CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

**AIR RESOURCES BOARD**

# "LEV III" AMENDMENTS TO THE CALIFORNIA GREENHOUSE GAS AND CRITERIA POLLUTANT EXHAUST AND EVAPORATIVE EMISSION STANDARDS AND TEST PROCEDURES AND TO THE ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES, AND TO THE EVAPORATIVE EMISSION REQUIREMENTS FOR HEAVY-DUTY VEHICLES

# FINAL STATEMENT OF REASONS


June 2012

## Table of Contents

State of California
AIR RESOURCES BOARD

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

PUBLIC HEARING TO CONSIDER THE "LEV III" AMENDMENTS TO THE CALIFORNIA GREENHOUSE GAS AND CRITERIA POLLUTANT EXHAUST AND EVAPORATIVE EMISSION STANDARDS AND TEST PROCEDURES AND TO THE ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES, AND TO THE EVAPORATIVE EMISSION REQUIREMENTS FOR HEAVY-DUTY VEHICLES

Public Hearing Date: January 26-27, 2012
Agenda Item No.: 12-1-2

# I. GENERAL

The Staff Report: Initial Statement of Reasons for Rulemaking (staff report), entitled "INITIAL STATEMENT OF REASONS FOR PROPOSED RULEMAKING, PUBLIC HEARING TO CONSIDER THE "LEV III" AMENDMENTS TO THE CALIFORNIA GREENHOUSE GAS AND CRITERIA POLLUTANT EXHAUST AND EVAPORATIVE EMISSION STANDARDS AND TEST PROCEDURES AND TO THE ON-BOARD DIAGNOSTIC SYSTEM REQUIREMENTS FOR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES, AND TO THE EVAPORATIVE EMISSION REQUIREMENTS FOR HEAVY-DUTY VEHICLES", released December 7, 2011, is incorporated by reference herein. The staff report, which is incorporated by reference herein, contained a description of the rationale for the proposed amendments. Also on December 7, 2011, all references relied upon and identified in the staff report were made available to the public.

On January 26-27, 2012, Air Resources Board (ARB or Board) conducted the public hearing to consider the Advanced Clean Cars Program, which includes the Low-Emission Vehicle (LEV) III Regulations, the Zero-Emission Vehicle (ZEV) Regulations, and the Clean Fuels Outlet Regulations. At this hearing, the Board received oral and additional written comments. At the conclusion of the hearing, the Board adopted Resolution 12-11, in which it directed the Executive Officer to make the originally proposed LEV III regulations and test procedures with a number of proposed modifications available for formal public comment.

Staff suggested these modifications in response to public comments made after issuance of the original proposal. The proposed modified regulatory and test procedure language and the text or narrative description of each modification was contained in a 107-page document entitled, "Staff's Suggested Modifications

to the Original Proposal for LEV III," which was distributed at the beginning of the hearing and included as Attachment D to Resolution 12-11.

Resolution 12-11 directed the Executive Officer to incorporate the modifications described in Attachment D into the originally proposed regulatory text, with such other conforming modifications as may be appropriate. The Executive Officer was directed to make the modified regulation (with the modifications clearly identified) and any additional documents or information available for a supplemental public comment period. He was also directed to consider any comments on the modifications received during the supplemental comment period. The Executive Officer was then directed to (1) adopt the modified regulation as it was made available for public comment, with any appropriate conforming additional modifications; (2) make all modifications available for public comment for an additional period of at least 15 days; and (3) present the regulation to the Board for further consideration if he determined that this is warranted.

Although stakeholder comments on hydrogen fuel price assumptions submitted to related rulemakings need not be responded to here, due to the relationship between the three Advanced Clean Cars program components, we state the following for completeness. Economic analysis of the overall program using the more conservative retail hydrogen fuel price assumption presented in the Clean Fuels Outlet ISOR shows this parameter would have a negligible effect on the program's overall impact. Therefore, staff continues to conclude that the Advanced Clean Cars program will produce small, positive economic impacts.

In preparing the modified regulatory language, the staff made various additional conforming revisions in response to public comments received during the 45-day comment period. These post-hearing modifications were incorporated into the text of the proposed regulation, along with the modifications specifically identified in Attachment D to Resolution 12-11.

The text of the proposed modifications to the regulation, with the modified text clearly indicated, was made available for a 15-day comment period starting on February 22 and ending on March 8, 2012 at 5:00 p.m., by issuance of a Notice of Public Availability of Modified Text and Availability of Additional Documents, which included eight enclosures: Enclosure A - Proposed 15 Day Modifications to sections 1900, 1961, 1961.2, 1961.3, 1976, 1978, 2112, 2139, 2140, 2147; Enclosure B - Proposed Amendments to the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles"; Enclosure C - Proposed New "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles"; Enclosure D - Proposed Amendments to the "California Evaporative Emission Standards and Test

Procedures for 2001 and Subsequent Model Motor Vehicles"; Enclosure E - Proposed Amendments to the "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles"; Enclosure F - Proposed Amendments to the "California Test Procedure for Evaluating Substitute Fuels and New Clean Fuels"; Enclosure G - Summary of 15-Day Changes to the Proposed Regulation Order and Incorporated Test Procedures; and Enclosure H - List of Additional Documents Added to the Rulemaking Record.

These changes included:

1. The addition of qualifying language to the definition of a small volume manufacturer to allow manufacturers that meet the 4,500 vehicle sales threshold for a small volume manufacturer, but are partially or fully owned by another manufacturer, to still qualify as “small volume manufacturers,” if they remain operationally independent from the company that owns them;.

2. Allowing 2015-2019 model year LEV II vehicles to certify to combined non-methane organic gas (NMOG) plus oxides of nitrogen (NOx) standards instead of separate NMOG and NOx standards;

3. Allowing manufacturers to meet a combined NMOG+NOx fleet average requirement for the 2014 model, instead of the current NMOG fleet average;

4. Allowing the criteria pollutant “pooling provision” to apply to the entire LEV III program, rather than just the NMOG+NOx fleet average;

5. Allowing manufacturers to meet the phase-in requirements for the LEV III medium-duty vehicle particulate standards based on a percentage of the combined sales of medium-duty vehicles weighing 8,501 to 10,000 pounds gross vehicle weight rating (GVWR) and medium-duty vehicles weighing 10,001 to 14,000 pounds GVWR, rather than separate percentages for the two weight classes;

6. The addition of an alternative compliance option for meeting the proposed Federal Test Procedure (FTP) particulate matter (PM) standards;

7. Requiring that the Highway NMOG+NOx emission values used to demonstrate compliance with the highway NMOG+NOx standards be rounded to three instead of two decimal places, since the highway NMOG+NOx standards are given in terms of three decimal places;

8. Allowing early compliance with 150,000-mile Supplementary Federal Test Procedure (SFTP) standards for model year 2014 vehicles and to require LEV III fuel-flexible vehicles to test only on LEV III certification gasoline;

9. Clarification of how to project full useful life emission values for vehicles continuing to certify to LEV II SFTP emission standards during the LEV III SFTP phase-in period ("carry-over" test groups);

10. Allowing the use of full useful life SFTP values in lieu of projections if such values are used to certify to the 4,000-mile emission standards;

11. Correction of three of the values in the table of NMOG+NOx Interim In-Use Compliance Standards in the regulations to align them with the values set forth in the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles;"

12. Allowing interim in-use SFTP emission standards for new certifications through the 2020 model year to align with the interim in-use standards for LEV III FTP;

13. Clarification that vehicles that certify to the LEV III super-ultra-low-emission vehicle 30 (SULEV30) or the LEV III super-ultra-low-emission vehicle 20 (SULEV20) standards are not required to generate partial ZEV credits;

14. Allowing manufacturers to use projected sales data rather than actual sales data to determine the minimum number of SULEV30 and SULEV20 vehicles they must produce in the 2018 and subsequent model years;

15. Allowing vehicles certified to federal standards to be included in the fleet average NMOG+NOx calculation based on the actual standards to which they certify; also, values were provided to allow LEV II low-emission and ultra-low-emission medium-duty vehicles to be included in the fleet average NMOG+NOx calculations;

16. Correction of an error in the Zero-emission vehicle miles travelled (VMT) Allowance values that may be used in the fleet average NMOG+NOx calculations;

17. Providing an additional two year lead time before small volume manufacturers are required to certify to ultra-low-emission vehicle 125 (ULEV125) standards, which aligns the compliance dates for certifying to these new standards with the compliance dates by which these manufacturers must certify to the 3 milligrams per mile (mg/mi) particulate standards and by which they must certify 100 percent of their fleet to LEV III standards;

18. Allow manufacturers to carryover to the 2015 and 2016 model years the certification of vehicles that were certified as LEV II SULEVs prior to the 2015 model year;

19. The addition of an alternate phase-in schedule of LEV III vehicles for those manufacturers that produce too few medium-duty vehicle test groups to be able to meet the percent requirements for the phase-in of LEV III vehicles;

20. Correction of the year when a manufacturer may earn LEV III credits, to align it with the year that the LEV III regulations will apply to medium-duty vehicles;

21. The correction of various mathematical formulas;

22. Elimination of the requirement that a manufacturer that elects to pool its GHG emissions report that selection to ARB prior to the start of each model year to which that selection applies;

23. Clarification of a reporting requirement that an Air Conditioning (A/C) Direct Emissions Credit application must meet, which was erroneously interpreted as one of the criteria that an A/C system must meet in order to qualify for A/C Direct Emissions Credit;

24. The provision for in-use compliance standards for vehicles certifying to the 2017 and subsequent model year greenhouse gas standards, which were inadvertently omitted from the regulations;

25. Revisions to the provisions for trading evaporative emission fleet-average credits to provide additional flexibility for trading evaporative emission credits among the heavier vehicle categories;

26. Allowing manufacturers to use projected sales data rather than actual sales data to determine the minimum number of vehicles they must produce in the 2015-2017 model years that meet the proposed evaporative emission standards;

27. Revisions to the pooling compliance option to specifically set forth required submittal information and to reduce the Executive Officer notification requirement;

28. Allowing manufacturers to meet optional early compliance with the LEV III evaporative emission standards requirement in the 2014 model year;

29. Exempting all incomplete vehicles, rather than just a subset of incomplete vehicles, from the refueling requirements given the added complexity that testing refueling on incomplete vehicles entails;

30. Corrections to the title 13, California Code of Regulations (CCR) sections to which sections 2112, 2139, 2140, and 2147 apply;

31. The addition of a requirement that automakers who will be making hydrogen fuel cell vehicles prior to the 2015 model year are to notify ARB of their intent 29 months or 33 months prior to the applicable model year, for the 2012 calendar year and for the 2013 and subsequent years, respectively, because this lead time is needed to build hydrogen fueling stations;

32. Requiring the air to fuel ratio requirements during SFTP operation to not be richer than the leanest air to fuel mixture required to obtain maximum torque (lean best torque), with a tolerance of 6 percent of the fuel consumption and remove a provision describing the operating mode of the emission control system;

33. Removing Small Volume Provisions specific to SFTP because the provisions for Small Volume Manufacturers already in the LEV III FTP program are linked to SFTP program;

34. Specification of a conversion factor of 1.03 to convert Non-methane hydrocarbons (NMHC) emission values to NMOG emission values for the purpose of determining SFTP compliance, because LEV II SFTP testing only required measurement of NMHC emission values;

35. Addition of testing requirements for demonstration of compliance with the LEV III PM standards;

36. Inclusion of text that was inadvertently omitted that sets forth criteria for comparing the stringency of LEV II standards and federal Tier 2 standards;

37. Adding “Vehicle fuel pressure rating” to the reporting requirement for hydrogen vehicles to inform ARB about the fueling requirements of the cars so that the agency can best inform the regulated party about fuel dispenser specifications;

38. Revisions to the testing requirements for flexible fuel vehicles to reduce the number of different test fuels that would need to be maintained in order to complete certification testing;

39. Clarification of the procedure for PM exhaust emissions testing and measurement on SFTP cycles;

40. Addition of a provision that changes the technical specifications of the cooling fan used during SFTP testing;

41. Adding equations and instructions for evaporative testing with the proposed certification test fuel containing 10 percent ethanol;

42. Adding an optional hydrocarbon mass adjustment factor for ethanol in lieu of directly measuring ethanol emissions to reduce equipment requirements and test burden when conducting evaporative emission testing with the proposed E10 fuel;

43. Allowing air to be mixed with fuel vapor for canister stabilization in the bleed emission test procedure and to specifically set forth a requirement to use the proposed ethanol-containing certification fuel for this evaporative emission test to reduce test burden and to clarify the fuel requirement for this test;

44. Requiring the use of the new certification fuel containing 10 percent ethanol for vehicles that comply with the proposed evaporative emission standards in the 2014 model year and to clarify the proposed evaporative emission test fuel requirement and implementation date for gasoline-fueled vehicles;

45. Clarification of the evaporative emission test fuel requirement for alternative-fueled vehicles; and

46. Aligning the durability demonstration requirements for new and substitute clean fuels with those required under the LEV III regulations.

With respect to the notice of modified text, on the Internet posting date the notice and all attachments were mailed to 12 parties for whom ARB staff did not have electronic mail addresses, as required by section 44(a), title 1 CCR. At the same time, the notices and all attachments were electronically distributed to all other parties identified, per section 44(a), title 1, CCR, in accordance with Government Code section 11340.85, and to all persons that have subscribed to the following 8 ARB listserves: cfo2012, clean_cars, fuels, leviiighg2012, levprog, ms-mailings, zev2012, zev-program.

After considering the comments received during the 15-day comment period, the Executive Officer determined that it was appropriate to present the modified regulatory language to the Board for further consideration. Subsequently, on March 22, 2012, the Board considered the modified regulatory language and adopted the Advanced Clean Cars Program, including the Low-Emission Vehicle III regulations. The adopted LEV III regulations reflect the final modifications that were made available for the supplemental comment period. The following sections of CCR, title 13, and the incorporated test procedures, are affected by the adoption of the LEV III regulations: sections 1900, 1956.8, 1960.1, 1961, 1961.1, 1965, 1968.2, 1968.5, 1976, 1978, 2037, 2038, 2062, 2112, 2139, 2140, 2145, 2147, 2235, and 2317; and new sections 1961.2 and 1961.3.

Subsequent to the release of the 15-day notice and the March 22, 2012, Board hearing, staff noticed several inconsistencies in the proposed modified regulatory language and test procedure language. These non-substantive mistakes, described below, have been corrected in the final versions of this document.

Non-Substantive Corrections to the Regulations

1. In the 45-day version of section 1961.2(a)(7)(A)(1), 2 of the columns in SFTP standards table were inadvertently mislabeled as “NMHC + NOx” instead of “NMOG + NOx.” This was not staff’s intent and is inconsistent with both the title of the section, “SFTP NMOG+NOx and CO Stand-Alone Exhaust Emission Standards” and the title of the table itself, “SFTP NMOG+NOx and CO Stand-Alone Exhaust Emission Standards for 2015 and Subsequent Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles.” In addition, the “NMHC + NOx” labeling is inconsistent with the corresponding language and tables contained within section E.1.2.2.1.1 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.” This error has been corrected in the final regulation, and the corrected labels are underlined below.

**§ 1961.2 (a)(7)(A)(1)** *SFTP NMOG+NOx and CO Exhaust Stand-Alone Emission Standards*.

| **SFTP NMOG+NOx and CO Stand-Alone Exhaust Emission Standards for 2015 and Subsequent Model LEV III Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles** | | | | | | |
|---|---|---|---|---|---|---|
| *Vehicle Type* | *Durability Vehicle Basis (mi)* | *Vehicle Emission Category*[1] | US06 Test *(g/mi)* | | *SC03 Test (g/mi)* | |
| | | | *NMOG + NOx* | *CO* | *NMOG + NOx* | *CO* |
| All PCs; LDTs 0- 8,500 lbs. GVWR; and MDPVs<br><br>Vehicles in these categories are tested at their loaded vehicle weight (curb weight plus 300 pounds). | 150,000 | LEV | 0.140 | 9.6 | 0.100 | 3.2 |
| | | ULEV | 0.120 | 9.6 | 0.070 | 3.2 |
| | | SULEV (Option A)[2] | 0.060 | 9.6 | 0.020 | 3.2 |
| | | SULEV | 0.050 | 9.6 | 0.020 | 3.2 |

2. As part of the 15-day changes to CCR, title 13, section 1961(b)(1)(A) and section 1961.2(b)(1)(A), text was added to allow manufacturers to comply with fleet average NMOG+NOx values instead of fleet average NMOG values. These fleet average NMOG+NOx values must be calculated using the applicable full useful life standards for their vehicle fleet. However, the word "life" was inadvertently omitted from the last sentence in the footnote to each table. This word (shown below in underlined text) has been added to these footnotes, so they now correctly read:

"A manufacturer must calculate its fleet average NMOG+NOx values using the applicable full useful life standards."

3. Starting with the 2016 model year, a manufacturer that produces and delivers for sale in California medium-duty vehicles in excess of the requirements may earn "Vehicle-Equivalent Credits" that can be banked for future use or sold to other manufacturers. CCR, title 13, section 1961.2(c)(2)(A) contains the formula for calculating these credits. The first 3 parts of the formula are shown below:

(1.00) x {[(No. of LEV395s and LEV630s Produced excluding HEVs) +
(No. of LEV395 HEVs x HEV VEC factor for LEV395s) +
(No. of LEV630 HEVs x HEV VEC factor for LEV630s)] –
(No. of LEV395s and LEV630s Required to be Produced)} +

(1.14) x {[(No. of ULEV340s and ULEV570s Produced excluding HEVs) +

(No. of ULEV340 HEVs x HEV VEC factor for ULEV340s) +
(No. of ULEV570 HEVs x HEV VEC factor for ULEV570s)] –
(No. of ULEV340s and ULEV570s Required to be Produced)} +

(1.37) x {[(No. of ULEV250s and ULEV400s Produced excluding HEVs) +
(No. of ULEV250 HEVs x HEV VEC factor for ULEV250s) +
(No. of ULEV400 HEVs x HEV VEC factor for ULEV400s)] -
(No. of ULEV250s and ULEV400s Required to be Produced)} +

In each part of the equation, the underlined terms are intended to be identical and the double underlined terms are intended to be identical. However, in the 15-day regulatory language, the bold dashed term in the third part of this equation was shown as ULEV270, instead of ULEV400. This error has been corrected in the final regulation.

4. In 6 places in CCR, title 13, section 1961.3, the word "for" was omitted from the title of the test procedures. So, the title was shown as "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles" instead of "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles." These sections are 1961.3(a)(2)(A)1, 1961.3(a)(2)(A)2, 1961.3(a)(2)(C), 1961.3(a)(5)(A), 1961.3(e)(30), and 1961.3(e)(35). These errors have been corrected in the final regulation.

5. CCR, title 13, section 1961.3(a)(1) establishes fleet average Carbon dioxide ($CO_{2)}$ requirements for passenger cars, light-duty trucks, and medium-duty passenger vehicles based on the sales-weighted average of the calculated $CO_2$ exhaust mass emission target values for each manufacturer. Subsections 1961.3(a)(1)(A) and (B) contain the $CO_2$ target values that are to be used throughout section 1961.3.

One subsection in which the $CO_2$ target values are to be used is 1961.3 (a)(4)(A). However, in the formulas in subsections 1961.3 (a)(4)(A)1 and (a)(4)(A)2 incorrectly use the term $GHG_{target}$ instead of $CO_{2\ target}$ to refer to the $CO_{2\ target}$ values. Since the term "$GHG_{target}$" is undefined and inconsistent with the terminology used throughout the rest of section 1961.3, this error has been corrected in both formulas in the final regulation.

6. Both CCR, title 13, section 1976, subsection (b)(1)(G)4.a and subsection (b)(1)(G)4.b allow a manufacturer to demonstrate compliance, for each model year, based on 1 of 2 options applicable throughout the model year. These options are Pooling Option 1, which requires manufacturers to demonstrate compliance separately for California, the District of Columbia, and for each individual state that has adopted California's evaporative emission standards

for that model year pursuant to section 177 of the federal Clean Air Act (Section 177 states); or Pooling Option 2, which allows manufacturers to demonstrate compliance based on the combined sales of vehicles in California, the District of Columbia, and the Section 177 states.

In the 15-day regulatory language for subsection 1976(b)(1)(G)4.c, "Pooling Option 2" was erroneously called "compliance Option 2." Since the term "compliance Option 2" is undefined and inconsistent with the terminology used throughout the rest of subsection 1976(b)(1)(G)4, this error has been corrected in the final regulation.

Non-Substantive Corrections to the Test Procedures

7. The intent of SFTP program is to require LEV II vehicles to meet 4,000-mile SFTP standards until such vehicles are phased into LEV III and required to meet 150,000-mile SFTP standards instead. In the proposed rulemaking package, section E.1.2.1 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" ("Test Procedures"), requires vehicles certifying as LEV II vehicles to comply with 4,000-mile SFTP standards through the 2018 model year (MY). However, there may still be LEV II vehicles being certified after MY 2018, and those vehicles would not have SFTP requirements pursuant to the proposed Test Procedures. Limiting the applicability of the 4,000-mile SFTP standards to only MY2018 and prior model LEV II vehicles was an inadvertent error and was not how staff presented SFTP proposal during the rulemaking process. In staff's discussions with manufacturers throughout the development of LEV III regulations, it was mutually understood that the 4,000-mile SFTP standards would continue to apply until the 150,000-mile SFTP standards are phased in. There have been no indications that manufacturers believe otherwise, and there is no justification to exclude MY2019 and subsequent LEV II vehicles from SFTP requirements. Therefore, the applicability language in the proposed Test Procedures is inconsistent with both the intent of SFTP program as well as manufacturers' understanding of SFTP requirements. In addition, the language also conflicts with the regulatory language set forth in section 1960.1 (r), which correctly extends the applicability of the 4,000-mile SFTP standards through the 2020 MY.

If left unmodified, the Test Procedures' inconsistency with the regulation will likely cause confusion and hinder the certification process. Additionally, it could potentially give manufacturers the opportunity to de-content the emission control systems of 2019 and subsequent model LEV II vehicles, which would result in increased exhaust emissions.

Staff is modifying the Test Procedures, as a non-substantive change, to align it with the regulatory language, which sets forth SFTP requirements as they are understood by manufacturers and other stakeholders. The updated SFTP applicability language in the Test Procedures is shown below in underline and now reads “through 2020” instead of “through 2018.

> **California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, Part I section E.1.2.1** *4,000-mile SFTP Exhaust Emission Standards for Light- and Medium-Duty Vehicles.*
>
> The following standards represent the maximum SFTP exhaust emissions at 4,000 miles for 2015 through 2020 model year passenger cars, and light-duty truck and medium-duty vehicles (less than 8,501 pounds gross vehicle weight rating) certifying to the LEV II exhaust emission standards in section E.1.1.1:

8. The footnotes to the tables in section E.2.1.1 of the “California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles” and section E.2.1.1 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" contain the identical error that appears in CCR, title 13, sections 1961(b)(1)(A) and 1961.2(b)(1)(A). It is explained in paragraph 2, above. This error has been corrected in the test procedures.

9. Section E.3.1.2.1 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" contains the identical error that appears in CCR, title 13, section 1961.2(c)(2)(A). It is explained in paragraph 3, above. This error has been corrected in the test procedures.

10. Sections E.2.5.4.1.1 and E.2.5.4.1.2 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" contains the identical error that appears in CCR, title 13, subsections 1961.3(a)(4)(A)1 and (a)(4)(A)2. It is explained in paragraph 5, above. This error has been corrected in the test procedures.

11. Section I.E.1.(e)(iv) of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" sets forth the Pooling Provision that a manufacturer will use to determine compliance with the proposed evaporative emission standards. In the 15-day test procedure language, sections I.E.1.(e)(iv) and I.E.1.(e)(iv)(B) incorrectly reference section I.E.1.(e)(iii) for the phase-in requirements of the evaporative emission standards. The correct section for the phase-in requirements is section I.E.1.(e)(ii). The references to the phase-in requirements have been corrected in the final regulation.

12. Section E.1(e)(iv)(C) of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" contains the identical error that appears in CCR, title 13, subsection 1976(b)(1)(G)4.c. It is explained in paragraph 6, above. This error has been corrected in the test procedures.

13. Section II.A.5.4.2.3 of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" allows the Executive Officer to withdraw a provision for certain types of vehicles to provide a canister-condition attestation instead of an engineering demonstration. In the original 45-day regulatory language for section II.A.5.4.2.3, the word "that" was erroneously deleted, which resulted in a grammatically incorrect sentence. This error has been corrected in the final regulation by leaving the word "that" as is. In addition, the comma between "to" and "that" has been deleted to clarify the meaning of this sentence.

14. 15-day modifications were made to section III.D.11.3.2 of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" to update the hydrocarbon calculations by including ethanol evaporative emissions. During the 15-day comment period, automotive manufacturers requested that the numerical ratio factors in these equations be expressed on a per-carbon basis, consistent with existing ARB regulations. The calculations in the 15-day language and those requested by manufacturers are mathematically equivalent. Therefore, to maintain consistency with common convention, the calculations have been updated to read:

"(1) $M_{hs} = M_{HChs} + (\underline{14.2284/23.034}) \times 10^{-6} M_{C2H5OHhs}$

(2) $M_{di} = M_{HCdi} + (\underline{14.3594/23.034}) \times 10^{-6} M_{C2H5OHdi}$

(3) $M_{rl} = M_{HCrlt} + (\underline{14.2284/23.034}) \times 10^{-6} M_{C2H5OHrlt}$"

This Final Statement of Reasons (FSOR) updates the Staff Report by identifying and providing the rationale for the modifications made to the originally proposed regulation. The FSOR also contains a summary of the comments received on the proposed new regulation during the formal rulemaking process and ARB's responses to those comments.

The Board 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.

No alternatives were considered to lessen the impact on small business, because small businesses will not be impacted by these proposed amendments and new documents.

The Board has further 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 and less burdensome to affected private persons than the action taken by the Board.

# II. SUMMARY OF COMMENTS AND AGENCY RESPONSE

The Board received numerous written and oral comments, in connection with the January 26-27, 2012 hearing and during the subsequent 15-day comment period. Set forth below are either the full text or a summary of each objection or recommendation specifically directed at the proposed regulation or to the procedures followed by ARB in proposing or adopting the regulation, together with an agency response. The comments have been grouped by topic whenever possible. Comments not involving objections or recommendations specifically directed towards the rulemaking are not summarized below.

## A. COMMENTS PRESENTED PRIOR TO OR AT THE HEARING

### 1. General Comments

1. Comment: Relative to early credits manufacturers can generate and use in later years, the SCAQMD staff believes that these credits play an important role to incentivize manufacturers to produce cleaner cars and light-duty trucks. However, CARB needs to carefully monitor the amount of credits generated and their use in producing vehicles that do not necessarily meet applicable criteria pollutant or greenhouse gas standards. (Barry R. Wallerstein, D.Env., Executive Officer, and Henry Hogo, Assistant Deputy Executive Officer, South Coast Air Quality Management District (SCAQMD))

   Agency Response: It is unclear to which early credits the commenter is referring. Concerning the criteria element of the LEV III program, early credits are only available under the alternative phase-in provision for the 3 mg/mi and 1 mg/mi particulate matter standards. See response to Comment #192 on the potential emission impact of the provision.

Similarly, there are no early credits available for the GHG element of LEV III. Furthermore, as a general rule, in the LEV program manufacturers have typically carried over a bank of credits from year to year in order to address any unforeseen changes in vehicle sales that may impact compliance with the fleet average requirement. As a result, manufacturers have historically over complied with the fleet average emission requirement. Staff expects manufacturers to continue this practice in LEV III. Regarding the production of vehicles not meeting applicable criteria or GHG standards, vehicles may not be certified for sale in California unless they meet all applicable criteria or GHG emission requirements.

2. Comment: Harmonization is needed for ARB and USEPA test procedures, certification processes, phase-in requirements, vehicle standards, fleet averages, and certification fuels in order to establish a common set of vehicle criteria emission standards nationwide. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

   Comment: Harmonization reduces the regulatory burden on manufacturers. We support harmonization with USEPA's greenhouse gas standards, and we encourage harmonization with USEPA's Tier 3 standards. (Kellen Schefter, public policy analyst, Fisker Automotive, Inc.)

   Comment: Although ARB's proposal is not yet fully aligned with the federal programs, we appreciate that ARB has repeatedly committed to make any needed changes in your rules to align them with the final federal rulemakings to allow manufacturers to continue to comply through the One National Program. We are also pleased that ARB and USEPA plan to coordinate the criteria pollutant standards to further align the regulatory requirements in the spirit of the One National Program. (Michael J. Stanton, President & CEO, Global Automakers)

   Comment: Chrysler supports single, harmonized national greenhouse gas, fuel economy, and criteria pollutant performance standards that treat all manufacturers equally and contribute to meeting California's air quality and GHG objectives. (Reginald R. Modlin, Chrysler Group LLC)

   Comment: We appreciate CARB working with the USEPA to harmonize its greenhouse gas standards as part of one national program. We have worked closely with CARB on LEV III and ask that CARB continue to work with USEPA to harmonize criteria emission standards with EPA's upcoming Tier 3 rule. (Robert Babik, Director of Environment, Energy, and Safety Policy, General Motors)

Agency Response: Board Resolution 12-11 directs the Executive Officer to either propose modifications to the approved regulatory amendments, or to return to the Board with a new regulatory proposal, to accept compliance with the 2017 through 2025 MY National Program as compliance with California's greenhouse gas emission standards in the 2017 through 2025 model years, if the Executive Officer determines that U.S. EPA has adopted a final rule that at a minimum preserves the greenhouse reduction benefits set forth in U.S. EPA's December 1, 2011 Notice of Proposed Rulemaking for 2017 through 2025 model year passenger vehicles. Regarding criteria pollutant emissions, although federal Tier 3 standards have not yet been proposed, staff has been working with USEPA to provide as much consistency as possible between California's LEV III criteria pollutant regulations and potential future federal Tier 3 regulations for criteria emissions.

3. Comment: We need more fuel efficient cars! Having more clean cars on the road will have the added benefits of helping families save money, cleaner air and supporting new jobs and investment in California's clean energy economy. (Maricela Cueva)

Agency Response: Although ARB does not regulate vehicle fuel efficiency, we appreciate this comment of support. The Advanced Clean Cars regulations are expected to save California drivers $5 billion in operating costs in 2025, and $10 billion by 2030 when more advanced cars are on the road. What this means to the average consumer is a fuel cost savings of nearly $6,000, nearly triple the estimated per vehicle added cost, in 2025. In addition, thanks to these regulations, in 2025, cars will emit 75 percent less smog-forming pollution than the average new car sold today. Finally, the overall savings generated by the proposed rules are expected to result in an additional 21,000 jobs in California in 2025, rising to 36,000 in 2030.

## 2. Comments Concerning the Criteria Pollutant Exhaust Regulations

4. Comment: We would be interested in discussing with ARB ways in which a vehicle's zero-emission vehicle miles travelled (VMT) may be accounted for more generally in the criteria pollutant regulations. An electric vehicle with extended range is currently certified at the emissions level that characterizes its range-extending engine. The certification in essence assumes that the engine will be operating at all times – a worst-case scenario – with the same emissions profile as a conventional vehicle. This assumption has two negative effects: 1) it creates confusion in the marketplace as to a vehicle's relative environmental impact, and 2) it requires automakers to design for the worst-case scenario as well; emissions equipment, for example, must be assumed effective for a full useful life in which a driver never utilizes the

vehicle's all-electric range, no matter how unlikely this scenario may be. (Kellen Schefter, public policy analyst, Fisker Automotive, Inc.)

Agency Response: A vehicle's zero-emission VMT is currently factored into the criteria pollutant regulations through the use of a "zero-emission VMT allowance" that is determined in accordance with the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes" or the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as applicable. This "zero-emission VMT allowance" allows a hybrid electric vehicle to be included in the fleet average at an emission rate that is between the actual standards to which they certify and the next more stringent standards. This is done based on the assumed percentage of the time that the vehicle is operating on electricity, as reflected in the Zero-emission VMT Allowance. Staff will examine whether or not this approach sufficiently reflects the emission benefits of these vehicles, in accordance with Board Resolution 12-11, which "directs the Executive Officer to return to the Board with in-use data for range extended battery electric vehicles and plug-in hybrid electric vehicles, and, if warranted, propose appropriate modifications to treatment and credits for these vehicle types in 2016."

5. Comment: The SCAQMD staff supports cleaner tailpipe and evaporative emissions standards for light- and medium-duty vehicles and trucks. Our analysis of the proposed NMOG+NOx tailpipe emissions standards indicate that the proposed standards could be accelerated and provide for earlier introduction of cleaner vehicles. The proposed standards are not technology forcing for diesel-powered passenger cars, based on current NOx and hydrocarbon certification levels of these vehicles, except in the outer years of the proposed phase-in schedule. This situation may result in the unintended consequence of facilitating increased market penetration of diesel vehicles with corresponding additional NOx emissions. For example, if 20 percent of all passenger cars and light-duty trucks sold are diesel vehicles through the proposed phase-in time period, foregone NOx emission reductions could amount to approximately 2 tons per day in 2025 in the South Coast Air Basin. Therefore, SCAQMD staff strongly recommends the implementation of a NOx capping standard for diesel-powered light-duty vehicles and medium-duty vehicles, to be equal to half of the proposed NMOG+NOx fleet average standard. This would allow substantial lead time for diesel vehicle manufacturers to develop requisite technology, and at the same time provide a level playing field approach relative to corresponding gasoline vehicles since the natural

split between NMOG and NOx emissions for gasoline vehicles is about 50/50. (Barry R. Wallerstein, D.Env., Executive Officer, and Henry Hogo, Assistant Deputy Executive Officer, South Coast Air Quality Management District (SCAQMD))

Agency Response: Concerning SCAQMD's analysis of the standards, staff is unable to respond in detail since no details of the analysis are provided. However, in developing the fleet average emission requirements, including the phase-in requirement, for LEV III, staff considered technical feasibility, cost of compliance and the resource challenge manufacturers face in complying with the requirement to simultaneously reduce criteria and GHG emissions.

Regarding a NOx capping standard to prevent a possible increase in NOx emissions from increased production of diesel vehicles, staff believes the scenario presented by SCAQMD (20 percent penetration of diesel vehicles beginning in 2016) presents an unlikely case. In 2010, diesel vehicles represented approximately 0.8 percent of new light-duty vehicle sales in California (2010 manufacturer NMOG reports for manufacturers selling light-duty diesel vehicles in California). Furthermore, with a projected incremental cost ranging from approximately $3,300 to $4,600 for light-duty diesel vehicles versus $1,400 to $2,400 for gasoline light-duty vehicles with equivalent or greater reductions in GHG emissions and concomitant reductions in fuel consumption (Tables III-A-4-8 and III-A-4-10, Initial Statement of Reasons), and the premium cost for diesel fuel over gasoline, it's difficult to make a business case to support a significant increase in sales of diesel vehicles over the long term. Nonetheless, as part of its effort to monitor the implementation of GHG technologies, staff will monitor sales of diesel vehicles and their emissions and, if necessary, present any appropriate regulatory modifications at a future Board hearing.

6. Comment: SCAQMD staff is concerned about the proposed medium-duty emission standards and phase-in schedule. The phase-in schedule allows a four-year lead time and a seven-year phase-in. Again, these timeframes are above and beyond the time periods CARB has historically allowed for compliance with technology forcing standards. SCAQMD staff recommends a three-year lead time and three-year phase-in, corresponding to an implementation timeframe between 2015 and 2017. In addition, SCAQMD staff believes that the medium-duty vehicle emissions standards can be stronger than the standards proposed by CARB staff. Based on certification data for current gasoline-powered medium-duty vehicles, these vehicles can meet the SULEV170 requirement, specified for 90 percent of the medium-duty vehicle sales in the 8,500 to 10,000 lbs weight class for the last model year (2022) of the proposed phase-in schedule. Similarly, we believe

that current gasoline-powered medium-duty vehicle technology would carry across for the 10,001 to 14,000 lbs. weight class as well. Therefore, we recommend that the proposed NMOG + NOx emission standards for medium-duty vehicles be tightened by 50 percent to truly implement technology-forcing emission standards for medium-duty vehicles. (Barry R. Wallerstein, D.Env., Executive Officer, and Henry Hogo, Assistant Deputy Executive Officer, South Coast Air Quality Management District (SCAQMD))

Agency Response: Staff disagrees and is not proposing any changes to standards and phase-in requirements for medium-duty vehicles (MDVs). In setting the emission standards for MDVs, staff took into consideration the same factors considered when setting the light-duty vehicle emission standards; technical feasibility, cost of compliance and the resource challenge manufacturers face in meeting the increasingly stringent criteria emissions requirements of LEV III while simultaneously meeting federal GHG emission requirements for these vehicles. It is important to note that MDVs, unlike light-duty vehicles, are work vehicles and therefore designed to operate under higher load conditions that in turn place higher demands on the emission control system. Furthermore, LEV III will for the first time require MDVs to meet Supplemental Federal Test Procedure (SFTP) emission requirements when operated under high acceleration and high speed conditions. Accordingly, in designing the emission control systems for these vehicles a balance must be struck between catalyst durability and effective emission control during both cold-start and hot running conditions under high load. More stringent FTP emission standards would require not only greater precious metal loading of the catalyst but also moving the catalyst closer to the engine in order to further reduce cold-start emissions during the FTP. This would subject the catalyst to higher engine exhaust temperatures during the SFTP, potentially impacting catalyst durability.

Concerning the MDV certification data cited by SCAQMD, again it's unclear what factors SCAQMD staff considered in their analysis. Vehicles in the MDV class are classified as either medium-duty passenger vehicles (MDPVs) or conventional MDVs. Vehicles in the MDPV classification include sport utility vehicles and vans such as the Chevrolet Suburban and passenger carrying versions of the Ford E150 and E250 vans. Since these vehicles are designed primarily to carry passengers, not heavy cargo loads, in LEV III their emissions are included in the fleet average requirement for the light-duty truck 2 (LDT2) category. Furthermore, MDPVs are tested at lighter weights than conventional MDVs - curb weight plus 300 lbs., while conventional MDVs are tested at curb weight plus half payload (depending on weight class, payload for MDVs typically range from 2,000-7,000 lbs.). The lower test weight for MDPVs is reflected in the certification data for 2012 model

year where emissions of MDPVs range from 0.110 to 0.160 grams per mile NMOG plus NOx. Since LEV III includes these vehicles in the LDT2 SULEV fleet average requirement, manufacturers will be highly motivated to minimize the emissions of their MDPVs. Emissions of conventional MDVs tested at higher weights range from 0.103 to 0.442 grams per mile NMOG plus NOx. Accordingly, for the reasons stated above, staff believes the LEV III MDV emission standards and phase-in provisions are appropriate for this class of vehicles.

7. Comment: A significant concern is that emission reductions gained through the proposed LEV III regulation may be largely offset by a national consumer trend of purchasing larger, heavier vehicles. Additionally, we are concerned that the travel provision, which provides an option for fleet averaging emissions across some states, could exacerbate this problem for the South Coast Air Basin. To mitigate the impact of the consumer trend, we would urge limiting the credit trading between vehicle categories for both criteria and greenhouse gas emissions in the proposed LEV III regulation. This could be done through annual or periodic adjustments based on the prior year's vehicle sales. Regardless, at a minimum, the impacts of credit use needs to be closely monitored and reported to the CARB Board. (Barry R. Wallerstein, D.Env., Executive Officer, and Henry Hogo, Assistant Deputy Executive Officer, South Coast Air Quality Management District (SCAQMD))

   Agency Response: As noted in the response to Comment #89, at the direction of the Board (Resolution 12-11), staff will monitor fleet trends and provide a status update to the Board by 2016 and, if necessary, include recommendations to mitigate any adverse impact from a shift in the fleet composition on GHG emissions. Concerning any impact on criteria emissions from a fleet shift to larger, heavier vehicles, the LEV III fleet average emission requirement ultimately reduces emissions for all vehicles less than 8,500 lbs., gross vehicle weight (GVW) to SULEV levels, mitigating any emission impact from a potential shift in passenger vehicle fleet composition.

**Comments Concerning the Particulate Matter Standards**

8. Comment: The lead time provided to phase-in the 3 mg/mi PM standard is a critical enabler of technically feasible and cost effective deployment of advanced technology vehicles. Ford requests that the Board maintain the phase-in percentages and timing proposed by staff. (Bob Holycross, Manager, Regulatory Strategy & Planning Sustainability, Environment & Safety Engineering, Ford Motor Company)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

9. Comment: We recommend that ARB provide an alternative phase in for the 3 mg/mi PM proposed standards, as described in the On-Board Diagnostic regulations §1968.2(c), definitions, "Alternate Phase-In." (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this suggestion and made the necessary modification to the regulatory language as part of the 15-day changes.

10. Comment: The new ultra-low PM standard of 3 mg/mi creates new and unprecedented measurement challenges for both industry and government. The LEV III and ZEV 2012 PM test procedures still reference older measurement techniques without properly accounting for this artifact or dilution ratio multiplier. The "LEV III PM TECHNICAL SUPPORT DOCUMENT" (appendix P) paper states test procedures will be updated in the future, but specifics are unclear. Furthermore, routine PM measurements for all emissions testing will be very costly and represent a significant testing burden for OEM's. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: ARB recognizes the technical challenges presented by the 3 mg/mi PM standard and is committed to work with the USEPA and industry in developing improved measurement protocols for PM. Furthermore, the USEPA is currently developing an improved PM test procedure, part 1066, that will be incorporated in the federal Tier 3 program for criteria emissions. It is ARB's intent to incorporate part 1066 into LEV III after USEPA finalizes the Tier 3 program.

Concerning "routine" PM emission testing, staff included a provision for testing of a subset of vehicle test groups when demonstrating compliance with the PM standards in a 15 day change, thus reducing the testing burden for manufacturers.

11. Comment: CARB has chosen to broadly seek to harmonize with the EPA's upcoming Tier 3 requirements to control particulate matter from gasoline-powered vehicles. However, there remain many discrepancies between the agencies' regulatory requirements that affect manufacturers' ability to meet these very stringent particulate requirements. Among the most important of these discrepancies are the test methods that will be selected to measure the particles now and in the future. The other critical discrepancy is that CARB and USEPA have

different requirements for reference fuels. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: It is staff's intent to work with USEPA in their development of the federal Tier 3 program, to encourage the development of a national program that is consistent with California's air quality and programmatic needs.

12. Comment: One very critical aspect of the requirements that are now proposed is a 3 mg/mile PM measurement standard. 3 mg/mile is on the edge of accurate and repeatable measurement capability using available techniques today. This challenge is likely to remain for the next 5 years. It is therefore critical that these regulations do not set standards at levels that cannot be measured and that cannot be achieved with known technology. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: See response to Comment #10.

13. Comment: The proposed model year 2025 FTP PM standard of 1 mg/mi is considered impossible to achieve with the currently established, as well as the under development, measurement procedures. BMW recommends eliminating this standard and conducting a review of the PM standards between ARB, USEPA, and industry. The review process should evaluate correlation and variability of new test procedures and facility requirements, consistency and repeatability of measuring PM at low levels (≤ 3 mg/mi), as well as an evaluation of alternative particulate test methods. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Comment: We recommend eliminating the 2025 FTP PM Standard of 1 mg/mile from the regulations. Instead, ARB and USEPA should work with automakers to develop standards for 2025 and beyond, when the results of a thorough formal review of the PM standards, test methods, and alternative test methods are available. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: We recommend a formal review of the form and level of the PM standard with ARB, USEPA, and automakers. This review should begin as soon as the new test procedures are public and facilities meeting the new requirements are available. The review should look at correlation and variability of the new test procedures and facility requirements, the ability to consistently and repeatedly measure PM at the 3 mg/mile and 1 mg/mile levels, and alternative PM test methods. Industry would work with ARB and USEPA to develop a scope of work,

timeline, commitments from each party, and a final report. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: ARB's proposed phase-in of 3 mg/mi FTP PM standards beginning in 2017 MY will be very challenging, due to technical issues such as measurement technology. More concerning is ARB's proposal to set a 1 mg/mi standard in 2025 MY. Toyota strongly supports the Alliance comment for a thorough formal technical review for any proposed PM standard after the 3 mg/mi standard. Once that review is done, then ARB could develop and propose standards for 2025 MY and later based on the findings of the PM technical review. (Kevin Webber, General Manager, Vehicle Regulation and Certification Engineering, Toyota Technical Center)

Comment: Based on Volvo's knowledge of particulate matter measurement technology, it is not currently feasible to measure compliance with the 1 mg/mile standard proposed for model year 2025. Volvo does not believe that setting an unattainable standard so far out in the future (2025) is realistic. Volvo supports a thorough, formal, review of PM standards, vehicle emission control technologies, test methods of today and alternative test methods for the future, but only as part of future rulemaking. After this review is complete, we would recommend CARB develop and promulgate standards for 2025. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Comment: Ford requests that CARB conduct a midterm review completed no later than April 1, 2018 to re-evaluate the assumptions supporting the 2022-2025 MY GHG standards and the 1 mg/mi PM requirements. (Bob Holycross, Manager, Regulatory Strategy & Planning Sustainability, Environment & Safety Engineering, Ford Motor Company)

Comment: We're highly supportive of and strongly encourage the Board to conduct a midterm review of the particulate matter standards in or around 2017 time frame. (James Jack, Emission Technology Control Association)

Comment: We recommend a thorough formal mid-term review of the 1 mg/mi PM standard and form of the standard with ARB, EPA, and industry. The formal review should include a scope of work, timeline, commitments from each party, and a final report. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: MECA agrees with ARB's decision to propose tighter particle matter standards for light-duty vehicles over the FTP test cycle and to establish full useful life PM standards for light-duty vehicles over the supplemental FTP test cycles. However, the recent late December 2011 decision by the European Commission to establish a particle number emission standard for light-duty vehicles powered by gasoline direct injection engines as a part of their upcoming Euro 6 light-duty emission standards, provides a more stringent particle emission limit for these gasoline direct injection vehicles in the same time frame as ARB's proposed 3 mg/mile PM standard (proposed phase-in for the 3 mg/mile PM standard starts in 2017 and is fully phased-in with the 2021 model year; the Euro 6 gasoline direct injection particle number limit has been set at 6 X $10^{11}$ particles/km, measured using the European particle measurement protocol (PMP). ARB needs to make sure that these same ultra-low PM, Euro 6 gasoline direct injection engines and technologies are also utilized in California. To that end, MECA believes that it is critically important for ARB to hold a formal technology review around their proposed 1 mg/mile PM light-duty vehicle PM standard in the 2017 timeframe. In this review, ARB should consider the stringency, form, and timing of this PM standard. (Joseph Kubsh, Executive Director, Manufacturers of Emission Controls Association (MECA))

Comment: CARB should identify the circumstances and/or timeframe under which particulate measurement technology would be reevaluated to ensure the technology is capable of supporting its proposed more stringent particulate matter standards. (Michael L. Krancer, Secretary, Pennsylvania Department of Environmental Protection (DEP))

Agency Response: Staff believes that both the stringency and implementation schedules for the 3 mg/mi PM standard and the 1 mg/mi PM standard are technologically feasible within the proposed timeframe. (See the ISOR and its Appendix P: Technical Support Document – Development of PM Standards for further discussion.) ARB test data have demonstrated PM levels from current port fuel injected (PFI) engines below 1 mg/mi and from late model gasoline direct injection engines (GDI) approaching 1 mg/mi. Staff expects that with further technical improvements in GDI engines during the lead time provided will enable GDI engines to achieve parity with PFI engines in terms of their PM emissions. However, it is staff's intent, in accordance with the Board's direction (Resolution 12-11), to conduct a review of the 1 mg/mi PM standard in the 2015 timeframe and report back to the Board on the results. If the outcome of that review indicates that modifications to the 1 mg/mi PM standard are warranted, staff will return to the Board soon after, to present the necessary changes to the standard and/or the implementation schedule. If the results of that review are inconclusive, staff will continue to monitor manufacturers' technical progress and

measurement capabilities towards meeting the 1 mg/mi PM standard and report back to the Board at such time as more information becomes available.

14. Comment: The 1 mg standard for particulate matter should be phased in sooner than proposed, with full implementation by 2025 in order to provide the health protections from such standards as soon as possible. (Don Anair, Senior Engineer, Union of Concerned Scientists)

Comment: We urge you to modify the compliance date of particle emissions standard (1 mg/mile) in the Low-Emissions Vehicles regulation to be phased-in from model year 2022 (instead of 2025) as had been originally planned. We acknowledge the fact that current measurement and monitoring technologies may have some limitations to assure compliance. However, in our opinion, providing a 10-year lead time is adequate to develop technologies that would ensure proper certification and compliance. In addition, ARB can choose conduct a review of technologies in the 2017 timeframe and modify if necessary the final form, stringency, or the compliance timing of the particle emissions standard. (Shankar Prasad, Coalition for Clean Air)

Comment: We strongly support the proposed standards for ratcheting down on smog-forming gases and fine particulate pollution, however, we urge you to speed up the pace of compliance with the particulate matter standard. As proposed, the fine particulate standard (1 mg per mile) would not begin to be phased in until 2025 and not fully realized until 2028. Instead, we urge full implementation of the standard by 2025. (Bonnie Holmes-Gen, Executive Director, Air Quality and Public Health, American Lung Association in California; Will Barrett (testimony), and 21 members of California's public health and medical community)

Comment: We support the proposal to reduce smog-forming emissions from new cars and light truck tailpipes by 75 percent by 2025 and a reduction in toxic particulate matter by 2028, while urging California Air Resources Board officials to move up the date on toxic particulates to 2022. (4,220 signatures to letter submitted by Union of Concerned Scientists)

Comment: We feel the reductions schedule for PM emissions is not commensurate with the previously successful implementation of technology-forcing standards. Over 15 years are far too in my opinion and does not reflect the critical need of the impact of PM on public health. Staff must be careful to avoid the tradeoff between public health and climate change. Thus, we're recommending accelerating the fine particle limits, reducing the ozone precursor limits on the supplemental test procedure, and more closely monitor the FTP testing and progress.

(Dr. Alan Lloyd, President, The International Council on Clean Transportation)

Comment: SCAQMD staff urges CARB to implement a three-year lead time and three-year phase-in subsequent to full implementation of the 2017 recommended end date for the 3 mg/mi PM standard. Specifically, the 1 mg/mi PM standards should be implemented from 2020 to 2022. (Barry R. Wallerstein, D.Env., Executive Officer, and Henry Hogo, Assistant Deputy Executive Officer, South Coast Air Quality Management District (SCAQMD))

Agency Response: In determining the appropriate phase-in schedule for the 1 mg/mi PM standard, staff considered the pace of technical improvement to engine technology that would be required to achieve the standard and the state-of-the-art of PM mass measurement. As noted in Appendix P: Technical Support Document – Development of PM Standards, measuring PM mass emissions at the 1 mg/mi level is problematic using current test procedures. Furthermore, in order to support certification and enforcement of the standard, the measurement procedure must be accurate, repeatable, and reproducible. Nonetheless, as noted in the response to Comment #13, staff expects that USEPA's new PM test procedures currently under development for LDVs will further enhance PM test capability. In addition, as noted in the response to Comment #13, staff will include an evaluation of the measurement capabilities of 40 CFR Part 1066 in its review of the 1 mg/mi standard, as well as manufacturer's technical progress towards achieving the standard.

15. Comment: ARB staff is proposing a new US06 PM Standard of approximately 90% reduction. Due to very short notice industry is still trying to determine the possibility to reach this extremely low standard. Where we and also independent research institutes have concerns is the effect this standard will have on new technologies, especially low-powered, downsized engine technologies and range extenders that will be necessary to meet the new greenhouse gas standards. Recent vehicle testing has shown that these PM standards are not achievable for vehicles with these new technologies. We recommend a PM standard for passenger cars and light duty trucks of 25 mg/mi or as an alternative a SFTP standard of 10 mg/mi composite. This composite formula is also used for other limited criteria pollutants in the LEV III regulation. Real world data from EPA and industry show that US citizen don't drive like the US06 test cycle and therefore there is no negative impact on the environment if ARB will agree to this proposal.

On the other side the $CO_2$ benefit will be extremely high by bringing low powered vehicles into the US market as they are available in the

European Union with more than 20 different models. (Klaus Land, Senior Manager, Certification, Environment and Regulatory Affairs Mercedes-Benz)

Comment: We recommend a SFTP PM standard for PCs and LDTs of 25 mg/mi or, as an alternative path, a 10 mg/mi composite standard. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: Technical feasibility of reaching the stringent SFTP PM standard (10 mg/mi for PCs, 20 mg/mi for LDTs) do not appear to be achievable for all vehicles equipped with new technologies necessary to meet the greenhouse gas requirements. More flexibility in meeting the SFTP PM standards is essential for future development and leads to the following recommendation for the PM standard: 25 mg/mi for PCs and LDTs or 10 mg/mi composite as an alternative. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response to Technical Part of Comments: Staff does not agree and is not proposing any changes. The SFTP PM standards were based on testing of a wide range of vehicles, including high mileage, older vehicles with direct injected engines that are known to have high PM emissions. Based on the test data, staff is confident that manufacturers will not have difficulty meeting the proposed 10 mg/mi standard. Thus, despite the fact that a small number of manufacturers have raised the concern that potential future vehicles with low power-to-weight ratios may not be able to meet the proposed standard, based on testing and discussions with other manufacturers, staff firmly believes that with properly designed engines the 10 mg/mi standard is achievable.

Agency Response to Portion of Comment Raising Environmental Issues: For Agency response to the complete comment, see the document "Responses to Comments on the Advanced Clean Cars Environmental Analysis," released March 12, 2012, and approved by the Board at the March 22, 2012 board hearing, which is available at http://www.arb.ca.gov/msprog/levprog/leviii/acc_ea_rtc.pdf. The response to this comment is included as "Response to Comments: LEV III – L10."

16. Comment: EMA has serious concerns with the SFTP PM standards for medium-duty vehicles as proposed. The standards are extremely stringent and pose significant measurement challenges including variability and repeatability. Moreover, manufacturers are concerned that the technology developments anticipated to meet forthcoming greenhouse gas requirements may be inherently challenged by the

SFTP test cycle and PM standards proposed. Additionally, for the 10,001-14,000 lbs GVWR weight class, the FTP and SFTP PM standards as proposed by ARB Staff lead to an effective LA92 PM standard that is negative when the LA92 is back-calculated assuming SC03 PM equal to the FTP PM standard.

EMA recommends the following medium-duty vehicle SFTP composite PM standards:

- 8,501-10,000 lbs (≤0.024 Hp/GVWR) 10 mg/mi
- 8,501-10,000 lbs (>0.024 Hp/GVWR) 13 mg/mi
- 10,001-14,000 lbs 13 mg/mi

(Lisa A. Stegink, EMA Truck & Engine Manufacturers Association)

Agency Response: Staff does not agree. Based on discussions with individual automakers and the USEPA, staff believes that the SFTP MDV PM standards are feasible, even when accounting for future technologies that will be necessary to comply with California and federal greenhouse gas emission requirements.

Regarding the commenter's concern for test variability and repeatability, based on staff's own testing experience, staff believes current methods and equipment are capable of accurately measuring PM emissions at the level these standards require. In addition, because the standards are composite standards, this will help reduce the effects of test variability, if any, as well as provide additional compliance flexibility by allowing test groups to offset a higher emission value from one test cycle with a lower emission value from another.

Regarding the comment about an effective LA92 PM standard that is negative, it is unrealistic to assume that manufacturers will certify test groups at the level of the standard on the FTP. Based on previous engine and vehicle certifications and on staff's discussions with industry, manufacturers design vehicles and engines to meet target emission values that are at least 30% lower than actual standards in order to provide an acceptable compliance margin. Therefore, it is reasonable to expect a vehicle in the 10,001 to 14,000 lbs GVWR range to certify to an FTP PM certification value of approximately 7 mg/mi. This would result in an effective 7 mg/mi PM standard for the LA92 as well, which staff believes is feasible based on test data from ARB and manufacturers.

17. Comment: Ford raised the concern that testing of PM on the US06 test cycle presents challenges due to the high exhaust emission temperatures, which can lead to artifacts in the results. In order to handle these artifacts the methods for handling exhaust may need to be modified. As a result, Ford is requesting that the lead time for compliance with the SFTP-US06 PM standards not be moved forward

from what was proposed by staff. (Bob Holycross, Manager, Regulatory Strategy & Planning Sustainability, Environment & Safety Engineering, Ford Motor Company)

Agency Response: Staff agrees and has left the SFTP phase-in as proposed.

**Comments Concerning Phase-in Requirements**

18. Comment: The ISOR requires non-PZEV SULEVs to convert 100% to 150K durability in the first year of LEV III – 2015 MY, with no phase-in provided. In our assessment, this would create a disproportionate burden in the very first year of LEV III to manufacturers that have significant numbers of such SULEVs. Toyota would like to reinforce the Alliance's request to allow at least until the 2017 MY for non-PZEV SULEVs to phase-in to 150K, instead of 100% in the 2015 MY. An extension by at least two years would provide much needed lead-time and flexibility for non-PZEV SULEVs to phase-in from 120K to 150K durability. (Kevin Webber, General Manager, Vehicle Regulation and Certification Engineering, Toyota Technical Center)

    Comment: ARB intends to require all vehicles that certify to ULEV 70 and below to meet the LEV III requirements (FTP and SFTP 150K durability and E10 certification fuel) beginning in 2015 MY, with the exception of PZEVs, which can be carried over until 2018MY. This penalizes manufacturers who have produced the cleanest vehicles (SULEV exhaust) by requiring the manufacturer to certify all of these vehicles in a single year (2015 MY) to new requirements. Such a penalty seems unnecessary and would be a significant burden on manufacturers with significant number of SULEV engine families that are not certified to the PZEV standard. We recommend revising the phase-in requirement for carry-over SULEVs to require 100% compliance with LEV III beginning in 2017 MY. New SULEV certifications beginning in 2015 MY would be certified to the new LEV III standards. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

    Agency Response: Staff agrees with this suggestion and, as part of the 15-day changes, made the necessary modification to the regulatory language to provide an addition two years for non-PZEV SULEVs that were certified prior to the 2015 model year (i.e., "carry-over" certifications) to phase-in to LEV III standards.

19. Comment: Allow compliance with the PM standard phase-in percentages for medium-duty vehicles based on the 8,500-14,000 GVWR. For example, provided 10% of the 8,500-14,000 vehicles meet

their appropriate standard the manufacturer is in compliance. This is also consistent with EPA. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this suggestion and made the necessary modification to the regulatory language as part of the 15-day changes.

20. Comment: We recommend limiting PM certification to a 20 percent of each manufacturer's test groups each year and allowing the manufacturer to attest that the other 80% of test groups meet the PM standards. Moreover, if ARB so chose, they could ensure that all vehicles were tested every 5 years. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff does not agree that limiting PM certification to 20 percent of each manufacturer's test groups each year will provide sufficient data to adequately demonstrate compliance with the PM standard. However, as part of the 15-day changes, staff did provide new certification testing requirements for PM emissions, which reduces the testing burden for manufacturers. These new certification testing requirements are consistent with the PM testing requirements that are currently being considered by USEPA for Tier 3.

21. Comment: We request that CARB change start date by which small volume manufacturers must certify vehicles using E10 certification gasoline and comply with the proposed 3 mg/mi particulate standard to MY 2022 to align with proposed changes to other standards and test fuel in order to avoid burdensome SVM certification in consecutive years. (Lance Tunick, Vehicle Services Consulting on behalf of Aston Martin Lagonda Limited, Lotus Cars Limited, and McLaren Automotive Limited)

Agency Response: As part of the 15-day changes, staff revised the compliance schedule for small volume manufacturers to allow them to continue to certify their vehicles to LEV II standards through the 2021 model year.

22. Comment: The phase-in plan for LEV III (FTP and SFTP 150K durability and E10 certification fuel) was unclear in the ISOR and in the regulatory wording. It is Volvo's understanding that all PZEVs can be carried over until MY2018 and that CARB intends to require all vehicles that certify to ULEV70 and below to meet the LEV III requirements from the beginning of model year 2015. Volvo requests confirmation of CARB's intent. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response:

For all manufacturers other than small volume manufacturers:

For the 2015 through 2017 model years, the following vehicles may be certified to LEV II standards: LEVs, ULEVs, and those SULEVs that are certified to SULEV emission standards using "carryover" of emission test data from a previous model year. All other 2015 through 2017 model year vehicles must be certified to LEV III standards.

For the 2017 through 2019 model years, the following vehicles may be certified to LEV II standards: LEVs and ULEVs. All other vehicles, including those previously certified as LEV II SULEVs, must be certified to LEV III standards.

For the 2020 and subsequent model years, all vehicles must be certified to LEV III standards.

For small volume manufacturers, there is no phase-in schedule. For the 2022 and subsequent model years, a small volume manufacturer must certify 100% of its vehicles to LEV III standards.

23. Comment: The regulations will also need to be changed to allow MDVs the option of early compliance with LEV III requirements. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff disagrees. An early compliance option is generally included to provide manufacturers with additional flexibility by accruing credits towards compliance with the phase-in schedule. However, unlike the case for LDVs, LEV III provides MDVs with an extended seven year phase-in where compliance with the more stringent emission standards occurs in the later years of the phase-in. Accordingly, staff does not believe that the additional flexibility provided by an early compliance option is warranted for MDVs.

24. Comment: Chassis certification is required for MDVs <10,000 GVWR in 2019 and 2022 depending on the section of the regulation. This should be consistent (2022 MY) throughout. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: All medium-duty vehicles with a GVWR ≤ 10,000 pounds must be chassis-certified in the 2020 and subsequent model years, as clearly stated in the 45-day regulatory language that modifies

§1956.8 (c)(1)(B) footnote B to the table and §1956.8 (h)(2) footnote A to the table.

25. Comment: BMW proposes that ARB adopt a single, harmonized phase-in schedule for LEV III PM, FTP, SFTP, and evaporative emission standards. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

    Agency Response: ARB is mindful of the technical challenge manufacturers face in simultaneously meeting increasingly stringent criteria and GHG emission requirements and therefore provided substantial flexibility in the phase-in requirements. Manufacturers typically certify separate test groups to the exhaust and evaporative requirements. Accordingly, the phase-in of LEV III FTP and SFTP exhaust emission standards are linked together since they share a common emission control system and are certified though common test groups. Similarly, the phase-in of evaporative requirements is separate because manufacturers certify separate evaporative test groups. The PM phase-in schedule is unique because of the technical challenge presented by the requirement and ARB intent to provide consistency between the LEV III program and the federal Tier 3 program currently under development by the USEPA. Accordingly, ARB believes that LEV III provides adequate lead time and phase-in flexibility for manufacturers to plan their future production.

26. Comment: Manufacturers should get more flexibility for aligning their model plans with the phase-in requirements by allowing an alternative phase-in with variation in the individual years if the same overall phase-in requirement 2017 to 2021 is achieved. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

    Agency Response: As noted in the response to Comment #25, ARB believes that adequate lead time and flexibility has been provided in the LEV III phase-in requirements.

**Comments Concerning Deterioration Factors (DFs)**

27. Comment: CARB must revise and keep updated assigned DFs. (Lance Tunick, Vehicle Services Consulting on behalf of Aston Martin Lagonda Limited, Lotus Cars Limited, and McLaren Automotive Limited)

    Agency Response: California's test procedures for light- and medium-duty vehicles incorporate 40 CFR §86.1826-01 with no changes. Under §86.1826-01(b)(1), we are obligated to determine assigned DFs (i)

based on sufficiently available industry-wide data or (ii) based on our own estimate if there's insufficient industry-wide data. Our past practice has been to let large volume manufacturers develop their own DFs during the first two years phase-in, then we develop the assigned DFs in the third or fourth year in-time for small volume manufacturers to certify to the new standards. This approach has met the needs of small volume manufacturers under LEV II, and we believe it will continue to meet the needs of small volume manufacturers under LEV III.

28. Comment: Durability demonstration procedures for exhaust emissions are not applicable to vehicles certifying to the SFTP standards set forth in section E.1.2.2 of the Appendix D Test Procedures. BMW understands DFs estimated through FTP Cycle may be applied to the LEV III USO6 and SCO3 emissions as well, in line with Tier 2 SFTP standards. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

    Agency Response: Staff agrees with the commenter's understanding that DFs used for determining FTP compliance may also be applied to LEV III US06 and SC03 emissions.

**Comments Concerning the Partial Zero-Emission Vehicle (PZEV) Backstop Provision**

29. Comment: The PZEV backstop provision should be removed and manufacturers should be allowed to produce whatever vehicles are required to comply with the NMOG+NOx fleet average. (Reginald R. Modlin, Director, Regulatory Affairs, Chrysler)

    Agency Response: Staff disagrees with the comment for several reasons. First, PZEVs are required to meet the extremely low NMOG and NOx SULEV exhaust emission standards and provide an additional NOx benefit beyond that provided by the NMOG fleet average requirement. Therefore, since each manufacturer's PZEV production is primarily determined by the compliance path it chosen to meet its ZEV requirement, beginning in 2018 when PZEVs transfer from the ZEV program to the LEV program and are no longer eligible for ZEV credits, their continued production would no longer be assured and the NOx benefit they provide would be lost. Second, a unique feature of LEV III is the change from the LEV II NMOG fleet average requirement to an NMOG plus NOx fleet average requirement. ARB incorporated this change to provide flexibility to the manufacturers in meeting SULEV emissions across their light-duty fleets. However, by combining NMOG and NOx emission values, absent a backstop provision, the LEV III fleet average requirement would not require manufacturers to produce

SULEVs until the NMOG+NOx fleet average falls below the ULEV50 NMOG plus NOx emission standard in model year 2023. Since the backstop provision only requires manufacturers to continue their production at a rate commensurate with their unique ZEV obligation, it only requires manufacturers to maintain their production of SULEVs, not increase it. Accordingly, the PZEV backsliding provision was included to preserve the emission reductions provided by these vehicles.

30. Comment: The PZEV Anti-Backsliding Provision requires manufacturers maintain a specific percentage of SULEVs in the 2018-2021 (Exh) and zero evap vehicles in the 2015-2017 (Evap) based on their percentage of PZEV sales in the three years preceding. ARB should base the minimum requirement on "projected vehicle sales" for all three prior years. For example, 2018 MY minimum SULEVs would be based on projected vehicle sales for the 2015-2017 MYs. ARB should allow manufacturers to comply with the EVAP PZEV anti-backsliding provision based on the average of the three model years 2015, 2016, 2017 MYs. Thus, the percentage of LEV III Evap vehicles in the 2015-2017 MYs (collectively) must be greater than or equal to the percentage of PZEVs in the 2012-2014 MYs. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with the comment and made the necessary modification to the regulatory language as part of the 15-day changes.

**Comments Concerning the 50ºF Exhaust Emission Standards**

31. Comment: The 50ºF exhaust emission standards for fuel flexible vehicles should be deferred until such time when ARB believes there is sufficient infrastructure in place to fuel these vehicles or alternatively, consider the positive $CO_2$ benefit from these vehicles when operating on E85 in lieu of the 50°F emission requirement. (Reginald R. Modlin, Director, Regulatory Affairs, Chrysler)

Agency Response: 50ºF exhaust emission standards for fuel flexible vehicles are currently in place under the LEV II regulations. These standards were established to adequately control emissions from these types of vehicles during "cold" mornings in southern California. The proposed LEV III 50ºF exhaust emission standards for fuel flexible vehicles are a necessary continuation of the LEV II standards. Staff, however, will examine the environmental impacts of Chrysler's suggestion and, if warranted, propose changes to this requirement at a future Board hearing. (It is important to note that ARB's primary concern is the attainment of federal and state ambient air quality standards,

which must be carefully considered with the reduction of $CO_2$ emissions from the California vehicle fleet.)

**Comments Concerning Medium-Duty Vehicle Alternative Compliance Plans**

32. Comment: A Medium-duty vehicle (MDV) Alternative Compliance Plan should be allowed for those manufacturers that have a small number of MDV test groups. (Reginald R. Modlin, Director, Regulatory Affairs, Chrysler)

Comment: For manufacturers with a small number (four or fewer) of MDV test groups the percentage phase-in requirements are not useful – much like a small volume manufacturer. We request that ARB allow an alternative phase in for OEMs with 4 test groups or fewer. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this suggestion and made the necessary modification to the regulatory language as part of the 15-day changes.

**Comments Concerning LEV II Vehicle Requirements**

33. Comment: Allow LEV II vehicles to meet a combined NMOG+NOx emission standards since the fleet average requirement for 2015MY (or earlier if the manufacturer opts in early) and beyond is an NMOG+NOx standard. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this suggestion and made the necessary modification to the regulatory language as part of the 15-day changes.

34. Comment: For 50$^{o}$F testing, LEV II vehicles should meet a combined NMOG+NOx standard and FFVs should be afforded the relief provided for 50$^{o}$F in LEV III. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff has modified the regulatory language to allow those LEV II vehicles that are certified to combined NMOG+NOx FTP standards to also meet the corresponding combined NMOG+NOx LEV III 50$^{o}$F standards.

35. Comment: Table c in section 1961(b)(1)(B) shows the applicable emission standards to be used in the fleet average equations.

According to ARB's Manufacturers Advisory Conversation on rounding of the equation, the results of the equation lead to different values for 2004 through 2014 model year vehicles certified to the optional 150,000 mile "LEV II" standards (e.g., ULEV for PCs and LDTs is 0.03 instead of 0.034). Please ensure the regulatory text does not retroactively change for manufacturers who have planned their vehicle certification in MY 2004 through 2014 based on ARB's Manufacturers Advisory Conversation. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: The changes commented upon was done to correct an error from a previous rulemaking. The table in question appears in both the regulations and in the test procedures. In that previous rulemaking, the correct number values, given to three decimal places, were written in the table that appears in the test procedures. However, they were incorrectly written only to two decimal places in the regulations. This error is being corrected in this rulemaking. This change will not apply retroactively. Rather it will apply to vehicles that are certified after these regulatory changes become effective.

**Comments Concerning Interim In-use Standards**

36. Comment: Interim in-use standards only apply through the 2019 MY for FTP, SFTP NMOG+NOx, and SFTP PM. Whereas FTP PM allows interim in-use through 2020MY. All of the interim in-use standards should apply through 2020 MY (the last year of the phase in). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: For FTP, SFTP NMOG + NOx, and SFTP PM, interim in-use standards apply only through model year 2019. All of these interim in-use standards should apply through model year 2020. For interim in-use FTP PM, Volvo supports CARB's planned phase-in through model year 2020. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: Historically, ARB has only provided interim in-use standards during the phase-in period for new emission standards. Staff does not believe they are needed once the standards apply to 100 percent of a manufacturer's fleet.

However, because FTP PM interim in-use standards extend through the 2020 model year, staff agrees that the application of interim in-use standards for SFTP PM should be extended through the 2020 MY and has made this adjustment as part of the 15-day changes.

**Comments Concerning the LEV III Fleet Average Requirements**

37. Comment: The regulations should provide a 2013 and 2014 MY LEV III fleet average of 107 mg/mile (PC/LDT1) and 128 mg/mile (LDT2) for manufacturers choosing early compliance. Otherwise, there will be no way to implement early compliance (e.g., if a vehicle certified to a combined standard what value would the OEM use for the NMOG curve?). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

    Agency Response: Staff agrees that it is appropriate to add fleet average NMOG+NOx values for the 2014 model year. These have been done as part of the 15-day notice changes. However, manufacturers are already certifying 2013 model year vehicles based on their plans to comply with the current NMOG fleet average requirements. Therefore, it would not be appropriate to change the compliance requirements for a particular model year once that model year is already underway.

38. Comment: In the introductory paragraph and the corresponding regulatory text, there is a need for CARB to clarify its plan to allow compliance with LEV III prior to model year 2015. The regulation lacks LEV III FTP and SFTP composite fleet averages for model years 2013 and 2014. The LEV III regulations appear to require LEV II vehicles to continue to meet separate NMOG and NOx standards. (§1961.2, Page A-35) Volvo requests clarification. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

    Comment: Like the FTP fleet average, the SFTP composite fleet average emission standards should begin with the current 0.140 g/mile requirement to 2013 and 2014MYs. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

    Agency Response: An SFTP composite fleet average has been added in for the 2014 MY as part of the 15-day changes. However, manufacturers are already certifying 2013 model year vehicles based on their plans to comply with the current NMOG fleet average requirements. Therefore, it would not be appropriate to change the compliance requirements for a particular model year once that model year is already underway.

**Comments Concerning Calculations**

39. Comment: The Emission Category for MDVs (LEV395, ULEV340, etc.) should include the applicable LEV II emission categories (§1961.2(b)(1)(B)1.c, page A-56), since MDPVs can and will continue to

certify to LEV II standards through 2019 MY. A separate chart for MDVs would be clearer. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this suggestion and made the necessary modification to the regulatory language as part of the 15-day changes.

40. Comment: The Alliance recommends ARB allow manufacturers to calculate the fleet average of federally certified vehicles at the level for which they are certified. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this suggestion and made the necessary modification to the regulatory language as part of the 15-day changes.

41. Comment: It is not clear how the NMOG+NOx Contribution Factors in (§1961.2(b)(1)(B)2., page A-57) were derived. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: Fisker Automotive recognizes that ARB has included in its LEV III amendments a NMOG+NOx Contribution Factor for Off-vehicle Capable HEVs that factors in a Zero-emission VMT Allowance in calculating a manufacturer's fleet average NMOG+NOx emissions. Fisker appreciates this provision in that it allows manufacturers that produce all-electric-capable vehicles to account partially for the reduced emissions of their vehicles. However, we would be interested to learn how ARB arrived at these contribution factors; it appears that a VMT Allowance of greater than 1 would reduce the SULEV20 HEV Contribution Factor to a value of less than zero. (Kellen Schefter, public policy analyst, Fisker Automotive, Inc.)

Agency Response: The NMOG plus NOx Contribution Factors allow off-vehicle charge capable hybrid electric vehicles to be included in the fleet average at an emission rate that is between the actual standards to which they certify and the next more stringent standards. This is done based on the assumed percentage of the time that the vehicle is operating on electricity, as reflected in the Zero-emission VMT Allowance. As part of the 15-day changes, the Zero-emission VMT Allowance was capped at 1, because VMT Allowance of greater than 1 would allow a vehicle to be included in the fleet average at a more stringent standard than the standard to which the vehicle certifies. But emissions increase as a vehicle ages due to deterioration of its emission control system. So, the actual air quality benefits of these hybrids will be commensurate with the higher, "unadjusted" actual standards

corresponding to a vehicle's emissions, not the lower "zero-emission VMT adjusted" standards. Consequently, allowing use of a Zero-emission VMT Allowance that is greater than 1 would cause a dis-benefit to California's air quality.

42. Comment: The section that provides the method for calculating the Vehicle Emission Credits (VECs) for medium-duty vehicles other than MDPVs should not begin until 2016 MY when the LEV III MDV requirements begin. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this suggestion and made the necessary modification to the regulatory language as part of the 15-day changes.

**Comments Concerning Conversion Factors**

43. Comment: The appendix D test procedures use an NMHC to NMOG conversion (1.1) which appears to be defined only for E10 fuel. This fixed factor is not harmonized with EPA's proposed Part 1066 where an equation is used as a function of the ethanol blends (<25% ethanol). Another concern with the fixed factor (1.1) is that other fuels (E15) might trigger a full speciation requirement for ARB testing (burden). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: It is appropriate to use an NMHC to NMOG conversion (1.1) in California's test procedures, because LEV III certification gasoline will be E10 fuel. Staff will continue to work with USEPA as they finalize CFR Part 1066. After CFR Part 1066 is finalized, staff will harmonize California's requirements with federal requirements to the extent that they accurately reflect E10 certification gasoline. Once USEPA finalizes CFR Part 1066, staff intends to return to the Board with a proposal to incorporate the federal equation to determine the NMHC to NMOG conversion factor for ethanol blends less than 25 percent. This action would alleviate industry's concern about additional testing requirements.

**Comments Concerning SFTP Requirement**

44. Comment: LEV II SFTP Projection to 120k or 150k (§1961.2(a)(7)(A)2. Footnote 2, page A-45):

Projection: This footnote requires manufacturers to convert LEV II SFTP values to NMOG+NOx and project those values to 120k or 150k using either SFTP or FTP deterioration factors. However, it is possible that

some vehicles were certified to 4K LEV II SFTP using 120k or 150k aged components. In this case, the projected emissions would be the certification value for the vehicle. Additionally, it is not clear which vehicles are required to project to 120k and which to 150k. We recommend clarifying this footnote to indicate that manufacturers are not required to project vehicle data if the data was generated using 120k or 150k aged components. Additionally, we recommend clarifying that vehicles would project to 120k or 150k based on their FTP certification durability.

Carry-Over: Footnote 2 begins with "For carry-over test groups certified to LEV II FTP emission standards…" However, it's possible that vehicles could be certified to LEV II in the 2015-2019MY timeframe that are not carry-over vehicles. We recommend that ARB deletes "carry-over" from Footnote 2. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees and made the clarifications as part of the 15-day changes that manufacturers are not required to project vehicle data if the data were generated using 120k or 150k aged components and that projection to either 120k or 150k is dependent upon FTP certification durability. Also, staff agrees that "carry-over" should be deleted from the Footnote 2 and this has been addressed as part of the 15-day changes.

45. Comment: Section §1961.2(a)(7)(A)2. (page A-44) of the regulations states that for FFVs, "SFTP Compliance shall be based on the same gaseous or liquid fuel used for FTP certification." However, for FFVs, the vehicle is certified on both gasoline certification fuel and E85. Conducting SFTP testing on two fuels would double the testing burden. For consistency with EPA, we recommend certifying on the gasoline certification fuel only (e.g., either CA cert gasoline (E0 or E10) or EPA certification gasoline (E0 or E15)). If this is not possible, we recommend testing using the fuel with the worst-case FTP emissions. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees, in part, with the commenter's suggestion and the regulation has been modified as part of the 15-day changes to only require SFTP compliance testing on LEV III certification gasoline for LEV III fuel-flexible vehicles. Based on an ARB test program evaluating FFV exhaust emissions, SFTP emissions are typically higher with certification fuel than with E85. Therefore, staff does not expect that this change will impact the stringency of the standards.

However, since the fuel-flexible vehicles required to comply with SFTP will be LEV III vehicles, staff disagrees with the commenter's suggestion to allow testing with LEV II or Tier II certification gasoline. Regarding the commenter's suggestion to allow SFTP testing using E15 test fuel, staff cannot make such a determination at this time because USEPA has not yet adopted specifications for E15. That said, once USEPA adopts E15 specifications, staff will evaluate the use of such test fuel and may propose an allowance in a future rulemaking if deemed appropriate.

46. Comment: ARB is proposing to revise the SFTP I requirements and adopt new SFTP II requirements to reduce the leanest air-to-fuel mixture required to obtain maximum torque (lean best torque, LBT) with a tolerance of ± 3% from ± 6%. We understand that the changes were intended to align with expected changes by USEPA for SFTP II. However, in recent discussions with USEPA, they have not made a decision on the actual percentage tolerance. Consequently, we recommend (1) deleting this change for LEV II SFTP (i.e., SFTP I) and (2) removing the new requirement from the current regulatory proposal for SFTP II and adopting a harmonized requirement in the next rulemaking to allow USEPA, ARB staff, and industry to determine the appropriate tolerance. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees and made the necessary modifications to the regulatory language to retain the original 6% tolerance language as part of the 15-day changes.

47. Comment: CARB should allow small volume manufacturers to certify 100 percent of their vehicles to existing SFTP I LEV II standards using current certification gasoline through the 2021 model year, and 100 percent of their ULEV/ULEV70/ULEV50 vehicles to SFTP II LEV III standards using E10 beginning with the 2022 model year. (Lance Tunick, Vehicle Services Consulting on behalf of Aston Martin Lagonda Limited, Lotus Cars Limited, and McLaren Automotive Limited)

Agency Response: Staff agrees, but no changes are being proposed because the 15-day regulatory language already provides SVMs with the LEV III SFTP phase-in suggested by the commenter. The LEV III SFTP requirements are tied to the LEV III FTP requirements in that manufacturers are only required to certify an engine family to the 150,000-mile SFTP standards on E10 when certifying that same family to LEV III FTP standards. Therefore, in the 15-day regulatory language, SVMs are required to certify all engine families to the 150K durability SFTP standards starting with model year 2022 unless they elect to certify an engine family to the LEV III FTP standards before the 2022 model year.

## 3. Comments Concerning the Evaporative Emission Regulations

48. Comment: CARB must revise and keep updated assigned DFs. In addition, the procedure for deduction of background evaporative emissions from full vehicle testing (mirror image of rig testing) must continue to be accepted. This is an important issue to small volume manufacturers given small-volume-manufacturer usage of composites, leather and larger tires. (Lance Tunick, Vehicle Services Consulting on behalf of Aston Martin Lagonda Limited, Lotus Cars Limited, and McLaren Automotive Limited)

    Agency Response: The evaporative emission test procedure continues to include an allowance for small volume manufacturers (SVM) to use assigned DFs in lieu of developing DFs through actual vehicle aging and testing, and a procedure already exists for SVMs to request them in the certification process. SVMs should work with certification staff to determine the appropriate assigned DFs to use for their LEV III evaporative emission families.

    Regarding the "mirror image of rig testing," as with current LEV II regulations, LEV III continues to allow manufacturers to use alternative test plans, subject to advance Executive Officer approval, to comply with the fuel-only ("rig" test) evaporative emission standards. No changes have been made in response to this comment.

49. Comment: The evaporative emission standards include MDPVs with LDT3 and LDT4s. The evaporative emission standard size based requirements were set recognizing that larger vehicles have inherently higher non-fuel emissions due to their size. We recommend treating MDPVs as MDVs for standards. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

    Agency Response: The Option 2 evaporative emission standards include MDPVs within the more stringent LDT3/LDT4 vehicle category instead of the MDV category to be consistent with the exhaust emission requirements for those same vehicles. Staff acknowledges that MDPVs are generally expected to have higher background emissions than smaller LDT3s and LDT4s and specifically accounted for this by incorporating additional compliance flexibility when developing the evaporative emission requirements. First, because the whole vehicle diurnal standards are based on the average of all vehicles within a category, manufacturers can offset higher MDPV emission values with lower emission values from LDT3 and LDT4 families. Additionally, the credit trading provisions will allow manufacturers to offset deficits in the MDPV/LDT3/LDT4 category with credits generated in the MDV/HDV

category if a deficit still exists three model years after it was incurred. No changes have been made in response to this comment.

50. Comment: The proposed regulations for LEV III evaporative emissions allow manufacturers the option of certifying to the zero evaporative emission standards using the Bleed Emissions Test Procedure rather than a "rig" test. Like the LEV III exhaust regulations, the LEV III Evap regulations begin in the 2015 MY. However, unlike the LEV III Exhaust regulations, there is no provision early compliance with the LEV III Evap standards. We recommend allowing early (2014 MY) compliance with the new evaporative emission standards consistent with early compliance allowance for LEV III exhaust, recognizing the manufacturers will not receive credits toward the 2018-2022 phase-in for vehicles certified early. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: The proposed regulation for LEV III evaporative emissions allows manufacturers the option to certify to the zero evaporative vehicle standards using the Bleed Emissions Test Procedure instead of a "rig" test. Manufacturers should be allowed early (model year 2014) compliance with the new evaporative emission standards consistent with the plan to allow early compliance for LEV III exhaust. (§1976(b)(1)(G), page A-131) (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: Staff agrees and has included the necessary modifications, as part of the 15-day changes, to the evaporative emission regulations and test procedures that will allow a manufacturer to optionally certify 2014 model year vehicles to the proposed LEV III evaporative emission standards. As noted by the first commenter, these early compliance vehicles would not generate credits towards the required evaporative emission phase-in schedule.

51. Comment: As written, it is not clear based on the language in App F III.F.3, Page III-54, which fuel would be used to test 2015 and subsequent model FFVs. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees and has incorporated the necessary modifications, as part of the 15-day changes, to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" that clarify the FFV test fuel requirements in section III.F.3.

52. Comment: For the carbon canister loading in the BETP, the test procedure requires the canister to be loaded with a mixture of fuel vapor

and nitrogen. Manufacturers would like the option to use air instead of nitrogen. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees and has made the necessary modifications, as part of the 15-day changes, to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" that allow loading the canister with a mixture of air and fuel vapor as an option.

53. Comment: The current and future evaporative emission test procedures require manufacturers to conduct an evaporative test during the exhaust deterioration factor determination at 5,000, 40,000, 70,000, and 100,000 miles. These tests are resource intensive without a commensurate gain. We recommend deleting these additional evaporative tests. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: Development of deterioration factors is already an extremely resource-intensive process. The prescribed intervals (5,000, 40,000, 70,000, and 100,000 miles) also make evaporative tests very costly. Eliminating the evaporative tests would result in a significant relief to Volvo. (Appendix F, Part II.A.(2.4), page II-2) (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: Modifications to the current evaporative durability procedure were not considered as part of the LEV III rulemaking, and the same mileage test points for evaporative durability determination that currently apply in LEV II remain unchanged for LEV III. Because this comment was submitted during the 45-day comment period of this rulemaking, there was insufficient time to fully consider the ramifications of making changes to the durability procedure. However, staff will continue to evaluate this issue and may consider proposing revised requirements as part of a future rulemaking.

54. Comment: We are supportive of CARB's intent to work with USEPA in developing evaporative emission leak standards and test procedures. A recent USEPA study found that in-use evaporative emissions were significantly higher than certification levels. We are concerned that significant gains from the proposed LEV III evaporative emission standards could be lost through excess in-use emissions. It is imperative that a leak test procedure and emission standards be developed that can be applied during certification and to the in-use fleet. (Barry R. Wallerstein, D.Env., Executive Officer, and Henry Hogo, Assistant Deputy Executive Officer, South Coast Air Quality Management District (SCAQMD))

Agency Response: Staff acknowledges the possibility of in-use durability issues associated with evaporative emission controls, but additional work needs to be completed in order to better characterize this problem and set forth an effective leak test program. As discussed in the staff report, staff will continue to work with USEPA to increase staff's understanding of the magnitude and causes of in-use evaporative emissions and to develop the leak test procedure and associated emission standards with the goal of incorporating them into the LEV III regulations in a future rulemaking.

**Comments Concerning ORVR Requirements**

55. Comment: ARB's proposal exempts incomplete vehicles <14,000 GVWR from the ORVR requirements if they are certified to complete heavy-duty vehicle standards under federal regulations. However, some incomplete < 14,000 GVWR vehicles are not so certified, and are currently not tested to the ORVR requirements since they are incomplete. To clarify, we recommend eliminating the ORVR requirements from all < 14,000 GVWR incomplete vehicles. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff intended for all incomplete vehicles to be exempted from the ORVR requirements. As such, the regulatory language and test procedures have been revised in the 15-day changes to make it clear that all incomplete medium duty vehicles are exempted from the ORVR requirements. In addition, staff has included language to clarify that only vehicles tested as incomplete vehicles for the purposes of evaporative emissions testing may be considered incomplete vehicles for ORVR compliance and testing.

**Comments Concerning the Pooling Provisions**

56. Comment: BMW recommends adding a pooling provision for SFTP like it is already proposed for FTP in California, the District of Columbia, and all states that have adopted California's criteria pollutant emission standards. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: Staff agrees and the pooling provision has been extended to SFTP as part of the 15-day changes.

57. Comment: The DEP requests that CARB provide adequate guidance to Section 177 states and the District of Columbia on how the credit and debit system relates to the pooling option for fleet emission standards

for criteria pollutants and evaporative emissions. (Michael L. Krancer, Secretary, Pennsylvania Department of Environmental Protection (DEP))

Agency Response: If a manufacturer chooses not to pool its emissions, credits/debits are calculated separately for CA and each of the 177 states based on compliance in each state. So, a manufacturer could be in compliance for one state (e.g., California) and out of compliance for another state (e.g. NY) for the same model year. If a manufacturer chooses to pool its emissions, credits/debits are calculated based on the total number of vehicles sold in CA and the 177 states combined. In this case, a manufacturer is either in compliance for all states or out of compliance for all states. Debits earned under a pooled scenario are divvied up between each state that is included in the fleet average. The per state debits are divvied out based on the "grams per mile" (for exhaust criteria emissions) or "grams" (for evaporative emissions) over the fleet average that the manufacturer achieves and the number of vehicles produced and delivered for sale in California and each individual state in the fleet average. Each state would then assign penalties to a manufacturer based on the debits attributed to that state.

58. Comment: For the purposes of complying with fleet average and phase in requirements, the Section 177 State Pooling Provisions (exhaust and evaporative) allow a manufacturer to pool their fleet based on sales in all of the Section 177 states. The Alliance recommends that: (1) ARB should require manufacturer's notification only prior to the first model year when the Section 177 State Pooling provision will be implemented. (2) To ensure this provision covers all of §1961.2, ARB should consider moving the Pooling Provision from §1961.2(b)(1)(A)1.c to new Section §1961.2(b)(5). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this suggestion and made the necessary modifications to the regulatory language as part of the 15-day changes.

59. Comment: Global Automakers understands that ARB, in coordination with Section 177 States, will allow a pooled compliance option for meeting the Advanced Clean Car regulations and that the pooling provisions will be clarified further in the staff's proposed 15-day changes. Global Automakers fully supports this allowance under the LEV III and GHG regulations and also believes that such a provision would add additional flexibility under the ZEV program. (Michael J. Stanton, President & CEO, Global Automakers)

Agency Response: We appreciate Global Automakers support for the pooled compliance option for the LEV III criteria pollutant and greenhouse gas regulations. The portion of this comment that refers to the ZEV program is addressed in the Final Statement of Reasons for the ZEV portion of the Advanced Clean Cars Program.

**Comments Concerning Federal Tier 3 Criteria Pollutant Exhaust Regulations**

60. Comment: Ford requests a resolution by the Board to direct staff to continue to work with manufacturers and the EPA to harmonize the California "LEV III" program with the anticipated federal "Tier 3"criteria emissions program, to the greatest extent possible, including standards, test procedures, certification requirements, and based on national compliance volumes. (Bob Holycross, Manager, Regulatory Strategy & Planning Sustainability, Environment & Safety Engineering, Ford Motor Company)

Comment: We recommend the Board direct the Executive Officer to work with automakers and USEPA to harmonize the vehicle criteria emission regulations, including fuels, standards, test procedures, and certification requirements, and to develop a regulatory package for the Board's consideration within 18 months of this hearing or within 9 months of when USEPA issues a final Tier 3 rule, whichever occurs last. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: It is of utmost importance to Volvo, as an intermediate manufacturer, that CARB and USEPA achieve harmonization between LEV III and Tier 3 to the greatest possible extent. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Comment: Stringent criteria emission requirements for LEV III and Tier 3 require the elimination of non-essential requirements and duplication of efforts (e.g., submission of certification data to the agencies, test procedures for plug-in hybrid electric vehicles). (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: It is staff's intent to coordinate and harmonize our criteria pollutant programs with those of USEPA to the extent that they continue to meet California's air quality and programmatic needs.

61. Comment: We strongly encourage the Board to continue working with your federal counterparts to get the Tier 3 program enacted to create a renewable standard and help the friends at the federal level along with

the California's leadership. (James Jack, Emission Technology Control Association)

Agency Response: It is staff's intent to work with USEPA in their development of the federal Tier 3 program to encourage the development of a national program that is consistent with California's air quality and programmatic needs.

## 4. Comments Concerning the Greenhouse Gas (GHG) Regulations

62. Comment: The essence of the USEPA/CARB small volume manufacturer (SVM) GHG proposal is for each eligible SVM to petition both USEPA and CARB for a case by case SVM-specific GHG standard. Small volume manufacturers with nationwide sales of fewer than 5,000 vehicles per year may petition CARB for alternative GHG emission standards. Consideration of alternative standards would be based on a review of the manufacturers' engineering and economic resources and other relevant data. If determined appropriate, alternative emission standards would be granted for a period of up to 5 years and reconsidered at future 5-year intervals.

We do have one observation on the CARB GHG case-by-case program which we feel is significant. Given that an SVM must separately petition USEPA and CARB for a case-by-case standard, we believe that all parties would wish to avoid a situation where a case-by-case standard determined by USEPA ends up being different from the CARB case-by-case standard for the same SVM covering the same time period. We believe that close cooperation between USEPA and CARB, as well as simultaneous filings with both agencies by the SVM, should essentially eliminate the risk of two different standards for a given SVM. However, we wish to bring this issue to the Board's and staff's attention. (Lance Tunick, Vehicle Services Consulting on behalf of Aston Martin Lagonda Limited, Lotus Cars Limited, and McLaren Automotive Limited)

Agency Response: Staff disagrees that there is any conflict and is not proposing any change. Staff believes that the procedure for evaluating whether or not a manufacturer meets the "nationwide sales of fewer than 5,000 vehicles per year" criteria is sufficiently detailed to minimize the risk of ARB and USEPA reaching conflicting conclusions. However, staff is not opposed to adding a provision to the regulations that would allow California to accept USEPA's approval of a manufacturer's compliance with this requirement as sufficient for meeting California's requirement. Staff will consider adding such language to the regulations once USEPA finalizes their 2017 through 2025 model year greenhouse gas rule, provided that the stringency of the final federal rule is consistent with the NPRM for that rulemaking.

63. Comment: We recommend that the Board direct staff to work with industry to align the federal and California programs in the following areas.

- Units of Greenhouse Gas Credits and Debits

  ARB quantifies greenhouse gas credits and debits in units of grams $CO_2e$ per mile. EPA quantifies these credits and debits as total tons of $CO_2$ or CREE emissions, accounting for differences in estimated passenger car and light-duty truck vehicle lifetime mileage.

  ARB also appears to mix the use of these units at 13 CCR 1961.3(a)(8)(A)2.a. and 13 CCR 1961.3(a)(8)(A)2.b. (ISOR at A-93)

(Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff has ensured that the crediting systems are aligned and is not proposing any change. While mirroring the form and stringency of the proposed federal GHG program for 2017-2025, California's GHG program has some unique features absent from the federal program. Among these are the assignment of upstream emissions to ZEVs and the structure of credits and debits. Since there are no provisions to transfer credits or debits between LEV III and the federal program, these differences should not pose a problem to the manufacturers. Regarding the units used for the term "credits" in the calculations in 13 CCR 1961.3(a)(8)(A)2.a. and 13 CCR 1961.3(a)(8)(A)2.b, they are both given in megagrams, which is used in the calculation in 1961.3(a)(8)(A)2.a. Since the final results of the calculations in the CCR sections cited here are expressed in terms of grams per mile, there is no internal inconsistency in the LEV III GHG credit and debit calculation requirements.

64. Comment: We recommend that the Board direct staff to work with industry to align the federal and California programs in the following areas.

- Treatment of Electric, Plug-In Hybrid Electric, and Fuel Cell Upstream Emissions

  ARB proposes to include upstream emissions for these vehicle types. EPA treats these types of vehicles as having 0 g/mi upstream emissions up to certain caps.

(Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff is not proposing any change. In relation to ARB's proposal to include upstream emissions for plug-in electric and fuel cell vehicles, ARB staff stated its justification for not exempting the known emissions of these technologies in the regulatory accounting (See ISOR, pages 134-138). Staff has received differing comments from many stakeholders about the importance of including the relative upstream emission impacts from advanced vehicles, and many of the comments were highly supportive. Based on staff's own analysis, lifecycle research in the scientific literature, and consideration of stakeholders' comments, staff is proposing to include the upstream emission accounting as proposed. The regulatory accounting of these vehicles' emissions is based on the general principles that all vehicle technologies are evaluated on a technology-neutral basis, that known emission impacts from particular vehicle technologies are not exempted, and that the regulatory framework is durable enough to accommodate evolving vehicle power sources over the long-term. In addition, the specific regulatory requirement for these vehicle types through the ZEV program obviates the need for additional special regulatory incentives. Nonetheless, staff notes that in the planned future rulemaking to deem the federal GHG standard compliance as sufficient for California compliance, the manufacturers would ultimately receive the same regulatory treatment in the federal and California regulations.

65. Comment: We recommend that the Board direct staff to work with industry to align the federal and California programs in the following area.

- Treatment of Dual Fueled Vehicles

  ARB does not provide for weighting of dual fuel vehicle emissions on both gasoline and alternative fuel. EPA provides an actual usage-based factor and proposes to create a "utility factor" for CNG dual fueled vehicles.

(Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: There are no special credits for CNG vehicles in the greenhouse gas regulations, but a comparable CNG vehicle does have a natural $CO_2$ benefit simply from its exhaust $CO_2$ emissions. Functionally, this means that a CNG vehicle will get a 20-25% lower GHG rating than its gasoline counterpart. We did not include any upstream benefits for any of the alternative fuels in LEV III. Staff believes that California's Low Carbon Fuel Standard already provides credits to lower carbon fuels and assigning an additional credit to the

vehicle would amount to double counting. Since the Low Carbon Fuel Standard does not apply nationwide, USEPA may find it appropriate to credit the upstream greenhouse gas emission benefits of CNG vehicles through their vehicle regulations.

66. Comment: We recommend that the Board direct staff to work with industry to align the federal and California programs in the following area.

- Credits for Reduction of Air Conditioning Direct Emissions

  ARB proposes to add a subjective judgment to determine whether an air conditioning (A/C) system has been optimized to minimize leakage and to justify the number of fittings and joints in an A/C system design. In contrast, USEPA only requires the objective measurement of system leakage per an established SAE procedure.

(Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The commented provision is meant to be a reporting requirement that an A/C Direct Emissions Credit application must meet, in addition to the criteria that an A/C system must meet in order to qualify for A/C Direct Emissions Credit. To improve clarity, as part of the 15-day changes, we revised the regulatory text in CCR, title 13, section 1961.3(a)(6)(A) and section E.2.5.6.2 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" to read:

- "an explanation describing what efforts have been made to minimize the number of fittings and joints and to optimize the components in order to minimize leakage."

67. Comment: We recommend that the Board direct staff to work with industry to align the federal and California programs in the following area.

- Credits for Reduction of Air Conditioning Direct Emissions

  Both ARB and USEPA propose a "high-leak penalty" applicable to vehicles utilizing refrigerants with a global warming potential of 150 or less. In the equation for this penalty, the average leakage rate terms differ between ARB and USEPA.

(Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The average leakage rate terms in the high leak penalty formulas are established based on our analysis that is detailed in Appendix R to the Initial Statement of Reasons. We are submitting comments to the USEPA proposing that the USEPA revise its proposed A/C Leakage Credit provisions by adopting the average leakage rate terms currently proposed by ARB, so that the A/C leakage Credit provisions would then be identical in the USEPA and ARB rules.

68. Comment: Volvo continuously develops its climate systems in order to reduce refrigerant leakage and to improve durability. Volvo is convinced that physical measurements better reflect real vehicle emissions and also result in development of more robust air conditioning systems than calculations of theoretical estimates and allowances. Volvo strongly supports the Agency's intent to allow, as expressed in the draft's Appendix D, paragraph E.2.5.6.3,1 physical measurements of refrigerant leakage as an alternative to the latest version of SAE J2727. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: The LEV III provisions on which Volvo commented, Sections E.2.5.6.3.1 and E.2.5.6.3.2 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," both have the following language: "The Executive Officer may allow a manufacturer to use an updated version of the August 2008 version of SAE J2727 or an alternate method if s/he determines that the updated SAE J2727 or the alternate method provides more accurate estimates of the initial leak rate of A/C systems than the August 2008 version of SAE J2727 does."

We would like to clarify that Section E.2.5.6.3 of the proposed LEV III rule does not express or imply that we will allow the use of physical measurements of refrigerant leakage as an alternative to the latest version of SAE J2727.

Section E.2.5.6.3 of the proposed LEV III rule does allow the use of an alternate method if we determine that the method provides more accurate estimates of the initial leak rate of A/C systems than the latest version of SAE J2727 does. For purpose of calculating A/C Direct Emissions Credit, ARB believes it is important that a method to quantify the initial leak rate of A/C systems reflect the variation in the probability

of mis-assembly for different fitting technologies (for example, O-ring versus seal washer). Furthermore, ARB believes that a physical measurement, such as a mini-SHED testing, by itself, would not reflect such variations because the testing subjects are usually properly assembled A/C systems, and thus would not provide more accurate estimates of the initial leak rate of A/C systems than SAE J2727 does.

ARB understands that SAE J2727 standard has recently been updated to improve the accuracy of the estimation of the initial leak rate of A/C systems and to expand its application to HFO-1234yf, a low-GWP refrigerant. The updated SAE J2727 (Revision February 2012) continues to take into account the variation in the probability of mis-assembly for different fitting technologies. However, when the updated version became available, it was too late for ARB to propose a corresponding revision to the LEV III rule via the 15-Day Notice for the rule. Therefore, ARB intends to amend the A/C Direct Emissions Credit provisions in the future to require the use of February 2012 version of SAE J2727. We also intend to continue to allow the use of a further updated version of SAE J2727 or an alternate method if we determine that the updated SAE J2727 or the alternate method provides more accurate estimates than the current SAE J2727 (Revision February 2012) does.

69. Comment: Fisker Automotive applauds the Air Resources Board for approving a cap and trade program that will reduce greenhouse gas emissions in California under Assembly Bill (AB) 32. By establishing controls for greenhouse gas emissions due to electricity generation (in the first compliance period of 2013-2014) and fuel distributors (in the second compliance period of 2015-2017), ARB has an opportunity to elegantly separate its regulation of upstream emissions and downstream (tailpipe) emissions due to vehicle use.

Different regulatory bodies take differing approaches to tailpipe emissions. The European Commission (ECE-R 101) recognizes electric driving as contributing zero tailpipe emissions, which results in a $CO_2$ rating of 51 g/km (or 82 g/mi) for the 2012 Fisker Karma. In contrast, the same vehicle under the proposed LEV III amendments would receive a $CO_2$ rating of approximately 140 g/mi, based on the calculation for model year 2016. The difference between these two ratings is partially attributable to the different handling of upstream emissions. (Kellen Schefter, public policy analyst, Fisker Automotive, Inc.)

Agency Response: Staff is not proposing any change. ARB emphasizes that counting known emissions impacts of electric vehicles is critical to establishing technology-neutral GHG performance standards that recognize emission-leading technologies without picking

technological winners. As a point of comparison, ARB staff notes that the plug-in hybrid Fisker Karma under a 140 g/mi rating would have a GHG level that is lower than every model year 2010 gasoline vehicle model except for the Toyota Prius and far lower than any vehicle with comparable performance attributes to the Karma. Compared to the fleet at large, that 140 g/mi GHG rating is 55% lower than the average model year 2010 automobile and 44% lower than the projected model year 2016 fleet average GHG standard of 250 g/mi. As a result, the model would be appropriately rated as a very low-GHG vehicle model and therefore receive emission-reduction credits commensurate with its environmental performance. Also, as noted in the response to Comment #4, staff will return to the Board after further study of in-use data for range extended battery electric vehicles and plug-in hybrids, and, if warranted, propose appropriate modifications to treatment and credits for these vehicles.

70. Comment: ARB's greenhouse gas emissions standards in the LEV III amendments incorporate a utility factor to calculate the fraction of VMT spent in all-electric range. Fisker Automotive would encourage ARB to consider aligning its utility factor-based accounting of greenhouse gas emissions with its approach to criteria pollutants. The utility factor approach, which is itself based on data from transportation surveys, could be refined with actual in-use data from vehicles as this data becomes available. Fisker Automotive does not wish to make undue allowances for any vehicles; at the same time, we believe it is in the state's best interests to level the playing-field for all vehicles, especially those that enable zero-emission driving. (Kellen Schefter, public policy analyst, Fisker Automotive, Inc.)

Agency Response: Staff agrees with the comment that the utility factor should be refined based on in-use data as such data becomes available. Based on the most recent data, the utility factor method appears to approximately estimate the extent to which plug-in hybrid electric vehicles are utilizing the electric grid in the real world. For example, the only such plug-in vehicle model for which there is hard data, the Chevrolet Volt, has a utility factor of approximately 64% and General Motors has reported that the vehicle model has logged 10 million cumulative miles with about two-thirds of its miles powered by electricity. ARB has an interest in providing an unambiguous, objective, and repeatable measure for all vehicle models for crediting purposes within the GHG regulation. ARB staff notes that within several years there will be more plug-in hybrid models, with more technology configurations, and with varying real-world electricity usage. Data from these new emerging vehicle plug-in hybrid models will be considered by ARB staff as it becomes available and will be incorporated into the greenhouse gas program's mid-term review. (Board Resolution 12-11 directs the

Executive Officer to participate in USEPA's mid-term review of the 2022 through 2025 model year passenger vehicle greenhouse gas standards being proposed under the 2017 through 2025 MY National Program.)

71. Comment: ARB's ISOR does not include the multiplier incentives for electric vehicles as proposed in the federal NPRM. According to ARB, the proposed ZEV regulation sets sufficient incentives for their market penetration and, therefore, additional incentives through e.g. multipliers are not needed. This view is not shared by BMW. Without multiplier incentives, standards compliance may be jeopardized due to the proposed very ambitious GHG standards for model years 2017-2025. BMW believes that any variation to the federal NPRM, such as different counting of upstream emissions or consideration of different flexibilities, is not goal-oriented towards achievement of single national standards. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: Staff is not proposing any change. The multiplier incentives are not included in California's LEV III GHG regulation, as they go against ARB's principles for establishing technology-neutral performance standards, they inappropriately give additional artificial credit for vehicles that are already mandated by the ZEV regulation, and they erode the program's intended GHG emission reductions. ARB staff notes that automakers do indeed get access to these special electric vehicle multiplier incentives if and when they comply with the federal GHG regulations, and compliance with those standards would be deemed as sufficient for compliance with the California GHG regulation. (Board Resolution 12-11 directs the Executive Officer to either propose modifications to the approved regulatory amendments, or to return to the Board with a new regulatory proposal, to accept compliance with the 2017 through 2025 MY National Program as compliance with California's greenhouse gas emission standards in the 2017 through 2025 model years, if the Executive Officer determines that USEPA has adopted a final rule that at a minimum preserves the greenhouse reduction benefits set forth in USEPA's December 1, 2011 Notice of Proposed Rulemaking for 2017 through 2025 model year passenger vehicles.)

72. Comment: BMW supports the option to convert measured $N_2O$ and $CH_4$ emissions that are above the applicable standards into $CO_2$-equivalent emissions for compliance purposes. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

73. Comment: From our point of view, adequate availability of R123yf is highly questionable. Therefore, we greatly appreciate CARB's decision regarding the future adoption of this refrigerant. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

74. Comment: Regarding leakage related credits, we would like CARB to reconsider the so called "HiLeakDisincentives". We feel that it must not be allowed to use any unintended fluid or refrigerant in any A/C system. If someone does so, then it would violate the law. So the effects of illegal refrigerant charge cannot be influenced by the manufacturer. Furthermore, this disincentive provokes discussions to use unintended refrigerants. We do not expect that vehicle manufacturers will shift to higher potential leakage rates when using R1234yf instead of R134a – BMW would definitely not do so and our focus will remain on best quality refrigerant circuit tightness for any given refrigerant. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: The purpose of the high leak penalty provisions is to incentivize continued efforts to reduce A/C leakage and to prevent backsliding of refrigerant containment when the industry transitions to using a low-GWP refrigerant. Any automobile manufacturer that utilizes high quality refrigerant containment technologies will not be at competitive disadvantage under these provisions.

The credit provisions and the related technical analysis in the Initial Statement of Reasons do not suggest or imply approval of using refrigerants for which an A/C system is not designed. However, the price disparity between HFC-134a and HFO-1234yf is likely to remain large, and further, HFO-1234yf is not currently allowed for use by do-it-yourselfers. Therefore, if HFO-1234yf is chosen by the industry as the next generation automotive refrigerant, illicit recharging of HFO-1234yf systems with HFC-134a refrigerant will be a realistic possibility for some consumers. Maintaining low leak rate will help reduce the frequency of recharge events, which in turn reduces both the number of opportunities for illegal behavior and the financial incentive for illegal behavior, and which also reduces the environmental consequences of that illegal behavior to the extent it occurs. Therefore, the manufacturer's system design can in fact influence the recharging of A/C systems with unintended refrigerants.

75. Comment: There is a concern that the new AC17 test cycle tests for determining air conditioner efficiency improvements be limited due to facility constraints plus the significant testing burden (time required to complete the test sequence). Additionally with this new test cycle (AC17) there is a concern with existing test facilities meeting the tight ambient tolerances. With some minor modifications to the requirements these issues can be reduced or eliminated. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Manufacturers are not required to conduct the AC17 test procedure on every vehicle, but instead need only test one vehicle amongst all those that share a common air conditioning system. Based on discussions with automobile manufacturers, staff understands that most vehicles on a single platform use the same air conditioning system. Given that most automobile manufacturers have a limited number of platform lines, staff does not anticipate a facilities constraint issue due to testing of vehicles for the purpose of obtaining air conditioning efficiency credits. However, staff will continue to evaluate this issue and if there are indications that such an issue could arise in the future, staff may consider proposing revised regulatory language in a future rulemaking, which is anticipated to occur before the end of 2012.

76. Comment: We support the review of A/C-idle judgment as a function of engine displacement. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: Staff is appreciative of the supportive comment and no additional response is required because it is supportive.

77. Comment: The AC17 test conditions do not reflect typical average or moderately increased air conditioning loads. Especially the solar load is too high. Some of the powerful measures to lower all-the-year fuel consumption also can't be evaluated at the currently suggested AC17 test load – e.g. significant reduction of reheat. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: Staff does not agree that the solar loading should be reduced. The solar loading was chosen not as an average ambient temperature, but as a moderately high soak temperature based on both CA-specific and national conditions. Based on comparisons to real-world temperature rise within a parked vehicle, staff believes the proposed loading to be appropriate given the amount of soak time that was chosen. Additionally, testing confirms that vehicles generally achieve complete pull down during the SC03 portion of the test cycle,

allowing steady-state conditions to be evaluated during the HWFET portion of the test cycle. Thus, all credited AC efficiency technologies should be adequately evaluated through the AC17 test procedure as proposed.

78. Comment: The reliability of AC17 test data is expected to be not better, but similar to AC-idle-test. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: Staff disagrees and is not proposing any change. As discussed in detail in the USEPA 2010 "Final Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Joint Technical Support Document," the primary issue with the Idle Test is not test-to-test variation, but scatter amongst the various vehicle models and types. As such, in the Notice of Proposed Rule Making for the 2017-2025 MY light duty greenhouse gas rule, USEPA has proposed a correction factor that will allow all vehicles with A/C efficiency technologies to qualify for indirect emission credits using the Idle Test, regardless of engine displacement and type. Despite this correction factor, the Idle Test is still not an ideal test because it cannot evaluate the benefit of several A/C efficiency technologies, such as recirculation. In addition, the Idle Test does not reflect the range of A/C operation conditions, including steady-state operation. To address these issues staff has proposed the AC17 test procedure, which is an improvement on the Idle Test in that it better reflects the full range of efficiency technologies and operation conditions. The AC17 test procedure is based on two, regularly conducted test procedures, SC03 and HWFET, which have known levels of repeatability and acceptable test-to-test variability. Thus, no changes to the AC17 test procedures were proposed as a result of this comment.

79. Comment: We recommend adopting the definition of platforms or carlines according to the Alliance proposal. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: The Alliance did not provide ARB with a comment suggesting a change in the definition of platforms or carlines, and as such, staff is not able to respond to the BMW comment. Thus, at this time no changes to the regulatory language have been made. However, staff will continue to evaluate this issue and may consider proposing revised regulatory language in a future rulemaking, which is anticipated to occur before the end of 2012.

80. Comment: We are also concerned about determining fuel consumption improvements and credit calculations depending on baseline test results. The generation of baseline car results needs to be properly defined. BMW does not have baseline cars – especially focused on 2017 – they have to be designed and built up for this single test. Therefore, we propose to test a baseline car once for each platform – according to the Alliance car definition – and the use of these baseline results should be allowed during the entire model year 2017-2025 timeframe. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: While staff understands BMW's concerns, staff believes that there is significant flexibility in the regulatory language such that manufacturers will be able to obtain a vehicle for baseline testing. In particular, it is not required that the baseline vehicle be identical to the test vehicle with the credit-generating technologies, only that it not contain the credit generating technologies and be of a "similar" type. In order to ensure that manufacturers can demonstrate the benefit of the credit-generating technologies, it is necessary to compare a vehicle with an improved air conditioning system to one that does not contain the efficiency technologies. Thus, no changes to the regulatory language have been made in response to this comment. However, staff will continue to evaluate this issue and may consider proposing revised regulatory language in a future rulemaking, which is anticipated to occur before the end of 2012.

81. Comment: BMW has the following comment on the AC17 test procedure. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

- During the 30 minute soak, it is quite difficult to control temperature and humidity properly. A wider tolerance range in this phase of the cycle would help. Even more critical for some modern full automatic test benches is the combination of engine-off and 4 mph wind speed, because this has significant impact on exhaust gas analysis measurement devices. We would prefer a soak definition with a wider tolerance range of temperatures and, especially, humidity, and a speed definition of maximum 4 mph (instead of exactly 4 mph).

Agency Response: The tolerances for the ambient test cell conditions were based on the capabilities of the test cell as defined for the current SC03 test in 40 CFR § 86.161-00, and testing conducted during development of the AC17 test procedure demonstrate the ability of these environmental chambers to maintain the ambient conditions as specified in the proposed regulation. In addition, due to the influence of wind

speed on cabin heating and thus indirect emissions based on differing glazing properties, it is essential to specify a specific wind speed during the soak as opposed to simply a maximum speed as requested. Thus, no changes to the regulatory language have been made in response to this comment. However, staff will continue to evaluate this issue and may consider proposing revised regulatory language in a future rulemaking, which is anticipated to occur before the end of 2012.

82. Comment: BMW has the following comment on the AC17 test procedure. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)
    - Solar load during A/C-off phases causes extreme temperature exposure to test drivers. These working conditions are unacceptable and will lead to poor accuracy when trying to meet the given drive cycle requirements. We suggest running A/C-off phases without solar load. As A/C is turned off, this has no impact on A/C-off fuel consumption.

    Agency Response: Maintaining ambient conditions from the air conditioning-on test to the air conditioning-off test is vital to ensuring that benefit from the air conditioning efficiency technologies can be evaluated. Because of the influence of the solar loading on the heating of the engine compartment and other vehicle systems and the resultant impact on vehicle $CO_2$ emissions, staff believes it is important to maintain the solar loading on both tests. In addition, the relatively mild ambient temperature conditions within the test cell should ensure some level of driver comfort, and as such no revisions to the regulatory language have been made in response to this comment. However, in order to further consider drivers' working conditions, staff will continue to evaluate this issue and may consider proposing revised regulatory language in a future rulemaking, which is anticipated to occur before the end of 2012.

83. Comment: BMW has the following comment on the AC17 test procedure. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)
    - Drive cycle definitions should be fully equal to currently used cycles (e.g., some seconds time shift @ HWFET). This would help to keep accuracy and test quality high and to avoid mistakes.

    Agency Response: Although the AC17 test cycle is comprised of two, currently existing test cycles, it is in fact a new test cycle that will need to be managed by the manufacturers, and thus no changes to the test procedure are required. However, staff will continue to work with the

USEPA to attempt to make the new AC17 test cycle as close to currently existing test cycles as possible. Assuming the Federal program is substantially similar to that which was proposed in the NPRM, staff plans to return to the Board to align the California indirect air conditioning credit program with the Federal program once it is finalized.

84. Comment: SCAQMD staff believes that CARB can still establish a 6% per year improvement rate at this time. Such a rate could take the form of an "optional" standard to further incentivize the early commercialization of cleaner vehicles (since the rate of performance is translated into a g/mile standard). This is similar to the optional NMHC+NOx exhaust standards CARB established for heavy-duty vehicles prior to the implementation of the 2007 exhaust emissions standard. As such, we urge CARB to propose an optional emissions standard for greenhouse gas emissions as part of the 15-day process. (Barry R. Wallerstein, D.Env., Executive Officer, and Henry Hogo, Assistant Deputy Executive Officer, South Coast Air Quality Management District (SCAQMD))

Agency Response: The structure and purpose of the suggested optional, more-stringent 6% per year set of standards is unclear. The proposed standards already allow for credit generation from automakers that choose to voluntarily over-comply with the standards in any model year. Any given automaker can over-comply in order to provide a buffer for their future year GHG emission levels, to sell excess credits at a profit to other automakers, or to over-comply with the GHG standards for corporate responsibility or marketing purposes. Functionally, it is difficult for ARB staff to see what publishing an optional, more-stringent 6% per year GHG standard accomplishes beyond the regulation's existing ability to promote the deployment of low-GHG-emission vehicles.

85. Comment: ARB has committed to the Mid-Term Review of the greenhouse gas regulations. We therefore request that the Board memorialize this commitment by directing the Executive Officer to conduct a mid-term review in coordination with the USEPA and NHTSA. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: Mid-term evaluation of the greenhouse gas regulations will allow manufacturers and the agencies to consider whether the regulation is reasonable and on track in its assumptions. It is therefore imperative that the industry and the agencies review and consider the outcomes of our work in 2012 in relation to the joint plan at the midpoint. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: This is not a comment directed at or suggesting a change to the regulatory text as proposed, and therefore no further response is needed. However, we note that Resolution 12-11 directs the Executive Officer to participate in USEPA's mid-term review of the 2022 through 2025 model year passenger vehicle greenhouse gas standards being proposed under the 2017 through 2025 MY National Program.

86. Comment: The California Air Resources Board (CARB) and the federal agencies (USEPA and National Highway Traffic Safety Administration (NHTSA)) should adopt a backstop mechanism to prevent the loss of benefits resulting from a significant shift towards larger vehicles and a reclassification of cars as trucks. As proposed in the staff report, CARB should continue to monitor the implementation of the standards and provide status updates to the board on an annual basis. (Don Anair, Senior Engineer, Union of Concerned Scientists)

Agency Response: Staff disagrees and is not proposing any change. ARB staff has considered the concept of a backstop mechanism that would ensure that the projected GHG emission targets are achieved in future years. Staff's analysis suggests that there is considerable uncertainty in the ultimate outcome of the GHG standards. Staff notes that the uncertainty is two-sided. As a result, the regulation could achieve greater GHG emission reduction than projected (e.g., if fuel prices were substantially higher than the approximate $4 per gallon estimation used in the analysis); yet shifts toward larger vehicles and reclassification of models as trucks would conversely increase GHG emissions. The lack of certainty is inherent to a regulatory framework that accommodates shifts in vehicle footprint and category, and, therefore, staff sees this simultaneously as both a strength and a potential weakness. Per direction from the Board (Resolution 12-11), ARB staff is committed to monitoring these fleet trends throughout the life of regulations, making the information publicly available, providing a status update to the Board by 2016, and addressing any such effects within the mid-term program evaluation.

87. Comment: We support CARB's inclusion of upstream emissions accounting for electricity and hydrogen and urge CARB to continue to work with federal regulators as national standards are finalized to include federal accounting of upstream emissions. (Don Anair, Senior Engineer, Union of Concerned Scientists)

Agency Response: Staff will continue to work with USEPA on their upstream emission accounting for electric and hydrogen vehicles.

88. Comment: Ford supports the harmonization of California and federal Greenhouse Gas programs. We request that staff include language to

allow manufacturers to comply with the 2017-2025 MY One National Program for Greenhouse Gas / Fuel Economy (GHG/FE) in lieu of compliance with the California Greenhouse Gas program. (Bob Holycross, Manager, Regulatory Strategy & Planning Sustainability, Environment & Safety Engineering, Ford Motor Company)

Comment: The current draft of the regulations does not make it clear that CARB intends to allow reciprocal recognition of the national greenhouse gas program, as was the case for model years 2012 to 2016. Volvo seeks confirmation that CARB intends to make this commitment for model years 2017 through 2025. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Comment: ARB has recognized the importance and benefit of a single national program for greenhouse gases. We recommend that ARB allow manufacturers to comply with the federal program in lieu of complying with the ARB program when the federal final rule is published. Additionally, we strongly urge ARB to conduct an extensive Mid-Term Evaluation to review the appropriateness of the standards and market acceptance. (Reginald R. Modlin, Director, Regulatory Affairs, Chrysler)

Comment: We request that the Board direct the Executive Officer to adopt regulatory changes necessary to allow manufacturers to comply with the USEPA greenhouse gas regulations in lieu of compliance with California once USEPA issues a final rule. Moreover, ARB should continue the practice of allowing manufacturers to certify vehicles in California by submitting federal certification test data. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Board Resolution 12-11 directs the Executive Officer to either propose modifications to the approved regulatory amendments, or to return to the Board with a new regulatory proposal, to accept compliance with the 2017 through 2025 MY National Program as compliance with California's greenhouse gas emission standards in the 2017 through 2025 model years, if the Executive Officer determines that USEPA has adopted a final rule that at a minimum preserves the greenhouse reduction benefits set forth in U.S. EPA's December 1, 2011 Notice of Proposed Rulemaking for 2017 through 2025 model year passenger vehicles. Staff is unsure about what the Alliance of Automobile Manufacturers is referring to by "ARB should continue the practice of allowing manufacturers to certify vehicles in California by submitting federal certification test data." However, staff did not make any changes to the regulations that would prohibit ARB from accepting federal certification test data.

89. Comment: CARB should engage with the federal agencies as part of the federally proposed mid-term review. However, California must continue to retain its right to exercise its authority under the Clean Air Act to adopt more stringent standards than the federal government to protect the health of all Californians from poor air quality and climate change. (Don Anair, Senior Engineer, Union of Concerned Scientists)

Agency Response: Resolution 12-11 directs the Executive Officer to participate in USEPA's mid-term review of the 2022 through 2025 model year passenger vehicle greenhouse gas standards being proposed under the 2017 through 2025 MY National Program. However, California reserves all rights to contest final actions taken or not taken by USEPA or NHTSA as part of or in response to the mid-term evaluation. In addition, nothing in ARB's July 28, 2011 commitment letter or this rulemaking can be read to state or imply that California has conceded any right to adopt more stringent standards.

90. Comment: We believe that by removing incentives to produce flexible fuel vehicles (FFVs) for the model year 2016 and later years, the proposed amendments will cause automakers to cease production of FFVs, and that any greenhouse gas benefits of the Federal Renewable Fuel Standard will be lost. We recommend projecting ethanol usage factors for FFVs, so that the automakers can incorporate the projected usage into their planning decisions for the future. (Tom Buis, CEO, Growth Energy)

Agency Response: California's GHG program for 2009-2016 included credits to manufacturers of FFVs who could demonstrate the usage of low carbon fuels, including E85. These credits were designed to account for the upstream GHG benefits provided by the use of low carbon fuels. However, in the interim ARB has adopted the Low Carbon Fuel Standard that requires fuel providers to lower the carbon content of fuels sold in California. This measure is an integral part of California efforts to reduce GHG emissions. Since the upstream GHG benefits for low carbon fuels are now assigned to the fuel providers, retaining these credits for FFVs would essentially result in double counting of those benefits. Accordingly, these credits were not retained in the LEV III program.

**Comments Concerning the Measurement of $N_2O$**

91. Comment: LEV III appendices C and D now require $N_2O$ measurements. Recent studies have shown that $N_2O$ measurement technology at such ultra-low levels (parts per billion range) is very much in its infancy and not well understood nor developed. OEM's have a

high level of concern over measurement technology readiness, instrument availability (most are prototypes), measurement accuracy, implementation lead time (commencing many years after technology is proven accurate and robust), additional testing burden, costs to implement, etc. The LEV III regulations require this $N_2O$ measurement for the 2015 MY, which is not feasible for OEM's to meet given $N_2O$ measurement technology readiness and required lead time. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

92. Comment: The LEV III regulations require this $N_2O$ measurement for the 2015 MY. Currently there is no equipment on the market that can measure $N_2O$ with a relevant repeatability. During 2012-2013, new technology will be introduced to the market, but this technology is still in the research stage, and it would be premature to commit to its use as a certification tool at this juncture. Volvo is concerned about technology readiness, instrument availability, measurement accuracy, and implementation lead time, including verifying that the instrument is robust enough for certification testing. Volvo and the Alliance addressed the same concern to USEPA, which has pushed implement date of its requirement to model year 2017. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: The commenter appears to have misread the requirements. As noted in the section E.2.5 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light Duty Trucks and Medium Duty Vehicles," measurement of $N_2O$ emissions is required to demonstrate compliance with LEV III GHG requirements beginning in 2017, not 2015, consistent with federal requirements.

## 5. Comments Concerning Size Definitions

93. Comment: Although Ferrari supports ARB's proposal to strengthen its LEV III program and its approach to setting standards for small volume manufacturers (SVMs), Ferrari is proposing that ARB should include in the final statement of reasons a revision to the definition of SVM in 13 CCR §1900 (22). The proposed language would allow a manufacturer to qualify as a SVM on the basis of its own sales if it can show that it is "operationally independent" from related manufacturers with which its sales would otherwise be aggregated. Ferrari's proposed regulatory language would benefit small, operationally-independent vehicle manufacturers while still protecting the environment and mimimizing vehicle GHG emissions. Specifically, Ferrari proposed that ARB adopt

the operational independence criteria that are included at page 74,992 of the EPA and NHTSA proposal, 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 76 Fed. Reg. 74,854 (Dec. 1, 2011) (Proposed Federal Rule). (Ing. Amedeo Felisa, CEO – Ferrari S.p.A)

Comment: Although Ferrari of Beverly Hills and Ferrari of Silicon Valley support ARB's proposal to strengthen the existing programs and its approach to setting standards for SVMs, we urge ARB to issue a 15-day notice revisiting the definition of to include the operational independence criteria proposed by EPA and NHTSA proposal, *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, 76 Fed. Reg. 74,854 (Dec. 1, 2011). The federal language would allow a manufacturer to qualify as a SVM on the basis of its own sales if it can show that it is "operationally independent" from related manufacturers with which its sales would otherwise be aggregated. Specifically, a manufacturer with more than 10 percent ownership by another vehicle manufacturer would have to demonstrate that its research, design, production, manufacturing, marketing, and other functions are operationally independent from the vehicle manufacturer owner. It is important that ARB maintain the consistency and uniformity between the state and federal regulatory programs by including these criteria in its rulemaking. (Giacomo Mattioli, Principal, Ferrari of Beverly Hills)

Comment: Ferrari of San Francisco supports this proposal and also urges the ARB to issue a 15-day notice containing the operational independence criteria proposed by EPA and NHTSA in the *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards*, 76 Fed. Reg. 74,854 (Dec. 1, 2011). These criteria would allow a manufacturer to demonstrate that it is operationally independent from related manufacturers with which its sales would otherwise have to be aggregated under the California regulations. In order to maintain consistency and uniformity between the federal and California programs, it is important that ARB include these criteria in its rulemaking. (Greg Minor, President, Ferrari of San Francisco)

Agency Response: Staff agrees with this suggestion on its merits and made the necessary modification to the regulatory language as part of the 15-day changes. However, it is important to note that EPA did not include the aforementioned language in the regulatory language that was published with its Notice of Proposed Rulemaking (NPRM) for the 2017 through 2025 national greenhouse gas rule. Rather, this language requested comments on the appropriateness of including this language

in the final rule, but there was no commitment on the part of EPA to do so.

## 6. Comments Concerning Heavy-Duty Otto-Cycle Test Procedure

94. Comment: Appendix J (HD Otto), there are conflicting requirements between the specified NMOG procedures and Part 1065. Examples are NMHC density and CH4 instrumentation. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The new NMHC derivation was developed through a cooperative effort with USEPA to harmonize California's test procedures with Parts 1065 and 1066 requirements currently under development. Staff will continue to work with USEPA to ensure that California's requirements are consistent with the NMHC mass derivation and CH4 instrumentation incorporated in the final Tier 3 regulations.

## 7. Comments Concerning Fuel Specifications

95. Comment: As part of the harmonization of vehicle emission programs, we recommend ARB allow manufacturers to use the federal Tier 3 gasoline for certification to the California standards for exhaust and evaporative emissions testing. (Note that evaporative tests using federal fuel would also use the federal temperature profiles.) (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff is open to this suggestion, but will wait for the federal Tier 3 rule to be published before determination to propose such allowance in a future rulemaking.

96. Comment: It appears that there may be two different cert fuels (E15 for Federal Tier 3 and E10 for California). If so, then the Alliance strongly urges that each Agency agree to "two way" reciprocity, in which each Agency accepts the other's test fuel and certification. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff is open to the idea of reciprocity with the USEPA Tier 3 rule, but cannot make a determination until EPA's Tier 3 rule has been finalized.

97. Comment: Considerable uncertainty still remains about the use of E15 market fuel in light of ongoing litigation challenging the USEPA E15 Waiver and corollary Mis-fueling Avoidance Rule, and because of the uncertainties about the pace of national investment in the retail

infrastructure to enable E15 use (e.g., new dispensers, etc.). At the point that E15 use is predominant in the national market and California market, then consideration of transitioning to a new cert fuel would be appropriate. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this comment and will consider reevaluating the certification fuel at the appropriate time.

98. Comment: ARB and USEPA should institute a coordinated formal review effort, with stakeholder involvement, to assess experience with the new cert fuel(s) and also developments in market fuels, perhaps in the 2017 timeframe. There is much new regulatory content in the ARB proposal, and a formal commitment to assess the full range of requirements for various fuel types is appropriate, especially in this period of rapid change in vehicle and fuel technologies. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff is open to the idea of a coordinated formal review effort with USEPA and stakeholders and will discuss the idea with EPA once their Tier 3 rule has been finalized.

99. Comment: The Alliance has pointed out that if USEPA and ARB each were to require testing at one of two octane grades (regular or premium, depending on what the OEM requires), then a company may have to obtain and track up to four different cert fuels (E10 regular and premium and E15 regular and premium) rather than the single fuel, single octane grade currently in use. This means there will be a reduction in the ability to make “apples to apples” comparisons across vehicles, as well as added cost and complexity for OEMs. ARB has not yet provided an economic analysis of the benefits vs. burdens/cost of this extra complexity, and should do so. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response**:** See response to Comments #100 and #96. Staff is going to provide auto manufactures with the flexibility to use the lower grade octane for all of their vehicle testing and is open to the idea of reciprocity concerning the use of certification fuel with the EPA Tier 3 rule, but cannot make a final determination until the rule is published. Should staff determine that it is appropriate to provide reciprocity in the use of certification fuel manufacturers would not need to maintain multiple fuel stocks for emission testing. Accordingly, until USEPA has finalized its certification fuel requirements it is premature to provide an analysis of the economic impact of different California and federal certification fuels requirements. Nonetheless, ARB staff did performed

an economic analysis of the change to California's certification fuel in this rulemaking.

100. Comment: To remedy this and allow flexibility to choose one octane grade, the word "shall" needs to be replaced with "may" in the first sentence of footnote (i) in the Table in Sec. 100.3.1.2 (Appendix D at II-4). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this comment and has made this change in the 15-day changes.

101. Comment: The new certification fuel specifications require the use of two octane values. This leads to additional complications and costs at the testing facilities. Since using a lower octane will either have no effect or will result in worse case emissions, manufacturers would like the option to use the lower octane. We recommend revising this footnote to allow use of 91 octane for vehicles/engines that require premium gasoline as part of their warranty, but not require it. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees with this comment and has made this change in the 15-day changes.

102. Comment: The Alliance encourages both ARB and USEPA to consider moving market and cert fuel specifications to RON and MON in lieu of an AKI (R+M/2) metric, to provide greater flexibility in future years, and compatibility with other countries. A specified MON value is important along with RON. With the wide variety of engine designs available across the U. S. marketplace, there is strong evidence to support the need for both a RON and MON specification. The AKI simple average will not meet the needs for future technologies for some OEM products. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff designed the certification fuel to be reflective of the current in-use fuel. The octane level of the current in-use fuel is based on the AKI metric because the Department of Measurement Standards (DMS) regulates octane level using the AKI metric. Therefore, to ensure the certification fuel is representative of the in-use fuel, staff used the same metric to determine fuel octane level as used by the DMS.

103. Comment: Market and certification fuel RON (Research Octane Number) and MON (Motor Octane Number) octane requirements should

be raised commensurate with the ethanol (or other bio-based fuel) octane contribution.

For purposes of E10 cert fuel, Alliance members requested that ARB use a higher RON and MON octane specification that would be commensurate with the octane enhancement provided by the 10% ethanol over and above the previous E0 octane cert fuel level. (The same principle would apply for any ethanol blend above the previous E0 cert fuel.) This would have made the cert fuels "forward looking" to marketplace need. The Alliance is disappointed ARB has not done so in the proposed 87 [and 91 minimum] AKI for LEVIII E10 cert fuel in the proposed Table in ARB Appendix D p.II-4. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff designed the certification fuel to be reflective of the current in-use fuel. According to the EIA[1], in California, among the total 5.4 million gallons per day of gasoline sold to end users in May 2011, 4.2 million gallons per day of gasoline (77%) were regular (87 AKI), 500 thousand gallons per day of gasoline (9%) were mid-grade (89 AKI), and 800 thousand gallons per day of gasoline (14%) were premium (91 AKI). Therefore, the certification fuel is designed around an 87 AKI and for those vehicles that have a warranty that requires 91 AKI, we allow for the vehicle to be tested using the certification fuel at 91 AKI.

104. Comment: Volvo agrees that there is a need to move the reference fuel to a blend of 10% ethanol, consistent with the current and foreseeable future U.S. market. This is also consistent with fuel developments in Europe and Asia. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: We thank Volvo for their support of E10 as a certification fuel.

105. Comment: Volvo supports a single certification fuel for USEPA and CARB. It is expensive and inefficient to develop and store several different fuels to meet two nearly identical regulations.

When USEPA and CARB require different fuels, it effectively doubles the amount of testing manufacturers are required to perform, while yielding limited, if any, additional environmental benefit. Even though it appears that 10% ethanol is likely to be the most common fuel on the U.S. market for the foreseeable future, it appears likely that USEPA will require E15.

[1] http://www.eia.doe.gov/dnav/pet/pet_cons_refmg_c_SCA_EPMM_mgalpd_m.htm

The consequence of this would be that CARB and USEPA will have different certification gasoline requirements. To eliminate unnecessary duplicative testing, Volvo is requesting that CARB accept certification using the USEPA proposed fuel from MY2017.

Volvo requests that CARB allow manufacturers to use the federal Tier 3 gasoline for certification to CARB standards for exhaust and evaporative emissions testing. For evaporative testing, the use of USEPA temperature profiles is a necessity that must be part of this allowance. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: Staff is open to the idea of reciprocity with the USEPA Tier 3 rule, but cannot make a determination until USEPA's Tier 3 rule has been published.

106. Comment: The same criteria that govern the need for new test procedures to measure extremely low emissions adequately and correctly also dictate the need for low-sulfur fuel. It is essential to avoid sacrificing environmental gains achieved by use of advanced technology by failing to recognize the effect of higher quality fuel or the impact of sulfur on catalyst efficiency over time. Lower sulfur in fuel will also result in environmental gains for the existing fleet since the catalyst deactivation and the need to regenerate the catalyst will be minimized.

Volvo would prefer a flat 10 ppm cap instead of using the currently proposed range of 8.0-11.0. This would align with international standards, such as the current requirement in Europe. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: Sulfur level in fuels has a very strong relationship to oxides of nitrogen emissions. The average in-use sulfur level in California is about 9 ppm. The proposed range is reflective of what we are seeing in-use. To have a sulfur level significantly below the proposed range would not be representative of in-use fuels and in-use emissions.

107. Comment: USEPA's proposed Reid Vapor Pressure of 9 psi offers an opportunity to act on an achievable environmental opportunity that would positively influence on the vehicle evaporative systems. To that end, Volvo would encourage USEPA's harmonization with CARB's 7 psi. This is an environmental opportunity that would positively influence all vehicles nationwide. Volvo supports CARB's decision to remain at a more environmentally beneficial level of 6.9-7.2 psi. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: We thank Volvo for their support of our proposed Reid Vapor Pressure specification for E10 certification fuel.

108. Comment: Higher octane fuel would enable manufacturers to pursue strategies that better support development and introduction of advance vehicle technologies, and a consequent reduction in greenhouse gases and criteria emissions. To optimize engine fuel efficiency and minimize emissions, transitioning to higher octane regular and premium grade market gasoline may be necessary. Volvo would support establishment of a minimum blend stock octane. In this way, adding ethanol would raise fuel octane without risk that blenders would make corresponding reductions in base blend stock octane, thereby undoing the octane benefit of ethanol addition. We recommend the Board direct staff to assess the environmental benefits of higher octane gasoline. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response to Technical Part of Comment: The Department of Measurement Standards regulates octane level for in-use fuels. Octane is considered a consumer protection issue to prevent knocking and poor vehicle performance. ARB does not and has not regulated octane in gasoline because there is no evidence to suggest that octane affects criteria emissions in and of itself. Staff is unaware of any studies that have been designed to isolate octane as an independent effect on criteria emissions. It is very difficult to isolate octane at the same composition and volatility levels. Nonetheless, staff agrees with commenter that an increase in blend stock octane would allow engine operation at higher compression ratios, thereby provide a $CO_2$ benefit. However, this is outside the scope of the notice and would require separate regulatory action by the Department of Measurement Standards.

Agency Response to Portion of Comment Raising Environmental Issues: For Agency response to the complete comment, see the document "Responses to Comments on the Advanced Clean Cars Environmental Analysis," released March 12, 2012, and approved by the Board at the March 22, 2012 board hearing, which is available at http://www.arb.ca.gov/msprog/levprog/leviii/acc_ea_rtc.pdf. The response to this comment is included as "Response to Comments: LEV III – L38."

109. Comment: The language in Appendix C Sec. 100.3.9 (p. 37) appears to omit some important language in this section compared with corollary language for Sec. 100.3.9 in Appendix D Part II, p.II-9. It doesn't include the initial paragraph or section 100.3.9(a)(2) of the language in

Appendix D, which should be identical for both sections as well as in Title 13 Sec. 2317 (Appendix A p. 152-3). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The language in question is already in Appendix C. Only the proposed changes to Appendix C are shown in the 45-day Notice language. So, the "omitted" language is still there. It appears as "* * * *" on the bottom of page 38. Since this language is specific to certification testing, it does not belong in Title 13 section 2317, which applies more generally to all substitute fuels sold in California.

110. Comment: The Alliance requests that ARB clarify that the phrase used in the first sentence of Sec. 100.3.9 of the Appendices C and D and in Appendix A for Sec. 2317, "to establish by regulation" means that any petition and Agency response to accept a new cert or market fuel will be subject to notice and comment rulemaking, and not a direct final regulation. Please add language to read "…establish by regulation (with notice and comment rulemaking)…" (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The proposed added language is unnecessary. California's regulatory process requires ARB to use the "notice and rulemaking" process to establish all new regulations.

111. Comment: The Alliance particularly supports inclusion of the language in Appendix D, Section 100.3.9(a)(2) in both Appendix C and Appendix D, and also in Sec. 2317(a)(3)(C) in Appendix A, but include the following (underlined) addition: "Use of the new clean fuel in such existing motor vehicles would not result in increased deterioration of the vehicle, including "emission-related parts" as defined in Title 13 CCR Section 1900, and would not void the warranties of any such vehicles." (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: ARB disagrees and no change was made in response. The proposed added language is unnecessary because: (1) the "emission-related parts" are part of the vehicle's emission control system and (2) the "California Test Procedures for Evaluating Substitute Fuels and New Clean Fuels in 2015 and Subsequent Years," states that the fuel may not cause an increase in the deterioration of vehicles' emission control systems.

112. Comment: Proposed Appendices M and N currently require a 50,000 mile minimum mileage durability test. Given the 150,000 full useful life requirement proposed for LEV III, the same durability minimum mileage should be required for future clean fuels evaluation. (Steven Douglas,

Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: It is appropriate to make this change to Appendix N, since it applies to LEV III vehicles, and LEV III vehicles must certify to 150,000 mile emission standards. Therefore, this change was incorporated in the 15-day changes. Appendix M, however, only applies through the 2014 calendar year. Since there are no current applications for a new clean fuel and staff does not anticipate any applications for a new clean fuel prior to the start of LEV III in 2015, no changes were made to Appendix M

113. Comment: ARB should change the Table in Appendix D, Sec. 100.3.1.2 (p. II-3, 4) benzene specification to 0.8 ppm maximum, and drop the range of 0.6-0.8 ppm maximum. Using a range just adds complexity and cost to the certification fuel preparation with no certification functional benefit. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Benzene plays a significant role in the potency of weighted toxic emissions. The average benzene level in staff's analysis of in-use fuel was on the order of 0.79 volume percent. Staff believes that permitting the benzene level to approach 0 volume percent would misrepresent the potency of weighted toxic emissions of in-use fuel.

114. Comment: ARB should change the lower limit to the proposed Total Oxygen weight % (Appendix D Part II, Sec. 100.3.1.2., at II-3-4).from 3.3 to 3.5, and the upper limit to the proposed Total Oxygen weight % from 3.7 to 4.0 weight %. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff understands there is a wide range of fuel densities and that is why staff allows for a range from 3.3 to 3.7 weight percent oxygen. Staff believes that the 3.3 to 3.7 range is more than adequate to meet the ethanol specification. In addition, the maximum allowable oxygen content for in-use fuel is 3.7 weight percent. The 3.7 weight percent is an absolute cap for in-use fuel and staff does believe the certification fuel should not exceed that absolute in-use cap because the certification fuel would not be representative of in-use fuels at levels greater than 3.7 weight percent.

115. Comment: The Alliance supports ARB's use of the Multi-substituted Alkyl Aromatics cert fuel specification. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

## 8. Comments Concerning the Non-Methane Organic Gas Test Procedures

116. Comment: In appendix E there is a new NMHC mass derivation (density equation vs. today's factor) which is a major departure from current practices (& USEPA). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The new NMHC derivation was developed through a cooperative effort with USEPA to harmonize California's test procedures with proposed CFR Part 1066 requirements. Staff will continue to work with USEPA to ensure that California's requirements are consistent with the NMHC mass derivation that is used in the final Tier 3 regulations.

## 9. Comments Concerning Editorial Changes to Regulations and Test Procedures

117. Comment: The equations (Calculation of Fleet Average NMOG+NOx (§1961.2(b)(1)(B)1.a & b., page A-55) appear to contain an error. The first bracketed term in the equation below should subtract the number of off-vehicle charge capable HEVs from the number of vehicles in the test group in both (b)(1)(B)1.a. and (b)(1)(B)1.b. Additionally, the equation in 1.b. uses Hybrid Electric Vehicle rather than PHEV. Appendix B differs. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The errors have been corrected as part of the 15-day notice changes.

118. Comment: The equation for calculating the Vehicle Emission Credits (VECs) for medium-duty vehicles other than MDPVs contains a couple of errors. (1) LEVs are not included in the equation. (2) The multiplier ("1.2" should be on the outside of the bracket "{." (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees. This error was corrected as part of the 15-day notice changes.

119. Comment: LEV III appendices C and D, and ZEV 2012 appendices A-2 and A-4 test procedures (and others) have many references to CFR Part 86, subparts B and C test procedures. USEPA is in the process of migrating these subparts B and C to Part 1066. Not being harmonized

with USEPA creates additional test burden for OEM's by requiring duplication of testing and uncertainty as to the certification requirements. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Comment: USEPA proposed, under Tier 3, to consolidate all test procedure requirements of Parts 86 into Part 1066 in order to improve their organization. In doing so, some test procedures will remain as they are, some will evolve, and new ones will be introduced. Based on Volvo's ongoing analysis of Part 1066, Volvo believes that these proposed processes would benefit from thorough revision, in cooperation with the industry, to minimize the risk of creating processes that will add very little value to the goals they are meant to achieve: good repeatability and accuracy. USEPA has recognized industry's challenges and therefore continues to work with industry on this issue. Volvo would welcome CARB's participation in that dialog. Currently there are crucial differences between CARB and USEPA advanced technology vehicle test procedures that would benefit from harmonization. (Katherine H. Yehl, Director of Government Affairs North America, Volvo Car Corporation)

Agency Response: As the commenter points out, EPA is "in the process of migrating these subparts B and C to Part 1066." ARB is not able to align with EPA's proposed changes until these changes have been finalized.

## 10. Comments Concerning On-Board Diagnostics Regulations

120. Comment: EMA supports the changes that ARB Staff has proposed to make to the OBD system requirements in the Proposed Regulation, as they are directionally appropriate and necessary to address certain limited technological feasibility concerns in the short term. Nevertheless, EMA also recognizes and acknowledges that these changes are short-term adjustments that require future modification. We understand that ARB Staff is committed to working with manufacturers to address those concerns in comprehensive, longer-term amendments to the medium- and heavy-duty OBD regulations during the upcoming heavy-duty OBD biennial review. EMA looks forward to working with ARB on those amendments. (Lisa A. Stegink, EMA Truck & Engine Manufacturers Association (EMA))

Agency Response: No change requested and none made, but ARB appreciates the comment.

## 11. Comments Concerning California Environmental Performance Label

121. Comment: The 2012 Fisker Karma receives a Global Warming Score of 5 under California's Environmental Performance Label, which includes upstream emissions, and a Fuel Economy & Greenhouse Gas Rating of 10 on the EPA's revised Fuel Economy and Environment Label, which does not include upstream emissions. (As a side point, there is also a discrepancy between the Smog Scores on the two labels.) While we applaud ARB's decision to accept the EPA's new label as compliant with California's labeling requirement, we point out this discrepancy to illustrate that different approaches to upstream emissions can create confusion in the eyes of the public regarding the environmental benefit of electric vehicles. (Kellen Schefter, public policy analyst, Fisker Automotive, Inc.)

Agency Response: When a dual-fuel vehicle is certified in California, the Global Warming Score on the California Environmental Performance Label reflects the dirtiest fuel. In the case of the Fisker Karma, it is based on the greenhouse gas emissions of the gasoline engine. However, the Fuel Economy & Greenhouse Gas Rating on the revised Federal Fuel Economy and Environmental Label is based on combined emissions from both the gasoline engine and the all-electric drive system. This will give the car a better score than the gasoline engine alone. All battery electric cars in California receive a 10 even when accounting for upstream emissions, so in this case, upstream emissions are not a factor.

122. Comment: ARB's proposal for changes to the Environmental Performance Labeling requirements will align the California and federal vehicle labeling requirements allowing manufacturers to comply by using one nationwide label for vehicles. This is a giant step forward in providing consistent and clear information to consumers nationwide. (Michael J. Stanton, President & CEO, Global Automakers)

Agency Response: ARB staff appreciates your support for our harmonizing with the Federal Government on this requirement.

## 12. Comments Concerning Statements Made by ARB in ISOR

123. Comment: Volkswagen supports California's intention to accept compliance with the Federal greenhouse gas program for light-duty vehicles. We do, however, wish to state that the existing proposal from USEPA and NHTSA contains elements for which Volkswagen will be offering suggested improvements and modifications. Volkswagen has stated our concern with both the annual stringency levels for passenger

cars and the market inequity resulting from less aggressive truck standards and targeted credits. It is the opinion of the Volkswagen Group that the 5% average annual stringency for passenger cars places an excessive burden on the segment of the market which already delivers some of the lowest fleet wide emissions. As illustrated in USEPA's NPRM, the regulations are expected to place the highest cost burden on passenger cars, the result of which may impact market acceptance for mainstream passenger cars, VW has also expressed our concern with the lower stringency being offered for the larger light-duty trucks, the very segment of the fleet with some of the highest $CO_2$ emissions. VW recognizes that these vehicles may feature duty cycles that demand a certain level of design, potentially impacting their capacity to employ fuel savings technology. Nevertheless, the lower stringency combined with additional targeted truck-specific credits may create unintended consequences in the marketplace, resulting in an inequitable playing field. (Stuart Johnson, Manager, Engineering and Environmental Office, Volkswagen Group of America, Inc.)

Agency Response: Because this comment is not directed toward a requested change to the proposed regulations or test procedures, ARB need not respond. However, in the interest of providing the commenter, stakeholders, and the public with additional information, we respond as follows:

Staff disagrees and is not proposing any changes. Staff notes that the GHG standards do not put undue burden on any particular portions of the light-duty vehicle fleet. As one way to clearly state the equity of the regulatory burden, the total required change in GHG emission level from model year 2008 to model year 2025 is nearly identical for the two main categories: 51% for cars and 50% for trucks. As a result, the demand from the regulation for each category to deploy low-GHG technologies will be approximately equal. Staff has identified many cost-effective technologies that can achieve the GHG levels across the various vehicle classes and sizes. As a result, ARB staff does not believe that the GHG standards are in any way "excessive." In addition, staff notes that the proposed GHG stringency levels have received support from thirteen automakers that produce vehicles across all classes and sizes and represent approximately 90% of California vehicle sales.

124. Comment: ARB noted their concern that fleet trends negative to $CO_2$ emissions (increasing emissions) may impact the anticipated overall $CO_2$ reductions. ARB raised concerns that OEMs may shift vehicles from the passenger car fleet to light truck, or that OEMs may increase the footprint of vehicles in order to reduce their calculated stringency. As a result, ARB stated that they intend to monitor vehicle classification and footprint averages over time through certification reports. If they

feel that manufacturers are straying from historic car/truck composition or average footprint sizes, they may propose an additional stringency linking a manufacturer's compliance requirement to previous year fleets rather than to targets calculated from current year product mix and footprint size.

Volkswagen has several concerns with this discussion. Should the future prove that actions to alter fleet mix or footprint sizes have indeed eroded expected $CO_2$ reductions…in lieu of a decision to scrap attributes, perhaps there could be potential with moving towards a flatter and more commonized car/truck footprint curve. (Stuart Johnson, Manager, Engineering and Environmental Office, Volkswagen Group of America, Inc.)

Agency Response: Because this comment is not directed toward a requested change to the proposed regulations or test procedures, ARB need not respond. However, in the interest of providing the commenter, stakeholders, and the public with additional information, we respond as follows:

Staff is not proposing any changes. Staff's analysis of the vehicle fleet and its potential future trends has led to the conclusion that closely monitoring any shifts in vehicle class and size for potential GHG impact is critical to the goals of the GHG regulation. Per direction from the Board (Resolution 12-11, January 26, 2012), ARB staff is committed to monitoring these fleet trends throughout the life of regulations, making the information publicly available, providing a status update to the Board by 2016, and addressing any such effects within the mid-term program evaluation. Staff notes that unexpected shifts in the fleet could be addressed in many ways in future GHG standards, including with adjustments to the overall regulatory stringency, category definitions, and the slopes of the car and truck attribute-based curves.

125. Comment: Volkswagen offers the opinion that ARB should consider changing fleet mix and footprints in context of overall industry trends. It is more equitable to compare the trends of an individual OEM relative to industry benchmarks rather than against the history of the OEM….What is important to consider is the impact that "backsliding prevention" may have on the free movement of investment by an OEM into segments in which they have not previously competed. (Stuart Johnson, Manager, Engineering and Environmental Office, Volkswagen Group of America, Inc.)

Agency Response: Because this comment is not directed toward a requested change to the proposed regulations or test procedures, ARB need not respond. However, in the interest of providing the commenter,

stakeholders, and the public with additional information, we respond as follows:

Staff is not proposing any changes. Staff did indeed consider overall industry trends in its analysis of potential shifts in the future fleet of new vehicles. Staff found that future industry trends could move upward, as well as downward, in size and category based on automaker offerings and consumer shifts. These potential and uncertain shifts are precisely the reason that staff will monitor and report upon how any such trends affect new vehicle GHG emissions, and especially if they are resulting in GHG levels that are significantly higher than projected in the ISOR. By developing the footprint-indexed GHG standard curves based on technology feasibility and cost-effectiveness, staff is fully confident that any given auto company can shift over time to different sizes and classes and still achieve compliance with the standards. In fact, accommodating such trends is one of the inherent features of footprint-indexed standards.

126. Comment: Although we largely agree with the methodology that CARB staff utilized, we are concerned that the incremental price associated with plug-in hybrid electric vehicles (PHEV) out to 2025 is not reflective of a number of price mitigating technology factors and policies at the state and national level. Although the CARB staff has indicated that there are factors that mitigate price, none of these factors were included in the CARB assessment. These include:
    - A pure ZEV fleet of vehicles would save about $1.6 Billion per year in societal damages, relative to a fleet of vehicles meeting current standards. This equates to about $3K-$4K per vehicle over the lifetime of the vehicle.
    - The federal government does not count upstream emissions when calculating the corporate average fuel economy (CAFE) rating for PHEVs. The incremental value of the PHEV CAFE benefit is approximately $4,200 per battery-electric vehicle.
    - Intensive analysis of the retail market for vehicles allowed access to high-occupancy vehicle lanes, even when there is only one passenger, indicates that such vehicles command a premium of $4K. These studies also indicate an incentive effect of 20 percent higher aggregate demand due to the HOV access.
    - Reduced vehicle maintenance costs for pure battery-electric vehicles are approximately $1,200 per vehicle over its lifetime. The result is an incremental price that is significantly higher than CalETC believes is accurate.
    - The Low Carbon Fuel Standard credit value for electricity used in PEVs must be passed on to PEV owners as a result of CARB's adopted amendments in December, 2011. The value of this credit

ranges from $75-$300 per vehicle per year, $750-$3,000 over the life of a PEV.

CalETC recommends the CARB staff include the value of these and other benefits associated with PEVs when assessing the incremental price associated with PEVs. (Eileen Wenger Tutt, Executive Director, California Electric Transportation Coalition (CalETC))

Agency Response: Because this comment is not directed toward a requested change to the proposed regulations or test procedures, ARB need not respond. However, in the interest of providing the commenter, stakeholders, and the public with additional information, we respond as follows:

Staff is not proposing any changes. Staff agrees that ZEV technology may offer net benefits that could be far greater than those presented in the staff report. However, staff notes that adoption of all the "price-mitigating technology factors" as suggested could amount to an unconventional evaluation of the benefits. The ARB does quantify the emission-reduction benefits of ROG, NOx, and PM2.5 (see ISOR, p. 177-178), but does not monetize those into avoided societal damage. Staff does, however, quantify the monetized GHG benefits under varied assumptions about the social cost of carbon (see ISOR, p. 203-207). However, due to the reduction of fleet average criteria and GHG pollutant standards (i.e., simultaneously including ZEV and non-ZEV vehicles) through 2025, it is not clear how to allocate such benefits to any particular types of vehicle technologies. In addition, although these types of impacts exist and can be monetized, these externality benefits do not directly fit within the accounting of "cost of compliance" (experienced by the regulated auto makers) or the direct "consumer impacts" (experienced by the vehicle user) – so they were not expressed in such per-vehicle terms.

It is even less clear how the other benefits should be included in the ARB regulatory assessment of ZEVs. The suggested "$4,200" federal regulatory upstream incentive impact is not necessarily going to translate into such a cost decrease in any given ZEV technology vehicle (and, to the extent that such an incentive exists, it would be inherently quantified in USEPA's OMEGA modeling of federal fleet-wide compliance). Although staff acknowledges that owners of ZEV technology may continue to experience high-occupancy vehicle (HOV) access benefit for some time, there is no assurance that the HOV access would be continued through 2025 at the required ZEV volumes, so this benefit was conservatively excluded. Maintenance benefits were also conservatively excluded, in the absence of definitive supporting data to compare long-term conventional and battery-electric maintenance costs. Finally, the

suggested Low Carbon Fuel Standard benefits are not included, as these would amount to a monetary transfer within the California economy (in this case, from regulated fuel providers).

127. Comment: The staff reports are actually quite dismissive of the performance and potential for natural gas. In the LEV III report staff writes: "Regarding alternative fuels other than electricity and hydrogen, the LEV III staff analysis does not project that CNG vehicles will be a significant strategy for LEV III GHG regulatory compliance." This is really surprising to us given the consistent performance of natural gas vehicles in going beyond emission standards set by the Air Resources Board over the last decade. (Tim Carmichael, President, California Natural Gas Vehicle Coalition)

Agency Response: Because this comment is not directed toward a requested change to the proposed regulations or test procedures, ARB need not respond. However, in the interest of providing the commenter, stakeholders, and the public with additional information, we respond as follows:

Staff is not proposing any changes. Staff acknowledges the approximately 30% lower fuel-cycle emission intensity of CNG versus gasoline and, therefore, the great potential of this fuel to contribute to reductions in climate-related emissions. In fact, the GHG standards promote CNG technology more than any previous regulatory standards have by publishing long-term standards for substantial GHG reduction from any viable low-GHG vehicle technology or alternative fuel that automakers choose to deploy. ARB has developed performance-neutral GHG LEVIII standards that neither exclude, nor preferentially select for, any particular technology type. Automakers, to the extent that they deploy CNG vehicles, would appropriately receive credit for CNG's lower GHG emission intensity, which would be reflected in its directly measured exhaust emissions. As a result, the deployment of CNG technology – especially with an increasingly efficient powertrain – would offer a strong contribution toward compliance with the vehicle GHG standards.

Nonetheless, staff's finding that CNG light-duty vehicles are not expected to play a critical role in GHG standard compliance is based on a number of factors, including automaker CNG product offerings and future plans, as well as the cost-effectiveness of the technology versus other competing low-GHG technologies that automakers are developing and deploying. Currently, one CNG model (Honda Civic GX) is offered, and it represents about 0.01% of the US automobile market. The CNG vehicle price premium, CNG fuel availability, and other factors have apparently negatively impacted the market viability for this vehicle

technology. Although some auto manufacturers have expressed interest in selling CNG vehicles, their public plans for light-duty vehicles are generally limited to small-volume sales to fleets, and the extent to which these small sales volumes would contribute toward overall GHG compliance is very limited. It is apparent to staff that the deployment of low-GHG gasoline vehicle technology can achieve at least the same level of GHG reduction, at lower cost and higher consumer acceptance, than CNG vehicles. However, staff's assessment should in no way imply that CNG is not a viable GHG-reduction vehicle technology.

128. Comment: Alliance members understand that California will accept Tier 3/ E15 in lieu of E10 certification based on the language in the ISOR at p. 17: "Staff also proposes to retain the option to certify on federal Tier 3 certification fuel which staff understands will be based on E15."

The Alliance, however, found no references in Appendices C or D that address the relationship of the ARB and the EPA cert fuels, probably because EPA has not yet published its proposed rule for Tier 3. It is our understanding that ARB has agreed to honor EPA cert fuel/testing in lieu of ARB/E10, consistent with the ISOR language quoted above. Therefore, we request that ARB be explicit in documenting in the final California regulatory language (and EPA should have reciprocal language in its Tier 3 final regulation) that OEMs may use Tier 3 USEPA cert fuel and certification in lieu of ARB E10 cert fuel and testing.

Furthermore, it should be made clear in the regulatory language that this option extends not only to criteria pollutant and GHG exhaust emissions, but also to evaporative (recognizing that evap. testing on federal certification fuel requires use of the federal temperature profiles for equivalence). The regulations and the relevant cross-referenced documents (appendices) should clarify that ARB would accept USEPA Tier 3/E15 certification in lieu of E10 ARB certification where otherwise E10 certification would be called for. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Because this comment is not directed toward a requested change to the proposed regulations or test procedures, ARB need not respond. However, in the interest of providing the commenter, stakeholders, and the public with additional information, we respond as follows:

See response to Comment #96. It is premature to bind ourselves through regulatory language to a rule that has yet to be finalized.

129. Comment: Our coalition's request is that as part of your adoption and your resolution today that you ask the staff to work with our industry and

take a look at the life cycle emissions again for natural gas, for renewable natural gas, and compare it to where we think these other fuels and technologies are going. (Tim Carmichael, President, California Natural Gas Vehicle Coalition)

Agency Response: Because this comment is not directed toward a requested change to the proposed regulations or test procedures, ARB need not respond. However, in the interest of providing the commenter, stakeholders, and the public with additional information, we respond as follows:

While the Board declined in Resolution 12-11 to direct staff to work with the natural gas industry to further evaluate life cycle emissions of natural gas vehicles, ARB will continue to examine the life cycle emissions of all transportation fuels, including natural gas, and, if necessary, update the their carbon intensity value as the Low Carbon Fuel Standard requirements are implemented.

## 13. Comments In Support of Amendments

130. Comment: To the members of CARB, first of all, I want to take this opportunity to thank each and every one of you. And I want to offer my strongest support for the full suite of clean vehicle fuel policies that are under consideration today. (California State Senator Kevin de León)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

131. Comment: "It is rare that new regulatory action will result in such a big win for the economy, consumers, national security, and the environment. As the original author of California's landmark Clean Car Law that serves as our national standard, the advanced clean car standards will help clean our air, reduce our dependence on foreign oil, and ensure automakers have certainty to create jobs and save consumers money at the pump…." (Rebekah Rodriguez-Lynn, District Director for California State Senator Fran Pavley)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

132. Comment: While I'm here today speaking on behalf of Vermont, many of Vermont's interests are shared by the other Section 177 states in the northeast. We strongly support California's proposed advanced clean car rulemaking. (Elaine O'Grady, Vermont Air Pollution Control Division)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

133. Comment: Under the authority of Section 177 of the federal Clean Air Act, Pennsylvania adopted and incorporated by reference California's Low-Emission Vehicle (CA LEV) regulations in 1998, except for the California Zero-Emission Vehicle and emissions control warranty systems statement provisions. The DEP supports CARB's efforts to harmonize the proposed emission limits with current and future federal light-duty vehicle emission requirements in order to ease compliance for manufacturers and encourage the production of cleaner vehicles nationwide. The DEP supports CARB's provision which provides flexibility to manufacturers, since flexibility will allow manufacturers to continue to provide a mixed fleet that meets standards. The DEP supports CARB's efforts to reduce actual emissions, which provide environmental benefits in Pennsylvania, while improving the value to the consumer. (Michael L. Krancer, Secretary, Pennsylvania Department of Environmental Protection (DEP))

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

134. Comment: Through higher standards, the money small business owners and consumers will save on gas will better equip the American public to foster economic growth by patronizing businesses everywhere. We support raising fuel economy standards because they'll be a boon to our small businesses and our economy. (David Chase, California Outreach Director, Small Business Majority)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

135. Comment: We support both the staff proposal as well as the reasoning behind it. (Lance Tunick, Vehicle Services Consulting on behalf of Aston Martin Lagonda Limited, Lotus Cars Limited, and McLaren Automotive Limited)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

136. Comment: Volkswagen commends CARB staff for proposing a set of (LEV III criteria pollutant) standards with appropriate flexibility for all technologies through reasonable lead time, additional emission categories, fleet average options, and combining the NMOG and NOx pollutants. Similarly, Volkswagen also commends CARB staff for offering flexibility in the proposed zero evaporative emission standards

proposed under the LEV III regulation. Volkswagen supports and commends CARB staff and the Federal agencies for harmonizing the vehicle fuel economy label and eliminating the need for a separate California Environmental Performance label. (Stuart Johnson, Manager, Engineering and Environmental Office, Volkswagen Group of America, Inc.)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

137. Comment: Nissan has been an active participant in the GHG National Program and remains committed to the regulatory program as set forth in the notices of intent and proposed rule. As a complimentary policy, Nissan supports the ARB GHG program as it recognizes the importance of a National program and judges compliance with it as demonstrating compliance with the California requirements. (Tracy Woodard, Robert Cassidy, and Mark Perry, Nissan North America, Inc.)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

138. Comment: The LEV III program as it applies to precursor emissions is very detailed and technical. Nissan supports the program as proposed and has worked with the industry and ARB Staff to reach a well-balanced plan which includes a significant reduction in emissions. The program also provides meaningful flexibility to allow manufacturers to phase-in the lower standards in conjunction with their product plans. (Tracy Woodard, Robert Cassidy, and Mark Perry, Nissan North America, Inc.)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

139. Comment: Hyundai supports the Advanced Clean Cars Program. We also do not oppose other flexibilities that have been outlined in the 2016 and 2025 national greenhouse gas and CAFE proposal that CARB has supported, even though these flexibilities likely will not be used by all OEMs. Hyundai particularly supports flexibilities such as the greenhouse gas overcompliance option that continue to maintain greenhouse gas reduction goals. (Michael O'Brien, Vice President of Corporate Product Planning, Hyundai America)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

140. Comment: In general, Mitsubishi Motors supports the proposed criteria pollutant regulations and the harmonization of GHG regulations except for some details important to our company. These details pertain to the ZEV and Clean Fuels Outlet elements of the Advanced Clean Cars Program. (David N. Patterson, Chief Engineer, Regulatory Affairs and Certification, Mitsubishi Motors R&D of America, Inc.)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

141. Comment: MECA agrees with ARB staff's assessment that achieving the proposed LEV III exhaust and evaporative emission standards and associated emission reductions are both technically feasible and cost effective. MECA supports ARB's proposed changes to their light-duty vehicle on-board diagnostic (OBD) requirements. MECA supports ARB's proposed post-2016 greenhouse gas emission standards for light-duty vehicles. (Joseph Kubsh, Executive Director, Manufacturers of Emission Controls Association (MECA))

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

142. Comment: The Governing Board urges the State of California and the California Air Resources Board to continue its national and international leadership role in reducing greenhouse gases and promoting clean vehicle technologies by moving forward quickly to develop and adopt expanded Low-Emission Vehicle (LEV III) standards to reduce criteria air pollutants and greenhouse gases and to strengthen the state's Zero-Emission Vehicle and Clean Fuels Outlet infrastructure programs to protect the health of California's economy, environment, and its people. (Thomas Jordan, Senior Policy Advisor, San Joaquin Valley Unified Air Pollution Control District)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

143. Comment: I'm here today to express the Bay Area Air Quality Management District's support of these proposed amendments that are intended to help our state transition to zero-emission vehicles and to help achieve the state's greenhouse gas emission targets. (Karen Messina Schkolnick, Bay Area Air Quality Management District)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

144. Comment: I want to provide strong support to your California Advanced Clean Cars rulemaking package. We also agree with CARB's proposed accounting for electric vehicle upstream emissions in the LEV III package. (Dr. Alan Lloyd, President, The International Council on Clean Transportation)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

145. Comment: We support the state's proposals to reduce global warming emissions for vehicles built between 2017 and 2025 to 166 grams per mile. (4,220 signatures to letter submitted by Union of Concerned Scientists)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

146. Comment: These standards are good for the environment, good for public health, and good for the economy. These standards will further protect public health from smog and particulate matter while cutting carbon pollution significantly. In addition, these standards will save our economy over $50 billion in fuel savings from 2017 to 2030, resulting in nearly 40,000 jobs being created in California. (Simon Mui, Ph.D., Scientist, Natural Resources Defense Council)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

147. Comment: We'd like to thank the staff for all their hard work, express our broad overall support for the program, although we do have couple suggestions that are in our submitted comments in terms of ways that we think the program could be improved. We support the CFO regulations and the PM standards. We appreciate keeping the one milligram per mile standard in there, although we think we'd like to see the hiatus period removed so we can accelerate that and urge you to look at it a little more closely. (John Shears, Research Coordinator, Center for Energy Efficiency and Renewable Technologies)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

148. Comment: I work out of the Fresno office, and I want to focus my testimony on the importance of these regulations for the San Joaquin Valley and how that importance has manifested itself in widespread support. I urge you to adopt the most health protective program possible. (Elizabeth Jonasson, Coalition for Clean Air)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

149. Comment: There are three critical reasons to be reducing oil use that these regulations will take us toward. First is, of course, the reality of global warming already manifesting in record temperatures in unprecedented drought in Texas. Second, health impacts of air pollution. Third, ZEVs and plug-in hybrids are critical to meeting the standards we must meet from mere thousands in 2011, to President Obama's goal of a million in 2015 to a major fraction of fleet by 2030. (Darrell Clark, National Co-lead of the Sierra Club's Beyond Oil campaign)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

150. Comment: We are writing to express our strong support of the California Clean Cars Campaign….We urge the California Air Resources Board to move forward this year to protect public health by enhancing California's Low-Emission Vehicle criteria pollutant and greenhouse gas regulations to reduce emissions from all new motor vehicles and by strengthening the state's Zero-Emission Vehicle program. (Jessica Tovar, MSW, Project Manager, Long Beach Alliance for Children with Asthma)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

151. Comment: QueensCare Family Clinics is writing to express our strong support of the California Clean Cars Campaign….We urge the California Air Resources Board to move forward this year to protect public health by enhancing California's Low-Emission Vehicle criteria pollutant and greenhouse gas regulations to reduce emissions from all new motor vehicles and by strengthening the state's Zero-Emission Vehicle program. (Barbara B. Hines, President and CEO, QueensCare Family Clinics)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

152. Comment: With your Advanced Clean Car Standards, California can reduce all major air pollution-related health impacts by up to 70 percent and avoid $7 to $8 billion in healthcare, environmental, and societal damages. With these standards, you are offering a beautiful, crucial, harm-preventing, and life-saving gift to us all. Public health at its best.

We urge you to run for it! And we thank you! (Robert Vinetz, MD, FAAP, on behalf of the Asthma Coalition of Los Angeles County)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

153. Comment: Higher fuel standards could help BM Builders save significantly on operational costs, savings that can be reinvested in the expansion of the business. Better standards would broaden the array of fuel-efficient vehicles available to our business, increasing choice and ultimately decreasing cost. The proposed fuel economy standards are a win-win for Californians and Americans at large. (John Ruud, co-owner, BM Builders)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

154. Comment: I am here today to encourage you to move forward with your proposed Advanced Clean Cars Program and to commend the exceptional leadership CARB has shown over several decades in the effort to restore clean air to California. (Ernesto Pantoja, Laborers Local 300)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

155. Comment: I speak today on behalf of Local 11 in support of the proposed Advanced Clean Cars Program that you have before you today. While I do not formally represent them, I would like to point out that the California State Association of Electrical Workers as well as 21 separate International Brotherhood of Electrical Workers (IBEW) locals, including Locals 6, 9, my own Local 11, 40, 47, 100, 180, 234, 302, 332, 340, 413, 440, 441, 477, 551, 569, 617, 639, 684, and 952, from all over the state of California, all have also endorsed this proposed clean air program. (Kevin Norton, IBEW Local 11)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

156. Comment: We support the updates to the Zero-Emissions Vehicle program, Low-Emissions Vehicle program, and the Clean Fuels Outlet program. (Emily Schneider, Green Technology Advocate, Professional Engineers in California Government (PECG))

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

157. Comment: As organizations representing millions of underprivileged and minority consumers across California, we urge you to vote “yes” on the strongest possible Advanced Clean Cars Program standards at your January board meeting. (Ken McEldowney, Executive Director, Consumer Action, San Francisco; Sharon Hillery, Executive Director, Fair Housing Consultants, Lakewood; Leticia Bejarano, YWCA, Monterey)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

158. Comment: As nationally recognized consumer organizations that serve to protect the consumer interest at the policy level, we urge you to vote in favor the strongest possible Advanced Clean Cars Program standards at your January board meeting. (comments by Jack Gillis Director of Public Affairs, Consumer Federation of America, and author of The Car Book)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

159. Comment: Consumers are counting on California to lead America to a cleaner, more sustainable, more affordable future. All of the consumers that voiced their support for these standards join me in encouraging the Board to vote “yes” for the strongest possible Advanced Clean Cars Program. (letter submitted by Jack Gillis and signed by: Mark Cooper, Director of Research for Consumer Federation of America; Rosemary Shahan, President of Consumers for Auto Reliability and Safety; David Champion, Director of Auto Test Division at Consumer Reports)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

160. Comment: The California Air Resources Board members must stand firmly by the proposed advanced vehicles package. If they do, California’s workers win, our job creating industries win, our environment wins, and our state and national economies get a big boost when we need it most. (letter submitted by Carol Lee Rawn and signed by Martin Lagod, Managing Director, Firelake Capital Management)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

161. Comment: As major U.S. businesses, we are writing to voice our strong support for California’s proposed Advanced Clean Cars Rules. By

addressing greenhouse gas and criteria pollutant emissions, supporting adoption of zero-emission vehicles, and promoting alternative vehicle outlets, the rules will promote economic growth, reduce dependence on oil, improve public health and mitigate climate risk. (letter submitted by Carol Lee Rawn and signed by Mindy S. Lubber, President, Ceres, on behalf of Business for Innovative Climate and Energy Policy [BICEP])

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

162. Comment: We support these efforts to reduce global warming emissions, improve the fuel efficiency of our vehicles, reduce our dependence on oil, and protect public health by ensuring drivers have more choices for clean cars and light trucks through the use of strong, cost-effective standards. (114 signatures from Ph.D. economists to letter submitted by Miriam Swaffer, Union of Concerned Scientists)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

163. Comment: We write to urge California leaders to seize the opportunity, once again, to demonstrate that the nation can begin to meet the climate challenge by adopting strong policies that will further reduce heat-trapping emissions from cars and trucks. (159 signatures from California scientists and engineers to letter submitted by Chris Carney, Union of Concerned Scientists)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

164. Comment: We support the proposed LEV III amendments and applaud California for bringing cleaner vehicles to our roads. (Hilary Sinnamon, Consultant to Environmental Defense Fund, and Erica Morehouse, Environmental Defense Fund)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

165. Comment: I appreciate and applaud the Air Resources Board's strong leadership in expanding zero (and near-zero) emission vehicle technology. I urge you to adopt the proposed amendments, with the strongest possible provisions and timing, for both the ZEV and the LEV III Advanced Clean Cars regulations. (William E. Avery, PhD., Professor of Biological Sciences, California State University Sacramento)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

166. Comment: We appreciate the opportunity to convey Consumer Reports' support for the proposed Advanced Clean Cars rules. We also called upon our network of consumer activists in California to voice their opinion on the Advanced Clean Cars program. We are pleased to report that 4,488 Californian activists wrote to the Board in support of the proposed rules. (Shannon Baker-Branstetter, Policy Counsel, Consumers Union)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

167. Comment: The undersigned public health and medical professionals strongly support California's efforts to reduce air pollutants and greenhouse gases from motor vehicles and urge the State of California to continue its national and international leadership in promoting clean vehicle policies and technologies. Without strong action to reduce emissions, global warming will exacerbate our existing air pollution-related public health crisis. (Bonnie Holmes-Gen, Executive Director, Air Quality and Public Health, and Dr. Michael Ong, member of the statewide Board of Directors, American Lung Association in California, and 144 other members of California's public health and medical community)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

168. Comment: We support the American Lung Association in California's recommendations that the California Air Resources Board must adopt strong Advanced Clean Cars Standards that will include the following requirements for new cars by 2025:
- Achieve a 75 percent reduction in smog-forming emissions and place stringent controls on particle pollution from vehicles;
- Achieve, at minimum, an overall 45 percent (6 percent per year starting in 2017) reduction in greenhouse gas emissions from vehicles;
- Achieve a new car fleet mix that includes at least 20 percent zero-emission vehicles.

(American Lung Association in California, letter with 350 signatures)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

169. Comment: California's Clean Cars Program is set to bring the next generation of clean, low-polluting cars and light trucks into the driveways of California families. I urge the California Air Resources Board to adopt the strongest possible standards for all of the state's important clean cars programs. (petition with 10,400 signatures, submitted by Sean Caroll, Environment California)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

170. Comment: Support for the Advanced Clean Cars Program is expressed by local governments and elected officials through numerous Resolutions, Proclamations, and letters, signed by 39 cities, 10 counties, 17 local and regional elected officials, four air districts and Air Pollution Control Officers, and nine other government-related entities. (submitted by Judy Mitchell, member of the City Council from the City of Rolling Hills Estates, for California Clean Cars Campaign)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

171. Comment: California Clean Cars Campaign supports California's Clean Cars Program. (letters of support from Consumer Organizations, Underprivileged and Minority Consumers, Public Health Organizations, Health Network for Clean Air, Faith Organizations, Scientists and Engineers, and Economists submitted by Wendy James for California Clean Cars Campaign)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

172. Comment: I'm here on behalf of California Faith Community. We submitted a faith letter that was signed by ten organizations which represent thousands of congregations in the state. We urge you to pass these clean car standards. We also submitted an electric letter signed by 159 of our faith advocates. (Allis Druffel, Southern California Outreach Director, California Interfaith Power and Light)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

173. Comment: The nation must follow the military's commitment to the mission…energy independence. I hope this Board and the leaders of our great state will set aside politics for the greater good. I urge you to implement robust emission standards that will encourage American innovation and create jobs all while addressing the growing threats we

face due to climate change and our dependence on fossil fuels. (Cathy Jackson-Ervin, Operation Free)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

174. Comment: The amount of oil we use isn't the only threat related to our fossil fuel use. The Central Intelligence Agency, National Security Agency, and Department of Defense all agree that climate change is a threat multiplier, and are working to take on that threat as well. Like the military, California has long been an example of leadership on clean energy issues. As a native Californian, and as a proud American veteran, I ask that you continue to support clean energy by adopting strong emission standards that help reduce our carbon emissions and make up energy independent from fossil fuels. (Mario Rivas, Operation Free)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

175. Comment: I am here today to encourage you to continue California's tradition of leadership and implement robust emission standards that will help reduce our dependency on oil, cut heat trapping emissions, and make our country more secure. (Uduak Ntuk, Operation Free)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

176. Comment: As organizations representing millions of underprivileged and minority consumers across California, we urge you to vote "yes" on the strongest possible Advanced Clean Cars Program standards at your January board meeting. (Community groups, community group staff that serve low and middle income consumers, people of color, and limited-English-speaking consumers)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

177. Comment: I came here today to urge you to approve these clean car regulations and tell you why they're so important to me. I hope you will adopt this regulation and send a signal to the industry and the rest of the world that we need to be prepared for the future. (Michael Strada, student at Cal State LA)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

178. Comment: Physicians for Social Responsibility in Los Angeles, together with our sister chapters in Sacramento and the Bay Area, strongly support the most stringent standards. The Advanced Clean Cars Program will clean up the air and protect public health. (Martha Arguello, Physicians for Social Responsibility)

Agency Response: We appreciate this comment, for which no response is needed because it supports the staff proposal.

## 14. Comments Not Previously Addressed Pertaining to Environmental Issues

179. Comment: While fully supporting the spirit of the proposed LEV III Regulation, it doesn't appear that the impacts of a significant shift to "ZEV" technology such as electric vehicles (EV) have been fully considered. A massive shift to EV/PHEV technology would potentially offset gains made from diesel PM emission reduction mandates. I support EV/PHEV technology for certain niches (e.g., urban commuter travel), but upstream emissions of this technology really need to be taken into account. (Loren Carl Marz, Certified Consulting Meteorologist (#591))

Agency Response: For Agency response to the complete comment, see the document "Responses to Comments on the Advanced Clean Cars Environmental Analysis," released March 12, 2012, and approved by the Board at the March 22, 2012 board hearing, which is available at http://www.arb.ca.gov/msprog/levprog/leviii/acc_ea_rtc.pdf. The response to this comment is included as "Response to Comments: LEV III – L9."

180. Comment: ARB proposes the inclusion of upstream emissions in the compliance calculation of standards for automakers, which seems to be in contradiction to the federal NPRM. BMW requests that CARB not only set standards comparable to the federal ones, but also incorporate the same fundamental structure for achieving these standards. Any non-zero upstream crediting serves as a lesser relative incentive for battery-electric vehicles and plug-in hybrid electric vehicles than the proposed ARB GHG crediting based on California's low-GHG grid. Manufacturers are not able to influence the grid mix and, therefore, differentiating between CARB States and the others in regard to upstream emissions should be avoided. Every such vehicle needs to be counted as zero upstream emissions. Any crediting above zero is a disincentive. (Thomas C. Baloga, Vice President, Engineering, and Andreas Klugescherd, Vice President of Governmental Affairs, BMW Group)

Agency Response: For Agency response to the complete comment, see the document "Responses to Comments on the Advanced Clean Cars Environmental Analysis," released March 12, 2012, and approved by the Board at the March 22, 2012 board hearing, which is available at http://www.arb.ca.gov/msprog/levprog/leviii/acc_ea_rtc.pdf. The response to this comment is included as "Response to Comments: LEV III – L34."

## 15. Comments Outside the Scope of this Rulemaking

181. Comment: The Alliance agrees with the majority of the ARB's CNG fuel specifications with the exception of a few important parameters. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Since the CNG specification was not changed during this rulemaking, this comment falls outside the scope of the 45-day notice and therefore requires no further response. This rulemaking only addressed updating of the gasoline certification fuel specifications. Nevertheless, staff will consider the commenter's request for consideration during future rulemaking efforts.

182. Comment: We used a USA 3rd party to test "The CARTENTIAL Effect"; attached please find the final report from the CAFEE Lab www.cafee.wvu.edu. The testing was conducted on "as new" equipment; meaning flushed, with none of the normal sediment, rust and other normal wear conditions. Cartential shows even better results when introduced into Vehicles manufactured on or before 2004. The purpose of Cartential is to make exhaust emissions a non-factor worldwide in Automotive, Commercial Trucking and other Industries where combustion motors are used. The up to 80% reduction in exhaust emissions will help California and other States reach the daily goal of removing an extra 100 tons of smog-forming emissions from the air; which will help the air quality worldwide. (Michael Jordan, NAFTA Region Market Consultant, ICT/Cartential)

Agency Response: ARB appreciates this comment. However, since ARB sets performance emission standards rather than mandate the use of specific emission control technology, it falls outside the scope of the 45-day notice and therefore requires no further response.

183. Comment: CARB and the EPA have long recognized that vehicle technology and the fuel employed with that technology need to work in concert as an integrated "system" so that vehicles can operate efficiently and achieve the lowest technologically emission targets. We believe

that CARB did not completely examine the impact of fuel parameter changes that could enable additional engine technologies to improve efficiency and ultimately improve emissions. Specifically, we are recommending one new fuel for vehicles model year 2017 and later (in addition to legacy FFVs) with an octane rating of 94 accomplished with a 30 percent blend of ethanol (E30). This new fuel used in conjunction with new engine technologies would provide even more clean air benefits than CARB is currently proposing. CARB is obligated by the California Government Code, the California Environmental Quality Act, and the California Health and Safety Code to propose and adopt only those regulations that maximize public benefits, minimize public and private costs, and afford maximum protection to the environment in a cost-effective manner. Those requirements can only be met by reducing vehicular emissions through new fuel standards. (Tom Buis, CEO, Growth Energy)

Agency Response to Technical Part of Comment: The commenter advocates a new fuel standard to reduce vehicular emissions. Promulgation of such a fuel standard is outside the scope of the proposed rulemaking. The fuel standard being recommended may be appropriate for consideration under a separate regulatory action by ARB. Since the substantive aspects of this comment are outside the scope of the 45-day notice, no further response is required.

Agency Response to Portion of Comment Raising Environmental Issues: For Agency response to the complete comment, see the document "Responses to Comments on the Advanced Clean Cars Environmental Analysis," released March 12, 2012, and approved by the Board at the March 22, 2012 board hearing, which is available at http://www.arb.ca.gov/msprog/levprog/leviii/acc_ea_rtc.pdf. The response to this comment is included as "Response to Comments: LEV III – L29."

184. Comment: Growth Energy recommends that CARB put into place enforceable requirements for the gasoline marketing industry in California that will ensure the commercial availability of gasolines that have an octane value of 94, for use in optimizing the GHG performance of new vehicles certified to the proposed LEVIII emission standards. (Tom Buis, CEO, Growth Energy)

Agency Response: This comment pertains to the in-use gasoline fuel in California. Consideration of in-use fuel requirements are outside the scope of the proposed rulemaking. The fuel standard being recommended may be appropriate for consideration under a separate regulatory action by ARB. Since the substantive aspects of this comment are outside the scope of the 45-day hearing notice, no further response is required.

185. Comment: CARB's two currently proposed certification fuels are both E10 blends; one a "regular," and the other "premium," with the regular blend having an octane number of 87 (AKI) and premium having an octane number of 91 (AKI). Growth Energy's proposal would provide for a certification and in-use fuel for 2017 and later LEVIII vehicles with an octane value of 94, accomplished with E30 instead of E10. This fuel would only be intended for the LEVIII vehicles, and not the legacy fleet (2016 and earlier), although legacy FFVs could also use it if doing so was consistent with the vehicle manufacturers' instructions or recommendations to owners and approved by CARB on that basis. The non-FFV legacy fleet (i.e., LEV II, LEV I, Tier 1) would continue to operate on E10. (Tom Buis, CEO, Growth Energy)

Agency Response: Staff designed the certification fuel to be reflective of the current in-use fuel. The in-use fuel currently contains 10 volume percent ethanol. The maximum allowable ethanol content in California gasoline is 10 volume percent ethanol. E30 is not a fuel that is available for use in the California market. Furthermore, automobile manufacture warranties do not allow for the use of E30 in non-flex fuel vehicles. With regard to the modifications to the in-use fuel, staff may consider this in a future rulemaking. This issue is outside the scope of the 45-day hearing notice to enable action on this item.

186. Comment: Staff does not appear to have examined the possibility of any ethanol concentrations above E10 as part of its regulatory package. Yet, as explained below, fuels with the higher octane levels that rely on higher ethanol blends would permit the automobile industry to meet CARB's stringent GHG standards at lower costs. Those lower costs would benefit the public, insofar as they would reduce the initial purchase price of new vehicles. That omission does not comport with the California Government Code, which requires the consideration of alternatives to a proposed regulatory action that could be more or equally effective as the proposed action but less burdensome for affected parties. (*See, e.g.,* Cal. Gov't Code § 11346.5(a)(13); *see also id.* § 11346.9(a)(5) *and* Cal. Health & Safety Code S 57005.) Alternatives to more stringent vehicular emission control measures that utilize and rely on improved fuels must be considered to determine if

they would be less costly to the motoring public (including but not limited to small businesses). (Tom Buis, CEO, Growth Energy)

Agency Response: See response to Comment #185.

187. Comment: Growth Energy's proposal for LEVIII certification fuel is shown in Table 2. This certification fuel is essentially the same as the Alliance of Automobile Manufacturer's proposal, but with the addition of 20 volume percent more ethanol, so that octane is higher, the distillation parameters are changed, and other parameters are lower by dilution.

**Table 2. Growth Energy's LEVII Certification Fuel Proposal**

| *Property* | *CARB regular* | *Growth Energy* |
|---|---|---|
| Octane (AKI or FON) | 87-88.4 | 94 |
| Sulfur (ppm) | 8-11 | 7-8 max |
| RVP (psi) | 6.9-7.2 | 6.2-6.8 |
| Total Aromatics (vol%) | 19.55-22.5 | 12-16 |
| Multi Substituted Alkl Aromatics % (vol%) | 13-15 | 10, max |
| Olefins | 4-6 | 4 |
| T50 | 205-215 | 150-190 |
| T90 | 310-320 | 280-295 |
| Benzene | 0.6-0.8 | 0.4 |
| Oxygen (wt%) | 3.3-3.7 | 10-10.5 |
| Ethanol (vol%) | 9.75-10.25 | 29.5-30.5 |

Fuel marketers would be required to produce fuel that would be similar to this proposed fuel for LEVIII vehicles. The parameters could have latitude initially to allow flexibility. An E30 Predictive Model would be developed based on test data to allow flexibility and to ensure in-use emission reductions are being met with alternative market fuel formulas.

Other concepts of this proposal are as follows:

- Automakers would certify LEVIII vehicles only on E30, they would not be required to certify on E10. The legacy fleet would continue to operate on E10.
- The state would have to modify state regulations which limit blends to either E10 or just E85.
- Ramp-up of ethanol for E30 would build with the introduction of each successive model year of LEVIII vehicles. Ethanol would have to be used preferentially for E30, then for E10 in the legacy fleet.
- There may be a net positive impact on upstream GHG emissions from producing the base gasoline (normalized to gasoline volume); this would have to be evaluated.

(Tom Buis, CEO, Growth Energy)

Agency Response: See response to Comment #185.

188. Comment: We recommend the Board direct staff to assess the environmental benefits (criteria and GHG emission reductions) of higher octane gasoline. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: This comment falls outside the scope of the 45-day notice because the notice only addressed certification gasoline, not commercial gasoline, and therefore requires no further response. Nevertheless, the commenter's request has been forwarded to the program staff involved with the California gasoline regulation for consideration under future rulemaking efforts.

189. Comment: The Alliance does not believe it was the ARB's intent to mandate the use of methanol in preparing the denatured ethanol for E85 blending later regulated in Section 100.3.4 of this same Appendix D. For example, adding the maximum allowable ethanol content (98.5 volume%) with the maximum allowable denaturant (1.1 volume%) equates to 99.6 v% of denatured ethanol and therefore requires at least 0.4 volume% methanol or water addition. The Alliance suggests that the ethanol industry has controlled the methanol level very well in field fuels, based on E85 fuel survey data, and that no intentional methanol or water addition is necessary to match the cert fuel to the market. Additionally, it appears that the Section 100.3.3 E100 changes require the use of the proposed LEVIII California Cert Fuel gasoline as the denaturant to be added to spirit grade, undenatured ethanol; a very expensive and onerous fuel blend proposal. This section should simply state that the denatured E100 for use in LEVIII E85 Cert Fuel blending should meet the ASTM D4806 denatured fuel ethanol specification entitled, "Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel." (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The E100 specification was not changed during this rulemaking. This rulemaking was only targeted at updating the gasoline certification fuel and not the other fuels. We may consider your suggestions for the E100 specifications in another rulemaking. Since this comment falls outside the scope of the 45-day notice, no further response is required.

190. Comment: The Alliance recommends that the entire CCR Title 13 section 2292.4 "Specifications for E-85 Fuel Ethanol" be revised to be consistent with the latest version of ASTM Specification D5798 "Ethanol Fuel Blends for Flexible-Fuel Automotive Spark Ignition Engines." The

benefits of making these two documents consistent can be seen when attempting to blend E85 to meet the required 8.0 – 8.5 psi RVP in Section 100.3.4 of the LEVIII Appendix D proposal. For example, un-denatured ethanol has an RVP of approximately 2.2 psi and the proposed LEVIII Cert Gasoline specification is a nominal 7.0 psi RVP. These two fuels cannot be blended together to meet an 8.0 psi ethanol blend without the use of a third high vapor pressure component, such as butane, which is uncommon in the marketplace. See ASTM D5798, Appendix Figure X1.3 as a reference. As with the ARB direction with the gasoline certification fuel to match the typical blend of market fuel, the ARB E-85 certification fuel should utilize a specified higher vapor pressure California winter gasoline to be blended with denatured ethanol meeting ASTM D4806 to an ethanol content in the center of the allowable E85 marketplace gasoline, i.e. 67 vol. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: This comment falls outside the scope of the 45-day notice, because the notice only addressed specifications for certification gasoline and did not address E-85 fuel specifications, and therefore requires no further response. Nevertheless, the commenter's request has been forwarded to the program staff involved with the E85 program for consideration during future rulemakings to amend current E85 specifications.

## B. COMMENTS RECEIVED DURING THE 15-DAY COMMENT PERIOD

### 1. Comments Concerning the Criteria Pollutant Exhaust Regulations

### Comments Concerning the Particulate Matter Standards

191. Comment: We believe that revisions to the proposed 15-day changes are needed to ensure that the full intent and benefits of the standard are achieved. The 15-day changes introduced a new section of the regulation that creates an alternative pathway for compliance specific to the adopted 100 percent implementation of a 3 milligram per mile (3 mg/mi) particulate standard for 2021 and 1 milligram per mile (1 mg/mi) particulate standard for 2028. The original pathway phased-in the standard in increasing increments over time to ensure ongoing deployment of stronger PM control technologies. However, the alternative pathway could allow for a slower overall deployment of PM control technologies, increasing emissions over the originally proposed phase-in and threatening to weaken the public health benefits of the program. We recommend that the Board accept the following recommendations to address these issues and ensure that the particulate standard is implemented as intended:

- Revise the alternative compliance pathway so that public health and air quality benefits are commensurate with the originally proposed pathway.

- Provide an analysis to ensure that the air quality and public health benefits of the original proposal are not diminished by an alternative compliance option.

- Specify that the alternate compliance pathway must also achieve 100 percent fleetwide achievement of the 3 mg/mi standard in 2021 or the 1 mg/mi standard in 2028.

(Bonnie Holmes-Gen, American Lung Association in California; John Shears, Center for Energy Efficiency and Renewable Technologies; Nidia Bautista, Coalition for Clean Air; Daniel Gatti, Environment America; Tyson Eckerle, Energy Independence Now; Simon Mui, Natural Resources Defense Council; Kathryn Phillips, Sierra Club California; Don Anair, Union of Concerned Scientists)

Comment: In this notice, staff propose an alternative compliance pathway for manufacturers of passenger cars and light-duty trucks required to be 100 percent compliant with a 3 mg/mi standard in 2021 and a 1mg/mi standard in 2028. It establishes a crediting scheme that awards automakers for more rapid introduction of vehicles that meet these new standards. While we are not opposed in principle to alternative compliance pathways, since they do provide useful flexibility to automakers, we do question the need for this alternative for meeting the particulate matter standards. In our view, the proposed phase-in schedule for both the 3 mg/mi and the 1 mg/mi standards provides adequate flexibility that automakers are already well suited to meet. It is also our view that an alternative compliance scheme would be more appropriate in the 2017-2025 time period if credits were made applicable toward to the more stringent 1 mg/mi standard rather than the 3 mg/mi standard.

In summary, the proposed alternative compliance mechanism for meeting the proposed LEV III particulate matter standards is flawed and should not be adopted in its current form. Staff should reconsider and revise their proposal such that (1) 100% compliance with a 3mg/mi and 1mg/mi standard is required in each of the years 2021 and 2028; and (2) either no alternative compliance pathway is provided, or a restructured alternative compliance pathway is provided that ensures no net increase in emissions relative to the original phase-in schedule. (Dr. Alan Lloyd, President, The International Council on Clean Transportation)

Agency Response: The alternative compliance pathway was included to provide compliance flexibility and an incentive to manufacturers for early introduction of compliant vehicles. The structure of the alternative compliance pathway is identical to approaches used in previous programs such as LEV II and On-Board Diagnostic (OBD) compliance requirements. Staff believes the concern expressed by the comments springs from limited early data on low mileage vehicles showing a potential for higher PM emissions from an emerging GHG technology, gasoline direct injection (GDI), since conventional port fuel injection (PFI) easily meets the 3 mg/mi PM standard today. However, as noted in Appendix T to the ISOR, based on newer in-use data from higher mileage vehicles from the USEPA, PM factors for GDI and PFI vehicles have been revised such that the same emission factors are applied to in-use PM emissions of both GDI and PFI vehicles. Accordingly, there should be little or no emission impact on the PM inventory regardless of the mix of vehicle technology in the fleet meeting the 3 and 1 mg/mi standards. Furthermore, staff agrees that 100 percent compliance in model years 2021 and 2028 is required to assure equivalent emission reductions from the alternative compliance pathway. Nonetheless, ARB will continue to evaluate PM emissions from both GDI and PFI vehicles in response to Board Resolution 12-11 and to update the PM emission inventory. Should newer data indicate that PM emissions from GDI vehicles present a concern staff will revisit the alternative compliance pathway at a future Board hearing to clarify the phase-in requirements.

**Comments Concerning Phase-in Requirements**

192. Comment: This comment is submitted on behalf of Aston Martin Lagonda Limited, Lotus Cars Limited and McLaren Automotive Limited. Each of these companies is classified as a “small volume manufacturer” (SVM) under CARB regulations. We support the proposed changes in CARB’s 15-day notice dated February 22, 2012. The proposed modified text adds clarity to the timing of the LEV III FTP and SFTP requirements for SVMs. (Lance Tunick, Vehicle Services Consulting on behalf of Aston Martin Lagonda Limited, Lotus Cars Limited, and McLaren Automotive Limited)

Agency Response: We appreciate this comment, for which no response is needed because it is supportive of the staff proposal.

193. Comment: The proposed 15 day modification couples LEV III SFTP certification with that of LEV III FTP. LEV II FTP certification is phased out in MY 2019 while LEV II SFTP certification is stated to phase out in MY 2018 in the Test Procedure (page E-8) but MY 2020 in the Regulation Order (page A-10). The 15 day modification proposes an alternative phase-in for PM at 100% in MY 2021. Depending on a

manufacturer's product line up, the different phase-in requirements for PM, FTP, SFTP and EVAP (evaporative emissions) standards could lead to an unreasonably high burden for a number of model variants near the end of the model cycle. This affects in particular the niche models with low volumes and high development costs. BMW recommends allowing manufacturers who meet the fleet average standards for both FTP and SFTP the option of a harmonized phase-in for LEV III FTP, SFTP and PM. This option should require 100% phase-in in MY 2021 for FTP, SFTP and PM and allow for an alternative phase-in BMW recommends allowing manufacturers who meet the fleet average standards for both FTP and SFTP the option of a harmonized phase-in for LEV III FTP, SFTP and PM. This option should require 100% phase-in in MY 2021 for FTP, SFTP and PM and allow for an alternative phase-in. (Thomas C. Baloga, Vice President, Engineering, BMW Group)

Agency Response: Staff agrees that there was an inconsistency regarding the phase out of 4,000-mile SFTP standards between the Test Procedures and the Regulation. The phase out year in the Test Procedures has been corrected to align with the phase out year in the Regulation Order as part of the non-substantive changes.

**Comments Concerning the Partial Zero-Emission Vehicle (PZEV) Backstop Provision**

194. Comment: ARB staff has expressed concerns that manufacturers could reduce the percentage of SULEVs and zero evap vehicles offered for sale while the LEV III regulations are being phased in. We understand this concern and agreed to the PZEV anti-backsliding provisions in the exhaust and evaporative sections of the regulation. Upon further review, however, manufacturers are concerned that the absolute percentage requirement for SULEV certified vehicles could be problematic if the markets unexpectedly shift (as was the case in 2008-2009). As written, while the minimum percentage can be based on projected sales, compliance is based on vehicles sold. To avoid this concern, we recommend one of two approaches:

a. Comply based on projected vehicle sales. This ensures that manufacturers make a good faith effort to meet the requirement, but would not result in a manufacturer being out of compliance if actual sales do not achieve the projections.

b. Base compliance on a 3-year average (2018-2020) (this was the approach used for the evaporative emission regulations). This would allow manufacturers to make up any shortfall in SULEV vehicles in a subsequent model year.

(Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: As part of the 15-day changes, staff revised the regulations to allow manufacturers to calculate the minimum percentage of PZEVs that a manufacturer must produce and deliver for sale in California based on projected sales rather than actual sales.

**Comments Concerning LEV II Vehicle Requirements**

195. Comment: The 15-day changes that allow a manufacturer to comply with a NMOG+NOx fleet average in the 2014 model year, in lieu of a NMOG fleet average requires manufacturers to include MDPVs in the NMOG+NOx fleet average. We recommend eliminating the requirement to include MDPVs in the 2014 fleet average NMOG+NOx calculation, since they are not included in the NMOG calculation. In addition, it appears that the word "life" should be added in between "useful" and "standards" in table in §1961(b)(1)(A) footnote 1. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: ARB made the 15-day change to accommodate manufacturers' request to begin introduction of LEV III vehicles prior to the start of LEV III in 2015 and to encourage the early introduction of cleaner, more durable vehicles. Accordingly, in order to maintain consistency with LEV III requirements, staff included MDPVs in the NMOG plus NOx fleet average requirement.

**Comments Concerning Calculations**

196. Comment: The contribution of a Plug-in HEV to emission reduction is properly compensated with Zero-emission VMT Allowance through the proposed equations. The addition of a 1.0 cap in 15-day Notice incorrectly penalizes calculation of vehicles with higher Zero-Emission VMT in the fleet average and should be omitted. (Thomas C. Baloga, Vice President, Engineering, BMW Group)

Agency Response: As noted in the response to Comment #41, the 1.0 cap for the Zero-emission VMT allowance was included in the 15-day changes to address a potential increase in the in-use emissions of these vehicles that would result in a dis-benefit to California's air quality. Nonetheless, as directed by Resolution 12-11, staff will monitor the performance of these vehicles in-use and, if warranted, return to the Board with appropriate modifications to the treatment and credits for these vehicle types in 2016.

197. Comment: Ford recommends that the ARB correct an error to the MDV VEC equation on Page A-30. In the third segment of the equation, the term “ULEV270” should be “ULEV400.” (Andre Welch, Regulatory Planning Engineer, Sustainability, Environment & Safety Engineering, Ford Motor Company)

Agency Response: This error has been corrected as one of the non-substantive changes submitted with this final rulemaking package, as described in Section I of this FSOR.

198. Comment: The multiplication factors used to calculate Vehicle emission credits (VECs) for medium-duty vehicles were revised downward in the 15-Day Notice from the ISOR language. Some of the changes reduce the VECs a manufacturer could receive for a vehicle by 5 percent, effectively increasing stringency. We recommend retaining the values contained in the ISOR, since those were the values upon which industry and ARB worked to develop the regulations. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The multiplication factors originally proposed over valued the emission credits that could be accrued by MDVs. Accordingly, they were revised to two significant figures so that they more accurately reflect the value for these credits.

199. Comment: Regarding NMOG+NOx Contribution Factors: We understand that these equations (and the additional language added in the 15-Day Notice) were developed to ensure that when calculating fleet average, the value used for an off-vehicle charge capable vehicle (PHEV) could never be below the next lowest certification level (e.g., a ULEV125 could never be calculated to have emissions below a ULEV70). While we understand the rationale, it is possible that real-world emissions from a PHEV could be significantly below the next lowest emissions category. We would like to work with ARB staff to develop appropriate values that represent real-world emissions. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: As noted in the response to Comment #4, staff will continue to evaluate the in-use performance of PHEVs to determine if modifications to the treatment and credits for these vehicles are warranted. Staff has taken a conservative approach to these vehicles since there is currently very limited data on how they are operated in-use. Staff anticipates working with industry in this effort to more accurately define their real world emission impact.

## Comments Concerning SFTP Requirement

200. Comment: SFTP Fixed Speed Cooling Fan Maximum Air Flow: These requirements were revised to allow a road speed modulated fan in addition to a fixed speed cooling fan. However, in modifying 40CFR159-08(b)(9), ARB did not include the fixed speed fan maximum discharge flow rate of 15,000 cfm. We recommend retaining the requirement for maximum discharge flow rate in 40CFR159-08(b)(9). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The requirement specifying the maximum discharge volume of the fixed speed fan has been removed primarily to accommodate larger MDVs, which have not been subject to SFTP standards in the past. Based on staff's testing experience, a fixed speed fan with a maximum discharge volume of 15,000 cfm does not always provide sufficient cooling for heavier vehicles and can result in overheating when operating over SFTP cycles. That said, staff will continue evaluating the issue and may propose updated cooling requirements in a future rulemaking.

## Comments Concerning Reporting Requirements

201. Comment: Proposed California exhaust emissions standards and test procedures require annual reporting of projected California sales and fuel economy data for all alternative fuel vehicles, even though the proposal limits the Clean Fuels Outlet regulations to hydrogen. It takes time and resources to gather the data for flexible-fuel vehicles, compressed natural gas, and other alternative fueled vehicles. In addition, manufacturers already submit projected sales data for all of our vehicles as part of the certification for application. Fuel economy data for all vehicles is also accessible on USEPA's website. Therefore, if the ARB wanted to do a study on alternative fuel vehicles, that are not subject of the Clean Fuels Outlet, information is already available without requiring a separate report. Because the proposal limits the Clean Fuels Outlet to hydrogen fuel, Ford believes it is appropriate to provide more flexibility in the reporting requirements for other alternative fuel vehicles. We believe that these reports should only be required upon request. (Sara Rudy, Ford Motor Company)

Agency Response: While the modifications to the Clean Fuels Outlet requirements are limited to hydrogen, ARB continues to have an interest in the production of alternative fuel vehicles. Historically, this is because of the criteria emission benefits these vehicles can provide. With the implementation of GHG emission requirements, ARB's interest in their production is heightened since alternative vehicles can also provide

substantial GHG benefits. Nonetheless, staff is willing to work with industry to find other means of gathering this information.

## 2. Comments Concerning the Evaporative Emission Regulations

202. Comment: BMW requests that the limitations restricting hydrocarbon credit trading be removed, thus allowing manufacturers to offset hydrocarbon debits between all vehicle classes. They expressed that this would provide manufacturers with greater compliance flexibility without adversely affecting the environmental benefits of the fleet average reductions. (Thomas C. Baloga, Vice President, Engineering, BMW Group)

Agency Response: Limitations restricting hydrocarbon credit trading were included as part of the 45-day regulatory language. Therefore, the comment is outside the scope of the 15-day notice and no further response is needed. Nonetheless, staff provides the following response to explain why it is necessary to restrict credit trading such that it is allowed only between similar vehicle categories. Because current zero-evaporative emission certified vehicles are in the lighter categories only, the emission standards were set to be more stringent for the lighter categories than the heavier categories. Unrestricted credit trading would allow credits generated from the less stringent heavier categories to be used to ease requirements in the lighter categories. Staff believes that there is sufficient flexibility built into the current regulation already and therefore concludes that unrestricted credit trading as requested in this comment would unnecessarily reduce the emission benefits of the regulation.

203. Comment: BMW requests to extend carry-over of 2014 MY vehicles certified to the current Zero-Fuel Evaporative Emission Standards from 2018 MY to 2019 MY. They contend that this would align with exhaust test procedures for PZEVs. (Thomas C. Baloga, Vice President, Engineering, BMW Group)

Agency Response: The carry-over of 2014 MY vehicles was not addressed as part of the 15-day changes. Therefore, it is outside the scope of the notice.

204. Comment: Ford recommends that the ARB replace any references to the “1.08” Ethanol mass adjustment factor for evaporative HC measurement with the generic term “the Ethanol adjustment factor.” We further request that CARB staff work with industry to develop a comprehensive data set to generate a more representative factor, which could be communicated at a later date via MAC or Mail-out. (Andre

Welch, Regulatory Planning Engineer, Sustainability, Environment & Safety Engineering, Ford Motor Company)

Agency Response: This optional factor was determined based upon internal testing and discussions with industry experts, and staff believes it appropriately accounts for the performance of current vehicles and test equipment. That said, staff is open to future communication with industry regarding this factor and may consider proposing modifications to the factor as part of a future rulemaking if sufficient data is supplied to support this.

205. Comment: Ford recommends that the ARB waive ethanol measurement for the Bleed Emission Test Procedure (BETP) HC measurements or provide a BETP-specific adjustment factor. (Andre Welch, Regulatory Planning Engineer, Sustainability, Environment & Safety Engineering, Ford Motor Company)

Agency Response: The regulatory language approved as part of the original 45-day notice already includes this provision. In the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," the following statement is found in section III.D.12.9: "There is no requirement to separately measure for alcohol emissions in this bleed emission test."

206. Comment: Evaporative Emission Ethanol Calculations: This section of the test procedures was revised to include equations and instructions for measuring evaporative emissions with fuel containing ethanol. Specifically, Part III.11.3.2 contains the final equations for calculating mass emissions from the Hot Soak, Diurnal, and Running Loss test. The recent USEPA greenhouse gas, and the existing ARB and USEPA regulations use the pre-carbon factors in their equations. To minimize confusion, we recommend ARB maintain this common convention. Additionally, the $10^{-6}$ multiplication factor may represent an error in the equation. Instead of the proposed equations, we recommend the following equations:

(1) $Mhs = MHChs + (14.2284/23.034)*M_{C2H5OHhs}$

(2) $Mdi = MHCdi + (14.3594/23.034)*M_{C2H5OHdi}$

(3) $Mrl = MHCrlt + (14.2284/23.034)*M_{C2H5OHrlt}$

(Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff agrees to adjust the numerical factors, which are shown as ratios above, to be expressed in a "per-carbon" format as the commenter has recommended in order to maintain consistency with current convention. These changes only alter the presentation of the equations and not their actual meaning or resultant values. As such, the

changes are being incorporated as non-substantive changes. The "$10^{-6}$ multiplication factor" noted in the comment, however, is necessary and should remain in the current equations because the ethanol mass input value needs to be converted from micrograms to grams prior to its addition to the hydrocarbon mass value, which is also expressed in grams.

**Comments Concerning ORVR Requirements**

207. Comment: ORVR Certification of Vehicles > 14,000 pounds GVWR (ISOR, §1978): The Alliance submitted comments to the ISOR regarding on-board refueling vapor recovery (ORVR) requirements for incomplete vehicles ≤ 14,000 pounds GVWR. We appreciate the work by ARB staff to address our comments. However, we would request ARB confirm that §1978 does not apply to vehicles > 14,000 pounds GVWR and that there are no ORVR requirements for these vehicles (either complete or incomplete). (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: As part of the 15-day changes, staff revised the ORVR regulation and test procedure language to clarify that ORVR will only apply to complete vehicles up through 14,000 pounds GVWR. Incomplete vehicles and vehicles greater than 14,000 pounds GVWR are exempt from the ORVR requirements.

**3. Comments Concerning the Greenhouse Gas (GHG) Regulations**

208. Comment: Section § 1961.3 (a) (6) (B), page A-34, 15 day Regulation Order: BMW supports one common approach for CARB and USEPA to obtain approval of the A/C Direct Emissions Credit. Further, because it may be difficult for manufacturers to provide adequate documentation over the vehicle design phase regarding fittings, joints and leakage for every vehicle A/C, BMW recommends that the required engineering evaluation demonstration be limited to the following:
• the amount of the A/C Direct Emissions Credit;
• the credit calculation; and
• the calculation data for the A/C leakage rate.
In our view, this information should be sufficient to confirm that the A/C system under consideration reduces A/C direct emissions. (Thomas C. Baloga, Vice President, Engineering, BMW Group)

Agency Response: We consider the elements of engineering evaluation demonstration that we require under Section §1961.3(a)(6)(B) (Page A-34 of the 15-day Regulation Order) critical to allowing corroboration of the credit calculation and ensuring accuracy of the credit request and

certification process. Those elements also allow us to track the industry status of technologies associated with A/C direct emissions.

Although we agree that it may be difficult for manufacturers to provide adequate documentation regarding system specifications associated with A/C direct emissions during the vehicle design phase, we note that the regulation allows manufacturers to submit certification data by May 1 of the calendar year following the close of the model year. Thus, BMW's stated difficulty concerning the timeline is not applicable to the requirements of this regulation.

Therefore, we did not make revision to Section §1961.3(a)(6)(B) (Page A-34 of the 15-day Regulation Order) in response to these comments.

## 4. Comments Concerning Size Definitions

209. Comment: Ferrari S.p.A. and Ferrari North America (collectively Ferrari) greatly appreciates the inclusion of a definition in the proposed 15-Day Notice regulatory language that would allow a small volume manufacturer (SVM) to demonstrate that it is "operationally independent" from other related manufacturers with which its sales otherwise would have to be aggregated. We nevertheless urge the Air Resources Board to make two additional changes to the regulatory language before finalizing the text. First, in the definition of "small volume manufacturer" in § 1900(b)(22), Ferrari recommends that the Air Resources Board clarify applicability of the transition period for an SVM that has lost or will lose this status due to a material change or aggregation requirements. Under the proposed 15-Day Notice Modified Text and existing aggregation requirements, it appears that Ferrari immediately could become part of a related manufacturer's fleet for the 2013 model year. As such, Ferrari immediately would have to begin complying with more stringent exhaust and evaporative emission standards with little prior notice. Furthermore, if USEPA finalizes its regulatory language on operational independence, Ferrari intends to apply for that status for MY2013. Assuming USEPA grants this application and California does not clarify the applicability of its own provision, Ferrari could be considered a small volume manufacturer for USEPA purposes but will not be for compliance with California regulations. This disparity could pose additional compliance difficulties for Ferrari, as well as related manufacturers. (Ing. Amedeo Felisa, CEO – Ferrari S.p.A)

Comment: Ferrari of Beverly Hills and Ferrari of Silicon Valley fully support ARB's decision to include operational independence criteria for small volume manufacturers ("SVMs") in the 15-day modified text, as we requested that such a provision be included in the rules. However, we

are concerned about the possible lack of a transition period for SVMs under the 15-day modified text. As we understand the language, model year ("MY") 2013 and MY 2014 Ferrari vehicles could have to be counted as part of a related manufacturer's fleet for purposes of the LEV II and III, ZEV, and GHG programs. Ferrari immediately would be required to begin complying with more stringent exhaust and evaporative emission standards without sufficient lead time and planning. We hope that ARB clarifies that a transition period is necessary to protect current SVMs from a sudden, drastic change in applicable standards.

It is my understanding that Ferrari intends to apply to USEPA for SVM status for MY 2013 (assuming that USEPA finalizes its regulatory language on operational independence). If USEPA grants this application and California does not clarify the applicability of its own provision, Ferrari could be considered a SVM for USEPA purposes but not for compliance with California regulations. We respectively request that ARB make some accommodation to resolve this issue. (Giacomo Mattioli, Principal, Ferrari of Beverly Hills)

Comment: Ferrari of San Francisco greatly appreciates the inclusion of a definition in the proposed 15-day notice that would allow a small volume manufacturer ("SVM") to demonstrate that it is "operationally independent" from other related manufacturers with which its sales otherwise would have to be aggregated under the California regulations. However, Ferrari of San Francisco urges ARB to make an additional change to the regulatory language before finalizing the text. Under the 15-day notice as proposed, Ferrari would immediately become part of a related manufacturer's fleet for the 2013 model year, and would have to begin complying with more stringent exhaust and evaporative emission standards with little prior notice. Such a requirement at short notice to the companies involved could create great logistical and practical difficulties. (Greg Minor, President, Ferrari of San Francisco)

Agency Response: Staff disagrees with the commenters that under the current regulations, small volume manufacturers would be required to comply with more stringent exhaust and evaporative emission standards for the 2013 model year "with little prior notice" due to current aggregation requirements. This is because, the requirement that manufacturer sales be aggregated under certain conditions was first adopted by the Board in 2001, as part of the "Rulemaking on the Amendments to the California Zero-Emission Vehicle Regulations Regarding Treatment of Majority Owned Small or Intermediate Volume Manufacturers and Infrastructure Standardization." Then, in 2004, the Board added aggregation provisions that are applicable to the non-ZEV regulations as part of the "Pavley" greenhouse gas regulations. So, in 2009, when Ferrari changed status because Fiat (the company that

owns Ferrari) acquired a greater than 10 percent ownership of Chrysler, all three of these manufacturers were subject to the aggregation requirements and obligations of aggregated manufactures. The longstanding definitions also make clear for these manufacturers that the onus of compliance for aggregated manufacturers falls on all of the aggregated manufacturers. A small volume manufacturer may also elect to purchase credits from another manufacturer, as an alternative to relying on the manufacturers with which it is aggregated. Finally, it is unknown whether or not USEPA will include the "operationally independent" language in their final 2017 through 2025 national greenhouse rule (see response to Comment #93), so it is premature to change California's regulatory language based on what USEPA might do in the future.

210. Comment: Second, in the fourth paragraph of § 1900(b)(22), in the criteria for demonstrating operational independence, Ferrari recommends that (4) be revised to read "the applicant does not use any vehicle powertrains or platforms developed or produced by related manufacturers" in order to clarify the intent of this criterion. (Ing. Amedeo Felisa, CEO – Ferrari S.p.A)

Agency Response: The intent of criterion (4) is to exclude related manufacturers that share vehicle powertrains or platforms developed or produced by either of them. Because this is consistent with the current wording of (4), no revision was made.

211. Comment: Suzuki appreciates the proposed modifications to the definition of "Small Volume Manufacturer" (SVM) in Title 13, California Code of Regulations (CCR), § 1900 (b)(22). Suzuki is concerned, however, that even though Suzuki's non-aggregated average annual sales volume in California is well below the SVM threshold, and Suzuki meets all of the criteria to qualify as "operationally independent," the additional requirement to submit an Attestation Engagement from an independent certified public accountant could create an impediment to Suzuki's ability to qualify as an SVM. As an alternative, Suzuki requests that this provision be replaced with a provision that a manufacturer applying for operational independence must submit a certification statement, signed by a company executive, that the listed conditions for a determination of operational independence have been met. (Kenneth M. Bush, Associate Director, Government Relations, American Suzuki Motor Corporation)

Agency Response: ARB, to the extent possible, structured the GHG provisions of the LEV III regulations to be consistent with the proposed federal GHG requirements for 2017-2025. Accordingly, the criteria for demonstration of operational independence mirrors provisions in the

federal Notice of Proposed Rule Making for 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Fuel Economy Standards, published on December 1, 2011. Since ARB also extended the operational independence provisions to the criteria element of LEV III, similar language was included for manufacturers that wish to qualify for the slightly reduced criteria emission requirements provided to SVMs by LEV III. Additionally, most large corporations employ an independent auditing firm when submitting their annual financial statements. Since the Attestation Engagement requires an attestation to the accuracy of the information provided by the manufacturer by an independent auditing firm, staff believes this does not present an undue compliance burden.

## 5. Comments Outside the Scope of the 15-day Notice

212. Comment: Chassis Certification of MDVs (15-Day Notice, Enc A, §1961.2 paragraph 3, page A-8; and ISOR Attachment D, Section E paragraph 2, page D-4): This paragraph appears to require that all MDVs < 10,000 pounds GVWR to chassis certify to the LEV III requirements starting in 2015MY. We understood that ARB would require MDVs < 10,000 pounds GVWR to chassis certify to the LEV III standards starting in 2022MY (as proposed in the ISOR Attachment D, Test Procedures also copied below). However, even the language in the ISOR Attachment D, Test Procedures is somewhat confusing, since it discusses LEV II, LEV III, and various MDV weights. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Staff believes that the referenced text clearly states the intent of the regulations. Regardless, the text referenced by this comment was not modified as part of the 15-day changes. Therefore, the comment is outside the scope of the notice and no further response is needed.

213. Comment: As noted on other portions of the regulations, we would like the option to comply with the LEV III regulations beginning in 2014MY. We appreciate all of the changes that ARB Staff has made to accommodate this request and it appears that the regulations accommodate optional early compliance for all of the PC/LDT requirements. There does not appear to be a method of calculating VECs for optional early compliance. We recommend the following changes that clarify the early compliance option for MDVs: (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: Early compliance of MDVs with the LEV III regulations was not modified as part of the 15-day changes. Therefore, the comment is outside the scope of the 15 day notice and no further response is needed.

214. Comment: High-Mileage Testing (ISOR App D (test procedures), Part 1, Section I, paragraph 1.1.3, Page I-1): This paragraph specifies the minimum mileage for high-mileage testing. Minimum mileage has been 75 percent of useful life, or 112,500 miles for a vehicle certified to 150,000 miles. However, simply procuring customer owned vehicles meeting the requirements for testing with such high mileage is very difficult. Consequently, we recommend specifying a minimum odometer mileage of 105,000 miles. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: High mileage testing was not included as part of the 15-day changes. Therefore, the comment is outside the scope of the notice and no further response is needed. Nonetheless, staff will work with industry to determine whether a reasonable solution to the problem presented by the commenter can be included in a future rulemaking.

215. Comment: Allow option to certify vehicles >14k in a 10-14k chassis test group (ISOR App D, Part I, A.1.1.3(b), pages A-1 and A-2): Depending on their intended use, some vehicles have gross vehicle weight ratings (GVWR) that span both below 14,000 pounds (i.e., MDV) and above 14,000 pounds (i.e., HDV). Since additional testing is burdensome, particularly in cases where the vast majority of these vehicles fall below 14,000 pounds, manufacturers would like the option to certify all of these vehicles to the <14,000 pound (MDV) requirements. We recommend inserting, “Manufacturers may optionally certify heavy-duty vehicles of 14,000 pounds GVWR or greater to the 10,001 - 14,000 pounds GVWR standards and test procedures in section E.1 of these test procedures” at the end of Section A.1.1.3. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The text on which the comment is based was not included as part of the 15-day changes. Therefore, the comment is outside the scope of the notice and no further response is needed. Nonetheless, staff will work with industry to determine whether a reasonable solution to the problem presented by the commenter can be included in a future rulemaking.

216. Comment: Regarding specifications for fill pipes and openings of motor vehicle fuel tanks - Ford recommends that the ARB allow manufacturers with Capless fuel systems to comply with ISO-9158, SAE J285 or equivalent as an alternative to complying with ISO-13331-1995(E).

(Andre Welch, Regulatory Planning Engineer, Sustainability, Environment & Safety Engineering, Ford Motor Company)

Agency Response: The text on which the comment is based was not addressed as part of the 15-day changes. Therefore, the comment is outside the scope of the notice and no further response is needed.

217. Comment: Federally certified vehicles (ISOR, App D, H 1.4.1, Page H-2): This section requires manufacturers to test federal vehicles to the 50°F, California SFTP and California highway NMOG+NOx standards (see Figure 6). The old requirements (App C, Section H 1.5.1, Page 31) did not require 50°F testing and provided for compliance with federal SFTP and federal NOx standards. The new regulation would require manufacturers to recertify federally certified vehicles to 50F, California SFTP and California highway NMOG+NOx standards even if the vehicle is being carried over. We do not believe this is ARB staff's intent, and recommend revising the regulation to allow carry-over of federally certified vehicle data and require 50°F, California SFTP and California highway NMOG+NOx testing only on new vehicle certifications. ARB could implement this by revising paragraph 1.4.1. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The text on which the comment is based was not addressed as part of the 15-day changes. Therefore, the comment is outside the scope of the notice and no further response is needed.

218. Comment: Emissions 2004-2014MY (ISOR App A, §1961(b)(1)(B)1.c., page A-22): This table contains the applicable emission standards to be used in fleet average calculations. The LEV and ULEV 2004-2014 model year vehicles certified to the optional 150,000 mile "LEV II" standards were increased from 0.06 to 0.064 (LEV) and from 0.03 to 0.034 (ULEV). This represents a 13 percent increase for ULEV and 6.7 percent increase for LEVs. The changes proposed will only apply to the 2014MY, since the 2013MY is already underway and the regulations cannot be applied retroactively. Consequently, we see no benefit to the proposed change and recommend ARB eliminate this change. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The text on which the comment is based was not addressed as part of the 15-day changes. Therefore, the comment is outside the scope of the notice and no further response is needed. Nonetheless, staff notes that the revisions to optional 150,000 mile standards were incorporated to correct a long standing discrepancy between the regulations and test procedures.

219. Comment: 2018 PM review (Board Resolution, page 21): In the 16-Feb-2012 Board Resolution, "the Board directs the Executive Officer to conduct a review of the 1 mg/mile PM in the 2015 timeframe and to report back to the board on the results." However, the 27-Jan-2012 transcript, page 13 suggests that ARB staff should conduct two reviews one in 2015 and another one in 2018 (see Figure 8). We recommend revising the Board resolution to so reflect. (Steven Douglas, Senior Director, Environmental Affairs, Alliance of Automobile Manufacturers)

Agency Response: The Board Resolution is not part of the 15-day change notice. Therefore, the comment is outside the scope of the notice and no further response is needed.

220. Comment: At the January 27th Board Hearing, the Board directed staff to review PM technology advancements for earlier implementation. Honda notes that measuring PM at the 1.0 mg/mile is not yet technically, nor practically feasible. CARB staff should take this into consideration when reviewing the PM schedule. (Robert Bienenfeld, American Honda Motor Co., Inc.)

Agency Response: The Board's direction to staff is not part of the 15-day change notice. Therefore, the comment is outside the scope of the notice and no further response is needed.

221. Comment: Honda shared with staff its advances in researching the effects of fuel specifications on actual PM. Honda proposed using its PM Index methodology to a) create PM Index specifications for certification fuels and b) create PM Index specifications for market fuels. The certification fuel specifications will standardize the testing of engines across all OEMs, and the market fuel specifications have the potential to reduce PM emissions in the in-use fleet, both older light duty vehicles on the road, as well as new light duty vehicles. If the PM Index strategy is too difficult for ARB to implement, a similar result can be achieved by holding aromatics of C>9 to not less than 2 vol %, in which case the gasoline quality for PM measurements will stabilize. We recommend that ARB add this specification to certification gasoline for LEV III light-duty vehicles. (Robert Bienenfeld, American Honda Motor Co., Inc.)

Agency Response: Fuel specifications were not part of the 15-day change notice. Therefore, the comment is outside the scope of the notice and no further response is needed.

222. Comment: Labeling guidelines in the Appendix D 2015 Test procedures. ARB newly changed the required abbreviations of "wide

range/linear/air-fuel ratio heated oxygen sensor" to "WRHO2S." Today, this technology is in wide use and commonly abbreviated on today's label as "AFS." Honda recommends that ARB continue using "AFS." (Robert Bienenfeld, American Honda Motor Co., Inc.)

Agency Response: The text on which the comment is based was not addressed as part of the 15-day changes. Therefore, the comment is outside the scope of the notice and no further response is needed.

## 6. Comments Not Previously Addressed Pertaining to Environmental Issues

223. Comment: Under the proposed alternative phase-in scheme for meeting the PM standards, a manufacturer would be permitted to introduce no more than 22% of new vehicles meeting a 3 mg/mi standard in the year 2020, as opposed to the 70% that would be required under the current phase-in schedule. In addition, an automaker may choose to meet this with essentially no change to existing vehicle or engine technology until 2021. Even more, an automaker would be permitted to introduce higher emitting vehicles in each of the five years leading up to 2021. These vehicles would be permitted to emit as much as 10 mg/mi, which some gasoline direct injection engines could approach[2]. In a worst-case scenario, the proposed alternative compliance scheme could result in a significant net increase in particulate emissions compared with the current phase-in schedule. (Dr. Alan Lloyd, President, The International Council on Clean Transportation)

Agency Response: For Agency response to the complete comment, see the document "Responses to Comments on the Advanced Clean Cars Environmental Analysis," released March 12, 2012, and approved by the Board at the March 22, 2012 board hearing, which is available at http://www.arb.ca.gov/msprog/levprog/leviii/acc_ea_rtc.pdf. The response to this comment is included as "Response to Comments: LEV III – 15-Day – 11."

## 7. Comments Submitted After the Close of the 15-day Comment Period

224. Comment: It seems that for 2017 model year only, all "carryover" LEV II SULEVs are required to be PZEVs. Mitsubishi Motors does not understand the purpose of this specific requirement nor the method for compliance. Does this mean existing LEVII SULEVs must be re-certified to the new LEVIII requirements in the 2017MY or will they be reclassified with existing carryover data to become PZEVs for that one

[2] See Table 3 in http://www.arb.c a.gov/regact/2012/leviiighg2012/levappp.pdf

model year? We request clarification or correction of this language. (David N. Patterson, Chief Engineer, Regulatory Affairs and Certification, Mitsubishi Motors R&D of America, Inc.)

Agency Response: Since this comment was received after the close of the 15-day comment period, it requires no response from staff. However, since it includes a request for clarification of the regulatory language, this response is provided to explain that, beginning with the 2017 model year, all SULEVs (i.e., both those that have previously been used to meet PZEV requirements and newly certified SULEVs) must be certified to LEV III standards.

# III. LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| A/C: | Air conditioning |
| AKI: | Anti Knock Index |
| ARB: | California Air Resources Board |
| ASTM: | American Society for Testing and Materials |
| BETP: | Bleed Emission Test Procedure |
| CAFE: | Corporate Average Fuel Economy |
| CARB: | California Air Resources Board |
| CCR: | California Code of Regulations |
| cfm: | Cubic feet per minute |
| CFO: | Clean fuels outlet |
| CFR: | Code of Federal Regulations |
| $CH_4$: | Methane |
| CNG: | Compressed natural gas |
| $CO_2$: | Carbon dioxide |
| $CO_2e$: | $CO_2$- equivalent |
| E10: | Fuel that contains a mix of 10% ethanol and 90% gasoline |
| E30: | Fuel that contains a mix of 30% ethanol and 70% gasoline |
| E85: | Fuel that contains a mix of 85% ethanol and 15% gasoline |
| E100: | Fuel that contains 100% ethanol |
| EIA: | U.S. Energy Information Administration |
| EV: | Electric vehicle |
| FFV: | Flexible fuel (or fuel flexible) vehicle |
| FTP: | Federal Test Procedure |
| GHG: | Greenhouse gas |
| g/mi: | Grams per mile |
| GVWR: | Gross vehicle weight rating |
| GWP: | Global Warming Potential |
| HC: | Hydrocarbons |
| HEV: | Hybrid electric vehicle |
| HFC: | Hydrofluorocarbon |
| HDV: | Heavy-duty vehicle |
| HWFET: | Highway Fuel Economy Test |
| ISO: | International Organization for Standardization |
| ISOR: | Staff Report: Initial Statement of Reasons |
| LA92: | "Unified" Dynamometer Driving Schedule |
| Lbs.: | Pounds |
| LDT: | Light-Duty truck |
| LDT1: | Light-duty truck with a loaded vehicle weight of 0-3750 pounds |
| LDT2: | Light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight rating of 8500 pounds |
| LDT3: | Subset of LDT2 with a gross vehicle weight greater than 6000 pounds to a gross vehicle weight rating of 8500 pounds |

| | |
|---|---|
| LDT4: | Subset of LDT2 with a gross vehicle weight greater than 6000 pounds to a gross vehicle weight rating of 8500 pounds |
| LEV: | Low-emission vehicle |
| LVW | Loaded vehicle weight |
| MAC: | Manufacturer Advisory Correspondence |
| MDPV: | Medium-duty passenger vehicle |
| MDV: | Medium-duty vehicle |
| mg/mi: | Milligrams per mile |
| MON: | Motor octane number |
| MY: | Model year |
| NHTSA: | National Highway Traffic Safety Administration |
| NMHC: | Non-methane hydrocarbons |
| NMOG: | Non-methane organic gas |
| $N_2O$: | Nitrous oxide |
| NOx: | Oxides of nitrogen |
| NPRM: | Notice of Proposed Rulemaking for USEPA's "2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards" as published in the Federal Register on December 1, 2011 (76 Fed. Reg. 74854) |
| OBD: | Onboard diagnostic |
| OEM: | Original equipment manufacturer |
| ORVR: | Onboard Refueling Vapor Recovery |
| PC: | Passenger car |
| PHEV: | Plug-in (or off-vehicle charge capable) hybrid electric vehicle |
| PM: | Particulate matter |
| PM2.5: | Particulate matter less than or equal to 2.5 micrometers in diameter |
| PMP: | Particulate Measurement Programme |
| ppm: | Parts per million |
| PZEV: | Partial zero-emission vehicle, as defined in the "California Exhaust Emission Standards and Test Procedures for 2009 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes" |
| ROG: | Reactive organic gas |
| RON: | Research octane number |
| RVP: | Reid Vapor Pressure |
| SAE: | Society of Automotive Engineers |
| SC03: | A test procedure designed to determine emissions associated with the use of an air conditioner; A/C test procedure |
| SFTP: | California Supplemental Federal Test Procedure |
| SULEV: | Super-ultra-low-emission vehicle |
| SVM: | Small volume manufacturer |
| ULEV: | Ultra-low-emission vehicle |
| USEPA: | United States Environmental Protection Agency |
| US06: | A high-speed, high-acceleration, test procedure designed to measure off-cycle emissions |
| VEC: | Vehicle-equivalent credit |

VMT: Vehicle miles travelled
ZEV: Zero-emission vehicle

## IV. LIST OF ATTACHMENTS

**ATTACHMENT A:** California Air Resources Board. “Responses to Comments on the Advanced Clean Cars Environmental Analysis.” March 12, 2012. Available at http://www.arb.ca.gov/msprog/levprog/leviii/acc_ea_rtc.pdf.