by default is included. The SET testing does not provide enough additional information over the Federal Test Procedure heavy-duty transient cycle (FTP) as far as the aftermarket DPF's behavior with the engine to warrant the additional testing of the aftermarket DPF.

24. Comment: [T]here are no prescribed requirements for the aftermarket DPF to demonstrate the influence of infrequent regeneration emissions in ARB's proposed procedure. OEMs, in contrast, are required to adjust emission levels for the infrequent regeneration emissions, but it appears the manufacturers of aftermarket DPF's are not required to make any such determination. (EMA)

Agency Response: The Procedure does include this. The requirements are specified in Sections (d)(3)(G), (d)(7), (f)(2)(D) and (f)(5)(B)(4) and (f)(5)(B)(5)), including the regeneration emission testing and influence of infrequent regeneration emissions with direction to follow U.S. EPA CIRD-06-17 and CIRD-06-22.

25. Comment: There also are no requirements identified in the testing procedures regarding DPF influence on surrounding component temperatures, either in normal operation or during a regeneration event. OEM DPF designs are evaluated for interaction with all related component temperatures including, but not limited to, surface temperature and discharge gas temperature. Aftermarket DPF replacement parts should not result in higher temperature exposure to nearby parts and/or exhaust gas discharge. (EMA)

Agency Response: The Procedure requires temperature measurements as part of all testing, including emission testing during regeneration. The aftermarket DPF

temperature must be within certain tolerances of the OEM part and itself over the course of testing (as specified in the Procedure (sections (f)(5)(B), (f)(10)(B)(1)(i), (f)(10)(B)(2)(ii), (f)(10)(C)(2), (f)(10)(D)(2))). The Procedure requires the applicant to provide documentation that the DPF showed no signs of excessive heat (sections (e)(2)(A)(1)(ii), (e)(2)(B)(1)(ii), and (i)(2)). The robust laboratory aging and field trials would highlight any differences between the OEM and aftermarket DPFs causing functionality issues or impacts on other engine components.

26. Comment: Additionally, the Proposal removes the OEM part from the aging sequence and emissions test. The deterioration factor of the AM part at the end of its useful life (at 2 years) should be similar to the similarly-aged OEM part to provide further proof that it is compatible with the control system over time. However, with no requirement for an AMM to do any analysis on the aged OEM part, it will not be possible to compare the deterioration factor of the AM part to the OEM part. (JM)

Agency Response: The Procedure was specifically designed to evaluate a modified part, as defined in Title 13, CCR Section 1900(b)(14) as any aftermarket part intended to replace an original equipment emission-related part and which is not functionally identical to the original equipment part. This Procedure is therefore designed to evaluate a “modified part” DPF, not a “replacement part” DPF, so the testing requirements are designed to demonstrate the modified part performance in that context. The Procedure is designed to prove out the aftermarket DPF, not prove it is identical in all respects to the OEM part, or determine the durability of the OEM DPF. It is essential that the aftermarket DPF survive the accelerated laboratory aging (equivalent to approximately 4,260 hours, or 191,700 miles with a truck running at 45 mph of actual engine/truck operation in the field) and still be emissions compliant.

27. Comment: Use of previously generated test data

MECA requests that ARB remains open to the use of appropriate test data that may have been generated prior to the approval of this procedure. We agree that some limits are necessary on archived data in order to minimize deterioration effects. We would like to point out that the retrofit verification process allowed for the use of prior data at the discretion of ARB staff. Applicants will have to do a significant amount of testing on a representative engine as part of their technology development process since no changes to the technology may be made after submitting an application. Applicants will need to develop baseline data for their test engine and conduct testing to insure the technology is robust. ARB retains the right to refuse data if they do not meet the criteria of the application, but it doesn't seem reasonable to outright refuse appropriate and good data simply based on a date stamp. Therefore, we believe some consideration for flexibility should be included here. (MECA)

Agency Response: Generating data for a yet to be approved program is problematic from a legal perspective and makes for an “unlevel playing field.” Companies new to rulemaking or to this Procedure would be at a competitive disadvantage due to the

fact they may not have seen the Procedure until the official 45-day period. Additionally, the Procedure requires manufacturers to work with staff to determine appropriate test engines and applications. Testing done without staff's input would be at the manufacturer's own risk and could result in manufacturers having to repeat costly testing, if ARB determined that prior testing was inappropriate, delaying ARB's approval.

## **E. Administrative Requirements**

28. Comment: ARB received several comments asking for early implementation of the regulation, including sufficient staffing for timely review of applications. (CDTi, DCL, ESW, MECA)

CDTi requests that the Board approve the procedure for early implementation and direct staff to begin accepting preliminary applications concurrently with making final changes to the procedure. CDTi expects that there will be a peak of submissions upon formal adoption of the procedure and that additional staff resources should be implemented to accommodate and expedite review. Even if the procedure is not ideal, California diesel vehicle owners deserve purchasing options and should not be limited in viable DPF aftermarket options indefinitely, due to ARB staff limitations. Additionally, with the ARB required retirement of pre-2010 trucks in the years 2021-2023, there is a finite window of opportunity for the 2007-2009 vehicles addressed in this procedure, hence early implementation is important. (CDTi)

Given that the rule addresses only the model year 2007-2009 heavy duty diesels, and that owners increasingly face limited choices for replacement parts for these aging vehicles, DCL encourages the Board to approve the rule without delay and to direct staff to begin accepting applications for certification. (DCL)

We encourage the Board to ensure that enough staff resources are available for the review of the certification applications, as the amount of data required in submissions is very extensive and will be time consuming for review. (DCL)

DCL encourages the Board to approve the proposal without delay and to direct staff to begin immediately with processing applications for certification. (DCL)

[W]e urge the Board to consider the aftermarket regulation for early adoption. (ESW)

Considering that currently some original equipment manufactured replacement parts are not made available and replaced by remanufactured parts, we believe that the rule is timely and we urge the board to consider early adoption. (ESW)

[W]e are also concerned whether ARB will be adequately staffed to process all the applications in a timely manner. This concern is based on our retrofit experience in dealing with an overworked and often understaffed CARB team. We believe that a similar scenario will delay the certification process and the much needed after-market product introduction. (ESW)

[W]e urge ARB to allocate appropriate staff for this program, so that applications can be reviewed and approved in a timely manner...I just want to request the staff that they be allowed to begin accepting data and applications as soon as the Board adopts this regulation, so that manufacturers can bring forward these technologies in a timely manner help to support ARB's inspection maintenance objectives for heavy-duty trucks. (MECA)

Furthermore, MECA requests that the Board directs staff to accept early implementation of this procedure immediately following Board approval so that applicants can begin to generate allowable data as part of their application. (MECA)

Finally, we are concerned that ARB allocates sufficient resources to review the number of applications from different manufacturers that are expected when a new program like this is launched. It has been suggested that two ARB staff will manage the entire aftermarket DPF program. As the 2007-2009 population of engines ages, the potential aftermarket DPF market diminishes each year. This limits the opportunity for an applicant to sell a sufficient number of aftermarket parts under this regulation to justify the cost of an EO [executive order]. We urge ARB to allocate additional resources for reviewing applications and test results under this regulation to be able to process EOs in a timely manner. (MECA)

MECA recommends Board approval and early implementation of the rule so that applicants may immediately begin working on their applications. (MECA)

Agency response: ARB acknowledges these concerns and is moving forward to complete the post-hearing process and allocate additional staff, as needed, to review applications within the timeframes specified in the Procedure. As part of this rulemaking process, ARB requested additional staff to support this new program.

29. Comment: The proposed aftermarket DPF label should include clarification that the applicant is the party responsible for any related product warranty. (EMA)

Agency Response: The proposed aftermarket DPF label already contains 1) EO number issued by ARB; 2) name, address, and phone number of the applicant; 3) product part number; 4) unique serial number; 5) month and year of manufacture; 6) directional flow arrow; and 7) other information, such as "birth weight" to help the end user clean their filter. EMA's concern about clarity of warranty responsibility has been addressed in the warranty language which is included in the Owner's Manual that accompanies the product. Therefore, staff maintains that the product label needs no additional information.

30. Comment: The installation instructions provided by the aftermarket DPF supplier must include clarification that installation of the aftermarket DPF voids any claims related to the DPF system as provided by the OEM. In addition, the maintenance procedures, technical service bulletins, and other service information related to the

aftermarket DPF are the responsibility of the aftermarket DPF supplier, not the OEM. (EMA)

Agency Response: This aftermarket DPF regulation is applicable only to engines that are out of the OEM warranty period. The Procedure's installation requirements are clearly specified in Section (j)(2)(C). The applicant is further required to authorize and train installers to follow all installation requirements (Sections (j)(2)(A) and (j)(2)(B)). Section (j)(6) requires that the applicant provide an owner's manual for the aftermarket DPF and requires that it include specific information, including installation and maintenance requirements. Technical service bulletins and other service information would fall within the responsibilities of applicants providing training and installation instructions to the authorized installers. Therefore, the Procedure has addressed the concerns expressed in this comment.

31. Comments: Procedure has less reporting requirements for aftermarket manufacturers than for OEMs.

There are no reporting requirements identified in the Aftermarket DPF Proposal beyond the need to provide information to CARB upon request. By contrast, OEMs are required to report production volumes to CARB on an annual basis, and also are required to submit warranty and defect reports to CARB based on a variety of factors, including service parts sales. It seems prudent for CARB to require aftermarket DPF suppliers to provide similar annual sales information in addition to being subject to the same warranty and parts defect reporting requirements as OEMs. (EMA)

Agency Response: This aftermarket DPF regulation does include recordkeeping and reporting requirements. The annual sales information and warranty and parts defect information are all included in the annual warranty report that must be submitted to ARB. The installer must also submit an annual warranty report. It is the quality control reports that are submitted to ARB only on request.

32. Comment: QC reporting requirements should be limited to only emission critical components of the DPF.

ESW believes that only emission critical components of the aftermarket DPF (i.e., substrate, wash coat, system interfaces) should be subject to part number control and quality reporting requirements. The manufacturing process flow and associated quality control elements should be subject to audit, but not submitted for approval as required by the proposed regulation. If the manufacturing processes are subject to potentially time consuming ARB approval, any upgrade or optimization in the manufacturing process such as tooling changes and upgrades to handle higher volume would be delayed. From our experience with retrofit change requests, being subject to the ARB approval process can have a tremendous negative impact on our ability to provide a high quality product at a competitive price, in a timely manner. We believe this has been recognized by regulators before and we are not aware of

any similar requirements for the OEM. ESW believes that warranty and audit testing requirements are sufficient to ensure that the DPFs will be of appropriate quality and durability. (ESW)

Agency response: This Procedure focuses only on aftermarket DPFs. Therefore, it is a well-defined product with a relatively small number of component parts, all of which are critical to its operation. For example, a DPF is typically in a can with matting. All parts are critically important for the correct functioning of the DPF and it is staff's position that all parts of the DPF, including canning and matting in addition to "emission critical components," are essential and must have quality control procedures associated with their production. These parts also legally define the system. Changes in the parts away from what ARB reviewed, and what the testing supported, could result in non-compliant systems which are incompatible with the engine and application. ARB must know what the system is, to ensure regulatory enforceability and avoid tampering. Additionally, a quality control procedure may be written in such a way that minor changes do not require revisions to the procedure. When changes to the procedure are planned, ARB would expect the manufacturer to submit the revised procedure in advance of implementation so that their QC plan submittal and approval process does not impact their business. ARB will work with manufacturers to minimize this impact as much as staff can. Additionally, ARB requested additional staff resources to directly support this new Procedure.

### 33. Comment: Opposition to requirement of an authorized installer

ARB has proposed that an aftermarket DPF may only be installed by an authorized installer selected by the applicant. Although this may be relevant in the installation of complex retrofit systems, it is far less critical for the replacement of a DPF core. Truck owners are not required to have other replacement parts installed by a dealer, and it is common for them to perform their own engine repairs. The burden on authorized installers may be enough to discourage them from participating in the program and drive truck owners away from purchasing aftermarket modified DPFs due to the financial burden associated with truck downtime while searching for and scheduling a repair with a conveniently located authorized installer. (MECA)

The replacement of a filter core is far less complicated and represents less risk than installing diesel retrofit systems. It is a less risky installation than replacing a fuel injector or other regular maintenance items, which are allowed to be replaced by the truck owner or fleet mechanic. MECA affirms that engines must be operating per the manufacturers specifications, including repair of any existing engine problems, before a replacement DPF is installed on the truck. This reduces the possibility of poor engine operation that could affect vehicle performance and result in damage to the new DPF. The procedure for pre-assessing the engine can be provided to the installer without requiring that only authorized installers be allowed to install the replacement part. (MECA)

Agency response: This authorized installer requirement ensures that DPF installation is performed by a party trained to properly perform the installation and is consistent with the authorized installer requirements of other ARB aftermarket programs (e.g., the Verification Program). The authorized installer requirement goes hand in hand with the requirement for a pre-installation assessment that ensures that the aftermarket DPF is the correct part for the engine and that the engine is in good working condition, etc. If these requirements did not exist, installers with no or improper training may incorrectly install aftermarket DPFs. DPFs that are improperly installed or are installed on incompatible engines can be damaged or pose vehicle usability challenges, resulting in potential costs to end users who subsequently would not be able to use the vehicle. Authorized installers should have appropriate training and, therefore, be able to properly assess and install aftermarket DPFs and to provide appropriate service and support to the consumer, thus potentially avoiding unnecessary product or installation disputes. This also holds the installer accountable for providing appropriate warranty information to the device manufacturer and ARB. Without this accountability it may be difficult or impossible to obtain accurate warranty reports, conduct audits, and/or undertake recalls. Failure to have authorized installers may also be non-protective to end-users as it can confound warranty investigations and may result in ARB having limited ability to enforce the provisions of the rule due to missing or incomplete records, no warranty reporting, etc. This could have profound ramifications in the case of a recall. Additionally, these requirements are protective of the device manufacturers as it means that the installers should have appropriate training and be able to provide device manufacturers with necessary information in the case of a warranty dispute.

34. Comment: Requesting clarification of recordkeeping responsibilities.

And then another thing that you talked about was the records for the DPFs. Are the companies going to be the ones that are keeping the records for these businesses or is the business going to have to keep these records? (Roudebush)

Agency response: Purchasing an aftermarket DPF is solely at the discretion of the consumer. The consumer is not forced to purchase an aftermarket DPF instead of the OEM DPF. The Procedure does not mandate the end-user keep records related to the aftermarket DPF, but failure to do so may jeopardize having a successful warranty claim. However, both the aftermarket DPF manufacturer and installer have recordkeeping responsibilities, which are clearly delineated in the Procedure, primarily in the installation and warranty sections (Sections (j) and (l)).

35. Comment: Request for consistent recordkeeping timeframes.

The diesel retrofit program was a mandatory program with no competing technology whereas in the aftermarket modified parts market, the consumer makes choices based on cost. The current version of the regulation imposes inconsistent recordkeeping requirements on applicants, and these requirements will be difficult to effectively fulfill. This proposal requires tracking of end-user contact information for a total of eight years whereas pre-installation records and warranty reporting are

required to be retained for six years. MECA requests ARB to harmonize all recordkeeping requirements to six years from the time of sale. This would result in a strong, consistent and less expensive recordkeeping requirement while providing support to consumers. (MECA)

Agency Response: The date of installation is more important than the date of sale. The warranty should apply to when the DPF is actually being used by the ultimate purchaser, and should not start prior to the DPF being installed and used. Additionally, it is illogical to have an installation warranty start prior to when the DPF is actually installed. As such, the product and installation warranties begin when the product is installed. This requirement is consistent with other aftermarket regulations, such as Verification.

ARB requires end user contact information to be kept for six years after the expiration of the two-year warranty, for a total of eight years, in case any warranty or enforcement issues arise and/or recalls are required. This timeframe is consistent with new engine certification. The annual warranty reporting and retention of pre-installation records are important for warranty dispute investigations and enforcement actions. The Procedure requires them for only six years to lessen the burden on installers and manufacturers. If it is more convenient, though, manufacturers may certainly keep pre-installation records for the full eight years.

36. Comment: Request to allow streamlining or flexibility of recordkeeping requirements and to allow online recordkeeping.

We recommend that greater consideration be given to streamlining or eliminating a number of unnecessary administrative burdens that the rule places on the installer and manufacturer. For example, the installer must fill out details on the vehicles, such as end user information, make, model, model year, engine serial number, VIN, engine family name, horsepower, engine configuration, etc. Much of this information is overlapping. Additionally, the rule explicitly requires that warranty cards must be “filled out in triplicate” and one copy returned with “pre-paid postage.” Experience with traditional mail-in warranty cards for the aftermarket catalytic converter program shows they are completed less than 20% of the time. DCL recommends that the rule be modified to allow administrative tasks for record keeping, training, and warranty to be maintained in an on-line database, and to allow the manufacturer the flexibility to eliminate the need for retaining information where there is overlap. (DCL)

The aftermarket parts business model is entirely different than that of retrofit devices, with one reason being that aftermarket sales go through parts networks, distributors and over the counter stores. MECA understands ARB's desire in having detailed records in case of a recall. However, a very low return rate for owner and vehicle contact and warranty information is a reality in the market. MECA's experience from gasoline aftermarket converters, which only require the return of a simple warranty card filled out by installers, is that less than 20% of the cards ever

make it back to manufacturers. Some reasons contributing to this low return rate are time required to fill out cards and distributors unwilling to share customer lists with applicants. Furthermore, maintaining accurate end user contact information is very difficult because resale of trucks or owner relocation are often not reported to applicants. (MECA)

MECA supports allowing applicants the option to conduct recordkeeping online in electronic databases, including installer training and authorization, and warranty card registration. MECA feels that this would reduce the risk to applicants and installers while reducing the burden on end users, and may result in more complete records. (MECA)

Agency Response: As explained in the response to comment #39, these administrative requirements are necessary and add value in terms of both end user protection and the potential reduction in warranty claims. All businesses should maintain adequate records as part of normal business practices. The recordkeeping requirements for this Procedure are critical to ensure end-user protections. Without these, warranty becomes difficult to support, and remedies to the end user, including recall, could be severely undermined. The enforceability of the Procedure may also be severely hampered. Additionally, the industry asked for the ability to move devices from vehicle to vehicle (swapping). Without proper record keeping this could: make it impossible to determine if a product was still covered under warranty; result in end-users having warranty claims denied; make it impossible for ARB to determine if a product was having problems in-field especially if it was specific to an engine or application; or make recalls ineffective and cost prohibitive for the device manufacturer.

With the exception of warranty card registration, the Procedure does not specify how records are to be kept. Installer training and authorization procedures are not specified by the Procedure. Therefore, any given manufacturer may conduct training, authorize installers, and keep records in whatever manner is best for its business. The use of warranty cards is a common business practice. Not every consumer has easy online access and requiring the traditional mail-in cards ensures that all of the necessary information is collected from all end users. Therefore, such recordkeeping requirements are reasonable and necessary.

37. Comment: Opposition to imposition of strict penalty for missing records.

While a manufacturer can use its best efforts to maintain records, given the amount of information collection required by the rule, and the length of time (eight years) for retaining records, it is expected that significant errors and omissions in records will occur. Vehicle ownership may change several times, and it is not realistic to expect that accurate records of ownership will be maintained over such a long time. Yet the rule imposes a strict penalty of rescinding the Executive Order (EO) for the manufacturer due to missing or inadequate records, and potential fines. ARB should eliminate penalties for manufacturers and installers that make good faith efforts.

ARB should be mindful that the large and unnecessary amount of information reporting by installers will make it less likely that forms are diligently filled out. (DCL)

The proposal imposes a strict penalty of rescinding the Executive Order (EO) for an applicant's aftermarket modified part due to missing or inadequate records. MECA requests that ARB staff consider flexibility when responding to situations where records are missing but not the fault of the applicant. (MECA)

Agency Response:

The Procedure does not state that revocation of the EO is the only remedy for incomplete or missing records. The Procedure states that the Executive Officer may modify or revoke an existing EO for any violation of the conditions governing Executive Order or this Procedure. It does not require that EO be revoked for any infraction. Any corrective action(s) taken by ARB would be appropriate to the individual situation. The comment further states that manufacturers and installers should not be held responsible provided they do a good faith effort and that because we have robust reporting requirements, people are less likely to comply correctly. Applicants are expected to comply with the regulation and failure to do so could result in corrective actions appropriate to the situation. Companies who chose to participate in the program are agreeing to—and expected to—comply with its requirements. Additionally, record keeping is critical to ensure end-user protections (e.g. warranty claims), and for ARB to assess if an aftermarket DPF may be subject to a recall. Missing, incomplete, or inaccurate information can undermine the Procedure's enforceability and protections.

38. Comment: Administrative requirements too burdensome, too costly and/or do not add value to the procedure in return for the cost, or should be more flexible.

[W]e believe that some of the proposed requirements concerning installers and recordkeeping impose costs with no improvement in durability or performance. We believe that further consideration should be given to provide flexibility in how the recordkeeping and installation requirements are implemented to benefit the performance and reliability aspects of aftermarket DPFs and enforceability of the regulation. (MECA)

Agency Response: Although the major purpose of the installation and recordkeeping requirements is for protecting the end user and improving the aftermarket DPFs' traceability and accountability, these requirements (e.g., pre-installation assessment, installation procedure, training for installers and end-users, etc.) could improve the aftermarket DPF's durability or performance in the field, and reduce the warranty claims. Therefore, staff's position is that the administrative requirements do provide good value in return for the cost and effort of complying with them. Additionally, without this information ARB would be unable to effectively enforce the Procedure, and would be unable to administer effective recalls or product investigations (e.g. audits).

39. Comment: Procedure imposes requirements on aftermarket suppliers that do not currently exist for OEM suppliers.

The proposed procedure imposes requirements on aftermarket suppliers that do not currently exist for OEM suppliers. This is not consistent with the traditional aftermarket that exists for other components in both gasoline and diesel applications, in California and the rest of the USA. However we recognize that in the absence of a procedure, the situation is even less desirable. This procedure creates a significant onus on the applicant's in the area of warranty duration, warranty record keeping, record keeping after the warranty period, installer oversight and control, installer data collection obligations, pre-installation requirements, and documentation included with the product; primarily found in Section j) OTHER REQUIREMENTS. This increased onus appears to be in response to conditions currently in a marketplace that does not yet include aftermarket choices. As such, we request these measures be applied to any DPF available for sale beyond the warranty period of the emissions system. (CDTi)

It has been characterized by some that aftermarket parts are unproven, have not followed the same certification standards as the OEM part and therefore need to be held to a higher standard than the OEM part. It should be noted that aftermarket DPFs have been in service in 49 States for over five years without reports of emissions or safety issues. Nevertheless, in many aspects the proposed rule places requirements on aftermarket parts for warranty, installation, reporting and component swapping that are not applied to OEM replacement parts. This creates an unlevel playing field in the marketplace. While DCL does not object to strict requirements, we encourage the Board to harmonize the rules for all DPFs, both OEM replacement parts and aftermarket parts. (DCL)

Setting administrative requirements for recordkeeping and installation on aftermarket DPFs and not OEM replacement DPFs has unintended consequences in competitiveness in the market place. We ask ARB to consider equitable recordkeeping, engine pre-assessment and recall requirements that are within applicants' ability to deliver and comparable to those imposed on new and used OEM parts. (MECA)

No such requirement [authorization of installers] is imposed on installers of OEM replacement filter cores or gasoline aftermarket converters. Although OEM DPF cores must be purchased from a dealer, they may be shipped to the owner for self-installation in order to save cost and convenience of not having to bring the truck to the dealer. (MECA)

ESW is concerned that the requirements placed on the distributors regarding the installation, maintenance and warranty add no value to the end user but will create restrictions on the aftermarket DPF that are not imposed on the OEM replacement DPF. Such restrictions could significantly discourage the distributors from offering aftermarket DPFs, thus limiting or eliminating the availability of aftermarket DPFs,

further raising the cost of DPFs, and leaving too many damaged DPFs on the road. For example, the distributors that install OEM parts are not required to follow any of these procedures that are called out in the draft regulation, such as: provide a 2-year installation warranty; maintain installation records for four years; collect service information on the replaced part; monitor warranty claims and generate and submit warranty reports; perform a detailed pre-installation inspection; determine whether the engine is in “cert condition”[—]in case of aftermarket injectors or other replacement parts this would be very hard to do; and track end user information (addresses may change). (ESW)

Agency response: This rulemaking addresses only aftermarket parts, as defined by Title 13, CCR Section 1900(b)(14), and governed by Title 13, CCR Section 2222, “Add-On Parts and Modified Parts.” It does not address replacement parts, as defined by CCR 1900(b)(20). Thus, ARB cannot include any requirements for OEM replacement DPFs in this regulation, as that would be outside the scope of this rulemaking.

Additionally, it is important to note that the OEM replacement part is functionally identical to the OEM DPF that was thoroughly tested as part of the OEM engine certification. The OEM DPF was an integrated component of the overall engine design supported by research, development, and testing far in excess of what this Procedure requires. In addition, given that the OEMs designed the engine, they have proprietary knowledge of the engine and OEM DPF which an aftermarket manufacturer does not have. Therefore, consumer protections are necessary to ensure that the aftermarket DPF is emission compliant, durable, compatible with the engine, and poses no safety hazards.

ARB considered comments such as these during the development of the Procedure, but determined that loosening these requirements would provide insufficient end-user protection by making it virtually impossible to have effective warranty protection or audit practices, and would seriously hamper recalls.

Authorized installers and pre-installation assessments are required, as explained in the response to comment #34, to protect the end user from improper installation. Additionally, the aftermarket DPFs are installed on in-use vehicles which may be in various stages of disrepair. Other engine components can fail, and, in theory the DPF is not being replaced if it is not necessary which would imply there was some sort of underlying problem which could potentially include engine problems. As such, the installer must understand what to look for to ensure the engine is appropriate for the device. An uneducated installer may inadvertently allow a potential safety issue to arise due to an improper installation. Additionally, the installers must have some basic requirements to ensure the end users have direct protections (in the form of warranty) and that the installers are also obligated to maintain some basic, standard information about the installations such that the device manufacturers and ARB can relay and utilize this to investigate issues and warranty claims, and to institute effective recalls.

The required pre-installation assessment ensures the aftermarket DPF is not installed on an engine for which it was never approved (e.g., outside of the ECG) or an engine which may have caused the OEM DPF to fail by being improperly maintained. An older aftermarket ARB program, Verification, saw numerous instances of avoidable device failure when verified technologies were installed incorrectly, on inappropriate engines, or on engines in an improper state of maintenance. By requiring certain checks and conditions, including training, to occur prior to installing a device, these types of issues can be avoided and potentially mostly eliminated. The proposed Procedure further requires that the installer be authorized by the manufacturer to perform the installation. This is ultimately protective of the end-user, installer, and DPF manufacturer as an incorrect installation could result in enforcement action (tampering) against all involved parties, including the DPF manufacturer. Also, given that the warranty coverage potentially excludes damage due to engine problems, installation on an engine which is improperly maintained could void an end-user's warranty coverage.

The two-year warranty is the base minimum time to determine if a device is robust and compatible with all engines in the ECG. The shorter OEM replacement part warranty is not a reasonable comparison, given that the OEM is attesting to the fact that the replacement DPF is functionally identical to the original DPF which was proved through extensive engine certification testing.

Recordkeeping requirements for both the manufacturer and installer are necessary to ensure the availability of all records needed to support the warranty requirements and potential recalls or agency actions, as explained in the response to comment #37.

Regarding the comment that products have been proven in use in other states, to assess the validity of the claim would require detailed information. However, since there are no requirements on these 49-state products, ARB has no way to know if the warranties are being honored or if the claims never get to the OEM because the installer does not report it or consider it warrantable. Additionally, California fleet rules require compliance. If a vehicle is used to comply with a fleet rule and needs to replace the DPF, the consumer should have protections not found in 49-state products.

Manufacturers and installers would likely not participate unless they expect to realize an economic benefit from the sale and service of the products. ARB has already had industry groups and individual companies ask when this Procedure will be finalized, as they wish to start selling their products in California by these rules.

In summary, these requirements are necessary to protect end-user and proper installation of aftermarket DPFs. These requirements will reduce the number of in-field issues encountered by end users by ensuring that the engine is appropriate for the aftermarket DPF and that a knowledgeable installer properly installs the

aftermarket DPF. Furthermore, the recordkeeping requirements will allow warranty investigations and any necessary recalls or other actions.

## **F. Miscellaneous Comments**

### **40. Comment: Compatibility of DPFs with engines.**

I just have a few questions about some of the things that were mentioned earlier. They talk about compatibility with engines, I was wondering who did all the studies to check to see the compatibility for DPF filters with engines? (Roudebush)

Agency Response: This Procedure is simply allowing an aftermarket DPF as an alternative to the OEM DPF original certified with the engine. However, the Procedure is designed to assess if an aftermarket DPF is compatible with engines within a given ECG. It has robust testing designed to assess emissions compliance and engine compatibility and to ensure the aftermarket DPF is durable. Furthermore, it includes protections in the form of warranty, audit, quality control, pre-installation assessments, authorized installers, record keeping, and recall provisions.

### **41. Comment: Clarification of regulation coverage.**

I have a question for maybe the Board, or maybe the staff, or the experts that are here. Does this regulation cover only the filter element or is it the entire DPF? ...[H]ow about the control units, all the electronics, the black boxes? (CAB)

Agency Response: This regulation requires warranty coverage for the DPF unit, which would include the core, the “can” that contains it, any brackets for mounting it, and any electronics, such as a DPF ECU, that are specifically designed for the aftermarket DPF. It does not include the manufacturer’s engine ECU.

### **42. Comment: Comparing this procedure to the Verification Program is inappropriate and a three-way catalytic converter model should be used as it is just a “like for like” substitution.**

Having explained the commercial contrast between the retrofit rules and the proposed procedure, we find it perplexing that the procedure so much resembles the procedure governing retrofit parts. While we understand the need to ensure that this procedure protects against tampering, we believe a more appropriate comparison would be the ARB gasoline aftermarket regulations. We would also comment that there are thousands of aftermarket replacement DPFs that have been supplied into the market in the 49 other States and Canada, and this procedure should reflect that in a free market, there are forces at work that inherently control the quality of any aftermarket parts and simply imposing a procedure that will require an investment of hundreds of thousands of dollars is a significant implicit quality control measure. (CDTi)

The proposed regulation has been compared by some to ARB's controversial Truck and Bus Regulation and the use of Verified Diesel Emission Control Systems (VDECS). We believe such a comparison is false. The VDECS program was intended to retrofit vehicles that were never designed by the OEM to operate with DPFs. As such, the VDECS rule involved addressing a number of complex challenges in safety, design, installation and operation, and required strong warranty protection for vehicle owners to ensure no negative impact on their vehicles. By contrast, the proposed rule is intended for vehicles that are already designed and equipped with a DPF by the OEM, and it merely addresses the issue of how to swap the DPF core with a like-for-like component. The durability of the DPF core is less than that of the engine, and therefore the swapping of the DPF core was intended by the OEM to be a simple task that could be conducted in less than thirty minutes by a technician, with little technical and safety risk. We consider the closest analogy of the proposed rule is the regulations for aftermarket catalytic converters, not the VDECS regulation. (DCL)

This current aftermarket DPF proposal includes much of the complex administrative and procedural requirements from the retrofit verification program, despite the many differences between aftermarket DPF parts for vehicles that were designed to operate with a DPF and diesel retrofit devices that are installed on trucks that were never intended to use a DPF. Similarities between gasoline aftermarket converters and aftermarket DPFs should not be overlooked when setting administrative requirements such as record keeping, warranty reporting and installation. (MECA)

Agency Response: Industry's comments on this are two-fold—that comparison to the retrofit diesel emission control system (Verification) procedure is inappropriate, and that comparison to the aftermarket catalytic convert program is appropriate.

Wall-flow DPFs are very different from flow-through three-way catalytic converters and have totally different failure modes. In addition, gasoline and diesel engines are vastly different technologies that require different considerations when assessing an emission control device. The Procedure was written to specifically address DPFs as a technology platform, just as the aftermarket three-way catalyst regulation was developed separately from general aftermarket parts many years ago. The catalytic converter is a simple, flow-through device. Unlike the catalytic converter, the DPF builds up soot that must be combusted, requiring the engine's ECU to determine when it time to begin and end regeneration. The DPF also builds up ash that requires cleaning. Inadequate filter maintenance can result in device failure and vehicle usability issues, which is untrue for catalytic converters. Therefore, a program analogous to the approval process for evaluating and approving an aftermarket catalytic converter would be inappropriate for evaluating and approving an aftermarket DPF.

While the retrofit systems were added to vehicles not originally certified with DPFs, many of the same considerations exist with regard to replacing DPFs on engines

that were certified with DPFs. The unit must be correctly installed and part of that installation process is ensuring that it is the correct DPF for the engine and that is installed on an engine that is in good condition and operating properly. Installing a DPF on an inappropriate engine or on an engine which is not operating properly can result in a damaged DPF, and potential vehicle usability issues. The aftermarket DPF must also regenerate in a manner similar to the OEM. Therefore, staff determined that measuring regeneration emissions, measuring catalytic activity, performing accelerated laboratory aging to show durability, performing field trials to demonstrate compatibility with the engine, and having installation requirements (authorizing installers, and requiring pre-installation assessments) and consumer protections (warranty, audit, and recall) similar to those of the Verification Program are essential and appropriate facets of a robust aftermarket DPF program.

43. Comment: Does not adequately protect end users

EMA strongly supports CARB's objective to evaluate and regulate the installation of aftermarket diesel particulate filters (DPFs) that are intended as replacements for the DPFs that original equipment manufacturers (OEMs) previously designed, certified, and originally produced in compliance with the CARB new engine emission standards applicable to 2007-2009 model year heavy-duty engines. EMA also strongly supports CARB's efforts to prohibit tampering with certified engine configurations, including through the installation of unapproved aftermarket replacement parts. That said, EMA members are concerned that the Aftermarket DPF Proposal does not adequately protect end-users as CARB claims. Increasing vehicle maintenance downtime by curtailing current [OEM] DPF maintenance practices is a negative consequence of the regulations as proposed. Moreover, providing end-users with a lower cost, but less reliable (or even worse, with an incompatible DPF) than might otherwise be available from the original engine manufacturer is not protective of those users' interests or the public interest. (EMA)

Agency Response: ARB's proposal includes extensive end-user protection requirements for aftermarket DPFs that are more stringent than any comparable requirements for OEM replacement DPFs. In addition to very stringent testing requirements that address the aftermarket DPF's filtration efficiency, catalytic performance, thermal stability, emissions compliance, durability, and engine compatibility, this aftermarket DPF regulation includes a number of provisions for protecting the end user who purchases these DPFs. First, the proposed regulation requires that the product be warranted to be free from defects for a period of two years from the date of installation, which is longer than an OEM replacement DPF's typical warranty of 90 days to 1 year. Second, installers must provide an installation warranty for a period of two years from the date of installation, which does not exist for OEM replacement DPFs. Third, the aftermarket DPFs may be subject to audit testing to check for compliance with the proposed Procedure, which is not required for OEMs replacement DPFs. Fourth, an aftermarket DPF may be subject to recall under certain conditions specified in the Procedure. These provisions are necessary and sufficient to ensure that the end users are adequately protected if they choose

to replace their OEM DPFs with aftermarket DPFs. In addition, the availability of lower-cost alternatives would make replacing a broken DPF less onerous for the end user, making it more likely to be replaced on a timely basis. Timely replacement of broken DPFs is in the public interest, as it ensures continued PM capture to benefit the environment and public health.

44. Comment: Opposition to prohibiting sale of used OEM DPFs.

Increasing vehicle maintenance downtime by curtailing current [OEM] DPF maintenance practices is a negative consequence of the regulations as proposed...The Aftermarket DPF Proposal, as described in section 2222(k)(5), would effectively preclude the sale of OEM-provided remanufactured or refurbished DPFs in California. Those provisions, if implemented, would have the unintended consequence of crippling the transportation industry in California by requiring that OEM-provided DPF maintenance be completed on the originally-installed DPF rather than through the common industry practice of swapping-out DPFs to facilitate vehicle maintenance while avoiding significant vehicle downtime. Currently, many OEM service operations provide DPF cleaning services by swapping a clean DPF for one that requires cleaning to minimize vehicle downtime. The removed DPF is cleaned and used for replacement on a subsequent equipment maintenance cycle. The DPFs involved are OEM-produced parts and are equivalent to the original DPFs installed by the OEM at the time of manufacture, and are considered replacement parts under Title 13, CCR Section 1900. EMA supports the proposed regulatory intent of ensuring that aftermarket DPFs are newly manufactured and not salvaged parts. However, allowing the continued practice of DPF swapping with OEM-produced DPFs is critical for the efficient operation of 2007-2009 model year vehicles that are the subject of the proposed regulation. Accordingly, EMA recommends that the language of the Aftermarket DPF Proposal be revised to read: "...or salvaged diesel particulate filter that is not a replacement part as defined in Title 13, California Code of Regulations, Section 1900 in California." (EMA)

Agency Response: This rulemaking action amends Title 13, CCR, Section 2222 to expressly state that used, remanufactured, refurbished, recycled, or salvaged DPFs may not be installed, sold, offered for sale, or advertised in California. This amendment does not establish a new requirement regarding the sale or use of remanufactured, refurbished or salvaged DPFs, but rather clarifies the applicability of VC 27156 to such DPFs.

VC Section 27156 prohibits the sale, offer for sale, advertisement, or installation of any device that alters the design or performance of any required motor vehicle pollution control device or system, unless that device has been exempted by the ARB. Replacement parts are presumed to qualify for an exemption from VC 27156 unless ARB's Executive Officer makes a finding to the contrary (Title 13, CCR section 2221(a)); however, remanufactured, refurbished or salvaged DPFs cannot qualify as replacement parts (defined in Title 13, CCR Section 1900(b)(20) as "any aftermarket part intended to replace an original equipment emissions-related part

and **which is functionally identical to the original equipment part in all respects which in any way affect emissions (including durability)**, or a consolidated part”), because any used DPF has necessarily been exposed to in-use conditions that will cause such used DPF to be not functionally identical to an original equipment DPF in all respects that can affect emissions (e.g., exposed to in-use conditions that cause catalyst deactivation or excessive backpressure). Consequently, remanufactured, refurbished or salvaged DPFs are not presumptively exempted from VC 27156 but must instead be exempted by ARB before they can be legally sold, offered for sale, or installed.

Furthermore, EMA supports ARB’s proposal to ban any used, remanufactured, refurbished, recycled, or salvaged DPF from aftermarket manufacturers, but requests that ARB not apply this same prohibition to OEM replacement DPFs. This is a potentially arbitrary distinction as both the OEM DPF and aftermarket DPF have similar attributes as far as failure modes, emissions compliance, etc.

Swapping and sale of used DPFs are two different concepts. Swapping DPFs is a common practice that involves movement of the same type of DPF (same size/part as under the same engine EO) between different vehicles/engines for the purpose of cleaning/maintenance, to reduce truck downtime. A swapped DPF is not being sold or resold, as it is already owned by the fleet and is simply being moved between vehicles within the same common ownership fleet. This swapping is different than sales of used DPFs. The current rulemaking, pertaining only to aftermarket DPFs, explicitly permits DPF swapping under certain conditions specified in the Procedure. This rulemaking does not address OEM replacement DPF swapping for cleaning, as this is outside the scope of the rulemaking.

45. Comments: [W]hy is not the '95 to '99 trucks being addressed? (Genovese)

Agency response: This Procedure addresses only 2007-2009 model year vehicles because they were certified with DPFs and are now out of warranty. While there may have been vehicles prior to the 2007 model year that were certified with DPFs, there are not likely very many left on the road. In addition, these engine/DPF systems may not be similar enough to the 2007-2009 model year vehicles for which this Procedure was designed to be applicable.

46. Comment: Request clarification of what happens if a DPF manufacturer goes out of business.

These companies that produce DPFs are going out of business. What's going to happen to those records, and what's going to happen to the owners of those DPFs? What repercussions are they going to have to get compensated to fix these things? (Roudebush)

Agency Response: As previously stated, end users are not required to purchase an aftermarket DPF. As with any purchase, the buyer must consider the options

available before choosing to purchase a non-OEM part. Staff investigated the possibility of requiring a bond to ensure warranty and/or recall claims would be paid, but this did not prove to be feasible. There were limited options in the surety industry and some companies would have difficulty qualifying. The Procedure requires very expensive and robust testing, in addition to the costs of researching and developing the aftermarket DPF products. Therefore, it is expected that only companies that have the financial resources to undergo the required testing and expect to make a profit will participate. This gives assurance that companies which receive approval will likely be financially viable. This is consistent with other ARB aftermarket part programs, such as the three-way catalyst and critical emission control parts for highway motorcycles. The end user must consider cost savings, convenience, manufacturer reliability, and other factors in determining whether to purchase an aftermarket DPF.

## **G. Comments Outside the Scope of the Rulemaking**

### **47. Comment: Suggestion to implement an inspection and maintenance program**

There exists an opportunity to create a more robust Inspection and Maintenance system to detect the extensive acts of willful tampering and correct them. We strongly feel this follow up work is a natural requirement of clean air actions and should be an ARB priority. (CDTi)

[U]nderstanding the ARB's ultimately air quality goals we feel we would be remiss to not, again, raise the issue of Inspection and Maintenance of diesel vehicles in California. Although this procedure, once implemented, will make it less likely that a diesel vehicle owner might consider willful tampering by creating pricing pressures on emissions components, it will not ensure that willful tampering does not occur. The ARBs emission inventories are based on 2007 and pre 2007 retrofitted diesel engines operating as intended with the emissions system intact, however, there exists an opportunity to create a more robust Inspection and Maintenance system to detect the extensive acts of willful tampering and correct them. We strongly feel this follow up work is a natural requirement of clean air actions and should be an ARB priority. (CDTi)

We believe that a robust heavy-duty IM [inspection and maintenance] program is going to not only help end users maintain their trucks properly, but it's also going to ensure air quality benefits across the State. (MECA)

Agency response: ARB appreciates the suggestions to implement a heavy-duty inspection and maintenance program. However, the Procedure is only a process of gaining approval to substitute one type of DPF (aftermarket) for another (OEM). Thus, these comments are outside the scope of this rulemaking. ARB is, however, actively pursuing development of a heavy-duty inspection and maintenance program.

48. Comment: Request to harmonize the rules for OEM replacement parts and aftermarket parts

DCL encourages the Board to extend the provisions in the rule related to record keeping, consumer protection, and installer training to all DPFs in California, including replacement parts from the OEM. (DCL)

It is important to note that such pre-assessments are not currently required when installing an OEM replacement part. DCL encourages the Board to address this serious loophole and to extend the requirement for vehicle pre-assessment to OEM replacement parts. (DCL)

[W]e believe that the same installation, engine pre-assessment and recordkeeping requirements should be applied to all replacement DPFs sold in California. (MECA)

MECA continues to urge ARB to establish equitable recordkeeping requirements between the competing original equipment replacement and aftermarket DPF options in the market place. (MECA)

Furthermore, we believe these [recordkeeping, training and installer authorization procedures] requirements should be harmonized for all replacement and aftermarket DPFs, including OEM replacement parts. (MECA)

[If authorized installers are required to perform aftermarket DPF pre-installation assessments,] the same pre-assessment requirement should be imposed on all replacement part options in the market. (MECA)

Agency Response: This rulemaking addresses only aftermarket parts, as defined by Title 13, CCR Section 1900(b)(14), and governed by Title 13, CCR Section 2222, "Add-On Parts and Modified Parts." It does not address replacement parts, as defined by Title 13, CCR Section 1900(b)(20). Therefore, this comment is outside the scope of this rulemaking.

49. Comment: DCL recommends that the Board give further consideration to how a used DPF ban will be enforced, and how to eliminate the practice of purchasing used DPFs out of state and bringing them in for installation. (DCL)

Agency Response: The rulemaking simply clarifies the existing requirements applicable to used DPFs and does not add a new or additional requirement. As such, Enforcement staff should be familiar with this issue as part of their routine duties. This is, therefore, outside the scope of the proposed rulemaking.

50. Comment: There is need for aftermarket parts for other critical emission control components in heavy duty diesel trucks, including diesel oxidation catalysts (DOCs), selective catalytic reaction (SCR) catalysts, and coverage for vehicles of model year 2010 and later. We recommend as a next step that staff begin the development of rules to cover these categories of aftermarket parts. (DCL)

Agency Response: ARB appreciates DCL's suggestion. However, the Procedure specifically excludes these technologies and DCL's recommendation is for future action, so this comment is outside the scope of this rulemaking. The Procedure was specifically designed to address DPFs and their unique features. It cannot address other technologies without massive restructuring and DOCs and SCR devices are different enough to warrant unique procedures specific to them.

51. Comments: Request for exemption from DPF requirements on the basis of a grandfather clause.

One thing I have to say is a part of a law which says that the law does not apply to certain people and things because of conditions that existed before the law was passed... Until we have a standard that is met and we can ensure that nobody's life is in danger, I'm requesting that we put this -- grandfather clause in place.  
(Genovese)

Agency response: This comment is beyond the scope of the rulemaking because it appears to be directed to a regulation that is not the subject of the current action. This Procedure does not modify or address any existing regulation(s) that require the use of a DPF. This Procedure simply allows for aftermarket DPFs as an alternative to the OEM DPF should the original certified DPF need replacing. This is a voluntary procedure in that it does not require stakeholders to purchase DPFs.

52. Comment: Recommends removing DPFs, as they are wrong, illegal, unconstitutional, inconsistent with federal law, and damage the economy. Clean trucks can be done in the fuel and maintenance.

You guys have got to remove this thing, period. And I'm sorry for the businesses that have gone into business thinking they're going to cut a fat hog on the manufacturing, but it's wrong. It's illegal, unconstitutional. You have violated so many Acts and federal law. Alone, you have damaged the economy of other guys. Do I have to remind you also, there's a lot of companies that are refusing to come to California. And then there's companies that are coming into California, because you guys have mandated these DPFs, they're getting 8 to 10 dollars a mile end user. There's no reason I need to be at the grocery store paying \$5 for an artichoke, which prior to you guys mandating this thing, might have been a \$1.99. It's transportation.  
(H&H)

Now, trucks can be cleaned up, and I'm all for having a clean truck. But the fact is, it could be done in the fuel and maintenance, not a DPF. It needs to be removed from the market. End of story. You guys have got to fix the situation. You've created a mess. (H&H)

Agency Response: This comment is beyond the scope of the rulemaking because it appears to be directed to a regulation that is not the subject of the current action.

This Procedure does not modify or address any existing regulation(s) that require the use of a DPF. This Procedure simply allows for aftermarket DPFs as an alternative to the OEM DPF should the original certified DPF need replacing. This is a voluntary procedure in that it does not require stakeholders to purchase DPFs and will increase DPF options available to consumers.

53. Comment: Request for clarification regarding consistency of state and federal NOx and carbon monoxide (CO) emission standards.

The other thing I'd like to ask about, please, is the NOx and CO gases. The State and federal regulations I believe are different for the NOx and CO gases. And I'd just like to know also if those are compatible with CARB. (Roudebush)

Agency Response: This Procedure does not make any modifications to any existing NOx or CO standards. Therefore, this comment is outside the scope of this rulemaking.

54. Comment: Request for information concerning a lawsuit over fair commerce laws.

And then also, I believe it's OOIDA that had a lawsuit about the fair commerce laws. I was just wondering what CARB has done about the fair commerce laws that are going on with OOIDA? (Roudebush)

Agency Response: This comment is beyond the scope of the rulemaking because it does not appear to be addressing this rulemaking.

55. Comment: DPFs cause engines to fail.

These DPFs are failing and may or may not be causing fires on the trucks. (Genovese)

Dr. Enstrom and Dr. Michael Dunn have poked holes in all of your data. The DPF does not work. It creates a problem and a negative industry to California and the rest of the nation. You guys have got to remove this thing, because the engines do not work, period. Throw more [re]ports at it. All you're doing is creating a more problem. You're breaking motors. We cannot be a reliable industry if you guys just keep throwing patches on this thing. (H&H)

They also said earlier that the engine is the cause of the failure of the DPF. Well, the DP – an engine is not going to fail if it doesn't have a DPF. The DPFs are what's causing these engines to fail. (Roudebush)

And your own documents support our contention from all -- from day one, that these filters damage the engine. It's not the engine that damages the filter. It's the filter that damages the engine. I don't know how it could be more clear. (CAB)

Agency Response: These comments are beyond the scope of the rulemaking because they appear to be directed to a regulation that is not the subject of the current action. This Procedure does not mandate the use of DPFs or require DPFs to be applied in new or different ways or to engines not originally equipped with an OEM DPF. This Procedure targets engines which are certified as having a DPF. They come equipped from the factory with an OEM DPF. DPFs are a commonplace and robust technology with over 90 million worldwide in various applications and 3 to 4 million in on-road, heavy-duty diesel applications. With appropriate maintenance, in-field DPFs have been found to last over ten years provided the engine is appropriately maintained.

This Procedure simply allows for aftermarket DPFs as an alternative to the OEM DPF should the original, certified DPF need replacing. This is a voluntary procedure in that it does not require stakeholders to purchase DPFs and will increase DPF options available to consumers. Additionally, the Procedure has robust testing and compatibility requirements to ensure that the aftermarket DPFs are compatible with the ECG, and has additional protections in the form of warranty, audit, recall, record keeping, safety, and quality control provisions. The Procedure also requires authorized installers to ensure the DPF is correctly installed and has pre-installation assessment requirements to ensure the engine is appropriate for the DPF.

56. Comments: I can't go out, buy a truck, and be responsible for a crew because the truck shuts down, because the DPF is plugged up. Ten years, it don't work. I have yet heard of a DPF lasting six months to a year. And then the manufacturer or the company that's fixing them or cleaning them have them piled all up because they won't clean. (H&H)

Agency Response: These comments are beyond the scope of the rulemaking because they appear to be directed to a regulation that is not the subject of the current action. This Procedure does not mandate the use of DPFs or require DPFs to be applied in new or different ways or to engines not originally equipped with an OEM DPF. Typically, with appropriate maintenance, in-field DPFs have been found to last over ten years provided the engine is appropriately maintained.

57. Comment: DPF Safety - Safety concerns

[We] don't think this new proposal changes anything regarding the fundamental danger of a diesel particulate filter, or a DPF, which also stands for dangerous, pricey, and flawed. (CAB)

Again, these things are dangerous, they're pricey, and they're flawed. And this does nothing to change that, absolutely nothing. (CAB)

[W]e have testimony from CalFire, from Highway Patrol, Caltrans, over 50 or 60 fires related to, at best, a engine compartment fire. And everybody is ignoring that and

pretending it's not there. It's the 800-pound gorilla in the room. You're not addressing it. (CAB)

So I don't think this proposal changes the fundamental problems that you have here. And as the people before me have said, we have a number of instances of fires, not just in California. We've -- we reserved ourselves just to California, but they're all across the country. This problem isn't going away and it isn't going to be solved by less expensive DPF, and it isn't going to reduce the burden on industry, because they have to get -- they still have to go back and get data logged. They have to go back and get this, that, and the other thing done. (CAB)

These DPFs are failing and may or may not be causing fires on the trucks.  
(Genovese)

It really doesn't matter about truck drivers. We've been up here 600 times yelling at you guys. You don't care about us. But you probably have kids that go to school. And you don't -- maybe you don't. When one of these DPF filters kill a kid on a school bus, make an amendment to the rule that we can sue him, the guy that's going to make the new DPF filters. Opening up the market just so that you can bring down the price, that's good. That is good, but they're still catching trucks on fire. And you guys don't care about us. I don't blame you. Who cares? You know, we're just truck drivers. But they're on school buses, and school buses are going to catch on fire. And when my kids die on a school bus, it's going to be bad, very bad.  
(Lindsteelt)

So I just want to address some of the comments that were made before me around DPF safety and fires. And I want to bring some statistics to this, so that we have something to look at. The U.S. Fire Administration publishes the statistics on roadside vehicle fires that occur all across the country. And since from 2004 to 2006, before DPFs were put on trucks, there were approximately 18,000 truck fires every year across the country. And these fires were attributed to -- primarily to electrical and mechanical failures. Since 2007 to 2012, after DPFs were installed, the number of truck fires actually decreased by 33 percent. And they continue to decrease. And that is available on -- in the public literature for anybody to review. In fact, I spent a lot of time reading through this information. And so to my knowledge, of the millions of DPFs that are on the road today, there are only two truck -- two fires that were attributed to a DPF, and these were due to a metal filter that was installed on a retrofit. And since that time, these have been recalled and are being replaced with ceramic filters. And it's the ceramic filters that are in all of the OEM installations, as well as these after-market installations, and so forth that we're talking about today.  
(MECA)

Agency Response: These comments are outside the scope of this rulemaking because they appear to be directed to a regulation that is not the subject of the current action. The Procedure does not mandate the use of DPFs or require DPFs to be applied in new or different ways or to engines not originally equipped with an

OEM DPF. It simply allows for alternatives in the marketplace by developing a procedure which allows for the assessment of aftermarket DPFs as substitutes for OEM DPFs. Consumers are provided options if they need to purchase a replacement DPF, but the Procedure is purely voluntary in that the consumer is not required to purchase an aftermarket DPF. Moreover, the Procedure contains several provisions to ensure that aftermarket DPFs will not pose safety concerns.

58. Comments: I have a perfectly good running truck. In order for me to upgrade, I would go back into debt and start all over again. I would love to go invest in a new truck, new clean air, clean water, everything, but I just cannot do it, and thank you. (Genovese)

Agency Response: This comment is outside the scope of this rulemaking because it appears to be directed to a regulation that is not the subject of the current action. The Procedure does not mandate the purchase of a new truck, or the use of DPFs or require DPFs to be applied in new or different ways or to engines not originally equipped with an OEM DPF. It simply allows for alternatives in the marketplace by developing a procedure which allows for the assessment of aftermarket DPFs as substitutes for OEM DPFs.

## H. Economic Impacts

59. Comment: On the business of price, you talk about you're going to reduce the price by after-market filters, but I don't know how you're going to guaranty a reduction in the price unless you're planning on fixing the price. If it's a free market, these people could charge whatever they want for that filter. Why would it be \$1,300 dollars, why not \$2,500 less, why not \$2,000 more? What's that -- where is that regulation? (CAB)

Agency Response: As stated in the ISOR, it is difficult to quantify the benefits of the regulation because no party is forced to participate in this Procedure or purchase a DPF and no such market currently exists in California. Due to the increasingly competitive DPF market, staff anticipates that prices to the end user may decrease. Staff surveyed aftermarket and OEM DPF manufacturers and/or installers to determine the approximate average current or projected retail prices and estimated that the end user will save, on average, approximately \$1200. The actual price of aftermarket DPFs will be based on many factors, including but not limited to market demand, manufacturing costs, and manufacturers' business models. ARB has no control over the actual retail price.

60. Comment: [W]e are concerned that the cost of completing the test protocol will increase the cost of the after-market product, and as a consequence reduce its competitiveness. (ESW)

Agency Response: Staff considered and responded to industry feedback throughout the development of this Procedure and reduced the potential testing costs to a given

company in several ways. First, engines were grouped into ECGs, as explained above, in comments 10 and 11. Regarding the cost per ECG application, staff also eliminated a number of testing requirements and there are no more costs that can be reduced while still ensuring that the aftermarket DPF is durable, effective, compatible with the engine, and produces no safety hazards. ARB allows flexibility in complying with testing by allowing the use of any test laboratory capable of conducting testing per the Procedure's requirements. Costs for testing will vary among laboratories and some companies have their own facilities. Additionally, ARB must maintain protections for the end user. Staff determined the current procedure is necessary to ensure durable and effective products in the marketplace.

## **I. Air Quality Impacts**

61. Comment: We support the introduction of this procedure to help lower operating costs for California diesel fleet and vehicle owners, while not compromising any of the emission reduction goals of the ARB and the people of the State of California. (CDTi)

We share ARB's concern that there may be a significant number of model year '07 to '09 and newer heavy-duty vehicles operating with damaged DPFs emitting excessive levels of particulate matter. And we commend ARB's efforts to create a common sense regulatory structure for after-market DPFs. We are convinced that this regulation will help improve California's air quality and protect public health. (ESW)

Agency Response: ARB appreciates support for the Procedure's goal of helping the end user have more cost-effective options to maintain emission compliance.

## **V. PEER REVIEW**

Health and Safety Code Section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including ARB. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to this peer review process. ARB determined that the rulemaking at issue does not contain a scientific basis or scientific portion subject to peer review, and thus no peer review as set forth in Section 57004 was or needed to be performed.