

State of California
AIR RESOURCES BOARD

FINAL STATEMENT OF REASONS FOR RULEMAKING
Including Summary of Comments and Agency Responses

2012 AMENDMENTS TO THE ZERO EMISSION VEHICLE REGULATIONS

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

Table of Acronyms

AB	Assembly Bill
APU	Auxiliary Power Unit
ARB	California Air Resources Board or the Board
AT PZEV	Advanced Technology Partial Zero Emission Allowance Vehicle, typically a non-plug in hybrid such as the Prius
BEV	Battery Electric Vehicle
BEVx	Range Extended Battery Electric Vehicle
CCR	California Code of Regulations
CEC	California Energy Commission
DC	Direct Current
EAER	Equivalent All Electric Range
Enhanced AT PZEV	Enhanced Advanced Technology Partial Zero Emission Allowance Vehicle, now called a Transitional Zero Emission Vehicle or TZEV
FCV	Fuel Cell Electric Vehicle
FSOR	Final Statement of Reasons
g/mi	grams per mile
GHG	Greenhouse Gas
HICE	Hydrogen Internal Combustion Engine
HOV	High Occupancy Vehicle Lane
ICM	Indirect Cost Multiplier
ILVM	Independent Low Volume Manufacturer
ISOR	Initial Statement of Reasons
IVM	Intermediate Vehicle Manufacturer
kWh	Kilowatt-hour
LCFS	Low Carbon Fuel Standard
LDT	Light- Duty Truck with loaded vehicle weight up to 8500 pounds
LEV I	First generation Low Emission Vehicle program, adopted in a 1990-1991 rulemaking, and generally applicable in the 1994-2003 model years
LEV II	Second generation Low Emission Vehicle program, adopted in a 1998 -1999 rulemaking, and generally applicable in the 2004 and subsequent model years
LEV III	Third generation Low Emission Vehicle program (criteria pollutant and greenhouse gas emission fleet standards), proposed as part of the Advanced Clean Cars rulemaking package in 2012, and generally applicable to 2015 and subsequent model years for Criteria Pollutants, and applicable to 2017 and subsequent model years for Greenhouse Gases.
NEV	Neighborhood Electric Vehicle
NHTSA	National Highway Traffic Safety Administration
NMOG	Non-Methane Organic Gas
NOx	Oxides of Nitrogen
NMOG+ NOx	Non-Methane Organic Gas plus Oxides of Nitrogen
PC	Passenger Car
PHEV	Plug-in Hybrid-Electric Vehicle

PM.....Particulate Matter
 PZEVPartial Zero Emission Allowance Vehicle, typically, a conventional gasoline,
 diesel, or natural gas vehicle that meets the most stringent standards for smog-
 forming emissions
 R_{cda}.....Charge Depleting Range Actual
 ROGReactive Organic Gases
 SAESociety of Automotive Engineers
 SIPState Implementation Plan
 SULEVSuper Ultra Low Emission Vehicle
 SVMSmall Volume Manufacturer
 Type 0Utility EV, less than 50 mile range
 Type ICity EV, range of 50 to less than 100 miles
 Type IIFull Function EV, range of 100 or more miles
 Type IIIZEV, range of 100 or more miles plus fast refueling, or 200 miles
 Type IV.....ZEV, range of 200 or more miles plus fast refueling
 Type V.....ZEV, range of 300 or more miles plus fast refueling
 TZEVTransitional Zero Emission Vehicle, typically a plug-in hybrid electric vehicle
 UDDSUrban Dynamometer Driving Schedule
 US06US06 drive schedule
 U.S. EPA.....United States Environmental Protection Agency
 VMTVehicle Miles Traveled
 ZEVZero Emission Vehicle

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

PUBLIC HEARING TO CONSIDER THE ADOPTION OF THE 2012 AMENDMENTS TO
THE CALIFORNIA ZERO EMISSION VEHICLE REGULATION

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

I. GENERAL

A. Summary

In this rulemaking Air Resources Board (ARB or the Board) has amended its regulation that requires automobile manufacturers to develop and commercialize zero emission vehicle (ZEV) technologies. The amendments have increased ZEV percentage requirements for model years 2018 through 2025, given manufacturers increased flexibility to comply with ZEV requirements, simplified the credit system for ZEVs and plug-in hybrid electric vehicles (PHEV), also referred to as transitional zero emission vehicles (TZEV), and created an optional compliance path for manufacturers in the Section 177 States. These ZEV amendments are part of ARB's Advanced Clean Cars program, a coordinated package of requirements for model year 2015 through 2025 light duty vehicles, which included amendments to the Low Emission Vehicle (LEV) criteria pollutant and greenhouse gas (GHG) standards, ZEV regulation, and the Clean Fuels Outlet (CFO) regulation. Continuing its leadership role in developing innovative and ground breaking emission control programs, ARB developed the Advanced Clean Cars program, a pioneering approach for a set of regulations, although separate in construction, related in terms of the synergy developed to address both ambient air quality needs and climate change.

The Staff Report: Initial Statement of Reasons for Rulemaking (ISOR or staff report), "2012 Proposed Amendments to the California Zero Emission Vehicle Program Regulations," was released December 7, 2011. The staff report, which is incorporated by reference herein, contained a description of the rationale for the proposed amendments. On December 7, 2011, all references relied upon and identified in the staff report were made available to the public.

The Board received written and oral comments at the hearing. At the conclusion of the hearing, the Board adopted Resolution 12-11, in which it approved the originally proposed amendments along with several modifications, some of which were suggested by staff in a document entitled "Proposed Modifications to Staff Proposal," distributed at the hearing. Resolution 12-11 directed the Executive Officer to make the text of the modified proposal, with other conforming modifications as might be appropriate, available to the public for a supplemental written comment period of at least 15 days.

The Executive Officer was then directed either to adopt the amendments with such additional modifications as might be appropriate in light of the comments received, or to present the regulations to the Board for further consideration if warranted.

The regulatory text with the modifications clearly identified was made available starting February 22, 2012, for a 15-day comment period ending March 8, 2012, by issuance of a Notice of Public Availability of Modified Text and supporting documents. Nine written comments were received.

After considering the comments received during the supplemental 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, per Resolution 12-21, the Board considered the Environmental Analysis (Appendix B to the ZEV ISOR) and the Response to Environmental Analysis Comments in accordance with the requirements of CEQA and ARB's certified regulatory program, and adopted the Findings and Statement of Overriding Considerations and adopted the final Advanced Clean Car regulations, including the modified ZEV regulation. The adopted regulation reflects the final modifications that were made available for the supplemental comment period.

This Final Statement of Reasons for Rulemaking (FSOR) updates the Staff Report by identifying and explaining the modifications that were made to the original proposal at the Board's direction and in response to comments, and summarizes and responds to written comments and hearing testimony. The Board has amended the following section of title 13, in the California Code of Regulations (CCR): section 1962.1 for Zero Emission Vehicle Standards for 2009 through 2017 Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, (renamed from "Zero-Emission Vehicle Standards for 2009 and Subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles") and its incorporated test procedures "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" (renamed from "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”). The Board has amended and renumbered the section 1962.2 “Electric Vehicle Charging Requirements” of title 13, CCR to section 1962.3. The Board has adopted the following section of title 13, CCR: section 1962.2 for Zero Emission Vehicle Standards for 2018 and subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, and its incorporated test procedures “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”.

B. Incorporation of Materials by Reference

The following documents are incorporated by reference in the regulations:

- (1) SAE J2481 “Utility Factor Definitions for Plug-In Hybrid Electric Vehicles Using 2001 U.S. DOT National Household Travel Survey Data,” as revised in March 2009
- (2) ETA-NTP002 (revision 3) “Implementation of SAE Standard J1666 May 93: Electric Vehicle Acceleration, Gradeability, and Deceleration Test Procedure,” adopted on December 1, 2004
- (3) ETA-NTP004 (revision 2) “Electric Vehicle Constant Speed Range Tests,” adopted on February 1, 2008
- (4) SAE J1772 “SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler,” as revised in January 2010

C. Fiscal Impacts

In developing this regulatory proposal, ARB staff evaluated the potential economic impacts on representative private persons or businesses. ARB estimates the total impact of ZEV regulation to regulated manufacturers, apart from all other regulations, to be \$10.2 billion, from model year 2018 through 2025 compliance.

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

The Executive Officer has also determined, pursuant to CCR, title 1, section 4, that the proposed regulatory action would affect small businesses. Modifications to the ZEV regulation could indirectly affect small businesses by creating or expanding electric vehicle supply equipment companies and ZEV component suppliers to support greater volumes of ZEVs, possibly provide fuel cost savings to small businesses who choose to purchase ZEVs that become more widely available, and gasoline retail stations operated as small businesses may see a decline in sales due to reduced demand for gasoline.

D. Consideration of Alternatives

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 as and less burdensome to affected private persons than the action taken by the Board.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

The following sections summarize the substantive modifications and the rationale for making such modifications as released on February 22, 2012, for public comment.

Optional Section 177 State Compliance Path

Staff's modifications include an optional Section 177 state ZEV compliance path available for intermediate volume manufacturers (IVM) and large volume manufacturers (LVM). In order to be eligible for this optional compliance path, manufacturers must place additional battery electric vehicles (BEV) in the Section 177 states equal to 0.75 percent of sales in 2016 model year and 1.5 percent of sales in 2017 model year. These obligations cannot be met with "traveled" credits, and are in addition to the existing requirements (i.e. 3 percent in each year) which can be met with "traveled" credits. Existing carry-forward and carry-back provisions will remain available to manufacturers. In exchange for these pre 2018 ZEVs placed in Section 177 states, manufacturers will have the following reductions in their allowed TZEV percentage and minimum ZEV requirement:

Optional Compliance Path Section 177 State Allowed TZEV Credit Percentage

	2015	2016	2017	2018
Percentage Reduction for TZEVs	25%	20%	15%	10%
New TZEV Credit % in Section 177 states	2.25%	2.40%	2.55%	2.25%

Optional Compliance Path Section 177 State Minimum ZEV Credit Percentage

	2018	2019	2020
Percent Reductions for Minimum ZEV Floor	37.5%	25%	12.5%
New minimum ZEV Credit % in Section 177 States	1.25%	3%	5.25%

In addition to the above credit percentage reductions, manufacturers on this optional compliance path will be allowed to “pool” their TZEV and ZEV credits within two regional pools: an East Region pool and a West Region pool. The East Region pool will be defined as Section 177 states east of the Mississippi River. The West Region pool will be defined as the Section 177 states located west of the Mississippi River. Currently, the East Region includes the following states: Connecticut, Maine, Maryland, Massachusetts, Rhode Island, New Jersey, New York, and Vermont. The West Region currently includes the following states: New Mexico and Oregon. Pooling for TZEV credits shall begin in 2015 model year through 2021 model year, and pooling for ZEV credits shall begin in 2016 model year through 2021 model year. Trading between the East and West pools is allowed at a 30 percent premium. For example, a manufacturer wanting to trade from its East to West pool would take 130 credits from its East pool, and move those credits to its West pool, where the traded credits would be worth 100 credits in its West pool. IVMs or LVMs must submit written notification for choosing this path no later than September 1, 2014. Pooling will be assessed on whether the system is working as intended and considered for model years beyond 2021 at a later review of ZEV regulation. Regulatory language has been added to subdivisions 1962.1(d)(5)(E)3. (and in the incorporated test procedures) and 1962.2(d)(5)(E)3. (and in the incorporated test procedures) to reflect this optional compliance path.

All parties reserve the right to reevaluate this proposal and/or any subsequent agreement in the event of other significant changes to California’s proposed regulation, including changes to California volume requirements. Any changes would need to be addressed in a subsequent rulemaking.

GHG-ZEV Over-Compliance

The Board directed staff to advance the final application date for manufacturers choosing to use GHG-ZEV over-compliance provision from May 1, 2018 to December 31, 2016. This will allow staff to consider information on manufacturers' plans to over-comply with GHG fleet standard in the mid-term review, scheduled to take place in 2017.

Additionally, as provided in "Attachment E" which was made available at the Board Hearing, staff's modifications include a provision which states that the GHG-ZEV over-compliance provision is only available if the Board accepts compliance with the Federal GHG fleet standard as compliance with the California GHG fleet standard.

Partial Allowance Zero Emission Vehicle (PZEV) Certification

Staff's modifications include allowing manufacturers to certify 2014 model year PZEVs to the new LEV III standards (Third Generation Lower Emission Vehicle Program), which include the super-ultra-low-emission vehicle (SULEV) 20 certification. This modification reflects what is allowed under the LEV III regulation. Additionally, staff's modifications allow 2015 model year through 2019 model year vehicles (PZEVs, advanced technology PZEVs, and TZEVs) to certify to LEV II (Second Generation Lower Emission Vehicle Program) exhaust and evaporative emission standards to conform to with what is allowed under the LEV III regulation.

Same Year Method for Calculating the Number of Vehicles to Which the Percentage ZEV Requirement is Applied

Staff's changes modify the criteria by which the Executive Officer is to make a decision allowing a manufacturer to use the same year method, as opposed to the previous second, third, and fourth model year average, when a manufacturer experiences a 30 percent drop in sales rather than 40 percent drop in sales.

Staff analyzed manufacturers' sales data from periods in which there were significant drops in vehicle sales. Based on this analysis, staff considers a 30 percent decline from one model year to the next represents a significant impact to a manufacturer, and is an appropriate threshold for allowing a manufacturer to choose the same year method to determine its ZEV requirements.

TZEV Credit Calculation for 2018 and Subsequent Model Years

It has been brought to staff's attention that the use of actual charge depleting range (R_{cda}) for TZEV credit determination might be "gamed" with vehicles equipped with battery systems that may not maintain sufficient power output through several urban dynamometer drive schedule (UDDS) driving cycles to meet the acceleration requirements on electric power alone, and that equivalent all electric range (EAER)

would better reflect usable battery capacity. Without the proposed change, blended PHEVs would earn the same credit as PHEVs that could maintain higher power throughout a UDDS range test, where test results would show EAER equal to R_{cda} . The modified calculation bases credit on EAER instead of R_{cda} . This modification will not result in a change in credit for most PHEVs, and will allocate credit proportional to the amount of usable energy available on a particular PHEV, a more appropriate metric for PHEV performance in the ZEV regulation.

Definition Changes

At the January 2012 hearing, the Board directed staff to resolve remaining inconsistencies regarding the timing of when manufacturers are subject to the large volume and intermediate volume ZEV requirements as a result of changing size definition categories for any reason, including change of ownership situations. Staff modified regulatory language in section 1962.1, CCR, and in the incorporated test procedure, to ensure manufacturers changing size due to change of ownership would be subject to stepped-up requirements starting in 2018.

Delivered for Sale and Placed in Service

Staff's modifications allow manufacturers to earn both delivered for sale and placed in service credits for a ZEV, as long as ZEV is delivered for sale in either California or a Section 177 state, and placed in service in California or a Section 177 state. Frequently, among Section 177 states in the Northeast, dealers trade vehicles across state lines and manufacturers have little control over where the vehicles are placed in service. Additionally, staff's modifications specify that the total credit for the vehicle (meaning the delivered for sale credit plus the placed in service credit) will be earned in the state in which ZEV is originally delivered for sale.

Hydrogen Internal Combustion Engine Vehicles

Staff's modifications include adding back subdivision 1962.1(c)(3)(B) and subdivision C.3.3(b), CCR, which allow hydrogen internal combustion engine vehicles to qualify for zero-emission vehicle miles traveled (VMT) PZEV allowance. Manufacturers have indicated interest in hydrogen internal combustion engine vehicles, and those vehicles will continue to qualify as TZEVs in 2012 and subsequent model years.

Alternative Charge Connector

Staff's modifications include an alternative approval process in section 1962.3, CCR, for vehicles with Society of Automotive Engineers (SAE) J1772 AC "equivalency" when equipped with a manufacturer provided, safety-listed adapter. This provides flexibility for manufacturers as a direct current (DC) fast charge connector standard is being developed and adopted.

Upstream Emissions and Harmonizing with Federal Regulations

The Board directed staff to have manufacturers include upstream emissions associated with ZEVs and TZEVs in their calculation of GHG-ZEV over compliance credits in 2018 through 2021 model year. When staff subsequently updates the regulation to harmonize with the Federal standard, it will make appropriate changes to the regulatory language to ensure upstream emissions associated with ZEVs and TZEVs are included in a manufacturer's calculation of GHG-ZEV over compliance credits.

Minor Modifications

Other post-hearing conforming modifications were made to the regulation for clarification and simplification:

Minor modifications for Section 1962.1 and the incorporated Test Procedure

1962.1(b)(1)(B)2. and C.2.1(b)(2): References to light-duty truck "2" (LDT2) have been removed from this section because the phase in of LDT2s in manufacturer's applicable sales volumes will be completed after model year 2011.

1962.1(c)(3)(A) and C.3.3(a): References to the "California Exhaust Emission Standards and Test Procedures through 2017 Model Zero-Emission Vehicles, and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium Duty Vehicle Classes" have been updated, as well as the reference to the equation used to determine the utility factor manufacturers are to use to calculate a zero-emission VMT allowance.

1962.1(d)(5)(E)1. and 2., and C.4.5(e)(1) and (2): Regulatory language has been clarified to specifically apply the provision to LVMS and IVMS, which are the only manufacturers with a ZEV requirement. Additionally, language in subdivisions 1962.1(d)(5)(E)1.b. and C.4.5(e)(1)(B) has been clarified to match the regulatory language in subdivisions 1962.1(d)(5)(E)1.a. and C.4.5(e)(1)(A).

1962.1(g)(2)(A) and C.7.2(a): Regulatory language has been clarified to accurately reflect how ZEV credits are calculated. Additionally, language has been added to specify how credits are calculated for model years 2015 through 2017.

1962.1(g)(2)(B) and C.7.2(b): Regulatory language has been clarified to accurately reflect how PZEV credits are calculated. Additionally, language has been added to specify how credits are calculated for model years 2015 through 2017.

1962.1(g)(2)(A) and (B), and C.7.2(a) and (b): Regulatory language has also been clarified to reflect that manufacturers may use the LDT2 non-methane organic gas (NMOG) fleet average when calculating the amount of credits earned by LDT2 PZEVs and ZEVs in model year 2009 through 2011. For 2012 through 2014 model years, manufacturers are only allowed to use their passenger car (PC) and light-duty truck “1” (LDT1) NMOG average when calculating PZEV and ZEV credits.

1962.1(g)(5)(A) and C.7.5(a): Regulatory language has been clarified to specify that transportation system credits for 2009 through 2011 ZEVs can qualify for the travel provision. The language has been corrected to show that TZEVs, Type I.5x vehicles and Type IIx vehicles can earn transportation system credits through model year 2017.

1962.1(g)(5)(C)2. and C.7.5(c)(2): The language has been clarified to specify how the cap for transportation system credits earned by TZEVs applies if a manufacturer chooses to comply with the optional Section 177 state compliance path.

1962.1(g)(6)(A) and C.7.6(a): The language has been clarified to specify how the cap for both 2001 through 2005 neighborhood electric vehicles (NEV) and 2006 and through 2017 NEVs applies if a manufacturer chooses to comply with the optional Section 177 state compliance path.

1962.1(i)(5) and B.1: A definition for “conventional rounding method” has been added to clarify how credits are rounded in the ZEV bank and when doing ZEV calculations.

1962.1(i)(6) and B.1: A definition for “East Region pool” has been added due to the new optional Section 177 state compliance path.

1962.1(i)(7) through (18): These subdivisions have been renumbered due to the addition of new definitions.

1962.1(i)(17) and B.1: A definition for “West Region pool” has been added due to the new optional Section 177 state compliance path.

Section D.3: A sentence was added to Section D in the 2009 through 2017 incorporated test procedures in staff’s initial proposal, but was not properly underlined. The new sentence, which requires manufacturers to update their annual NMOG reports if their production numbers on their ZEV reports have been updated, has been indicated by a double underline.

Section F: The section F title in the 2009 through 2017 incorporated test procedure has been modified to reflect that section F applies to 2012 through 2017 model ZEVs and hybrid electric vehicles. Additionally, a reference has been corrected in the first paragraph of this section due to renumbering of test procedure sections.

Section G: The section G title in the 2009 through 2017 incorporated test procedures has been modified to reflect that section G applies to 2012 through 2017 model off-vehicle charge capable hybrid electric vehicles, which are commonly referred to as PHEVs. Additionally a new section G.12 has been added to establish the calculations that must be used to determine the GHG emissions values attributable to PHEVs for the 2017 model year.

Minor Modifications for 1962.2 and the Incorporated Test Procedures

1962.2(a) and C.1: The language has been clarified to reflect that GHG emissions from a vehicle's air conditioning system will not exclude the vehicle from counting as a ZEV.

1962.2(c)(3)(A)1. and C.3.3(a)(1): The language has been corrected with the appropriate acronym for all electric range, which is AER, not R_{cda} . Additionally, the reference to the "California Exhaust Emission Standards and Test Procedures for the 2018 and Subsequent Model Zero-Emission Vehicles, and Hybrid Electric Vehicles in the Passenger Car, Light-Duty Truck, and Medium Duty Vehicle Classes" has been corrected.

1962.2(d)(5)(E) and C.4.5(e): The language has been clarified to specifically apply the provision to LVMs and IVMs, which are the only manufacturers with a ZEV requirement.

1962.2(d)(5)(G) and C.4.5(g): The minimum range qualification has been corrected from 80 miles range to 75 miles range for range extended battery electric vehicles (BEVx) to match the minimum requirements for BEVxs in 2012 through 2017.

1962.2(g)(2)(A) and C.7.2(a): The language has been clarified for how ZEV credits are calculated if a manufacturer chooses to comply with the optional Section 177 state compliance path.

1962.2(g)(2)(B) and C.7.2(b): The language has been clarified for how TZEV credits are calculated if a manufacturer chooses to comply with the optional Section 177 state compliance path.

1962.2(g)(5)(C)1 and C.7.5(c)(1): The language has been clarified to specify how the cap for transportation system credits earned by ZEVs applies if a manufacturer chooses to comply with the optional Section 177 state compliance path.

1962.2(g)(5)(C)2 and C.7.5(c)(2): The language has been clarified to specify how the cap for transportation system credits earned by TZEVs applies if a manufacturer chooses to comply with the optional Section 177 state compliance path.

1962.2(g)(6)(A) and C.7.6(a): The language has been clarified to specify how the cap for discounted PZEV and Advanced Technology Partial Zero Emission Allowance Vehicle (AT PZEV) credits and NEV credits applies if a manufacturer chooses to comply with the optional Section 177 state compliance path.

1962.2(g)(6)(B)2.a and C.7.6(b)(2)A.: The language has been corrected to reference the correct subdivision within section 1961.3.

1962.2(i)(3) and B.1.: A definition for “conventional rounding method” has been added to clarify how credits are rounded in the ZEV bank and when doing ZEV calculations.

1962.2(i)(5) and B.1.: A definition for “East Region pool” has been added due to the new optional Section 177 state compliance path.

1962.2(i)(4) – (19): These subdivisions have been renumbered due to the addition of new definitions.

1962.2(i)(17) and B.1.: A definition for “West Region pool” has been added due to the new optional Section 177 state compliance path.

1962.2(j): Some abbreviations have been removed because they no longer apply nor are used in the regulatory text.

Section B.1: Definitions for discounted PZEVs and AT PZEV credits, energy storage device, hydrogen fuel cell vehicle, and hydrogen internal combustion engine vehicle have been added to the 2018 and subsequent model year test procedures to reflect definitions included in section 1962.2.

Section F: The section F title has been modified in the 2018 and subsequent model year incorporated test procedures to reflect that section F applies to 2018 and subsequent model ZEVs and hybrid electric vehicles. Additionally, a sentence has been removed that stated manufacturers may certify 2009 through 2011 model year ZEVs and hybrid

electric vehicles because the sentence will not apply in the 2018 and subsequent model year timeframe.

Section G: The section G title has been modified in the 2018 and subsequent model year incorporated test procedures to reflect that section G applies to 2018 and subsequent model ZEVs and hybrid electric vehicles. Additionally, a sentence has been removed that stated manufacturers may certify 2009 through 2011 model year PHEVs because the sentence will not apply in the 2018 and subsequent model year timeframe.

Section J: Section J has been deleted from the 2018 and subsequent model year incorporated test procedures because the test procedures for 2009 through 2011 model ZEV and hybrid electric vehicles no longer apply.

Other Modifications

Modifications that correspond with those described for the regulations were also made to the incorporated test procedures. For both the regulations and the test procedures, ARB also made other non-substantial modifications for clarification such as correcting typographical, grammatical or numbering errors, and correcting references and cross references.

III. MODIFICATIONS MADE SUBSEQUENT TO THE 15-DAY PUBLIC COMMENT PERIOD

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

Non-Substantive Corrections to the Regulations

In a 45-day comment, it was brought to staff's attention that the use of R_{cda} for TZEV credit determination might be "gamed" with vehicles equipped with battery systems that may not maintain sufficient power output through several UDDS driving cycles to meet the acceleration requirements on electric power alone, and that EAER would better reflect usable battery capacity. Changes were made throughout subdivision 1962.2(c)(3)(A) to reflect this change. The final regulation text had However, R_{cda} was erroneously not removed from the title row of the table in subdivision 1962.2(c)(3)(A) and replaced with EAER. The final, adopted regulations correct this error.

Minor non-substantive corrections were also made to the final regulation text in title 13, section 1962.1, subsections (c)(3)(A), (h)(1), (i)(3), and (j), in order to match the regulation text as published in the California Code of Regulations.

Non-Substantive Corrections to the 2009 through 2017 Test Procedures

1. In response to a 45-day comment, in the regulatory text accompanying the 15 -day notice, language in subdivision 1962.1(c)(2)(A) was modified to allow manufacturers to certify 2014 model year PZEVs to the new LEV III exhaust standards and allow 2015 model year through 2017 model year PZEVs to certify to LEV II exhaust emission standards. Language that should be identical to this section of the regulations also appears in section C.3.2(a) of the test procedures. However, when the proposed 15-day changes to the test procedures were released, the language was not updated in section C.3.2(a). The final, adopted regulations correct this oversight and maintain consistency by updating the language to reflect the official regulatory language in section C.3.2(a).

2. In response to a 45-day comment, in the regulatory text accompanying the 15-day notice, regulatory language in subdivision 1962.1(c)(2)(B) was modified to allow manufacturers to certify 2014 model year PZEVs to the new LEV III evaporative standards and allow 2015 model year through 2017 model year PZEVs to certify to LEV II evaporative emission standards. Language that should be identical to this section of the regulations also appears in section C.3.2(b) of the test procedures. However, when the proposed 15-day changes to the test procedures were released, the language was not updated in section C.3.2(b). The final, adopted regulations correct this oversight and maintain consistency by updating the language to reflect the official regulatory language in section C.3.2(b).

3. Throughout the 2009 through 2017 model year test procedure, references to sections E and F were updated, due to a new section E being added to the test procedure. However, references made to the correct sections were not updated in section D.2.6(c). The final adopted regulations correct this oversight and correctly reference the updated section numbers in section D.2.6(c).

Non-Substantive Corrections to the 2018 and subsequent Model Year Test Procedures

1. As in the regulations, in a 45-day comment, it was brought to staff's attention that the use of R_{cda} for TZEV credit determination might be "gamed" with vehicles equipped with battery systems that may not maintain sufficient power output through several UDDS

driving cycles to meet the acceleration requirements on electric power alone, and that EAER would better reflect usable battery capacity. Changes were made throughout subdivision C.3.3(a) to reflect this change. However, R_{cda} was erroneously not removed from the title row of the table in subdivision C.3.3(a) and replaced with EAER. The final, adopted regulations correct this error.

2. References in section D.2.6(c), D.2.10, and D.2.11 erroneously refer to the incorrect sections within the 2018 and subsequent model year test procedures. The final adopted regulations correct this oversight and correctly reference the corrected section numbers in sections D.2.6(c), D.2.10, and D.2.11.

The changes listed above do not materially alter any requirement, right, responsibility, condition, prescription, or other regulatory element of any California Code of Regulations provisions.

IV. CORRECTION TO REFERENCES

Staff identified several typographical errors and other minor problems in some of the references that were listed in the ISOR. For clarity, the following is an identification of these errors and the necessary corrections.

1. In Chapter 1, "Introduction", page 4, the reference for ARB, 2009a erroneously refers to the May 19, 2009, update as the date of the Climate Change Scoping Plan. This is the incorrect date. The correct date is December 2008. The correct reference should be as follows:

ARB, 2009a. California Air Resources Board. December 2008. "Climate Change Scoping Plan"
http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf

2. The references contained in the reference list on page 12 in Chapter I, "Introduction" were corrected as follows:

In Chapter 1, "Introduction," page 12, the reference for Honda, 2011 erroneously refers to an article with an incorrect title. The correct title should be "Honda at the Los Angeles Auto Show: Fact Sheet." The correct reference should be as follows:

Honda, 2011. Honda Motor Company, LTD. Press Release, November 17, 2010. "Honda at the Los Angeles Auto Show"

<http://www.hondanews.com/channels/honda-automobiles-concepts/releases/honda-at-the-los-angeles-auto-show-fact-sheet>

In Chapter 1, “Introduction,” page 12, the reference for USA TODAY, 2010 erroneously refers to the March 18, 2010, as the date of the USA Today article “GM vow production-ready hydrogen fuel cell by 2015.” This is the incorrect date. The correct date is March 17, 2010.

USA TODAY, 2010. Chris Woodyard, USA TODAY. March 17, 2010. “GM vows production-ready hydrogen fuel cell by 2015”

<http://content.usatoday.com/communities/driveon/post/2010/03/gm-vows-production-ready-hydrogen-fuel-cell-by-2015/1>. Accessed November 5, 2011

3. In Chapter 2, “Summary of Proposed Amendments,” page 16, the reference for ARB, 2009d erroneously refers to an incomplete website URL to the White Paper: Summary of Staff’s Preliminary Assessment of the Need for Revisions to the Zero Emission Vehicle Regulation. The correct reference should be as follows:

ARB, 2009d. California Air Resources Board. “White Paper: Summary of Staff’s Preliminary Assessment of the Need for Revisions to the Zero Emission Vehicle Regulation,” www.arb.ca.gov/msprog/zevprog/2009zevreview/zevwhitepaper.pdf

4. The reference (ARB, 2009a) cited in the paragraph on page 16 in chapter 2 was corrected for an incorrect date, (see correction 1).
5. In chapter 5, “Economic Impacts”, page 66 the reference for PluginCars, 2011 erroneously refers to an article with an incorrect title. The correct title should be “Ford Pushes Key Marketing Message for Electric Cars: Lower Maintenance Costs.” The correct references should be as follows:

PluginCars, 2011. PluginCars.com. Zach McDonald. February 9, 2011. “Ford Pushes Key Marketing Message for Electric Cars: Lower Maintenance Costs.” <http://www.pluginCars.com/ford-pushes-key-marketing-message-electric-cars-lower-maintenance-costs-106793.html>. Accessed September 26, 2011.

6. In chapter 5, “Economic Impacts”, page 68, the reference for UC Davis, 2010 erroneously uses the incorrect acronym for “Reflexive Layers of Influence” which should be RLI, not RFI. The correct references should be as follows:

UC Davis, 2010. University of California, Davis. J.Axsen and K.Kurani. July 2010. *“Reflexive Layers of Influence (RLI): A model of social influence, vehicle purchase behavior, and pro-societal values.”*

7. In chapter 5, “Economic Impacts”, page 69, the reference for Coulomb, 2011 did not include a specific reference to information on the website. The correct reference should be as follows:

Coulomb, 2011. Coulomb ChargePoint America. Website. “ChargePoint America Program Info” <http://chargepointamerica.com/program-info.php>. Accessed September 20, 2011

8. The reference (ARB, 2009a) included in the list of references in chapter 10, page 107, was corrected for an incorrect date, (see correction 1).
9. The reference (ARB, 2009d) included in the list of references in chapter 10, page 107, was corrected for a typographical error, (see correction 3).
10. The reference (Coulomb, 2011) included in the list of references in chapter 10, page 109, was corrected to be more specific, (see correction 7).
11. The reference (Honda, 2011) included in the list of references in chapter 10, page 110, was corrected for a typographical error, (see correction 2).
12. The reference (PluginCars, 2011) included in the list of references in chapter 10, page 111, was corrected for a typographical error, (see correction 5).
13. The reference (UC Davis, 2010) included in the list of references in chapter 10, page 112, was corrected for a typographical error, (see correction 6).
14. The reference (USA TODAY, 2011) included in the list of references in chapter 10, page 113, was corrected for an incorrect date, (see correction 2).

V. SUMMARY OF COMMENTS MADE DURING THE 45-DAY, THE BOARD HEARING, AND SUPPLEMENTAL COMMENT PERIOD AND AGENCY RESPONSES

Below is a list of those who submitted comments during the 45-day comment period, at the January 26 and 27 Board Hearing, or gave oral testimony at the Board Hearing:

<u>Commenter</u>	<u>Affiliation</u>
Alegria, Lydia	private citizen (Alegria)
Altman, Daniel	private citizen (Altman)
Amedeo, Felisa	Ferrari S.p.A. (Ferrari)
Anair, Don	Union of Concerned Scientists (UCS)
Arguello, Martha	Physicians for Social Responsibility (PSR)
Avery, William	private citizen (Avery)
Babik, Robert*	General Motors (GM)
Baker-Branstetter, Shannon*	Consumers Union (CU)
Barrera, Andrew	Los Angeles Metro Hispanic Chamber of Commerce (LAMHCC)
Barrett, Will	American Lung Association of California (ALAC)
Baumhefner, Max	Natural Resources Defense Council (NRDC)
Beinenfeld, Robert *	American Honda Motor Company, Incorporated (Honda)
Boesel, John	CalStart (CalStart)
Cabaniss, John *	Global Automakers (Global)
Campbell, Susan	Jaguar Land Rover North America, LLC (JLR)
Carmichael, Tim*	California Natural Gas Vehicle Coalition (CNGVC)
Carney, Chris	Union of Concerned Scientists (UCS) - 159 signees
Caroll, Sean*	Environment California (EC)
Cassidy, Robert	Nissan (Nissan)
Chew, Yuli	private citizen (Chew)
Clark, Darrell	Sierra Club (Sierra)
Conibear, Robert	private citizen (Conibear)
Cuevas, Yolanda	Los Angeles Unified School District Asthma Program (LAUSD)
De Leon, Kevin	California Senator De Leon (Senator De Leon)
Douglas, Steven *	Alliance of Automobile Manufacturers (Alliance)
Druffel, Allis*	California Interfaith Power & Light (CAIPL) (Written Testimony included 10 signees)
Eckerle, Tyson*	Energy Independence Now (EIN)
Ehlmann, Jim	General Motors (GM)
Esty, Daniel	Connecticut Department of Energy & Environmental Protection (CT)
Friedland, Jay*	Plug-In America (PIA)

Friedman, David*	Union of Concerned Scientists (UCS)
Friedman, David	Union of Concerned Scientists (UCS)
Frost, Jonathan	Johnson Matthey Fuel Cells (JMFC)
Gillis, Jack	Consumers Union.org, Consumers for Auto Reliability and Safety, and Consumer Federation of America (Consumers) (Written Testimony included 3 signees)
Gillis, Jack*	Consumer Federation of America (CFA)
Ginsburg, Andrew*	Oregon Department of Environmental Quality (OR)
Gomez, Cruz	private citizen (Gomez)
Greenberg, Stephen	private citizen (Greenberg)
Greuel, Wendy	City of Los Angeles Controller (LA)
Hamasaki, Lee	United States Green Vehicle Council (USGVC)
Hines, Barbara	QueensCare Family Clinics (QFC)
Hogo, Henry*	South Coast Air Quality Management District (SCAQMD)
Holmes-Gen, Bonnie	American Lung Association of California (ALAC)
Illades, Jane	private citizen (Illades)
Jack, James	Emission Control Technology Association (ECTA)
Jackson-Ervin, Cathy	Operation Free (OF)
James, Wendy*	California Clean Cars Campaign (CCCC)
James, Wendy	State Advocates (SA) - 22 Signees
Johnson, Stuart*	Volkswagen Group of America, Inc (VW)
Jonasson, Elizabeth	Coalition for Clean Air (CCA)
Jordan, Thomas*	San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD)
Kelsey-Lamb, Anne	Regional Asthma Management & Prevention (RAMP)
Kelsey-Lamb, Anne	Community Action to Fight Asthma and Regional Asthma Management & Prevention (CAFA)
Khalili, Azita	Bayerische Motoren Werke of North America, LLC (BMW)
Klosterman, Peter	private citizen (Klosterman)
Klugescheid, Andreas	Bayerische Motoren Werke of North America, LLC (BMW)
Land, Klaus*	Mercedes-Benz (Mercedes)
Lee, Michael	private citizen (Lee)
Lerner, Eric	private citizen (Lerner)
Lloyd, Alan*	International Council on Clean Transportation (ICCT)
Lord, Michael*	Toyota Motor North America, Inc (Toyota)
Lord, Michael	Large Volume Manufacturers, including BMW, Chrysler, Ford, GM, Honda, Mercedes, Nissan, and

	Toyota (LVM)
Love, Michael	Toyota Motor North America, Inc (Toyota)
Lyou, Joe	Coalition for Clean Air (CCA)
Mars, Dan**	private citizen (Mars)
Martens, Joe	State of New York Department of Environmental Conservation (NY)
Marz, Loren**	private citizen (Marz)
Mattioli, Giacomo	Ferrari of Beverly Hills (FBH)
McElDowney, Ken	Consumer Action (CA) - 28 signees
Messina Schkolnick, Karen	Bay Area Air Quality Management District (BAAQMD)
Minor, Greg	Ferrari of San Francisco (FSF)
Mitchell, Judy	City of Rolling Hills Estates, City Council (RHE)
Mitchell, Judy	California Clean Cars Campaign (CCCC)
Modlin, Reginald*	Chrysler Group LLC (Chrysler)
Morehouse, Erica	Environmental Defense Fund (EDF)
Morrison, Jonathan	California New Car Dealers Association (CNCDA)
Mui, Simon*	Natural Resources Defense Council (NRDC)
Miyasato, Matt	South Coast Air Quality Management District (SCAQMD)
Nocera, Barbara*	Mazda North American Operations (Mazda)
Norton, Kevin	International Brotherhood of Electrical Workers, Local 11 (Local11)
Ntuck, Uduak	Operation Free (OF)
O'Brien, Michael	Hyundai America (Hyundai)
O'Connell, Diarmuid*	Tesla Motors (Tesla)
O'Grady, Elaine	Vermont Air Pollution Control Division (VT)
Ong, Michael*	American Lung Association of California (ALAC)
Pantoja, Ernesto	Local 1300 (Local1300)
Patterson, David*	Mitsubishi Motors North America and Mitsubishi Motors Corporation (Mitsubishi)
Pennino, Summer	Electric Vehicles International (EVI)
Perry, David	private citizen (Perry)
Prasad, Shankar*	Coalition for Clean Air (CCA)
Provenzano, James	Clean Air Now (CAN)
Rivas, Mario	Operation Free (OF)
Rodriguez-Lynn, Rebekah	Office of Senator Fran Pavley (Senator Pavley)
Ross, Charles	private citizen (Ross)
Rudy, Sara*	Ford Motor Company (Ford)
Rudy, Sara	Large Volume Manufacturers, including BMW, Chrysler, Ford, GM, Honda, Mercedes, Nissan, and

	Toyota (LVM)
Salmi, Chris	State of New Jersey Department of Environmental Protection (NJ)
Schefter, Kellen	Fisker Automotive (Fisker)
Schneider, Emily*	Professional Engineers of California Government (PECG)
Scully, Janet	Asthma Coalition of Los Angeles County (ACLAC)
Shears, John*	Center of Energy Efficiency and Renewable Technologies (CEERT)
Shields, Susan	private citizen (Shields)
Sladek, Aaron	private citizen (Sladek)
Sloustcher, Matt	CODA Holdings, Inc (CODA)
Stein, Ronald	private citizen (Stein)
Stewart, Sandra	Green Chamber of Commerce (GCC)
Strada, Michael	private citizen (Strada)
Summers, Robert	Maryland Department of the Environment (MD)
	Union of Concerned Scientists (UCS) – (Two letters submitted. Letter submitted on 1/25/2012 (9:33): 4220 signees. Letter Submitted on 1/25/2012 (10:34): 116 signees
Swaffer, Miriam	
Tapia, Rudy*	Vision Motor Corporation (Vision)
Tator, Erin	private citizen (Tator)
Tovar, Jessica	Long Beach Alliance for Children with Asthma (LBACA)
Tran, Lloyd	Cleantech Institute (CI)
Tutt, Eileen*	California Electric Transportation Coalition (CalETC)
Vinetz, Robert*	Asthma Coalition of Los Angeles County (ACLAC)
Wallerstein, Barry	South Coast Air Quality Management District (SCAQMD)
Woodard, Tracy*	Nissan (Nissan)
Yehl, Katherine	Volvo Car Corporation (Volvo)

The commenters listed above with a single asterisks (*) submitted written comments and gave oral testimony at the January 26 and 27 Board Hearing. Summary of comments and ARB response for commenters listed above with a double asterisks (**) can be found in Attachment A, “Responses to Comments on the Advanced Clean Cars Environmental Analysis.” ARB received multiple comments from various commenters with the same affiliations. All comments with the same affiliation have been grouped, regardless of the commenter.

The following is a list of form letters received during the 45-day comment period, how they are referred to in ARBs response to the comments, the organization responsible for the comment letter, and the approximate number of form letters received:

Form Letter #1	CREDO	1075
Form Letter #2	Consumer Union Advocacy	4493
Form Letter #3	American Lung Association in California	664
Form Letter #4	Coalition for Clean Air	12
Form Letter #5	Natural Resources Defense Council	1999
Form Letter #6	no affiliation	479

During the 15-day supplemental comment period, the Board received written comments from:

<u>Commenter</u>	<u>Affiliation</u>
Atkinson, John	Virginia Natural Gas (VNG)
Bienenfeld, Robert	American Honda Motor Company, Incorporated (Honda)
Bienenfeld, Robert	American Honda Motor Company, Incorporated (Honda)
Krich, Frank	Chrysler Group, LLC (Chrysler)
Mattioli, Giacomo	Ferrari of Beverly Hills (FBH)
Minor, Greg	Ferrari of San Francisco (FSF)
Nordberg, David	Oregon Department of Environmental Quality (OR)
Rudy, Sara	Ford Motor Company (Ford)
Rugge, John	Fuji Heavy Industries USA, Inc. (Subaru)

ARB received a comment outside the supplemental comment period from Mitsubishi Motors North America and Mitsubishi Motors Corporation (Mitsubishi), submitted by David Patterson. ARB has included responses to this Mitsubishi comment.

Set forth below is a summary of each objection or recommendation made regarding the specific adoption, amendment, or repeal proposed, together with an explanation of how the proposed action has been changed to accommodate each objection or recommendation, or the reasons for making no change. Only objections or recommendations directed at the agency’s proposed action or the procedures followed by the agency in proposing or adopting the action are summarized as permitted by CCR, title 2, section 11346.9. Repetitive or irrelevant comments have been aggregated and summarized as a group. A comment is “irrelevant” if it is not specifically directed at the agency’s proposed action or to the procedures followed by the agency in proposing or adopting the action. The comments have been grouped by topic whenever applicable.

When comments have been grouped, a brief summary of the comment is given to relay the content of all the comments in the group. All other comments are taken verbatim from documents submitted during the 45-day and 15-day comment periods, or from the January 26 and 27, 2012 Board Hearing transcript. Acronyms exclusively used by commenters have been defined by [brackets] throughout this section.

COMMENTS AND TESTIMONY PRESENTED PRIOR TO, OR AT THE JANUARY 26 AND 27, 2012 HEARING

Part I. Non-Specific Regulatory Comments

Comments grouped in this section refer generally to the proposal presented in the ISOR, but do not specifically speak to the proposed ZEV regulation. Other comments in this section refer to parts of the regulation which were not modified in this rulemaking.

A. Support

1. Comment: ARB received several comments expressing strong support for the proposed vehicle and fuel policies, and specifically for the Advanced Clean Cars standards, and for the Board to adopt the Advanced Clean Cars standards. (ACLAC, ALAC, BAAQMD, CAFA, CAN, CCA, CCCC, CEERT, CT, CU, CalETC, CalStart, EC, ECTA, EDF, EIN, GCC, ICCT, Klosterman, LA, Lerner, Local11, Local1300, NY, OF, PECG, RAMP, RHE, SCAQMD, SJVUAPCD, Senator De Leon, Senator Pavley, Sierra, Strada, UCS, VT)

We support your regulations and greenhouse gas regulations. (Alliance, Oral Comment, Douglas)

Agency Response: ARB appreciates support for the Advanced Clean Cars regulation. The Board adopted the final Advanced Clean Cars regulations at its March 22, 2012 Hearing.

2. Comment: ARB received several comments expressing strong support for the California Clean Cars Campaign. (CIPL, LAUSD, LBACA, QFC)

Agency Response: The Clean Cars Campaign is an informal alliance of state, local, and national health and environmental organizations working together to promote cleaner motor vehicles. The Clean Cars Campaign promoted ARB's

Advanced Clean Car standards throughout the rulemaking process. See response to Comment 1.

3. Comment: ARB received several comments expressing strong support for the ZEV regulation, the efforts to strengthen the ZEV regulation, and for the proposed amendments to the ZEV regulation. (Alegria, EIN, ICCT, JMFC, Nissan, Sierra, UCS)

Agency Response: ARB appreciates support for the modifications to the ZEV regulation. The Board adopted the final Advanced Clean Cars standards, which included the ZEV regulation at its March 22, 2012 hearing.

4. 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. (UCS)

Agency Response: ARB appreciates support for the efforts and goals of the Advanced Clean Cars standards. The Board adopted the final Advanced Clean Cars regulations at its March 22, 2012 hearing.

5. Comment: I'd like to first acknowledge and thank you for the trailblazing work your agency has done in developing the LEV program and the ZEV requirements. We are indebted to you for establishing these programs, and we consider ourselves partners in your agency's longstanding commitment to the development of vehicles that do not harm human health and the environment. (OR)

Agency Response: ARB appreciates support for its efforts in developing the LEV and ZEV requirements. Section 177 states, like the commenter, have helped strengthened ARB's position to require stringent standards for light-duty vehicles.

6. Comment: General support for Advanced Clean Car goals. (CNGVC)

Agency Response: ARB appreciates support for its Advanced Clean Car goals. The final Advanced Clean Cars standards as approved by the Board at its March 22, 2012 hearing, set California on a path towards achieving the goals of cost-effectively reducing criteria pollutant and GHG emissions, pushing ZEV commercialization by 2025, and ensuring sufficient infrastructure is available to support the most advanced vehicles in the regulations.

7. Comment: I am writing to strongly support the goals of the ZEV program to achieve the health base air quality standards and the GHG emission goals. (Chew)

We strongly support the goals of the ZEV program and applaud programs that provide needed economic incentives to help achieve California's health based air quality standards and aggressive GHG emission goals. (EVI)

Agency Response: ARB appreciates support for its ZEV program goals. The final modifications to the ZEV regulation, as approved by the Board at its March 22, 2012 hearing, set California on a path towards achieving the goal of pushing ZEV commercialization by 2025.

8. Comment: Toyota also supports the roles of the ZEV program and the ARBs continuing efforts to accelerate the commercialization of advanced technology vehicles. (Toyota)

Agency Response: ARB appreciates support for the role of the ZEV regulation. The final modifications to the ZEV regulation, as approved by the Board at its March 22, 2012 hearing, strengthen the role of the ZEV regulation, and continue to accelerate the commercialization of advanced technology vehicles.

9. Comment: Support for including TZEVs and BEVs into ZEV regulation. These vehicles use technologies and infrastructure that will advance the commercialization of ZEVs. (Mercedes)

Agency Response: ARB appreciates support for the inclusion of TZEVs and BEVs into the ZEV regulation. The final modifications to the ZEV regulation, as approved by the Board at its March 22, 2012 hearing, help push advanced vehicles toward commercialization by 2025.

B. General Opposition

10. Comment: Don't be draconian with the regs. We can still have our autos and not have to rely only on electric cars as they pollute too just in a different way. Please remember this point as you're making your vote look like a shell game. (Perry)

Agency Response: ARB recognizes there are upstream emissions associated with ZEVs and TZEVs. However, both BEVs and FCVs are still less polluting on

a well to wheel basis than conventional vehicles (see ZEV ISOR, page 75-77) and they can be powered by fuels created from 100 percent renewable energy. Additionally, the ZEV program has become even more important for California in meeting goals under the Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32) and meeting California's 2050 GHG emission reduction goals. No gasoline technology can contribute equivalent criteria or GHG emission reductions necessary for meeting long term air quality goals.

11. Comment: I am writing to oppose strengthening the "advance clean cars" proposal to increase the numbers of ZEVs on California roads. False science is being used by the Lung Association and others to fool the populace. Electric cars are essentially coal-powered and this measure increases, rather than reduces, net air pollution. Please reject strengthening the "advance clean cars" proposal. (Ross)

Agency Response: The Board believes the ZEV program is necessary to meeting California's environmental goals. Both BEVs and FCVs are still less polluting on a well to wheel basis than conventional vehicles (see ZEV ISOR, page 75-77). Additionally, California's electricity is generated mainly from natural gas, not coal, with aggressive targets set for increasing renewable energy produced. Zero emission technologies can greatly reduce or even eliminate some of the persistent environmental problems from motor vehicle emissions. See response to Comment 10.

C. General Board Requests

12. Comment: ARB received several comments urging the Board to adopt the strongest possible Advanced Clean Cars standards, including the strongest possible motor vehicle emission standards. (ACLAC, ALAC, Avery, CA, CFA, Consumers, EC, Form Letter #2, Form Letter #4, LAUSD, LBACA, Lerner, PSR, QFC, Sladek)

Agency Response: In adopting new passenger car standards, the Board must consider the cost effectiveness, consumer acceptance, and environmental impacts of the proposed amendments. The Board adopted the Advanced Clean Car standards which achieve 75 percent reduction in criteria pollutant emissions, 30 percent reduction in GHG emissions, and requiring over 1.4 million ZEVs and PHEVs to be delivered for sale in California by 2025, while taking into consideration vehicle cost and consumer payback periods. The Board will review the Advanced Clean Car standards in 2017 to assess the overall stringency for the 2022 through 2025 model year timeframe, and will consider further

modifications to the program as appropriate to properly align the Advanced Clean Car standards with California's GHG and air quality long term goals.

13. Comment: I urge you to adopt the proposed amendments, with the strongest possible provisions and timing for both the ZEV and LEV III advanced clean car regulations. (Avery)

Agency Response: The phase-in schedule for both the ZEV and LEV regulations is aggressive and will require innovative GHG reduction technologies between 2017 and 2025 model years. See response to Comment 12.

14. Comment: ARB received several comments calling for the Board to strengthen the ZEV regulation, in some cases beyond staff's proposal or for the Board to adopt a strong ZEV regulation. (ALAC, LAUSD, Lerner, NRDC, QFC, SJVUAPCD)

We need the deployment and acceleration of these clean technologies. We need them at an accelerated pace, even faster than what's proposed in the ZEV regulation. (SCAQMD)

Agency Response: The Board considered four alternatives, including the staff proposal, during this rulemaking. Three alternatives (not including the staff proposal) were rejected for various reasons, including compliance costs, likelihood of ZEV commercialization, and reliance upon non-zero emission technologies. The Board adopted a simplified, improved, and aggressive ZEV regulation, beginning in model year 2018. Overall, the amendments help to simplify and strengthen the ZEV regulation, pushing zero and near zero emission technologies towards commercial levels by model year 2025.

15. Comment: ARB received several comments urging the Board to adopt the strongest possible and highest possible ZEV standards and strongest possible requirement for advanced technology. (Avery, Form Letter #1, Form Letter #3, Form Letter #5, Greenberg, UCS)

Agency Response: The Board adopted staff's proposed modifications to the ZEV regulation, with the direction to modify the amendments in specific ways to stay on track with meeting the overall goal of ZEV commercialization. ARB considered four alternatives when developing the ISOR proposal. Three alternatives (not including the staff proposal) were rejected for various reasons,

including compliance costs, likelihood of ZEV commercialization, and reliance upon non-zero emission technologies.

16. Comment: Vehicle emission (sic) is a sizable contributor to global warming. Signs of global warming are everywhere. Look no farther than the current drought in California. The fear is that this is not a one year aberration, but a long term trend. The cost of doing nothing is enormous. What happens if Santa Barbara burns every year due to the lack of rain? This list goes on and on. Do what we can now to stem global warming. (Lee)

Agency Response: Overall, the Advanced Clean Cars program as adopted by the Board will help reduce GHG emissions from the light-duty vehicle sector 30 percent by 2050, preventing hundreds of millions of metric tons of GHG emission from entering the atmosphere.

17. Comment: We urge you to also consider the global impact of these regulations. The ZEV program has successfully driven down cost of advanced vehicle technology since its inception, which, in turn, has helped to and will increasingly facilitate the deployment of clean vehicles far beyond our state and national borders. (CODA)

Agency Response: The Administrative Procedure Act only requires ARB to consider "reasonable" alternatives (Gov. Code section 11346.2(b)(4)(A)) to the regulation as proposed. Considering global impacts would not be a reasonable alternative as California has limited ability to control behavior beyond its borders.

18. Comment: ARB needs to closely monitor the sales of ZEVs and make necessary revisions to ensure that the full emission reduction benefits are achieved. (SCAQMD)

Agency Response: Comment noted. ARB will constantly review the status of the ZEV regulation and the amount of advanced vehicles resulting from the regulation.

19. Comment: Closely monitor the amount of credits generated and their use in producing vehicles that do not necessarily meet applicable criteria pollutant or GHG standards. (SCAQMD)

Agency Response: Any vehicle receiving credit through the ZEV regulation must be certified to California's most stringent tailpipe standards for light duty vehicles.

This means any near-ZEV must be certified to SULEV tailpipe standards and zero evaporative emissions. Credits are not awarded to vehicles that do not meet applicable criteria pollutant or GHG standards.

20. Comment: I urge you to adopt the most health protective program possible. (CCA)

Agency Response: In Resolution 12-11, the Board found that the Advanced Clean Cars program will not cause California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards.

21. Comment: As you meet later this month to consider the next phase of your landmark ZEV Program, we urge you to continue to support the states that have stood beside you in this effort over the years. The Sec. 177 states and states that may choose to join the program in the future should be seen as important partners in your vital clean air effort. We urge you to work closely with these states to ensure that they receive significant deliveries of ZEVs in the near term and a guaranteed increase in the number of vehicles to be delivered in the next decade. (SA)

Agency Response: Comment noted. ARB worked closely with the Section 177 states throughout the rulemaking process. The optional Section 177 state compliance path is a result of many months of negotiations between Section 177 states, manufacturers and ARB. Numerous Section 177 states submitted comments in favor of the Advanced Clean Car standards, modifications to the ZEV regulation, and the optional Section 177 state compliance path.

D. Regulatory and Compliance Flexibility

22. Comment: Given the technology forcing nature of the ZEV regulations, as well as the task for the automotive industry to develop, produce, and sell vehicles that future customers will accept, BMW recommends the implementation of early additional phase-in flexibility to address the ambitious ramp-up rate of the requirements and the inclusion of the well-timed reviews before 2018 to validate industry-wide technology development, customer demand for advanced clean cars, and the development of an adequate refueling infrastructure necessary for vehicles in the ZEV program. (BMW)

Agency Response: The Board adopted various flexibilities for BMW and other transitioning IVMs before 2018 model year to help ease the burden of 2018

model year LVM requirements. These flexibilities include a decreased requirement between 2015 and 2017 model years and a less burdensome discount factor on PZEV credits used for compliance towards the TZEV category starting in 2018 model year. Additionally, IVMs may participate in the optional Section 177 state compliance path, and reduce their overall requirement in the Section 177 states in 2018 through 2020 model years.

23. Comment: Increase compliance flexibility by providing credit for the sale of hybrid vehicles. (CNCDA)

Agency Response: Manufacturers may produce conventional hybrids, meeting SULEV and zero evaporative emission standards, through 2017 model year for ZEV credit, which can be used towards meeting a portion of their overall ZEV requirement. Starting in 2018 model year, the Board approved removing those vehicles from the ZEV regulation, as conventional hybrids are reaching commercial levels and no longer need to be mandated.

24. Comment: I would suggest that all mitigation credits should not reduce the current mandate by an aggregate to a maximum of 50 percent, both for the ZEV and TZEV portions. (Chew)

Agency Response: Comment noted. The regulation is currently silent on how caps for various credits should be applied to a manufacturer's requirement, and how the caps would limit spending of credits toward certain portions of a manufacturer's requirement. When ARB harmonizes its regulations with EPA, staff will propose a new method for applying caps to a manufacturer's requirement in any given year, to ensure manufacturers must still produce some advanced vehicles in compliance with their yearly requirement.

E. Heavy Duty ZEVs

25. Comment: We urge the ARB to allow Vision Motor Corp's zero emission heavy-duty class eight truck to become eligible to earn credits under the ZEV credit program on the following merits: letters of interest from OEMs, potential air quality benefits to California, help spur technology and market development of zero emission heavy-duty vehicles, and attaining ZEV credit status would have a huge economic impact to Vision and to the zero emission trucking effort, both locally and state-wide. The ability to earn ZEV Credits will serve as a financial catalyst that will help speed the early market introduction of zero emission heavy duty trucks in California. (Vision)

Refining the ZEV program to include ZEVs over 14,000 pounds would achieve the greatest tons per dollar reductions associated with the program and accelerate the program's health benefits. Allowing the ZEV program to include larger vehicles will leverage private dollars to help modernize the fleet and eliminate toxic diesel emissions, cleaning the air and alleviating toxic exposures. To support the expanded development of California ZEV technologies and associated California jobs, we ask that California-manufactured, zero emission, heavy-duty vehicles be allotted credit under the ZEV Program to help sustain new job creation within our state and provide market-based incentives to accelerate the replacement of large, dirty diesel vehicles. We strongly believe that allowing heavy-duty vehicles the ability to earn ZEV Credits will serve as a financial catalyst that will help speed the early market introduction of zero emission heavy duty trucks in California. (EVI)

Agency Response: ARB does not see the benefit of allowing light and medium-duty manufacturers to purchase credits earned from heavy-duty ZEVs. Light and medium-duty manufacturers have a ZEV requirement because they contribute a substantial amount of criteria and GHG emissions to California through sales of passenger vehicles. Allowing manufacturers to purchase credits from a different on-road transportation sector would not further the light duty vehicle subsector to meet its own long-term criteria pollutant and GHG emission reduction goals. ARB does however believe it is appropriate to explore ZEV regulations for heavy-duty vehicles.

26. Comment: Replacing one diesel-powered big rig with a Vision Class 8 truck has the air quality benefit of removing the tailpipe emissions created by 64 passenger vehicles. Credits that would be earned by the sale of our heavy duty truck should be of larger value than those of a passenger vehicle manufacturer based on the great emission reductions. (Vision)

Allowing auto manufacturers to purchase ZEV credits from manufacturers of larger ZEVs and allowing these credits to fulfill light-duty manufacturers' ZEV requirements will provide a substantial net air quality benefit. (EVI)

Agency Response: ARB agrees there are significant emissions benefits associated with heavy-duty ZEVs. However, ARB does not see the benefit of allowing light and medium-duty manufacturers to purchase credits earned from heavy-duty ZEVs. See response to Comment 25.

F. Alternative Regulatory Approaches

27. Comment: I am concerned that the Board has lost some focus that being too tied to the detail clouds the objective. The objective being to reduce GHG's in the quickest possible time and to do so in the most efficient manner energy and cost-wise. Use energy efficiency as the base criteria with rewards for greater efficiencies and penalties for less. Set up an independent non-profit fund to guarantee loans to order large quantities of vehicles that use little fuel or no fuel, and guarantee assembly line production of vehicles that meet the defined standard. Spend the fund on rebates, added, replacing and/or superseding the present rebates. Pay for the fund by usage fee on each gallon of gasoline thereby making the users pay for fuel efficient vehicles and reward them and the country by low to nil future costs of fuel with the new vehicle at no extra capital costs to the buyer. No more studies, experimental funding, etc, just buy them. Independently set up general standard based on efficiency of the drive system. (Conibear)

Agency Response: ARB does not have the authority to set vehicle fuel economy standards. ARB also does not have the authority to impose a gas fee or tax. Such authority would require California Legislative action. The ZEV regulation has resulted in over 1 million PZEVs, over 300,000 conventional hybrids, and thousands of ZEVs being placed on California's roads. With a goal of commercializing ZEVs, using zero emission miles as a metric for crediting vehicles for compliance provides an appropriate nexus between technology and vehicles for achieving our goals. Once commercialized, the new vehicle standards under the LEV program can continue to drive down the vehicle fleet emissions of criteria and GHG emissions utilizing these technologies. For this reason, ARB believes zero emission miles are sufficiently appropriate to credit a vehicle's environmental benefit.

28. Comment: We have concerns regarding the use of credits in such a manner that may lead to greater sales of vehicles that do not meet the applicable standards. We recommend that the Board consider establishing optional emission standards for zero and near zero and alternative fueled vehicles that could be benchmarked for incentive programs in California. We believe such an approach can lead to earlier and greater penetration of ZEVs and alternative fueled vehicles in California and provides an incentive to have greater number of vehicles on California roads. (SCAQMD)

Agency Response: ARB does not see the need to establish optional zero and near-zero certification standards for any purpose, including for incentives. The current certification standards for zero and near-zero emission vehicles ensure

vehicles meet the most health protective criteria pollutant standards. Currently, only PHEVs qualifying as enhanced AT PZEVs, meaning the vehicle is certified to SULEV standards and zero evaporative emissions, with a 15-year/150,000 mile emission warranty, and 10 year/150,000 mile warranty on the vehicle's energy storage system, and certified ZEVs qualify to receive monetary incentives through ARBs Clean Vehicle Rebate Project. Additionally, it is not clear how establishing optional standards will help greater penetration of ZEVs and alternative fueled vehicles.

G. ZEV Review

29. Comment: Require a full review of the ZEV regulations prior to 2018 model year to evaluate the market, state of technology, and infrastructure development with the goals of ensuring that the regulations are in alignment with projected market demand and replacing the mandate with performance-based standards. (Ford)

The LVMs believe a review early enough to examine the 2018 and subsequent model year requirements is needed. Therefore, in addition to the formal mid-term review, the LVMs request that the Board direct staff, in the form of a resolution, to continually monitor the technological progress and market acceptance of ZEV technologies by conducting more frequent informal ZEV reviews. (LVM)

Total ZEV percent requirement 2018-2025 is very ambitious and strongly dependent on various external frame conditions. We recommend implementing an additional review before 2018 to examine industry-wide compliance status and the development of infrastructure necessary for vehicles in the ZEV program. (BMW)

The revision to the ZEV regulations contains a very aggressive ramp up of the ZEV requirement in 2018 model year. Toyota would like to request that the Board continually monitor the pace of technology development and acceptance in the market to insure the assumptions on which these regulations are based are correct. This is in addition to working with EPA and NHTSA on the mid-term review contained in the GHG one national program agreement. (Toyota)

Agency Response: Comments noted. ARB is committed to constantly reviewing the ZEV program, and assessing the need to update the regulation as necessary. Additionally, ARB will include a ZEV review as part of the GHG regulation mid-term review in 2017.

30. Comment: Chrysler supports a more frequent review of the ZEV Program. Manufacturers have announced plans for many electric vehicles which will launch over the next several years. This first major move towards plug-in vehicle commercialization will yield many lessons in both vehicle technology and market acceptance of these vehicles. Chrysler recommends that ARB undertake a biennial review process which examines critical technology, cost, and market considerations and to recommend changes to the ZEV Program to the Board as needed based on these reviews. (Chrysler)

Agency Response: Comment noted. ZEV program staff is constantly reviewing the status of the ZEV regulation, the development of technology, and are participating in numerous complementary policy efforts to help foster ZEV technology. Staff will recommend modifications to the Board as appropriate and necessary.

31. Comment: ARB staff has previously stated its intent that for 2026 and beyond the ZEV program will be incorporated into the LEV program GHG fleet average, with no technology-specific requirements. ICCT notes that the proposed regulation order does not include any such sunset, but rather continues the 2025 requirement indefinitely into subsequent model years. Although there are indications that longer term sales volumes and technology development as well as GHG and criteria pollutant standards could result in a self-sustaining market, we agree with CARB staff that picking a sunset date is premature at this time. We suggest re-evaluating the status of these factors and progress towards achieving a self-sustaining market over time at a future date. (ICCT)

Agency Response: Comment noted. See response to Comment 29 and 30.

H. ISOR Analysis

32. I want to say I've been incredibly impressed by the thoroughness of research, analysis and the public process involved with these Advanced Clean Car proposals. This is how regulations should be done. (UCS)

Agency Response: ARB appreciates support for the methodology and strategy used to develop the Advanced Clean Car standards.

33. Comment: CalETC supports a data-driven approach to regulation and ARB staff's commitment to studying PEV [plug-electric vehicle] data with the intention of improving the current methodology for ZEV credits. The next few years will be critical to better understanding PEV [plug-electric vehicle] driving patterns and

behavior. Some of the data gathered to date indicates that annual ZEV miles driven by a plug-in hybrid vehicle do not differ significantly from annual ZEV miles driven by a pure battery-electric vehicle. Further, there is a significant body of data that shows that pure battery-electric vehicles with a 100-mile range can meet 75-90 percent of driving needs for vehicle owners and that younger drivers are more willing to consider car-share programs. The collection of this kind of data could result in improvements in the ZEV credit methodology. (CalETC)

Agency Response: ARB appreciates the support for staff's data-driven approach to the regulation and the future commitment to studying PHEV and BEV data.

34. Comment: Although we largely agree with the methodology that CARB staff utilized, we are concerned that the incremental price associated with plug-in electric vehicles out to 2025 is not reflective of a number of price mitigating technology factors and policies at the state and national level. Although the ARB staff has indicated that there are factors that mitigate price, none of these factors were included in the ARB assessment. The result is an incremental price that is significantly higher than CalETC believes is accurate. Some benefits of PEVs that have been assessed 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 PEVs. The incremental value of the PEV 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 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. (CalETC)

Agency Response: ARB agrees that ZEV technology may offer net benefits that could be far greater than those presented in the ZEV and LEV III ISORs. 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 reactive organic gases (ROG), oxides of nitrogen (NOx), and particle matter (PM) 2.5 (see LEV III ISOR, p. 177-178), but simply 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 LEV III 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 model year, 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 external 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) and therefore were not expressed in such per-vehicle terms.

It is even less clear how the other benefits should be included in ARBs 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 zero-emission technology vehicle (and, to the extent that such an incentive exists, it would be inherently quantified in U.S. EPA’s OMEGA modeling of federal fleet-wide compliance). Although ARB acknowledges that ZEV owners may continue to experience high-occupancy vehicle (HOV) lane access benefit for some time, there is no assurance that HOV access would be continued through 2025 at adequate volume to support vehicles resulting from the ZEV regulation, 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 (LCFS) benefits are not included, as these would amount to a monetary transfer within the California economy (in this case, from regulated fuel providers).

35. Comment: Changing to at least some more realistic assumptions and analyzing the most likely scenario would indicate consumer costs that are a few hundred to several thousand dollars lower per car and benefits that are thousands of dollars higher per vehicle. Incorporating just some of these changes would raise the net lifetime savings for electric cars in 2025 to \$5,000 to \$10,000 compared to today's typical car. Specifically, we recommend the adopting of an electricity price significantly less than 15 cents per kWh for electricity to account for future accessibility of time of use rates and off-peak battery charging. We estimate that switching to 10 cents per kWh would increase lifetime savings for a battery electric car by as much as \$2,000. (UCS)

Agency Response: ARB agrees that changing the projected electricity rate from \$0.15/kWh to \$0.10 would generally increase the BEV and PHEV consumer benefit by roughly \$1000 to \$2000 per vehicle. However, as discussed in Appendix C of the ZEV ISOR, current and projected electricity rates vary widely. There are a number of prevailing uncertainties including: when electric vehicle consumers will charge, future time-of-use and possibly special electricity rates and metering for electric vehicles set by utilities, the frequency of public fast charging at a premium price, increased local distribution costs from greater electricity demand, and changing future electricity costs with implementation of California's Renewable Portfolio Standard. Additionally, state and/or local governments may potentially need to impose future road use taxes for electric vehicles and other alternative fuel vehicles to address possible fuel tax revenue shortfalls that would effectively increase operating costs of electric vehicles. Due to these uncertainties and currently available data, assuming \$0.15/kWh as the basis for future electric vehicle charging rates is reasonable at this time. Staff will incorporate any new data, as it becomes available, regarding the actual electricity rates that electric vehicle users are experiencing in future analyses.

36. Comment: A lower hydrogen price should be adopted in staff's economic analysis. (UCS)

Agency Response: Staff has reevaluated the economic impacts using the more conservative retail hydrogen fuel price assumption presented in the CFO ISOR, i.e. a constant \$8/kg price, and used throughout the Advanced Clean Car economic analysis. The change in hydrogen fuel price assumption means that consumers would be expected to pay less per kilogram of hydrogen fuel in the near-term, but more per kilogram in the long-term when compared to the previous price assumption. However, due to the relatively low levels of hydrogen

consumption assumed in the timeframe of the analysis, this change has a negligible impact on statewide fuel expenditures, expected fuel savings, or overall economic impacts from the regulation, in many cases producing results within the rounding error. Staff's overall conclusions that the Advanced Clean Cars program will produce small, positive economic impacts remain unchanged.

37. Comment: Adoption of a higher gasoline price of \$4.02 per gallon by 2025. Californians are regularly experiencing \$4 per gallon gasoline today. We estimate that switching to \$4.50 per gallon would increase lifetime savings for a battery or fuel cell electric car by more than \$2,000. (UCS)

Agency Response: ARB understands and agrees that increases in the assumed gasoline fuel prices would result in proportional increases in fuel savings from each of the vehicle technologies, as indicated by the comment. Accordingly, decreases in the fuel price (e.g., to average 2008-2010 gasoline prices) would proportionally decrease each vehicle technology's projected consumer benefit. In light of the uncertainty of future gasoline fuel prices, staff linked its regulatory assessment of consumer impacts to the average of the California Energy Commission's (CEC) high and low projections for fuel prices in order to utilize the State's data source that ARB staff deems to be the most authoritative and most consistent with other state-wide energy and transportation planning. However, acknowledging that higher gasoline prices would affect fuel savings calculations, Section IX.E of the LEV III ISOR presented consumer and economy-wide effects from the entire Advanced Clean Cars program (including ZEV) assuming fuel prices 30 percent higher than the CEC average, or in the \$5-6 per gallon range.

38. Comment: An ICM [indirect cost multiplier] of 1.33 for ZEV technologies, which staff highlighted as the most likely case, is not used in the analysis. ARB staff estimates that using an ICM [indirect cost multiplier] of 1.33 would bring down battery and PHEV cost by \$1,000 to \$3,000 per vehicle and fuel cell electric car costs by \$200 to \$1,500 per vehicle. Based on ARB data and UCS calculations, using the correct ICM [indirect cost multiplier] would cut the cost of the ZEV program by nearly \$2 billion, bringing it to \$3 billion. At a minimum, the ICM [indirect cost multiplier] for battery electric and certain types of plug-in hybrid electric technologies should be reduced to the same level as that for fuel cell electric vehicles as they are of similar complexity. (UCS)

Agency Response: ARB acknowledges the considerable uncertainty regarding this issue of determining the appropriate indirect cost multiplier (ICM) for advanced technologies like BEV and PHEV in the 2015-2025 model year time

period. As a result, staff analyzed relatively high ICM values that were consistent with the federally adopted ICMs by technology, as well as analyzing the lower 1.33 ICM case. ARB agrees that the approximate cost reductions in the ZEV program that would result from adopting the constant 1.33 ICM factor are approximately as indicated by the commenter. However, ARB ultimately adopted the higher ICMs to build a conservative data basis into the analysis to acknowledge the inherent uncertainty in these emerging technologies and how their indirect costs will compare with conventional technologies. In addition, the higher ICMs were maintained for consistency with the cost assumptions used by the federal regulatory agencies. ARB intends to continue to study this issue as further data becomes available, and it is likely that an improved database will be available for the 2017 mid-term review.

39. Comment: While the proposed federal rules are not final and could change, ICCT recommends that CARB staff eventually provide an assessment of how the staff estimates of the net cost and emission impact would be affected by compliance under the proposed federal rules once they are finalized. (ICCT)

Inclusion of an analysis of the costs associated with the ZEV program in the most likely scenario where automakers choose to comply with federal GHG standards in place of LEV III-GHG. We estimate that the incentives provided to electric cars in the federal GHG standards are about \$3,000 to \$6,000 per battery or fuel cell electric vehicle, depending on the year and the actual vehicle upstream emissions from 2018 through 2021, with significant incentives still available in 2022 through 2025 depending on how many electric cars automakers produce. Accounting for these incentives would further lower the cost of the ZEV program by about \$1 billion, bringing it to \$2 billion. ARB has not looked at the case where automakers choose to use federal GHG compliance in place of LEV III-GHG. Unless key provisions in the federal GHG standards are altered, automakers will receive significant incentives for selling electric cars through a federal provision that excludes upstream emissions from producing electricity and hydrogen and that can up to double the credit electric cars receive towards meeting federal GHG standards. Because these incentives are, appropriately, not included in the California LEV III program, they have not been accounted for in ARB staff estimates of the costs of the ZEV program. (UCS)

Agency Response: ARB agrees that the federal provisions for upstream accounting and multipliers for electric-drive vehicles provide incentives that are included in the California LEV III-GHG proposal. Without fore knowledge about the final federally proposed electric vehicle incentive provisions, staff could not

definitively analyze such a scenario. ARB acknowledges that the regulatory incentive can be loosely translated into a relative financial incentive based on the reduced deployment of non-electric vehicle technology. However, ARB finds this type of cost accounting (i.e., essentially assuming a cost credit for ZEVs) to be uncertain and unconventional in assessing such forgone technology costs in the California rulemaking based on presumed federal incentive provisions. The federal rulemaking analysis (e.g., via United States Environmental Protection Agency's, or U.S. EPA's, OMEGA modeling of automaker compliance) does explicitly analyze these provisions for electric vehicles – and therefore its overall projected compliance costs per vehicle do factor these incentives. Staff's analysis reflects the regulated automakers' compliance with the California regulation. To the extent that automakers choose to comply with final federal GHG regulations in lieu of California's, the differing compliance costs would be reflected and analyzed in the U.S. EPA final rulemaking assessment, which is expected in July of 2012.

40. Comment: The staff is perhaps overly optimistic about the opportunity for a dramatic cost reduction in batteries over the course of this decade and into the next. (Toyota)

Agency Response: Staff's cost projections for automotive battery packs are based on the best available science and are well in line with many industry estimates. The cost projections for batteries – at about \$200-250/kWh for full electric, \$300-400/kWh for plug-in hybrid and \$550-700/kWh for hybrid batteries in the 2025 timeframe – are based on expertise of Argonne National Laboratory's (Argonne) state-of-the-art battery modeling efforts and have gone through an extensive peer-review by battery and automotive industry experts. The Argonne battery assessment is the most rigorous, transparent, and relevant study of the pertinent lithium-ion battery technologies that are emerging. In addition, ARBs (and U.S. EPAs and NHTSAs) battery pack cost estimates appear to be largely consistent with a number of consulting studies on future battery costs, and the costs tend to be higher than a number of battery manufacturing companies' recent press releases.

Part II. Regulatory Comments

Comments grouped in this section are specific to Staff's suggested modifications and the regulatory language presented at the January 26 and 27, 2012 Board Hearing.

I. ZEV Production Requirement

41. Comment: ARB received support for the proposed ZEV credit requirement. (Fisker, ICCT, Tesla)

Auto companies may be fighting the proposed ZEV standards, but it is vital to update and stick to stringent emissions standards in order to promote zero-emissions technology and force auto manufacturers to improve their designs. (Shields)

Agency Response: ARB appreciates support for the ZEV credit requirement as proposed in the ISOR. The Board adopted staff's modified ZEV credit requirement as proposed.

42. Comment: ARB received several comments calling for two million electric-drive vehicles, electric vehicles, and clean vehicles on the road by 2025. (Form Letter #3, Form Letter #5, Shields)

Agency Response: The Board considered four alternatives, including the staff proposal, during this rulemaking. Three alternatives (not including the staff proposal) were rejected for various reasons, including compliance costs, likelihood of ZEV commercialization, and reliance upon non-zero emission technologies. The Board adopted staff's ZEV requirement as proposed in the ISOR. The ZEV requirement is meant to act as a minimum requirement. Staff developed a likely compliance scenario, in which manufacturers were likely to place 1.4 million ZEVs and TZEVs in compliance with the modified ZEV requirements. The actual number of ZEVs and TZEVs that will be placed is highly dependent on the type of ZEVs and TZEVs produced, the model years in which those vehicles are produced, and how many manufacturers are required to comply in each model year. Additionally, in previous years most manufacturers have over-complied with mandated ZEV requirements. Therefore, it is possible that compliance with the increased ZEV requirements could result in far greater numbers of ZEVs and TZEVs than those in staff's likely compliance scenario.

43. Comment: ARB received several comments calling for 1.8 million electric cars, battery, fuel cell, and PHEVs on the road by 2025. (Alegria, EIN, Form Letter #1, Illades, Klosterman, PIA, UCS)

Agency Response: See response to Comment 42.

44. Comment: Strengthen the credit requirement by 30 percent in a manner similar to staff alternative B, but with a smaller increase between 2017 and 2018. This will significantly increase the chance of meeting California's long term climate and public health goals. (UCS)

Agency Response: Alternative B, as presented in the ISOR, was considered during development of staff's proposal. Alternative B was rejected due to the steep jump in volume requirement between model year 2017 and 2018 requirements and increased overall compliance costs. Additionally, see response to Comment 42.

45. Comment: Reduce the mandated percentage of ZEV and TZEV vehicles that must be produced and delivered for sale in California to reflect a goal that is realistic and attainable. (CNCDA)

Agency Response: The purpose of the ZEV regulation is to require manufacturers to produce advanced vehicles in increasing levels to reach commercial levels. Failure to adopt stringent ZEV requirements would mean California would likely not reach the goal of ZEV commercialization and cost reductions that come from greater production volumes. The Board adopted numerous flexibilities that allow manufacturers to customize their compliance with the ZEV requirements.

46. Comment: While we feel that the regulation goals are important, we are concerned that the ramp-up rate of the requirements in 2018 and later could outpace market demand for such large volumes of advanced technology vehicles and that additional flexibility is needed to better align with the goals of the program. (LVM)

The proposed ZEV mandate will not align with market demand, especially in the more distant years. The proposal goes beyond commercialization of the technology to mandating consumer choice. The current proposal amounts to a command-and-control regulation in which government dictates what manufacturers must produce and what consumers must buy. The proposed ZEV mandate seeks to impose ZEV sales volumes far surpassing those of hybrids, and well beyond the volumes needed for the launch of commercial ZEV technology. (Ford)

Agency Response: To assist with the development of a ZEV market, the Board did not modify the ZEV requirement for LVMs in 2012 through 2017, to allow

manufacturers six model years to prepare for increasing requirements starting 2018 model year. ARB adopted flexibilities that allow manufacturers to use multiple compliance paths to meet the increased ZEV requirements, including the optional Section 177 state compliance path, the GHG-ZEV over-compliance provision, unlimited carry forward for all credits starting in 2012 model year, extending the travel provision through 2017 for BEVs, and extending travel for FCVs until sufficient hydrogen infrastructure is available in the Section 177 States.

47. Comment: We believe that greater penetration of ZEVs and AT PZEVs can occur if ARB requires additional sales of these advanced technology light-duty vehicles in the near-term. (SCAQMD)

Agency Response: The Board adopted an aggressive ramp up rate of ZEVs and TZEVs between 2012 and 2025 model years. ARB adopted flexibilities written in the ZEV regulation that allow manufacturers to start ramping up production of ZEVs and TZEVs in the near term in order to smooth the ramp up in the later model years. Also, see response to Comment 42.

48. Comment: CNCDA is concerned with the impact that the aggressive ZEV requirements will have upon the market prior to the technology being perfected and universally accepted by consumers. When pricing BEVs and FCVs for the California market, the ZEV regulations will impose artificial market forces on affected manufacturers, who will be faced with choosing between two basic pricing strategies: (1) price the vehicles at or above cost, sell what they can, and then either ration the sales of their traditional vehicles or face enforcement efforts, or (2) price ZEVs under their cost and subsidize the loss by increasing the price of their traditional vehicles. The latter approach, which CNCDA believes likely, will have the perverse effect of artificially decreasing new car sales and making used cars more attractive purchase options in California. (CNCDA)

Agency Response: ARB agrees that manufacturers may employ various pricing strategies in order to ensure that their fleets comply with the ZEV (and LEV) amendments. To allow for the possibility that some of the costs of ZEVs may be displaced onto non-ZEVs as well as other pricing mechanisms, the supplemental economic analysis that evaluates potential sales impacts assumes a uniform price increase for all vehicle configurations within a given model year, which includes the additional costs associated with ZEVs (see Appendix T of the LEV ISOR). Staff utilized a model which simulated purchasing behavior, and included

the option to purchase a used vehicle. Using this model, staff's results showed that new vehicle sales would not decline relative to the baseline scenario. ARB will be closely monitoring technological progress, consumer acceptance and new vehicle sales during the implementation of the Advanced Clean Cars standards to identify any opportunities to encourage growth of the emerging ZEV market.

49. Comment: The proposed regulations require that large volume vehicle manufacturers manufacture and deliver for sale a fleet of vehicles that consists of 15.4 percent ZEVs and TZEVs in model year 2025: a mere 13 model years away. This 13 model year time period is the same length of time that hybrid electric vehicles have been available to the public (beginning with the 1999 Honda Insight). After 13 years of heavy marketing and incentivization (sic) (including state and federal tax credits and several years of access to carpool lanes), hybrid sales made up approximately 2.1 percent of sales nationwide in 2014 (down from a high of 2.7 percent in 2009), and approximately 4.3 percent of sales in California. Unlike with ZEVs or TZEVs, purchasers of hybrid vehicles required absolutely no change in driving or fueling behavior (meaning that there is no impediment to consumer adoption). If after 13 model years of hybrid vehicle availability, marketing, and incentivization (sic), adoption is in the low single digits, we fear that the adoption rate will be even lower for ZEVs and TZEVs which will require dramatic changes in consumer driving and fueling behavior. Rather than setting vehicle manufacturers, new car dealers, and alternative vehicles themselves up for another predictable failure, ARB should adjust the mandate to reflect a goal that is realistic and attainable. (CNCDA)

Agency Response: ARB adopted the 2018 through 2025 model year ZEV requirements as proposed by staff in the ISOR. ARB sees public benefits in ZEV technologies to the consumer, including fuel savings, lower cost of ownership, and environmental benefits. ARB sees the new ZEV requirements for 2018 through 2025 model years as stringent, but attainable. The ramp-up rates were based on considering technology cost curves and future GHG fleet standards. As production volumes increase, costs decline due to economies of scale. The ramp-up rates are necessary to increase volumes and bring costs down so that ZEV commercialization can be realized in California. The GHG fleet standard absent the ZEV regulation would result in only 6 percent ZEVs by 2025. This level of penetration would not likely achieve the cost reductions needed for commercialization in the timeframe needed to meet long term emission reduction goals. Additionally, most manufacturers have production plans that include various zero and near-zero emission vehicles. However, staff is planning to re-evaluate the ZEV regulation during the 2017 mid-term review and review the

progress of the regulation toward meeting the goal of ZEV and PHEV commercialization.

J. ZEV and TZEV Crediting

50. Comment: Toyota supports the increase in the FCV credit value in 2015 model year as a way to achieve the appropriate credit balance between BEV and FCV with the extension of BEV travel to 2017 model year. (Toyota)

Agency Response: ARB appreciates support for the increase in Type V ZEV credits in 2015 through 2017 model year.

51. Comment: Support for tying the amount of credits by each ZEV exclusively to the vehicle's UDDS range, thereby incentivizing long-range ZEVs. (Tesla)

Agency Response: ARB appreciates support for the new credit mechanism for ZEVs in the 2018 and subsequent model year timeframe. The Board adopted this credit structure in Resolution 12-11.

52. Comment: We believe that limiting the portion of a manufacturer's ZEV requirement that may be met with TZEVs sufficiently prioritizes ZEVs over TZEVs; in other respects, Fisker believes these credits could be treated the same. Specifically, Fisker would urge ARB to treat credits arising from ZEVs and TZEVs equally with respect to travel provisions, banking, and carry forward provisions. (Fisker)

Agency Response: TZEVs are a transitional technology to ZEVs. Staff's 2009 analysis showed ZEVs will need to be 100 percent of new vehicle sales by 2040 in order to meet the reductions necessary in the light duty vehicle sector to reach the 2050 GHG emission reduction goals. TZEVs able to achieve 10 miles all electric range on the US06 drive schedule are credited using the same credit equation as used for ZEVs. Additionally, PHEVs are able to run sufficiently without electric infrastructure, which is not true of ZEVs, and thus do not qualify under the travel provision. However, TZEV credits can be banked indefinitely for use toward subsequent model year ZEV requirements.

53. Comment: In 2018MY [model year], the staff is proposing to reduce the credit value for ZEV and TZEV by half or more compared with the current regulation. The LVMs are concerned about how this causes a "step change" in the required number of vehicles and proposes that the new credit values be phased-in over five years beginning in the 2018MY [model year]. This is more in line with the

expected gradual improvement in ZEV and TZEV technologies and their acceptance in the marketplace. (LVM)

The staff proposal dramatically reduces the credit values for vehicles between 2017 and 2018. A 2018 PHEV with 20 miles electric range (PHEV20) receives approximately 1/3rd (one-third) the credit value that the identical car receives the year before. A 2018 BEV with 100 miles range (BEV100) receives ½ the credits that the identical car receives the prior year. All other things being equal, this requires OEMs [original equipment manufacturer] to triple their PHEV volumes and double their BEV volumes between one year and the next. Honda strongly urges the Board to consider phasing in these dramatic, single year credit changes over a short, three year period. Simply put, we would keep the 2018 and later formulate for BEVs and PHEVs but add a multiplier that would phase-out over three years. Our proposal is to multiply the new credit values by 1.7 in 2018, 1.5 in 2019 and 1.3 in 2020. This concept has the sanguine effect of phasing-in the credit reductions by 30 percent in 2018, 50 percent in 2019 and 70 percent in 2020. Overall volumes would be modified slightly (-4.2 percent reduction in BEVs and -8.5 percent for PHEVs) over the 2018 – 2025 period of this program. Considering that the CARB staff proposal will obligate OEMs [original equipment manufacturer] to build millions of vehicles over the same period, this relatively small phase-in of credits seems reasonable to us, worthy of the Board's support. (Honda)

Agency Response: While the credit per vehicle is being reduced significantly between model year 2017 and 2018, manufacturers' ZEV requirements in terms of credit percentages are also being reduced significantly over what was required starting in 2018 model year in the previous rule. There are various mechanisms that can be altered to affect the number of vehicles a manufacturer must make in a certain year. ARB adopted staff's proposed credit structure for TZEVs and ZEVs starting in 2018, as well as staff's proposed credit values for 2018 and subsequent model years.

54. Comment: Revise the range-based ZEV and TZEV credit structure to include an attribute-based factor which will encourage ZEV technology on a broader range of vehicles. The proposed range-based credit structure makes it more difficult to earn credits for these heavier larger vehicles. Increasing the mandate to include heavier light-duty trucks, without putting appropriate credit structure in place, has the practical effect of doubling the percentage requirements for full line manufacturers, from approximately 15 percent of the fleet to 30 percent of our passenger cars and small MPVs. Without an attribute based credit structure, we

believe most manufacturers will choose to put the ZEV technology on small sub-compact cars. This could flood this already small market with ZEV technologies. Meanwhile, the technology may not be offered on larger vehicles needed by families, farmers, commercial applications, etc. During the 2008 ZEV rulemaking (resolution 08-24) the Board directed Staff to redesign the 2015 model year and beyond ZEV program to look at blended plug-in hybrid credit being based on different parameters, rather than just range. We do not believe the current proposal accomplishes this objective. Ford believes an attribute-based credit factor is necessary and appropriate to encourage ZEV technology on a broader range of vehicles and to not disadvantage full line manufacturers that produce larger vehicles that provide the utility that consumers need and want. (Ford)

Chrysler urges staff to carefully examine plug-in vehicle market trends over the next several years. In the current regulation and ISOR, ZEV credit is provided based on plug-in vehicle electric range. Electric range-based credits encourage manufacturers to build smaller vehicles (thereby minimizing battery costs needed to achieve the desired range). Additional attribute-based metrics (e.g., vehicle footprint or passenger volume) could encourage manufacturers to build a wider variety of vehicle types and sizes, increasing ZEV marketability. (Chrysler)

Agency Response: Staff considered including a vehicle's size in a future credit system, which might have had the effect of placing ZEV technologies in larger platforms. However, staff dismissed such an approach because longer range vehicles are generally on larger platforms, which reduced the need to credit the vehicle's footprint as well as its range. Additionally, such an approach would incentivize larger vehicle platforms, which is not necessarily the goal of the ZEV regulation. The environmental benefit is more directly linked to the vehicle's zero emission miles rather than its platform. The goal of the ZEV regulation is to commercialize ZEVs in California. The Board adopted a credit structure in the 2012 rulemaking that is appropriate for this timeframe for technology neutrality.

55. Comment: If CARB increases credits for Type V (300 mile FCV) ZEVs to appropriately incentivize this future technology, it should immediately include 300 mile BEVs into the Type V category, given that DC [direct current] Fast Charging infrastructure is being deployed at a fraction of the cost of hydrogen infrastructure. (PIA)

Agency Response: Comment noted. A BEV with 300 mile range and the ability to refill to 90 percent in 15 minutes or less is eligible to receive Type V ZEV credit.

56. Comment: All true ZEVs should have premium value over non-ZEVs – careful consideration of new concepts should not devalue true ZEVs. (Mitsubishi)

Agency Response: Pure ZEVs can be used with no restriction throughout the ZEV regulation. All non-ZEVs, including the new BEVx category, are limited in how a manufacturer may use those credits toward meeting its ZEV requirement. Though credit values may be similar, credit treatment is more preferential towards pure ZEVs.

57. Comment: All ZEVs should have similar credit value – large multipliers are not logical – one car replaces one car. (Mitsubishi)

Agency Response: Comment noted. ARB considered simplifying the credit structure but was concerned that awarding all vehicles the same credit would encourage manufacturers to produce low performance vehicles that would not be attractive to consumers. The least costly way to satisfy a “one-ZEV to one-credit” requirement would be to build vehicles with the minimum capabilities needed to meet the threshold. There would be no incentive to add additional zero emission range. The Board adopted a credit structure in the 2012 rulemaking that is appropriate for this timeframe for technology neutrality.

K. Range Extended Battery Electric Vehicles (BEVx)

58. Comment: ARB received support for the creation of the BEVx (Type I.5x and Type II vehicle) category. (BMW, Chrysler, PIA, SCAQMD, VW)

Agency Response: ARB appreciates support for the new BEVx vehicle category. The Board adopted BEVx vehicle category in the ZEV regulation at its March 22, 2012 hearing.

59. Comment: ARB received comments that a BEVx has the ability to pollute, and therefore is not a BEV. (ICCT)

Agency Response: Comment noted. ARB limited the use of BEVxs toward meeting a manufacturer’s pure ZEV requirement due to the fact that a BEVx is not a pure ZEV.

60. Comment: Re-evaluate the BEVx credit treatment because it is overly generous, thus picking a technology “winner”. Furthermore, if this technology is treated like a pure-ZEV, then driver inducements to discourage operation on the auxiliary power unit should be required. Because this technology can be used to offset 50%

of the pure-ZEV requirement, a manufacturer may avoid producing pure-ZEVs by using this technology in conjunction with the GHG over-compliance option that may also be used for up to 50% of the pure-ZEV requirement. The ZEV regulations should not provide some non-full-line manufacturers with an escape hatch from the production of pure ZEVs, particularly when the absence of an attribute-based approach gives full-line manufacturers such an enormous ZEV task. (Ford)

Agency Response: Using the same credit methodology for determining credits for BEVs and BEVxs is in line with ARBs treatment of a BEVx. BEVs are similar to BEVxs, and likely will be driven more similarly to a BEV than a PHEV. It is appropriate to place a cap on how BEVx credits may be used to satisfy a manufacturer's requirement, rather than use a different methodology for determining BEVx credit. Additionally, the same crediting method is being used for US06 capable TZEVs as is being used for ZEVs and BEVxs. A different crediting method that would result in less credit for BEVxs would overly complicate the regulation. The BEVx category is not targeted for a specific manufacturer, and may be used by any manufacturer to generate credit in the ZEV program. Also, in regards to caps, see response to Comment 24.

61. Comment: ICCT encourages CARB to determine the appropriate regulatory treatment of BEVx based on two fundamental ZEV program purposes: (1) encouraging battery/fuel cell production and electric miles traveled and (2) creating a transition to pure zero tailpipe emission vehicles. ICCT sees the potential for BEVx to contribute toward the first goal by providing an additional option for consumers seeking a vehicle with a large battery pack and a gasoline powered range that is no greater than the battery electric range. ZEV credit values for BEVx range beyond the 80 mile cap imposed on TZEVs are reasonable as they reflect the potential for greater utility of these vehicles and their contribution towards battery production volume. On the other hand, the types of vehicles and applications that would occur under the proposed regulation and their real-world usage patterns are unclear. Thus, we encourage ARB to restrict the proposal to grant the BEVx pure ZEV credits to the 2014-2017 compliance period only, with the option to extend later based on the percent of pure electric driving and total electric miles compared to BEVs and FCEVs with a comparable range. (ICCT)

Agency Response: Comment noted. ARB adopted staff's proposal to include BEVxs through 2025 model year. However, Resolution 12-11 includes direction for staff to return to the Board with in-use data for BEVxs and TZEVs, and if

warranted, proposed changes to the regulation in regards to treatment of these vehicle types.

62. Comment: CEERT recognizes that vehicles under this new category within the ZEV regulation have the potential to allow drivers to achieve greater zero-emissions miles by helping to address their range-anxiety. However, based on the criteria proposed to define this vehicle category – through to the 2025MY [model year]– and the creative ability of the engineers for the automobile manufacturers, it is unclear what approaches a manufacturer might develop for these vehicles and what their applications might be in real-world use. We feel it essential that ARB require that any automobile manufacturer introducing one of these vehicles into the market, especially before the year 2017, be required to participate in a monitoring and verification program that would allow ARB to develop a performance or attribute-based approach to credit generation for these vehicles. The simplest approach might be to award credits to the vehicles based on a statistically rigorous analysis of their actual real-world performance. ZEV credits for these vehicles would thus be based on the proportion of zero-emission vehicle miles driven relative to the pure-ZEV version of the same vehicle. ARB should continue to monitor developments in this vehicle category beyond the year 2018 to ensure that these vehicles are being designed and built in a manner consistent with the program goals. (CEERT)

Establish a rigorous monitoring program for automakers to provide data to ARB on Type I.5x, Type IIx and BEVxs use so that ARB can adjust credits received or the criteria used to qualify as a BEVx based initial data on their real-world all-electric-miles versus gasoline miles. (UCS)

Agency Response: Comments noted. Though no formal verification program was adopted by the Board, Resolution 12-11 includes direction for staff to return to the Board with in-use data for BEVxs and TZEVs and, if warranted, proposed changes to the regulation in regards to treatment of those vehicles.

63. Comment: The following changes will more properly align the BEVx category between the ZEV and TZEV categories:

- a. The minimum range requirement for BEVx should be no more than the minimum range requirement for the ZEV category of 50 miles.
- b. The limit on the range for the range extending engine will limit both the market acceptance of BEVxs and the total all electric miles traveled. We propose that there be no limit on the range of the APU [auxiliary power unit].

c. There should be some flexibility in not allowing the APU [auxiliary power unit] to start under any user-selectable driving mode unless the energy storage system used for traction power is fully depleted. For example, the Volt has a “Mountain Mode” switch that allows the driver to preserve battery energy needed for climbing a mountain so that the driver is not limited by the less powerful APU [auxiliary power unit]. We believe switches such as Mountain Mode make the Volt more desirable to a broader cross-section of customers, a goal that we all need to strive for with our ZEV program vehicles. (GM)

Agency Response: The Board specifically rejected moving the minimum range threshold for BEVxs from 75 miles to 50 miles, and did not include an additional vehicle category similar to the BEVx, but with lower minimum range and longer auxiliary power unit (APU) range, that would be allowed to count towards a manufacturer’s minimum pure ZEV requirement.

ARB believes that the BEVx is a relatively high-electric range BEV to which an APU is added. If the BEVx category were modified to (a) reduce the minimum electric range, (b) remove limitations on gasoline APU range, and (c) allow unrestricted use of the gasoline APU, these vehicles would no longer have any features to distinguish them from conventional PHEVs. The objective of the BEVx is not to develop a PHEV with universal appeal, but rather, to expand the market for BEVs by adding an option for a “backup” APU and enable a class of near-ZEVs that achieve greater than 90 percent zero-emissions VMT.

However, Resolution 12-11 includes direction for staff to return to the Board with in-use data for BEVxs and PHEVs and, if warranted, proposed changes to the regulation. Researchers will be modeling and studying BEVx driver behavior in the coming years to assess the electric range fraction achievable with BEVxs.

64. Comment: We have heard arguments that the BEVx’s APU is really intended to address range anxiety by being just powerful enough to provide a “limp-home” mode, but not powerful enough to intentionally use on longer trips that will involve APU operation. This is intended to result in a high fraction of a BEVx’s miles being electric vehicle (EV) miles, making it similar to a BEV where 100 percent of its miles are EV miles. While this may result in a high percentage of the BEV’s miles being electric for that one vehicle, it does not mean a high percentage of a given household’s miles will be electric. For household’s (sic) that own such a BEVx, or a BEV, we believe most will need a second vehicle which will most likely be a conventional gasoline vehicle for the foreseeable future. This

conventional vehicle, which may even be an older high emitter, will be used for the many trips that the limp-home BEVx or pure BEV cannot be used for. Our proposed BEVx criteria (discussed in Comment 63) the BEVx can be the single vehicle for the household, and can be used for all trips. We believe that even though the percentage of EV miles may be lower on our BEVx, the total EV miles for the household will be greater. And it is the total EV miles that are a direct indication of the fleet-wide GHG emissions reduced and petroleum displaced. (GM)

Agency Response: ARB recognizes that further study is necessary to determine how BEVs or BEVxs will eventually be integrated into multi-car families or “micro-fleets” of vehicles. However, without these relevant studies of driver behavior, it is not yet possible to predict vehicle type and choice behavior with any degree of confidence. Until driver behavior data is available, a case could also be made that households which can afford an early-market BEVx are more likely to also have a later model and therefore cleaner and more efficient “second” vehicle in their garages. It is even reasonable to propose that the second vehicle in such a household is likely to be a PHEV that is used by another family member routinely, or, by the entire family for long trips. Until BEVx drivers are studied and a better case can be made, ARB believes that credit should be allocated according to an individual vehicle’s actual performance instead of the performance of a combination that includes an unknown second vehicle.

L. Transitional Zero Emission Vehicles (TZEV)

65. Comment: Carefully consider how vehicles that achieve high levels of electric miles fit within the ZEV regulation categories, so that vehicles such as the Volt are appropriately credited and incentivized. (GM)

Agency Response: ARB has considered the higher percentage electric VMT capability of vehicles like the Volt, and believes that the extra credit assigned to US06-capable TZEVs appropriately reflects this increased percentage electric VMT capability as well as the Volt’s important place in the transition towards full ZEVs in the future.

66. Comment: The proposed credit for TZEVs is lower than previously proposed (e.g. 0.5 for TZEV₂₀ versus 0.7), which greatly impacts the volumes mandated. The LVMs requested that the 0.3 additive factor in the TZEV credit equation be changed to 0.5 to restore TZEV credit levels to be more in line with those previously proposed. Thus the LVMs recommend the following TZEV equation:

$$\text{TZEV Credit} = [(0.01 * \text{EAER}_{\text{udds}}) + 0.5]$$

Plus 0.2 additional credit for 10 miles US06 all electric range capability

Minimum $EAER_{\text{Udds}} \geq 19$ miles (No AER_{Udds} minimum)

Maximum credit = 1.1 at 80 miles or 1.3 including 0.2 US06 allowance

Where: $EAER_{\text{Udds}} = ERF * Rcd_{\text{Udds}}$

(BMW, LVM)

Agency Response: When developing the credit structure for ZEVs, ARB chose to strike a balance between competing vehicle technologies and stakeholder recommendations. If the suggested proposal to increase the credit for the minimal PHEV was implemented, then stakeholders that favor US06 drive schedule (US06) capable PHEVs would, in turn, argue for additional credit for these vehicles relative to the increased minimal PHEV. These US06 capable PHEVs would end up earning more credit than allocated for ZEVs in spite of the fact that they do not achieve the same emissions reductions. However, Resolution 12-11 includes direction for staff to return to the Board with in-use data for BEVxs and PHEVs, and if warranted, proposed changes to the regulation.

67. Comment: Staff is now proposing to limit the use of this technology PHEV with a new AER requirement on the assumption that battery technology will improve such that vehicles should naturally be able to operate in EV only mode at higher speeds and loads. While Toyota agrees that battery technology will improve for future generation PHEVs, we strongly object to this requirement because it limits the market flexibility in the following manner: battery improvements can be used to reduce cost rather than increase range and the market should determine if more EV operation or less cost is more important; this requirement may unnecessarily restrict PHEV to smaller vehicles and the customer will ultimately determine the success or failure of PHEVs as a mass market technology. All automakers are trying to build this market and it's inappropriate for ARB to determine winners and losers and reduce flexibility at this very early stage.

We believe that these plug-in Prius can and should play a large role in the ZEV regulation. They should not be viewed as transitional. They will be a key part of electrification for the fleet for the foreseeable future because it can reach a broader public due to the ability to cover all customer driving use at a lower cost. Specifically, we believe the current staff proposal may limit the potential for plug-in hybrids. One, they are proposing additional minimum hour requirements that would dictate the circumstances when an engine of a plug-in hybrid turns on. This may limit the expansion of plug-in technology to larger heavier vehicles of more cost sensitive models. We believe that there should be a single minimum

requirement, which is the EAER, and I believe staff has proposed some change on part of that. (Toyota)

Agency Response: ARB agrees with this first suggestion, and adopted staff's suggested modifications as provided at the 2012 January hearing to change TZEV credit determination based on EAER instead of AER.

ARB also believes that a minimum 10 mile AER requirement for all PHEVs was appropriate and necessary. This requirement ensures all PHEVs receiving credit through the ZEV regulation in 2018 and subsequent model years have some zero-emission capability, which results in GHG and criteria pollutant benefits to California. The current model Prius PHEV easily exceeds the 10 mile AER threshold requirement for TZEVs, and most, if not all other manufacturer proposed PHEV models also exceed the proposed minimum requirement. Additionally, ARB believes this minimum AER requirement is necessary to continue to drive this technology to commercialization. ARB is hopeful that the Prius PHEV will become a success and play a significant role in the ZEV regulation. ARB also expects that battery performance and cost effectiveness will continue to improve so that this same 10 mile AER capability can then become commonplace in mid-sized PHEVs, and later on, in large PHEVs.

68. Comment: In order to be eligible for TZEV credits from 2018MY, staff is proposing to include a new requirement that a TZEV achieve a minimum 10 mile AER (i.e., a minimum 10 mile drive on the UDDS test cycle without the engine starting). This minimum requirement is independent of minimum 10 mile AER on the US06 test cycle which earns an additional 0.2 credits/vehicle. The LVMs are concerned that this new constraint may inhibit the expansion of plug in technology to larger vehicles and more cost sensitive vehicle segments thereby further limiting market expansion. We believe that this proposed minimum AER requirement should be replaced with the current requirement for a minimum EAER. (LVM)

Change the TZEV credit structure for blended operation PHEVs (e.g. replace AER with EAER) so that this technology is not discouraged before it has even been introduced and we learn how customers will use their vehicles. Ford recommends that the minimum range be based on EAER, in conjunction with change the zero emission VMT TZEV allowed from R_{cda} to EAER. (Ford)

Agency Response: The new, optional, TZEV category is intended to encourage development and production of vehicles that are much more ZEV-like than the

vehicles developed for the former AT PZEV option. In order to further transition towards ZEVs, vehicles will require increases in both (1) electric drive system power and (2) energy storage capability. An EAER-only requirement with no threshold for minimum electric drive system power would only address energy storage capability, and would not necessarily result in vehicles with a desirable “balance” of electrical power and energy. An EAER-based threshold would also require an additional, separate, and more complex power requirement in combination with the EAER energy-only requirement. Setting a minimum 10 mile AER threshold appropriately combines the electric drive system power and energy storage capability requirements.

69. Comment: Minimum PHEV/TZEV qualification of 10 miles AER (versus "equivalent" AER) – The automakers will tell you that they need this compliance path, yet we need to scale the number of all electric VMT as quickly as possible. PIA believes that a minimum of 20 miles of AER should be the baseline requirement going forward, with the potential to scale up an additional 5 miles AER each year. (PIA)

Agency Response: The Board adopted a 10 mile AER requirement for the minimum TZEV threshold that will still encourage development of larger PHEVs. Adopting a minimum 20 mile AER might discourage development of PHEVs across all vehicles classes and platforms. The Board directed staff in Resolution 12-11 to study electric VMT across various vehicle technologies and adjust credits as appropriately award advanced vehicles.

70. Comment: Staff is proposing to reduce the portion of the credit requirement that can be met with TZEVs from slightly over 50 percent in 2018MY to 28 percent in 2025. The LVMs are concerned about this proposed phase-down and believe that the TZEV credit share should remain at 50 percent. Retaining the 50 percent credit requirement share will give the market more latitude in choosing between ZEVs (BEVs and FCEVs) vs. TZEVs (PHEVs), thereby increasing the overall chances of success in the marketplace. It also provides OEMs [original equipment manufacturers] more flexibility in meeting the ZEV mandate allowing them to better align their choices of ZEV program vehicles with their product plans. (LVM)

In order to better reflect projected customer demand on electric vehicles, we propose to increase the flexibility for manufacturers to meet total ZEV requirement with 50 percent TZEV credits. (BMW)

Toyota is concerned with this phased-down and believes that the TZEV credit share should remain at 50 percent. Retaining the 50 percent credit requirement share will give the market more latitude choosing between ZEVs (BEVs and FCVs) vs. TZEVs (PHEVs), thereby increasing the overall chances of success in the marketplace. It also provides OEMs [original equipment manufacturers] more flexibility in meeting the ZEV mandate by allowing them to better align their choices of ZEV program vehicles with the directions of the market. If BEVs are more preferred, the requirements would allow them to satisfy a greater share and vice versa. Finally, as the attached battery analysis indicates, TZEVs can provide substantial benefits, and given the lower credit value of TZEVs vs. ZEVs, allowing a greater portion of TZEV compliance might actually result in greater petroleum savings (as well as reductions in GHGs) due to a much larger total volume of vehicles. (Toyota)

Agency Response: ARB agrees that TZEVs will play a role in the next ten years of advanced vehicle commercialization and increased zero emission VMT in California. Allowing manufacturers to meet up to half of their requirement with credits from TZEVs could result in more vehicles, but fewer pure ZEVs. Staff's 2009 analysis showed that pure ZEVs ultimately are needed to help California reach its 2050 GHG emission reduction goals. The pure ZEV requirement will be evaluated along with other aspects of the regulation at a later ZEV review.

71. Comment: In the proposed zero-emission VMT allowance calculation we still see some room for ambiguities which should be avoided by explicitly describing the calculation of EAER_u as follows:

$$\underline{10 \text{ miles} \leq \text{Urban equivalent all electric range (EAER}_u) \leq 40 \text{ miles}}$$

$$\text{VMT allowance credit} = \text{EAER}_u * (1 - \text{UF}_{\text{Rcda}}) / 11.028$$

$$\text{EAER}_u = \text{ERF} * \text{R}_{\text{cda}}$$

$$\underline{\text{EAER}_u > 40 \text{ Miles:}}$$

$$\text{VMT allowance credit} = \text{EAER}_u * (1 - \text{UF}_{\text{Rcda}}) / 11.028$$

$$\text{EAER}_u = \text{ERF} * \text{R}_{\text{cda}}$$

$\text{R}_{\text{cda (EAER}_{u40})}$ depends on ERF [electric range fraction] and presetting of $\text{EAER}_{u40} = 40 \text{ miles}$

(BMW)

Agency Response: The comment appears to make use of, and restate, a definition for electric range fraction (ERF) that already exists in the ARB PHEV test procedure. ERF is a derived value that is not commonly used by the industry.

When possible, ARB prefers to directly reference the test procedure results, EAER and RcdA, and not to introduce additional derived values.

M. Neighborhood Electric Vehicles (NEV)

72. Comment: Do not implement retroactive restrictions on previously earned credits (e.g. NEVs) that were earned in good faith because it discourages manufacturers from taking early action. (Ford)

Agency Response: There were no retroactive restrictions placed on previously earned NEV credits in this rulemaking. All changes made affected model year 2015 through 2025.

73. Comment: The proposal to extend NEV credits (page A-3-7 of post-2018 regulation) would indefinitely detract from the unique focus of the California ZEV program on development of mainstream ZEVs. Lead-acid batteries are a well-developed technology (as vehicle starter batteries and as the primary energy source for over 100 million 2 and 3 wheeled vehicles in China) and are not a pathway to full performance zero emission vehicles. Encouraging NEVs for neighborhood transportation could also be inconsistent with California's goals of encouraging VMT reductions through walking, cycling, and public transit. If CARB staff do include NEV credits, limiting their availability as much as possible would be beneficial. (ICCT)

Agency Response: NEVs produce zero emissions and are useful in limited applications. ARB adopted limitations for 2018 and subsequent model years which limit the use of NEV credits to 25 percent of the portion of a manufacturer's requirement that may be met with TZEVs, and has reduced the amount of credit new NEVs earn from 0.30 credits to 0.15 credits.

74. Comment: In regards to subdivision 1962.1(g)(6)(A), Use of NEV credits, and allowing up to 50 percent NEV credits to meet TZEVs and AT PZEV credits for 2012 – 2017, I think that allowing NEV credits to meet up to 50 percent of TZEV credit requirements is too high, it should be reduced to just at 25 percent level to encourage the growth of this TZEV technology sector. (Chew)

Agency Response: NEVs produce zero emissions and are useful in limited applications. It is appropriate to allow NEVs to fulfill the same amount of a manufacturer's requirement that may be met with non-ZEVs in 2012 through 2017 model years.

N. Travel Provision

75. Comment: Extending the travel provision for BEVs through 2017MY is a logical flexibility for manufacturers. This extension reflects the higher market uncertainty and infrastructure development in ZEV Program states outside of California. This extension provides additional time for infrastructure and market demand to develop in these states. It also respects product plans developed by manufacturers based on the information shared by ARB staff in multiple public workshops. At these workshops, no opposition to this flexibility extension was voiced. (Chrysler)

Agency Response: ARB appreciates support for extending the travel provision for BEVs through 2017 model year.

76. Comment: ICCT supports the extension of travel for FCVs, recognizing the significant effort needed to install necessary infrastructure. (ICCT)

Agency Response: ARB appreciates support for extending the travel provision for FCVs until sufficient infrastructure is available in the Section 177 states.

77. Comment: BMW appreciates ARBs staff proposal to extend compliance flexibility concerning the new BEVx category and the travel provision. The extension of this provision to all qualified BEV and BEVx types through model year 2017 will help all LVMs and transitioning LVMs to prepare and expand their BEV offerings to other section 177 ZEV states, where the markets for EVs [electric vehicles] haven't yet matured in the same way as the California market. (BMW)

Agency Response: ARB appreciates support for including BEVxs in the travel provision through 2017 model year.

78. Comment: BEVx are not subject to infrastructure requirements in the same way as ZEVs. TZEVs with similar refueling patterns do not benefit from the travel provision and thus travel for BEVx vehicles does not appear to be justified. (ICCT)

Agency Response: Throughout the ZEV regulation, BEVs and BEVxs are treated similarly. The intent for allowing BEVx credits to travel is because BEVxs are expected to be operated like BEVs, and dependent on electric infrastructure to be truly useful and fully functional vehicles. This vehicle has substantially more electric range than currently announced PHEVs, and with electric range comparable to full function BEVs.

79. Comment: Please ensure in the regulation text the understanding of ARB that in the 2009 to 2011 model years, the 1:1 travel provision is applicable for IVMs. Proposed language should only affect model years 2012 through 2017. (BMW)

Agency Response: It is not necessary to clarify this language, since the interpretation is of subdivision 1962.1(d)(5)(E) is well documented, and all IVMs have been informed in a letter dated December 17, 2011, that proportionality will not apply to those manufacturers through model year 2011.

80. Comment: Restore the travel provision for all ZEVs and TZEVs. (CNCDA)

Agency Response: The Travel Provision will remain in effect for BEVs through 2017 model year, and for FCVs until sufficient hydrogen infrastructure is available in the Section 177 states. ARB believes that by 2018, Section 177 states will be ready to support BEVs in increasing numbers. This is evidenced by the optional Section 177 state compliance path, a provision forged by eager Section 177 states and manufacturers to ensure ZEVs are placed in those states prior to 2018 model year. The travel provision has never been available for TZEVE credits.

81. Comment: The reason for this, according to the ISOR, was that an OEM would have to sell 3 BEVs (average 9 ZEV credits) to be of the same value as 1 FCV. However, BEVs are proposed to travel until 2017. The Section 177 states would also like to set a reasonable and achievable level of pool for the compliance, with the acceptance from the OEMs [original equipment manufacturers]. As such, there is no urgency for this argument. The Type V FCV will stay as it is to get 7 credits, with 1 credit per 50 mile range. (Chew)

Agency Response: If travel expired for BEVs after 2014 model year, as was in the 2008 version of the regulation, there would be an advantage to produce FCVs during the 2015 through 2017 model year timeframe, since the manufacturer would not have to produce as many FCVs as BEVs in compliance with California and Section 177 state ZEV requirements. Because staff proposed to extend the travel provision for BEVs through 2017 model year, the incentive to produce FCVs is less. Therefore ARB adopted an increase in Type V ZEV credits (300 mile FCVs) from 7 credits to 9 credits to ensure FCVs are appropriately incentivized in the 2015 through 2017 timeframe.

82. Comment: In regards to subdivision 1962.2(d)(5)(E), counting specified ZEVs placed in service in a Section 177 state and in California, ARB should encourage the early deployment of FCVs by encouraging that only after a minimum level of FCV in the North East Region / Section 177 state before any excess credits can be traveled. The minimum level should also account for the placement of the battery electric vehicles. In short, only after the minimum quantities of BEVs and FCVs, that any excess FCV credits can be traveled. (Chew)

Agency Response: The purpose of the travel provision is to allow manufacturers to focus demonstration efforts in centralized locations and to help manufacturers place ZEVs in areas prepared with sufficient complementary policies such as infrastructure and incentives. Starting in 2018 model year, the travel provision will no longer apply to BEVs, and therefore Section 177 states can expect vehicles to be placed outside of California, without requiring a minimum number to be placed. It is difficult to justify requiring a minimum number of FCVs in the Section 177 states without sufficient hydrogen infrastructure to support those vehicles. However, through the optional Section 177 state compliance path, manufacturers will have the option to place a minimum number of BEVs or FCVs in the Section 177 states, and will not be able to travel credits associated with those vehicles.

83. Comment: Since travel provisions remain a controversial aspect of the regulation, ARB could propose subordinating travel to credit trading. That is, a manufacturer would only be able to “travel” its credits after demonstrating that it could not meet its requirement in a given state through the procurement of credits from other manufacturers. (Fisker)

Agency Response: The ZEV requirement is a performance standard which may be met in many ways. ARB will not require manufacturers to purchase credits towards compliance with their ZEV requirements. Each manufacturer chooses a compliance strategy to meet its ZEV requirements. Such a change would reduce flexibility for manufacturers.

84. Comment: It is proposed that the “Travel Provisions” be limited to “Manufacturers with a ZEV requirement producing ZEVs.” Our understanding is that a manufacturer not subject to the ZEV mandate (e.g. small volume manufacturer (SVM)) would not be allowed the “travel” credits. If the SVM provides that credit to an LVM, then the LVM would decide whether to “travel” that credit. However, the regulatory language is not very clear and should be clarified. (LVM)

The ISOR states that the travel provision only applies to manufacturers that have a requirement. Fisker would ask ARB to clarify that credits procured from a manufacturer without a requirement, then used by a different manufacturer with a requirement, would be allowed to travel. (Fisker)

Agency Response: Comment noted. ARB clarified the regulatory language to ensure IVMs and LVMs may travel ZEV credits. Only IVMs and LVMs may travel credits because these are the only manufacturers with a requirement, and the travel provision specifically helps a manufacturer comply with other Section 177 state requirements, and is not meant to act as a credit banking provision for all manufacturers. This was the intent of the language proposed in the ISOR. The Board approved the final travel provision language at its March 22, 2012 hearing.

85. Comment: ARB Staff has included (ISOR Section 2.1.2, "Travel Provision") specific clarifying language to prohibit travel provision credits for iLVM [independent low volume manufacturer] OEMs [original equipment manufacturers] such as Mitsubishi Motors through 2017MY. As discussed above, this is detrimental considering we must fully comply with ZEV 2.0 in 2018MY without sufficient credits. Previously, ARB Staff stated that iLVM [independent low volume manufacturer] OEMs [original equipment manufacturers] are not allowed to gain travel provision credits. When asked to identify the regulatory language that prohibits iLVM [independent low volume manufacturer] travel provision credits, ARB staff stated that it was the "intention" of the regulation. ARB Staff mentioned they are concerned that non-traditional OEMs (EV-only OEMs) [electric vehicle-only original equipment manufacturers] would utilize the travel provision to gain credits for sale.

Therefore, this additional regulatory language is added to legitimize their previous finding without regard to the regulated parties. Regardless of OEM [original equipment manufacturer] size, ZEV vehicles and the credits generated from these vehicles are highly valuable. ARB Staff action devalues ZEV credits from all iLVM [independent low volume manufacturers] OEMs [original equipment manufacturers]. Given that iLVMs [independent low volume manufacturers] will be reclassified in 2018MY, these credits may be necessary for compliance and therefore, very valuable to transitioning iLVMs [independent low volume manufacturers] such as Mitsubishi Motors. Allow OEMs [original equipment manufacturers] required to comply in 2018MY to bank Travel Provision credits. This will eliminate ARB Staff's problem of non-traditional OEMs [original equipment manufacturers] from stockpiling credits for sale and allow current

iLVMs [independent low volume manufacturers] to transition to IVM status in 2018 model year. (Mitsubishi)

Agency Response: The Travel Provision applies only to manufacturers with ZEV requirements. The intent of the Travel Provision is compliance. Subdivision 1962.1(d)(5)(E)1.a., b., and 2. all state “ZEVs....may be counted towards compliance...” which implies the credits may only be traveled by a manufacturer using the credits towards compliance with a requirement. Independent low volume manufacturers (ILVM) and small volume manufacturers (SVM) are free to deliver for sale and place in service ZEVs in any Section 177 state, and may bank those credits for use in a future year. ILVMs have no ZEV requirement in any state which is sufficient compliance flexibility.

86. Comment: ZEVs should not be required in areas not prepared to develop sufficient infrastructure –this affects the Travel Provision and ZEV Compliance Pools. (Mitsubishi)

Agency Response: The Clean Air Act allows other states to adopt California vehicle emission standards including the ZEV regulation. ARB does not have authority to change the Clean Air Act, nor any authority over states which adopt California’s regulations. The Travel Provision will remain in effect for BEVs through 2017 model year, and for FCVs until sufficient hydrogen infrastructure is available in the Section 177 states. ARB believes by 2018, Section 177 states will be ready to support BEVs in increasing numbers. This is evidenced by the optional Section 177 state compliance path, a provision forged by eager Section 177 states and OEMs to ensure ZEVs are placed in those states prior to 2018 model year.

87. Comment: PIA has been consistent in its opposition to the Travel Provision in the ZEV regulations. At best it dilutes the overall number of plug-in (sic) available to the market. At worst it creates a mechanism for automakers to produce fewer vehicles and negatively impacts the other states who have adopted ZEV regulations. Simply stated it encourages gaming the system and should be phased out immediately. (PIA)

Agency Response: Comment noted. The travel provision has allowed manufacturers to focus demonstration efforts in centralized locations and helped manufacturers to place ZEVs in areas prepared with sufficient complementary policies such as infrastructure and incentives. The travel provision is scheduled to be phased on in model year 2017 for BEVs, and will continue until sufficient

hydrogen infrastructure is available for FCVs. Additionally, the optional Section 177 state compliance path will bring ZEVs earlier to the Section 177 states, in 2016 and 2017 model years. This shift in the travel provision reflects the growing number of ZEVs available for sale and increasing support for ZEVs in the Section 177 states, which is necessary for ZEV commercialization.

88. Comment: Global Automakers fully supports pooled compliance with the Section 177 States under the LEV III and GHG regulations, and also believes that such a provision would add additional flexibility under the ZEV program. We recommend that ARB and Section 177 States adopt a pooling provision for the ZEV program, too, to facilitate ZEV manufacturer compliance while not unduly penalizing a manufacturer that may have a shortfall in one state but has over-complied in another, so long as overall required volumes are met. (Global)

With respect to compliance flexibility and softening the required ramp-up of BEV sales in the Section 177 ZEV states, BMW recommends the implementation of an additional pooling provision option. This option could be phased-in during model years 2015 to 2017 and continued from 2018 and subsequent model years, when travel for qualified BEVs and BEVx types expires. (BMW)

Agency Response: Manufacturers have the option to qualify for pooling for ZEV and TZEV credits in the Section 177 states if they choose to participate in the optional Section 177 state compliance path. The Section 177 states will monitor how pooling affects the placement of vehicles within the East and West Region, and make a determination at a later date on whether pooling is appropriate for all manufacturers and vehicle types.

O. Section 177 State Optional Compliance Path

89. Comment: ARB received support for the optional Section 177 state compliance path, or for an option which gradually introduces ZEV technologies into the Section 177 states. (BMW, CT, Ford, GM, Global, Honda, LVM, MD, NJ, NY, Nissan, OR, Toyota, UCS, VT)

Agency Response: ARB appreciates support for the new optional Section 177 state compliance path. The Board approved the final ZEV regulation, including regulatory language for the optional Section 177 state compliance path on March 22, 2012.

90. Comment: Chrysler believes that among others, the following principles must continue to be preserved if such an agreement with the Section 177 states

regarding early placement of ZEVs is reached and staff develops appropriate regulatory text to implement the agreement.

Regulatory text implementing such an agreement must respect the identity requirements of the Clean Air Act. Chrysler's legal staff will be reviewing changes proposed to implement such an agreement and we reserve our legal rights to challenge any provision which infringes upon these requirements. Chrysler notes that it does not, by omission of any potential legal or policy objection to any aspect of this ARB proposal, waive its right to raise any legal or policy objection to any future ARB proposed or final regulatory action, regardless of whether such future objections are the same or similar to those that Chrysler might be able to raise with respect to this proposal.

Any agreement must be an overlay of the ZEV Program as proposed by ARB staff in the ISOR. Aside from the particular additional and reduced requirements in such an agreement, the principles upon which those requirements were developed, and additional flexibilities offered, ZEV provisions such as credit banking, vehicle credit values, etc. must continue to form the underlying structure of Section 177 state compliance.

Any agreement must provide equal opportunity (and risk) to all manufacturers, regardless of compliance strategy. Of particular concern is ensuring that any ZEVs in excess of the early introduction credit requirement continue to receive the flexibility to utilize the travel provision through the 2017 model year including the use of traveled ZEV credits to cover compliance requirements in the TZEV, AT-PZEV, and PZEV categories.

The agreement must be optional. Manufacturers must be able to make use of the provisions as proposed by staff in the ISOR and approved by the Board. If the agreement introduces additional compliance flexibilities, such as pooling of compliance provisions, these flexibilities should be extended to all manufacturers after the time period of the optional agreement. For example, a pooling provision should be extended to all manufacturers in the 2021 model year after all manufacturers are subject to the same requirements again. (Chrysler)

Agency Response: It is expected that the Section 177 states adopting the ZEV regulation, as modified by this rulemaking, will adopt the language as written, and therefore "identity" requirements will likely not be an issue. Additionally, the optional Section 177 state compliance path is intended to work within the confines of the ZEV regulation, and only changes the provisions as noted in subdivisions

1962.1(d)(5)(E)3. and 1962.2(d)(5)(E)3. It is also the intent of the optional Section 177 state compliance path to allow manufacturers who wish to fulfill other portions of their requirement with credits from ZEVs to be able to do so, as allowed by subdivisions 1962.1(g)(6) and 1962.2(g)(6). Also, this is an optional compliance path for any IVM or LVM. The Section 177 state optional compliance path only applies through 2020 model year. Any flexibilities under this provision will not continue in the ZEV regulation until a review of the effects of such flexibilities is brought before the Board and reconsidered.

91. Comment: LEV III developed the CA and 177 state pool starting in 2018 model year to adapt to each state's unique vehicle purchase patterns while requiring overall fleet compliance. ZEV 2.0 eliminates the travel provision in 2018 model year (in effect, pools the results of all states) which returns ZEV compliance to a state by state basis. Considering the lack of electric vehicle infrastructure development, this could force electric vehicle sales in states unprepared for electric vehicles. On January 24, 2012, Tom Cackette notified our staff that the LVM OEMs had concluded their negotiations for an Optional Compliance Path to creating two compliance pools outside of California. While Mitsubishi Motors generally agrees to the concept, none of the details for iLVM/IVM compliance were discussed with the affected OEMs [original equipment manufacturers]. ARB, 177 and iLVM/IVM OEM [original equipment manufacturers] staff should work to establish specific details to ensure iLVM/IVMs may participate in this Optional Compliance Path. (Mitsubishi, 45-Comment 76) (Mitsubishi, Oral Comment, Patterson)

Agency Response: IVMs may participate in the optional Section 177 state compliance path. IVMs have requirements in the Section 177 states, and it is appropriate for them to participate in such a program. However, ILVMs have no requirement in the Section 177 states but are allowed to bank all credits generated in those states for future compliance. ILVMs have no ZEV requirement in any state, which is sufficient compliance flexibility in the Section 177 states.

P. GHG-ZEV Over Compliance

92. Comment: ARB received several comments asking the Board to reject the ZEV-GHG over-compliance provision, which was also referred to as a loophole for some manufacturers because the provision sends the wrong signal to manufacturers, it provides unequal treatment of manufacturers, and the provision does not achieve the objective of the ZEV regulation. ARB also received several objections and opposition to the ZEV-GHG over-compliance provision. (CCA,

CEERT, CODA, CalETC, Chrysler, EIN, Fisker, Ford, Form Letter #5, Form Letter #6, GM, Mercedes, NRDC, PIA, Tator, Tesla)

Agency Response: The Board approved the GHG-ZEV over-compliance provision in Resolution 12-11, standing by its commitment made in a July 28, 2011, letter to the U.S. EPA and National Highway Traffic Safety Administration (NHTSA). However, the Board did strengthen the provision by requiring manufacturers to commit to using such a provision by December 31, 2016, and requiring upstream emissions from ZEVs to be included in calculating a manufacturer's GHG-ZEV over-compliance credits.

93. Comment: ARB received several comments in support of the ZEV-GHG over-compliance provision, urging the Board to adopt such a provision that provides manufacturers flexibility. (Global, Honda, Hyundai, Mazda, NY)

Agency Response: ARB appreciates support for the GHG-ZEV over-compliance provision. The Board approved the GHG-ZEV over-compliance provision in Resolution 12-11, standing by its commitment made in a July 28, 2011, letter to U.S. EPA and NHTSA.

94. Comment: ARB received requests to require manufacturers to account for the upstream emissions for any ZEVs manufacturers use in determining their fleet-average GHG emissions average for GHG over-compliance in 2018-2021MYs. (CEERT, EIN, ICCT, UCS)

Agency Response: Comment noted. The Board strengthened the GHG-ZEV over-compliance provision by requiring manufacturers to include upstream emissions in their calculation of over-compliance with the GHG fleet standard. ARB will refine the language in a subsequent rulemaking when harmonizing with the federal GHG standards and ensure such emissions are counted.

95. Comment: ARB received requests to limit or place a cap on the participation under the ZEV-GHG over-compliance provision. ARB received specific requests on the appropriate percentage cap for the industry, between 10 percent and 50 percent. (ALAC, CCA, CEERT, CODA, EIN, ICCT, NRDC, UCS)

Agency Response: The Board approved the GHG-ZEV over-compliance provision in Resolution 12-1, standing by its commitment made in a July 28, 2011, letter to U.S. EPA and NHTSA, and did not place a cap on the number of manufacturers allowed to participate in this provision. The Board received many

comments in opposition to this proposal asserting such a provision creates an unfair playing field between regulated manufacturers. Such a cap could potentially create an unfair playing field by only allowing some manufacturers to participate in the provision and prohibiting other manufacturers, and would create administrative challenges. However, the Board strengthened the provision by requiring manufacturers to commit to using such a provision by December 31, 2016, and requiring upstream emissions to be included in calculating a manufacturer's over-compliance credits.

96. Comment: ARB received requests that the Board increase the GHG fleet average over-compliance requirement from two grams per mile to between four and five grams per mile. (ALAC, CCA, CEERT, EIN, UCS)

Agency Response: The Board approved the GHG-ZEV over-compliance provision in Resolution 12-11, standing by its commitment made in the July 28, 2011, commitment letter to the U.S. EPA and NHTSA, and did not increase the threshold over what was proposed in the ISOR. Due to caps placed on the amount of GHG-ZEV over-compliance credit allowed to be used towards compliance in one model year, and not allowing any GHG-ZEV over-compliance credits to be carried forward to the next model year, increasing the threshold beyond two grams per mile would potentially generate more credits that would be able to be used in any year towards meeting ZEV requirements. However, the Board strengthened the provision by requiring manufacturers to commit to using such a provision by December 31, 2016, and requiring upstream emissions to be included in calculating a manufacturer's over-compliance credits.

97. Comment: ARB received requests to clarify the intent of the ZEV-GHG over-compliance provision to be temporary and to not represent an inherent link between the ZEV program and national GHG program. (EIN, UCS)

Agency Response: The ISOR and commitment letter to the U.S. EPA and NHTSA, dated July 28, 2011, makes it very clear that this provision would be limited to 2018 through 2021 model years as is now specified in the regulatory text.

98. Comment: Absent elimination of the GHG-over compliance, the following actions can help limit the losses to the ZEV program including monitoring the provision over 2014 to 2025 model year, and report every two years back to the Board on the number of manufacturers intending to participate, their market share, and the number of ZEV or TZEV vehicle losses for the program. (EIN)

The combination of the use of built-in staff compliance credits and GHG ZEV over-compliance credit provisions seem to have a significant impact on the number of ZEV vehicles that will be deployed in California in the years 2018 through 2021. In reviewing this provision, we have some concerns that the combination of both of these credit mechanisms may reduce the number of ZEVs deployed in California. While ARB staff has assured us that there is only a remote chance that a significant number of auto manufacturers will avail themselves of this option, we request that your Board consider including a provision that would give you an option to review and assess the impacts of these credits on the ZEV regulation of deployment targets going forward. (BAAQMD)

If the GHG-ZEV over-compliance provision is not eliminated, we recommend that the ARB monitor the use of the provision and report back on the losses in ZEVs and TZEVs due to the provision. (UCS)

Agency Response: Comment noted. The Board directed in Resolution 12-11 staff to report back every two years on the manufacturers' use of the GHG-ZEV over-compliance provision, and on avoided ZEVs and TZEVs in California.

99. Comment: If the GHG-ZEV over-compliance provision is not eliminated, we recommend that the ARB reduce the uncertainty of the program by moving up the date for signing on to December 31, 2016 instead of May 1, 2018, which is after the program would be generating credits. (UCS)

Agency Response: Comment noted. The Board strengthened the over-compliance provision by requiring manufacturers to commit to using such a provision by December 31, 2016.

100. Comment: We agree with the proposal to require a commitment from OEMs [original equipment manufacturer] to opt in for all four years for the over-compliance provision, but encourage CARB to set an earlier date for OEMs [original equipment manufacturers] to notify CARB of opting in. A commitment from OEMs [original equipment manufacturers] to exceed regulatory standards would reinforce the technical feasibility of the standards during the mid-term review of the federal GHG/fuel economy program. Thus it should be required in 2017, in time for consideration in the mid-term review due April 1, 2018. The proposed regulation sets an opt-in notification date of May 2018 which is after the mid-term review is concluded. (ICCT)

Agency Response: See response to Comment 99.

101. Comment: We understand that CARB staff intends to prohibit the use of hybrid truck and EV [electric vehicle] “supercredits” to meet the 2 g/mile “overcompliance” benchmark required to participate in overcompliance. We agree that these prohibitions should be included in the final regulation even for manufacturers that otherwise comply with the federal GHG program in lieu of the California GHG program. We note that federal regulation language may be needed to recognize cancellation of federal PV [plug-vehicle] GHG credits used for “overcompliance”, as it is unclear whether CARB would have binding authority to cancel federal credits. (ICCT)

Agency Response: Comment noted. ARB appreciates support for such restrictions placed on this GHG-ZEV over-compliance provision. ARB is committed to ensuring extra credits earned for PHEVs and BEVs will not be used in calculating manufacturer’s over-compliance with the GHG regulation, and will refine the language as needed in a subsequent rulemaking when harmonizing with the federal GHG standards.

102. Comment: In its Letter of Commitment dated July 28, 2011, ARB committed "to propose that its revised ZEV program for the 2018-2021 MYs [model years] include a provision providing that over-compliance with the federal GHG standards in the prior model year may be used to reduce in part a manufacturer's ZEV obligation in the next model year." As we discussed during our meeting, the Alliance of Automobile Manufacturers opposes this proposal. By offsetting the number of ZEVs based on GHG performance, the proposed change would reduce the number of ZEVs in California and those states that have adopted California's ZEV regulations. To our way of thinking, this is inconsistent with ARB's long-held position that a "critical mass" is needed for ZEVs to become cost-effective, viable technologies. If ARB truly believes that the number of mandated ZEV s should be lower-a view that our members would share-the appropriate response would be to reduce the mandated ZEV volumes accordingly, not to allow a subset of manufacturers to reduce their volumes based on their status under a completely different program. It is critical that the burden of the ZEV mandate be borne equally by all "large-volume" manufacturers as defined in California's regulations. In as much, as this proposal would allow certain manufacturers to eliminate a significant portion of their ZEV requirements, it would undermine this level playing field, giving such manufacturers a significant competitive advantage. As an aside, allowing credits to be transferred out of the Single National Program and into

ARB's ZEV program is also likely to reduce the GHG credits available for purchase, thereby reducing the flexibility of the Federal GHG standards for MYs [model years] 2018-2021. (Alliance)

Agency Response: The Board approved the GHG ZEV over compliance provision in Resolution 12-11, standing by its commitment made in a July 28, 2011, letter to the U.S. EPA and NHTSA. ARB concluded that this provision was valuable to both the ZEV program and the GHG program as it results in a net GHG emissions benefit and it was one element needed to secure support for the national GHG standards. ARB recognizes that such a provision could result in fewer ZEVs during the 2018 through 2021 model year timeframe. ARB does not expect all manufacturers to use this provision and it is a manufacturer's choice to participate in such a provision. Due to the nature of the ZEV regulation, all manufacturers use different provisions to meet their requirements. Some manufacturers may choose to purchase credits at a lesser cost rather than building their own ZEV technology. The GHG fleet standards do not require manufacturers to sell additional GHG credits to other manufacturers. It is more probable that any additional GHG credits would be banked and subsequently used by the manufacturer earning the credits. Therefore, a manufacturer using this provision would be choosing to reduce its own flexibility in meeting the GHG standards, just as it is a manufacturer's choice to make extra GHG credits available to other manufacturers.

103. Comment: We do ask for the elimination or the significant modification to the GHG-ZEV over-compliance provision. This provision creates a strong economic incentive for car companies to avoid selling up to 40 percent of their electric car requirements from 2018 to 2021 in return for over-complying with greenhouse gas standards by just one percent, a 40-to-1 exchange rate. But let me look at it in terms of dollars and cents. Auto companies using this provision would have to invest just 2 to \$3,000 into off-the-shelf technology they were going to do anyway to avoid selling 10 to \$15,000 worth of truly advanced technology. That's not a good deal for California, especially in critical years of the program for infrastructure development and market ramp-up for battery electric and fuel cell vehicles. (UCS)

Agency Response: The Board approved the GHG-ZEV over-compliance provision in Resolution 12-11, standing by its commitment made in a July 28, 2011, letter to U.S. EPA and NHTSA. ARB recognizes that such a provision could result in fewer ZEVs during the 2018 through 2021 model year timeframe. However, the Board did strengthen the provision by requiring manufacturers to

commit to using such a provision by December 31, 2016, and requiring upstream emissions to be included in calculating a manufacturer's over-compliance credits.

104. Comment: While Chrysler supports the principles of the ZEV Program, Chrysler takes exception with the provision that would give a select group of manufacturers the opportunity to avoid up to half of their ZEV obligation as a result of over compliance with the GHG provisions of the federal or California program. Accordingly, this provision should be removed. Chrysler strongly believes that the GHG over-compliance ZEV credit provision is inconsistent with the Board's directive to move zero emission drive technology to commercialization, undermines the incremental air quality benefit that is lost with the avoided zero emission drive vehicles, creates an un-level playing field by providing a select group of manufacturers a significantly lower cost of compliance, may face considerable legal obstacles, and slows down the much needed market acceptance of electric drive vehicles.

Given the structure of the program and these apparent emissions impacts, there may be legal obstacles to California's adoption of the GHG Over-Compliance Provision proposal. First, the proposed GHG Over-Compliance Provision may be preempted under Section 209 of the Clean Air Act because (1) the proposal could require California to obtain a new waiver under Section 209(b) of the Clean Air Act for its greenhouse gas standards -- including the ZEV program and; (2) those standards could be ineligible for a waiver because they would not be consistent with federal greenhouse gas standards under Section 209(b)(1)(C). Furthermore, to the extent that California has relied on ROG + NOx [reactive organic gases plus oxides of nitrogen] reductions from the ZEV program in any Air Quality Management District (AQMD) state implementation plan for ozone, these revisions would relax the ZEV program and would not be allowed absent EPA [United States Environmental Protection Agency] approval of a revised SIP [State Implementation Plan] accounting for the resulting ROG + NOx [reactive organic gases plus oxides of nitrogen] increase.

With respect to preemption, Section 209(a) preempts California from adopting or enforcing standards related to emissions from new motor vehicles absent a waiver from EPA under Section 209(b). EPA [United States Environmental Protection Agency] may grant a waiver under Section 209(b) solely where California determines (and the determination is not arbitrary and capricious) that its standards will be, in the aggregate, at least as protective of public health

and welfare as federal standards, and the standards are necessary to meet compelling and extraordinary conditions. Because California's proposal would relax the ZEV program and thereby may increase ROG + NOx [reactive organic gases plus oxides of nitrogen] emissions, compared to the ZEV program for which EPA [United States Environmental Protection Agency] granted a waiver, EPA [United States Environmental Protection Agency] may be required to reevaluate whether the ZEV program -- and its lower ROG + NOx [reactive organic gases plus oxides of nitrogen] benefits as revised -- is still required to meet compelling and extraordinary conditions, and that the program would not fall within a "within the scope" waiver exception.

In addition, the California greenhouse gas standards (including the ZEV requirements), and accompanying enforcement procedures must be consistent with Section 202(a) (EPA's [United States Environmental Protection Agency] own greenhouse gas standards). Section 202(a)(3)(A) of the Clean Air Act requires EPA [United States Environmental Protection Agency] to establish emission standards that "reflect the greatest degree of emission reduction achievable through the application of technology which [EPA] [United States Environmental Protection Agency] determines will be available for the model year to which such standards apply, giving appropriate consideration to cost, energy, and safety factors associated with the application of such technology." California's proposal allows over-compliance with the national GHG standards to reduce ZEV obligations. This option undermines EPA's [United States Environmental Protection Agency] GHG standards. This is because the credits retired from the national program to reduce ZEV obligations would, in fact, be *retired*, and accordingly not be applied to offsetting under-compliance in the federal program. As a result, we would expect overall GHG emissions necessarily to be lower than that which would occur absent the California ZEV provision. Removing over-compliance credits from the federal GHG program makes those credits unavailable in the federal GHG "emissions credit market" for automaker's use in complying with the federal standards. This makes compliance more difficult because there are fewer credits to use; as such this effectively lowers the passenger car and light duty truck curves. Because EPA [United States Environmental Protection Agency] must establish federal standards reflecting the greatest degree of emission reduction achievable, this California ZEV option -- that makes federal compliance more difficult -- interferes with and is inconsistent with the federal standards. Accordingly, the California ZEV option would be ineligible for a Clean Air Act section 209 waiver, and preempted entirely.

In addition to these potential preemption issues, to the extent that California has anticipated that the ZEV program will achieve ROG + NO_x [reactive organic gases plus oxides of nitrogen] reductions, it is possible that California AQMDs responsible for achieving compliance with the ozone NAAQS [National Ambient Air Quality Standards] (and possibly other criteria pollutants) have relied on the ZEV program in their State Implementation Plans (SIPs) for attainment. The California proposal to allow federal GHG over-compliance to satisfy ZEV obligations would reduce the ROG + NO_x [reactive organic gases plus oxides of nitrogen] benefit (as discussed above). If EPA [United States Environmental Protection Agency] has approved AQMD SIPs based on assumed ROG + NO_x [reactive organic gases plus oxides of nitrogen] reductions that would not occur due to the GHG over-compliance option, that change cannot be made without approval of a revised SIP that still shows attainment.

If adopted, the Greenhouse Gas Over-Compliance provision will also put manufacturers who still need to comply with the full ZEV requirement at a competitive disadvantage, causing serious financial harm, compared to those manufacturers able to take advantage of the provision with little or no additional investment.

Therefore, Chrysler strongly urges the Board to not adopt the greenhouse gas over-compliance ZEV credit provision. (Chrysler)

Agency Response: At the January 27, 2012, hearing, the Board adopted the ZEV regulation, and affirmed its commitment to the GHG-ZEV over-compliance provision. The Board stated that this provision recognizes that “we’re (meaning ARB, manufacturers, and other stakeholders) all in this together in terms of trying to get to the ultimate of the cleanest and most efficient and most advanced cars possible and that people are on different paths. They’re (manufacturers) not all going to do it the same way, as we’ve (ARB) been saying over and over again. There are different mixes.” (January 27, 2012 Transcript pg 26) The GHG-ZEV over-compliance provision is open to all manufacturers, and does not include limitations on the number of manufacturers that may participate in the provision.

There is no federal equivalent to the California ZEV regulation. Therefore the ZEV regulation will be able to obtain a waiver under Section 202 of the Clean Air Act because it is at least as protective of public health and welfare as federal standards. In addition a U.S. EPA review for “inconsistency” within the

Section 202 context looks to issues of technological feasibility and lead time, not to consistency between federal and California standards.

The U.S. EPA (and ARB) curves are set at levels deemed achievable through available, cost effective technology. Although credit trading is available to manufacturers, it is not assumed that manufacturers would make their extra credits available for trading, nor is it assumed in setting the GHG standards at the federal level.

Because this provision is not required, it will not necessarily affect GHG or criteria emissions in California. Additionally, ARB does not depend on emission benefits from the ZEV regulation to meet its State Implementation Plan (SIP) requirements. ARB uses emission reductions from the LEV fleet standards to account for the emissions reductions expected from the light-duty vehicle fleet. ZEVs are counted toward a manufacturer's LEV compliance, and therefore are adequately accounted for in meeting California's SIP requirements.

ARB does not expect all manufacturers to use this provision and it is a manufacturer's choice to participate in such a provision. Due to the nature of the ZEV regulation, all manufacturers use different provisions to meet their requirements. Some manufacturers may choose to purchase credits at a lesser cost than building their own ZEV technology. The GHG fleet standards do not require manufacturers to sell additional GHG credits to other manufacturers. It is more probable that any additional GHG credits would be banked and subsequently used by the manufacturer earning the credits. Therefore, a manufacturer using this provision would be choosing to reduce its own flexibility in meeting the GHG standards, just as it is a manufacturer's choice to make extra GHG credits available to other manufacturers.

Q. Credit and Requirement Calculations

105. Comment: It is our understanding that credits are calculated by subtracting the ZEV requirement from the ZEV credits that a manufacturer has earned for vehicles produced and delivered for sale. We believe the language needs to be clarified in subdivision 1962.1 and subdivision 1962.2. (LVM)

Agency Response: The language as released in the ISOR is correct, and was adopted by the Board without modification. ARB does not believe clarification is needed at this time.

106. Comment: “Conventional rounding” should be defined. U.S. EPA and other sections of the CCR, reference the rounding-off method specified in ASTM [American Society for Testing and Materials] E29, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications. We recommend that the same rounding convention be used in the ZEV regulation. (LVM)

Agency Response: Comment noted. The Board adopted the final modifications to ZEV regulation, including the conventional rounding definition at the March 22, 2012, hearing. The definition recommended by the commenter is more appropriate for certification data when dealing with vehicle emissions rather than credits, which only go to the third significant digit.

107. Comment: We believe that an LDT2 ZEV offsets the air quality benefit of the LDT2 fleet average NMOG; therefore it is appropriate that the LDT2 fleet average NMOG be used in the ZEV NMOG credit calculation. Because light duty trucks are larger and heavier than passenger cars, additional energy storage is needed on these vehicles to achieve the same range. Using the higher LDT2 fleet average to calculate credit based on range, will help equalize the cost per credit for heavier light duty trucks compared to passenger vehicles. This could encourage manufacturers to design zero emission technology into a broader range of vehicles. Furthermore, we do not believe that CARB should be making changes retroactively (2009 – 2014 MY [model year]) and should provide lead time. Manufacturers plan for compliance years ahead and changes that negatively impact those plans should allow for adequate lead time for manufacturers to adjust their plans, which may require new supplier agreements, increasing capacity constraints, or even new vehicles. (LVM)

Agency Response: It was never the intent of ARB to allow manufacturers to use different NMOG fleet averages when calculating credits earned by various vehicle classes. This was brought to ARBs attention in 2009, and ARB released a letter dated December 6, 2010¹, stating that this was allowed, but would be changed for 2012 model year as soon as possible. A vehicle’s credit under the ZEV regulation does not necessarily reflect its relative emission benefit. A LDT2 PZEV earning more than a PC PZEV is counter-intuitive, because both vehicles must meet the same SULEV certification standard.

108. Comment: We believe that the proposed criteria for applying to the Executive Officer to use the current model year method are too stringent. For example a

¹ MSCD Mail-Out #10-55 (December 6, 2010) http://www.arb.ca.gov/msprog/mailouts/mouts_10.htm

40 percent decline in sales is worse than what was evidenced in the recent recession, when it was clearly recognized that relief was needed. What happens if there is a 20 percent decline one year and a 30 percent decline the next? If all LVMs but one qualify for current model year, and that LVM sales declined by 39 percent, this would create a competitive disadvantage for that LVM. Staff's proposal provides two less years of lead time to manufacturers for planning purposes. In fact, this modification will result in manufacturers not knowing their production requirements with certainty until after the beginning of the model year in which they must produce the ZEVs. Also problematic is the constraint that qualification must be based on comparison to the prior model year.

The LVMs recommend that the threshold to qualify for the same-year method either be removed (as in current regulation) or, if needed to limit use of this flexibility, that the threshold be set at 15 percent sales decline as compared to the production determined under the prior-year average method. Comparing same-year results to prior year average results corrects the concern noted in which a manufacturer experiences a multi-year decline exceeding the threshold, but would not otherwise qualify if the same-year production was only compared to the single prior year. (Chrysler, LVM)

Agency Response: Comment noted. After further analyzing manufacturers' sales data from periods in which there were significant drops in vehicle sales, ARB changed the Executive Officer criteria from 40 percent to 30 percent. Additionally, it is not appropriate to compare single model year data with a three-year average of data. When making Executive Officer determinations, it is best to compare similar data to ensure an unbiased decision is made. A drop in sales can happen gradually, but does not have the same effect as a dramatic drop in sales from one year to the next, which was the purpose of this Executive Officer discretion.

109. Comment: The requirement to apply to the Executive Officer before using the same-year method interjects a subjective decision into what would otherwise be an objective, data driven, process. The LVMs recommend that this restriction be removed. (LVM)

Agency Response: The default method is based on a manufacturer's second, third, and fourth year back sales average. A flexibility, which was requested by manufacturers, was included to allow a manufacturer to use a same year average when a significant decrease in sales occurred between two model

years due to factors outside of the manufacturer's control. Therefore, the Board adopted a provision by which the Executive Officer will make an objective determination of whether or not to allow use of the same-year calculation method. The Executive Officer discretion criteria needs to be data based as to not be biased in any way when a decision is made. It is appropriate for the Executive Officer discretion, as written, to be included in the regulation.

R. Manufacturer Size Definitions

110. Comment: Support for lowering the threshold for the definition of a LVM in order to increase the number of ZEV offerings and ensure a level playing field among all the major vehicle manufacturers. (Tesla)

Agency Response: ARB appreciates support for modified size definitions. This change was needed to ensure that major manufacturers compete on a level playing field and to assure a variety of ZEVs are available to the consumer.

111. Comment: VW supports the lead time for IVMs becoming subject to LVM requirements starting in 2018. (VW)

Agency Response: ARB appreciates support for the lead time allowed to IVMs subject to LVM requirements due to modification to the size definitions.

112. Comment: JLR would like to request reconsideration of, and further discussion regarding, the proposed lead times for transition between IVM and LVM definition. JLR considers the lead time provisions for redefinition of an IVM to LVM to be insufficient to initiate and launch the necessary new vehicle programs to meet the LVM category requirements. JLR requests consideration of a revision of the wording and concept as follows: "A manufacturer with three consecutive averages over a size threshold will be subject to the stepped-up requirement in the fourth model year following the last year of the third consecutive threshold." This proposed lead time would give sufficient lead time to initiate and launch the necessary new vehicle programs to meet the LVM category requirements. (JLR)

Agency Response: Staff sought a simpler way to transition manufacturers in and out of size definitions. Allowing lead time after a manufacturer crosses a threshold in one average is confusing, and is not clear if the manufacturer would still be subject if the manufacturer fell below the threshold in any subsequent average during that lead time. Three consecutive averages, or two

model years, above either the IVM or LVM threshold will be sufficient in proving a manufacturer's relative size, especially when these modifications are being made to the regulation in 2012. Additionally, the new lead time is in line with the other fleet standard regulations (LEV III criteria pollutant and GHG).

113. Comment: By any measure – such as market share in California, the U.S., or global markets; annual revenue and profitability; global production; number of employees; annual R&D [research and development] investment; resources; or market capitalization – Mazda is NOT a Large Volume Manufacturer. Mazda is very similar to the remaining IVMs and, we respectfully urge, should be similarly defined as an IVM. Mazda's available resources to develop the necessary vehicles and technology in the timeframe envisioned are much more limited than the current-and newly-defined LVM's some of which have been working to reach this point for 20 years. We do not foresee that our efforts to develop electric hybrid and BEVs will enable us to comply with the stringent ZEV requirements that are proposed to start in the 2018 model year if we are categorized as an LVM. In addition to the significant level of resources required to develop advanced technologies for electric vehicles, it is necessary that vehicles be not only produced, but sold in numbers sufficient to meet the annual credit requirements. However, for companies with limited financial and research and development resources, such as Mazda, marketing such vehicles is another significant burden. Mazda is at a distinct disadvantage to many of our large competitors. Mazda vies the modest flexibilities afforded the IVMs as necessary to us in order to achieve compliance with the new requirements. We believe that the rate of technology development envisioned by the regulations should not exceed individual companies' abilities to develop, implement and market the technologies. We respectfully request that ARB review the proposed changes to the LVM definition, specifically as it applies to Mazda. We suggest the following changes to the regulatory language for the IVM and LVM definitions:

A manufacturer is classified as an IVM if it has average annual California sales for the three previous consecutive model years;

- Between 4,501 and 20,000 per year, or
- Between 20,001 and 40,000 per year and average annual global sales of less than 1.8 million vehicles per calendar year.

A manufacturer is classified as an LVM if it has average annual California sales for the three previous consecutive model years;

- Exceeding 40,000 per year, or

Exceeding 20,000 per year and average annual global sales exceeding 1.8 million vehicles per calendar year.

(Mazda)

Agency Response: Comment noted. The Board adopted staff's size definitions as proposed in the ISOR. However, the Board directed staff to monitor how the modification to the size definitions affects manufacturers, especially those without the research and development budget necessary to develop ZEV technology. Staff will report back to the Board if such a situation arises.

114. Comment: Staff has proposed new language in the ZEV regulation proposal that states whenever an overlap in model years exists, the earlier model year takes precedent. This language is specifically applied to situations where a change of ownership for a company occurs. Since model years now span a wide range of time with both early introductions and extended model years, Volkswagen is concerned that the proposed language may result in additional unintended consequences and a model year determination could be made when the bulk of a manufacturer's model year has changes to the newer year while a small fraction of vehicles are still being produced under the previous model year. We request that ARB strike this language and allow each manufacturer to be handled on a case by case basis. This gives flexibility to both ARB and each individual manufacturer to discuss model year strategy.
(VW)

Agency Response: ARB strives to decrease ambiguities that exist in its regulations and treat manufacturers fairly. The issue regarding model year and ownership has come up numerous times, and it is important that the regulatory language be clear for such a situation. Allowing Executive Officer discretion, as suggested by the commenter, would not be appropriate in this situation. The language as adopted by the Board will provide for fair manufacturer treatment, regardless of special circumstances.

115. Comment: Within the limited time remaining where a four year versus six year lead time could apply to company mergers before the 2018 changes are enforced, it is possible an IVM may acquire a SVM that has no ZEV development program. In this situation the small company would not accelerate the development of the larger company's ZEV compliance plan. VW fails to see the technical arguments that support why two smaller companies by California definition who do not currently have a ZEV program should be able to bring ZEV vehicles to market faster once they are combined. Given the

backstop of the 2018 start of new definitions and the fact that this regulation will not be finalized before the start of the 2013 model year, VW does not see the need for continued application of the four year clause. (VW)

Agency Response: Comment noted. The Board directed staff to correct inconsistencies that could bring a manufacturer in under more stringent requirements, dependent on how a manufacturer increased in vehicle sales volume. The regulation now reflects that if a manufacturer increases in size independently or gains ownership of another manufacturer, the manufacturer would have a 5 year lead time and be subject in the sixth model year, or in 2018 model year, which occurs first.

116. Comment: Mitsubishi Motors was assured the “new” IVM classification would have similar requirements to the previous iLVM since the remaining companies were mostly iLVMs. This classification is small; ARB Staff’s analysis found all “new” IVMs combined sales volume is approximately 3 percent of annual California sales and barely affects overall ZEV sales goals. In fact, the proposed “ZEV offsets based on over-compliance with the federal GHG standards” would have much, much larger effects on ZEV sales volumes than all IVMs combined. Mitsubishi Motors and other IVMs met with ARB Staff numerous times to discuss a compromise between the current iLVM standard -- no ZEV requirement -- and the new LVM standards. In the fall of 2011, ARB Staff disclosed their decision -- without sufficient justification -- ending the iLVM classification (ISOR 2.2.1, page 27). These the “new” IVM requirements are identical to LVM requirements with one exception (“Flexibility”) – IVMs may comply with credits generated from TZEVs.

Unfortunately, this is not a realistic flexibility for two reasons: 1) TZEVs, by definition, generate less credit than BEVs or FCVs and therefore IVMs would need much larger fleets of TZEVs than BEVs. For example, if overall ZEV credit requirement is 12 percent (2021MY), then nearly 24 percent IVM vehicles sold would need to be TZEVs to comply. Historically for ZEV compliance, IVMs maintained PZEV percentages much higher than LVMs– this would create a similar discontinuity for IVMs with TZEVs; and 2) TZEVs do not qualify for the travel provision. Therefore, IVMs would be required to comply with ZEV Mandate with separate TZEV fleets in CA and Section 177 States – this increases the fleet required for compliance significantly.

Possible Solutions: 1) Return to former iLVM standard – no ZEV Mandate, or more appropriately, 2) create a new IVM specific program – for example: allow

IVMs to comply with the same PERCENTAGE (not credit) requirement of TZEVs; and allow IVMs to Travel TZEVs through 2017 model year.

Most importantly, ARB staff needs to consider an appropriately designed program with input from IVM OEMs [original equipment manufacturer]. “One size DOES NOT fit all.” (Mitsubishi)

Agency Response: Requirements for IVMs in 2018 and subsequent model years are in line with current requirements for IVMs. Just as IVMs are allowed to produce PZEVs, which earn less credits than ZEVs, to fulfill their pre-model year 2018 requirements, staff is allowing IVMs in the post-2018 model year timeframe to fulfill their requirement with TZEV credits. IVMs are not required to produce TZEVs, and may fulfill their requirement with pure ZEV credits. Additionally, IVMs are currently allowed to comply in all Section 177 states with credits from PZEVs, and will be allowed to comply with credits from TZEVs starting in 2018 model year. Continuing the ILVM definition beyond 2018 model year would not benefit all IVMs equally, as most manufacturers do not currently qualify under the ILVM definition. Flexibilities offered to IVMs go beyond the ability to fulfill their ZEV requirements with TZEV credits. For 2015 through 2017 model years, IVMs are allowed to meet a lesser overall requirement. Additionally, IVMs are given a less stringent discount factor on their banked PZEV credits. In 2018 and 2019 model years, IVMs are also allowed to meet their entire requirement with discounted PZEV and AT PZEV credits. These flexibilities, including a six year lead time, should provide sufficient time for manufacturers to prepare for additional requirements beginning in 2018 model year. Additionally, ILVMs currently have the ultimate flexibility, as these manufacturers are not required to comply with the ZEV regulation in California or any Section 177 states.

117. Comment: Under the California motor vehicle emissions program, a SVM receives certain flexibility in compliance with applicable regulations. The LEV III ISOR has proposed that compliance with the LEV III requirements would be deferred for SVMs until 2022 model year, during which time SVMs will have nationwide sale of 5,000 vehicles or less per year may petition ARB for relaxed emission standards. As noted in the ZEV ISOR, SVMs are not required to comply with the ZEV regulations, but they may generate, trade, and sell ZEV credits. Under 13 CCR § 1900(22) (sic), the definition of SVM includes an aggregation requirement that could exclude some manufacturers with very low volumes of sales due to their ownership relationship, including Ferrari. These manufacturers would thus be subject to the LEV III tailpipe and greenhouse gas

(GHG) standards and the ZEV regulations to the same extent as larger manufacturers, despite their reduced resources and decreased impact to criteria and GHG emissions. Therefore, Ferrari is proposing that ARB should include in the FSOR a revision to the definition of SVM in 13 CCR § 1900(22) (sic). Specifically Ferrari proposed that ARB adopt the operational independence criteria that are included in the Proposed Federal Rule. (FBH, FSF, Ferrari)

Agency Response: The Board adopted the final modifications to section 1900 at its March 22, 2012, hearing, including the modifications requested by the commenter. However, it is important to note that U.S. 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 was merely part of the pre-amble to the NPRM. In this pre-amble, U.S. EPA requested comments on the appropriateness of including this language in the final rule, but there was no commitment on the part of U.S. EPA to do so.

S. Carry Forward and ZEV Deficit (Carry Back) Provisions

118. Comment: While Toyota would prefer 2 year carry back from 2018 model year, Toyota appreciates the additional flexibility provided by Staff with the return of unlimited carry forward and does not object to the 1 year carry back provision. (Toyota)

Support for allowing all manufacturers to earn, bank, and trade model year 2012 and higher ZEV credits for compliance in later model years without artificial expiration limits. (Tesla)

Agency Response: ARB appreciates support for modifications to the carry forward and ZEV deficit provisions.

119. Comment: CODA proposes that the carry forward provisions be revised to incentivize only “cleaner” and “newer” technologies, such as pure ZEVs, while the existing limitations in the carry-forward provisions remain in place for older, advanced technologies with lower tier credits, i.e. SULEV, NEV, PZEV to allow the lower value credits to expire in accordance with current rules. The rules should be revised to encourage new clean technology innovations, such as pure ZEVs, to be brought to market. If the carry forward provision is removed across the board, as currently proposed, the ZEV mandate in the near-term model years would be substantially weakened or nullified, and related

investment and progression will slow down. It is important that the ARB provide regulatory certainty for companies, like CODA, who have invested in new technologies based, in part, in good faith that existing rules would remain substantially intact. (CODA)

Agency Response: There has never been carry forward provisions for any credit categories other than pure ZEVs. Therefore it would be impossible for carry forward provisions to remain in place for PZEVs, AT PZEVs, TZEVs, and NEVs.

120. Comment: Chrysler recommends that a credit generated under a given allowance be permitted to satisfy a debit generated under that allowance level or lower. Allowing these categories of credits to satisfy a prior year credit deficit generated in the same or lower compliance category would not degrade the air quality benefits that would have been derived by specific vehicle types and would require minimal or no additional tracking effort. (Chrysler)

Agency Response: A deficit may only be incurred when a manufacturer has failed to meet a requirement. The only requirement is a manufacturer's ZEV requirement. All other categories (PZEV, AT PZEV, and TZEV) are allowed to meet a manufacturer's requirement, but none of those credit categories are required to be produced. Therefore, the only deficit a manufacturer can incur is a pure ZEV deficit. Additionally, in the 2008 rulemaking, language was specifically removed from subdivision 1962.1(g)(7)(A) that allowed PZEV credits to fulfill a manufacturer's ZEV deficit.

121. Comment: In clarifying the provisions for satisfying a ZEV credit deficit, staff has excluded range extended battery electric vehicles from satisfying a prior year deficit. Given that these vehicles can be used to partially satisfy minimum ZEV requirements, Chrysler recommends that credits generated by this vehicle type be allowed to satisfy a prior year ZEV credit deficit. (Chrysler)

Agency Response: See response to Comment 120.

122. Comment: In the future, manufacturers are likely to need more than one model year to make up a ZEV deficit. The ZEV requirements significantly increase beginning in the 2018 MY [model year] and a full-line manufacturer confronted with this significant increase in volume may need more time to react in face of an uncertain market. Chrysler recommends that ZEV Program credit carry-back remain at two years or be extended to three years. (Chrysler)

Agency Response: In general, the 2018 and subsequent model year requirements are written to ensure ZEVs are placed in increasing numbers through model year 2025. The shortening of a manufacturer's time to make up a deficit is in line with the overall direction of the 2018 and subsequent model years requirements. Additionally, staff eliminated the carry forward restriction for ZEVs after model year 2011, meaning manufacturers will be allowed to use credits earned in 2012 and subsequent model years towards meeting any future requirement.

123. Comment: In regards to subdivision 1962.1(b)(1)(B)(1)(g), Carry-over of Excess Credits, the clause did not explain explicitly that the elimination of carry-over limitations for MY2011 [model year 2011] and later as explained in the ISOR. (Chew)

Agency Response: Subdivision 1962.1(b)(2)(B)1.g. falls under provisions for the alternative requirements, which are only available for LVMs from 2009 through 2011 model years. Additionally, subdivisions 1962.1(g)(6)(B) and (C) clearly limits the carry forward provisions to model years 2009 through 2011. The language as modified in the ISOR is sufficiently clear that carry forward for ZEV credits only applies to those model years.

T. Delivered for Sale and Placed in Service

124. Comment: It is our understanding that a vehicle must be placed in a section 177 state to get credit, but it is overly restrictive to require that the vehicle be placed in the same state as the vehicle was delivered, especially considering the geography and dealer trades in the Northeast. The proposal should be revised to allow credit for a vehicle that is placed in service in a state that adopted the ZEV regulation, even if it is not the same state in which the vehicle was produced and delivered for sale. (LVM)

Constraining full ZEV credit to only vehicles which are placed in service in the same state in which they are delivered for sale introduces additional uncertainty for manufacturers with little to no positive benefit to ZEV Program goals. Chrysler recommends that this proposed change not be finalized. (Chrysler)

Agency Response: Comment noted. ARB clarified the regulatory language to be less restrictive and allow manufacturers to earn both delivered for sale and placed in service credits for a ZEV, as long as the ZEV is delivered for sale in either California or a Section 177 state, and placed in service in California or a

Section 177 state, even if it is different from the state the vehicle was delivered to. This ensures that California and Section 177 states are receiving the vehicles required under those state's regulations. Additionally, the language was clarified to specify that the total credit the vehicle will be earned in the state in which the ZEV is originally delivered for sale. Therefore a vehicle that ends up placed in service in California or a Section 177 state when the vehicle was never intended or delivered for sale in California or a Section 177 state does not receive either delivered for sale or placed in service credit.

125. Comment: Under current regulation and unchanged in the ISOR, manufacturers cannot generate full credit for a ZEV unless it is placed in service. This requirement requires manufacturers and state regulators to track each vehicle registration and to compare motor vehicle records from multiple states. Even at the three percent minimum ZEV requirement level, this is a significant number of vehicles to track. Chrysler recommends simplifying the requirement to simply delivering the vehicle for sale. (Chrysler)

Agency Response: For 2012 through 2017 model years when most ZEVs are in demonstration and pre-commercial levels, it is appropriate to require ZEVs to be delivered for sale and placed in service in order to receive full credit. Additionally, ZEVs are not required to be placed in service. Each ZEV delivered for sale earns one credit, and those credits may be used to satisfy a manufacturer's entire requirement. Additional credits are earned for placement. In 2018 and subsequent model years, most vehicle types will not be required to be placed in service, with only NEVs, and FCVs required to be placed in service. This shift away from placed in service is in recognition of the increasing requirements starting in 2018 model year and the necessity of the vehicles to be leased or sold in order for the manufacturers to continue production.

126. Comment: The ISOR also introduces a change limiting full credit to only vehicles which are placed in service before December 31 five calendar years after the model year. Although Chrysler expects few ZEVs (if any) will take over five years to sell, this seems to be an unnecessary additional constraint. Such a constraint implies that a ZEV which will generate the same number of zero emission miles regardless to when it is sold, is less valuable to state emission goals after an arbitrary period of time. Chrysler recommends that this proposed change not be finalized. (Chrysler)

Agency Response: ARB believes that five years is an appropriate amount of time to place a ZEV. There are very few ZEVs that are placed beyond this timeframe. However, ARB does believe that establishing a maximum time limit is also appropriate to prevent the unlikely situation where a manufacturer produces ZEVs never intended for consumers, just to be in compliance with the regulation.

127. Comment: Allowing five years to place a ZEV may be too long and undermined the compliance efforts by the regulators. Most of the placed in service ZEV can be traced nine months after the end of the model year (as in the current regulation allows) from the state motor vehicle registration agencies. If they are not sold by the next three years, it would be difficult to imagine that the customers would prefer the older models. Concerns should be taken to prevent any stakeholders who deliberate (sic) do not submit on time. To allow for this length of time will disrupt the smooth flow of data collection and undue disruptions for late data later on. I would suggest that for those ZEV that had been placed in the model year, they should continue to submit the credits nine months after the model year ended. For those ZEV that are yet to be placed, a 3 years extension would be sufficient. (Chew)

Agency Response: See response to Comment 126.

128. Comment: For a multiple state dealership that may sell across different states with or without the ZEV mandate, awarding “deliver for sale” credits to all ZEV vehicles placed through the chain can be misused. The only evidence may be from the delivery receipts or from that evidences from the Manufacturers Source of Origin. There may be only a portion of them that will eventually sold to the residents in the state and earn the “place in service” credits. The ratio of “deliver for sale” to “place in service” may have to be capped, e.g. at 1.2 before this provision is being abused. (Chew)

Agency Response: Placing a cap on the ratio of vehicles delivered for sale to vehicles placed in service is unnecessary, especially when most ZEVs that have been delivered for sale have been placed in service. Additionally, in 2018 and subsequent model years, most vehicle types will not be required to be placed in service, with only NEVs, and FCVs required to be placed in service. This shift away from placed in service is in recognition of the increasing requirements starting in 2018 model year and the necessity of the vehicles to be leased or sold in order for the manufacturers to continue production.

U. Discounted PZEV and AT PZEV Credits

129. Comment: Toyota supports the ability to convert excess PZEV/ATPZEV credits to TZEV even though the proposed discounting is overly severe. (Toyota)

Agency Response: ARB appreciates the support for the ability to convert excess PZEV and AT PZEV credits to be used towards meeting the portion of a manufacturer's requirement that may be met with TZEVs.

130. Comment: The proposal includes a reduced discount rate of 75 percent versus 93.25 percent for PZEVs and a lower requirement for IVMs in the 2015 through 2017 model years (12 percent versus 14 percent%), in order to prepare IVMs for the transition into LVM status starting in 2018 model year. The same accommodation should be made for LVMs to prepare for the strong ramp up of ZEV volumes beginning in 2018 model year. (LVM)

Agency Response: ARB is providing certain flexibilities to manufacturers who are faced with producing pure ZEVs for the first time starting in 2018 model year. Current LVMs have been allowed much flexibility during the course of the regulation, which have allowed them to build up banks of credits that can be used in future model years. It is not necessary to allow the LVMs flexibilities to significantly reduce their requirements, especially during a time when ZEVs are reaching pre-commercial levels for many manufacturers. Such flexibilities could slow down development and commercialization.

131. Comment: In order to avoid any ambiguities concerning discounted credits, we recommend to ensure in the regulation text that neither banked ZEV credits nor banked Enhanced AT PZEV credits from model years 2017 and earlier will be discounted and may be used without any carry forward credit limitations. (BMW)

Agency Response: The regulatory language modified in the ISOR clearly applies to banked PZEV and AT PZEV credits. It is not appropriate to add additional language to further clarify which credits are meant to be discounted and applied towards the portion of a manufacturer's requirement that may be met with TZEVs.

132. Comment: In regards to subdivision 1962.1(g)(2). Converting PZEV and AT PZEV Credits after Model Year 2017, I would support that same discount factor be applied for both LVM and IVM. How can you prevent a transfer of PZEV

balance credit from a LVM to a IVM and get a better value and then trade the credit back to LVM? (Chew)

Agency Response: Comment noted. It is each manufacturer's decision to trade or transfer credits based on a variety of reasons. The discount factor will be applied to a manufacturer's PZEV and AT PZEV credits dependent on the manufacturer's size in 2017 model year. If the converted PZEV and AT PZEV credits are traded or transferred in 2018 or any subsequent model year, the discount factor will not change based on the manufacturer's size.

133. Comment: Toyota believes the further limitation of these "converted" TZEV credits at 25 percent is overly restrictive. Toyota believes one way to address this would be to raise the limit on usage of converted credits to 50 percent from 25 percent. (Toyota)

Agency Response: ARB is being generous in allowing manufacturers to use converted credits from the PZEV and AT PZEV categories to meet any portion of their requirement that may be met with TZEVs. The regulation focuses much more on ZEVs and TZEVs becoming a more significant portion of a manufacturer's new vehicle sales in California. Allowing PZEVs and AT PZEV credits to meet the portion of a manufacturer's requirement that may be met with TZEVs was a way to allow manufacturers to use credits earned in good faith, without resulting in too many vehicle losses in the 2018 and subsequent model year timeframe.

V. Transportation System Credits

134. Comment: In regard to subdivision 1962.1(b)(2)(D)(4), Use of Additional Credits for Transportation Systems, I would propose adding additional ZEV types to minimize confusion: 'Any additional credits for transportation systems generated from different categories of ZEVs in accordance with subdivision 1962.1(g)(5)....' (Chew)

Agency Response: Comment noted. ARB clarified that ZEVs, Type I.5x and Type IIx vehicles, and TZEVs are eligible for transportation system credits.

135. Comment: I would suggest the elimination of additional credits for the transportation project obtained from AT PZEV and PZEV from 2012 and later, since it seems that no OEMs [original equipment manufacturer] have to participate directly for these vehicles. These vehicle technologies have been in the market for a long time and should be phased-out. (Chew)

Agency Response: In 2008, the Board approved modifications to the regulation to sunset transportation system credits for PZEVs and AT PZEVs after 2011 model year. Transportation system credits for PZEVs and AT PZEVs are no longer available to manufacturers after 2011 model year.

W. Test Procedures

136. Comment: The hybrid test procedures need to be updated to reflect a common approach between EPA [United States Environmental Protection Agency] and CARB. EPA [United States Environmental Protection Agency] extensively refers to SAE J1711 test procedures. The J1711 test procedures are the result of many years of cooperative work between industry and government, which includes EPA [United States Environmental Protection Agency] and CARB. If this harmonization does not occur, there will be unnecessary additional test burdens on the industry as a result of duplication of testing and uncertainty concerning the certification requirements. (Volvo)

“Zero Emissions Vehicles 2012”, appendix A-2 (“... TEST PROCEDURES FOR 2009 THROUGH 2017 MODEL ZERO-EMISSION VEHICLES AND HYBRID ELECTRIC VEHICLES...”) and A-4 (“... TEST PROCEDURES FOR 2018 AND SUBSEQUENT MODEL ZERO-EMISSION VEHICLES AND HYBRID ELECTRIC VEHICLES...”), basically carry over the circa 2009+ emissions testing procedures. These test procedures need to be updated to reflect advances in hybrid vehicle electrical propulsion technology plus be harmonized with EPA’s [United States Environmental Protection Agency] recent update of hybrid vehicle test procedures in the 2011 Fuel Economy Label and Green House Gas rulemaking. EPA [United States Environmental Protection Agency] now extensively points to SAE J1711. The J1711 test procedures are the result of many years of cooperative work between industry and government, which included EPA [United States Environmental Protection Agency] and the ARB staff. A-2 & A-4 not being harmonized with EPA [United States Environmental Protection Agency] (and J1711) creates additional test burden for OEM’s by requiring duplication of testing and uncertainty as to the certification requirements. (Alliance)

Agency Response: Comment noted. During the time of this rulemaking, the U.S. EPA had not finalized its hybrid vehicle test procedures. ARB will work with the U.S. EPA, and harmonize the test procedures where appropriate and necessary with the goal to relieve manufacturers of additional test burden.

137. Comment: In A-4 there is one new section G.12 “The Calculations of the Combined Green House Gas Regulatory Rating of Off-vehicle Charge Capable Hybrid Electric Vehicles” which has differences with respect to similar equations and algorithms in EPA’s [United States Environmental Protection Agency] Part 600. These differences need to be analyzed further and harmonized where possible. (Alliance)

Agency Response: Comment noted. ARB has modified the language to include new section G.12 to the Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, as requested by the commenter.

138. 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. EPA [United States Environmental Protection Agency] is in the process of migrating these subparts B and C to Part 1066. Not being harmonized with EPA [United States Environmental Protection Agency] creates additional test burden for OEM’s [original equipment manufacturer] by requiring duplication of testing and uncertainty as to the certification requirements. (Alliance)

Agency Response: Comment noted. During the time of this rulemaking, the U.S. EPA had not finish migrating subparts B and C to Part 1066. ARB will work with U.S. EPA, and harmonize the test procedures where appropriate and necessary with the goal to relieve manufacturers of additional test burden.

X. Miscellaneous

139. Comment: In regards to subdivision 1962.1(b)(4), Requirements for Small Manufacturers and Independent Low Volume Manufacturers, additional language may be added to clarify that they are only entitled to earn delivery for sale and place in service credit in each state, and not traveling credits in the 177 States. (Chew)

Agency Response: Comment noted. ARB clarified regulatory language in subdivision 1962.1(d)(5)(E) and subdivision 1962.2(d)(5)(E) to specify only manufacturers with a requirement are allowed to travel credits to the Section 177 states. ARB believes this language is clear and sufficient to prevent SVM and ILVMs from using subdivision 1962.1(d)(5)(E) and subdivision 1962.2(d)(5)(E).

140. Comment: Like it or not, internal combustion engine vehicles still offer consumers the best value proposition. They are cheaper, have a long history of proven dependability and durability, and have little or no refueling or range issues. (CNCDA)

Agency Response: Comment noted. ARB agrees that the purchase price of gasoline vehicles is currently less expensive than PHEVs and ZEVs. Gasoline vehicles are commercially available and able to meet stringent criteria pollutant and GHG fleet standards. ARB does believe that the total cost of ownership, including fuel and maintenance is lower for ZEVs when compared to conventional gasoline vehicles. Additionally, according to ARB's 2009 analysis, gasoline vehicles will not be able to meet California's long term 2050 GHG emission reduction goals. Only ZEVs and PHEVs will be able to provide the deep reductions in GHG emissions needed to meet California and ARB's long term goals. That being said, up to 2017 model year, manufacturers are allowed to produce PZEVs, the cleanest gasoline vehicles, to comply with some, or all, depending on the manufacturer's size, of their ZEV requirement.

141. Comment: The ZEV requirement is clarified based on the annual NMOG production report. However, it would be useful also to clarify if the exempted vehicles such as emergency and law enforcement vehicles should be included, even if they are certified according to the California certification. To allow for any exemption will encourage these vehicles from being properly accounted for. (Chew)

Agency Response: All vehicles that are California certified must be included in the annual NMOG production report regardless of whether the vehicles are emergency or law enforcement vehicles. However, if they are only federally certified, they do not need to be included in the annual NMOG production report. This level of detail would be more appropriately addressed in an update to Mail Out #95-04 ("Reports Pertaining to Compliance with the California Fleet Average Non-Methane Organic Gas (NMOG) Requirements and Zero Emission Vehicle (ZEV) Provisions Applicable to Manufacturers of Passenger Cars and Light-Duty Trucks") which identifies what should be included in the annual NMOG report.

142. Comment: We are very frustrated that ARB staff does not see natural gas vehicles as the "ultra-clean vehicles" they are. The staff reports are actually quite dismissive of the performance and potential for natural gas. Our primary concern is the attempt to draw a bright line between "ZEV fuels" and "non-ZEV

fuels”. The staff reports identify hydrogen fuel cell vehicles and battery electric vehicles as ZEVs and ZEV fuels and categorizes CNG [compressed natural gas] among the non-ZEV fuels. Curiously the staff reports don’t mention biomethane/biogas even though ARB’s own life cycle analysis identifies it as one of the cleanest transportation fuels. There is plenty of evidence to suggest that biomethane will be used increasingly as a transportation fuel, whether on its own or blended with conventionally (sic) natural gas. There is also lots of information about near-term engine developments that will reduce natural gas engines’ already very low emissions even lower. Given these facts we ask the Board to direct staff to work with our industry to take another look at life cycle emissions of biomethane and conventional natural gas to see if they are today or are likely to be in the time frame of these regulations just as clean as the fuels and technologies that ARB currently identifies as zero emission. (CNGVC)

Agency Response: Staff acknowledges the approximately 30 percent lower fuel-cycle emission intensity of compressed natural gas (CNG) versus gasoline and, therefore, the great potential of this fuel to contribute to reductions in climate-related emissions. The ZEV regulation will continue to credit CNG vehicles through 2017 model year as AT PZEVs, and manufacturers are allowed to use those credits toward meeting their ZEV requirements. As a result, the deployment of CNG technology, especially with an increasingly efficient powertrain, would offer a strong contribution toward compliance with the ZEV regulation or a manufacturer’s GHG standards.

In 2018 and subsequent model years, the ZEV regulation is focused on PHEVs and ZEVs. Staff’s 2009 analysis showed that these technologies are essential to meet long term GHG emission reduction goals in California. Additionally, fuels for these vehicles can be derived from renewable and zero-carbon sources. Bio-methane is very important, but will likely be needed by other sectors where pure EV and fuel cell technology may not be as feasible.

143. Comment: We thought the intent was for the ZEV mandate to go away after 2025 model year, because by that time the goal of commercialization would have been achieved. After the technology has become commercially available, other performance-based policy mechanisms should be used to further the ARB’s air quality and GHG goals. The LVMs recommend that the ZEV program be sunset post-2025 model year because the technology would be commercial and the emissions benefits are appropriately considered in the performance LEV and GHG regulations. (LVM)

Ford requested that the Board incorporate the ZEV technologies into the performance-based LEV III emission and greenhouse gas program and in the post 2025 time frame. (Ford)

Agency Response: Comment noted. The goal of the ZEV regulation is to commercialize near-zero and ZEV technologies, but at this time is it premature to pick a sunset date for the regulation. In subsequent reviews of the regulation, ARB will assess whether or not it is appropriate to sunset the ZEV regulation in exchange for a more stringent fleet average standard if the goal of commercialization is met prior to 2026 model year.

144. Comment: The proposal should be revised to clarify that “or greenhouse gas” does not include air conditioning emissions or upstream emissions. The LVMs believe that the previous definition of a ZEV based on criteria emissions was sufficient to distinguish a vehicle with emissions from a vehicle without emissions. However, we understand the ARB’s desire to change the definition to focus of the program (sic) on GHG emissions. However this has other consequences. The GHG regulations include air conditioning and upstream emissions. The intent of the ZEV is not to have zero emission air conditioning systems or ZEVs offered without air conditioning systems. Likewise; the greenhouse gas regulations include upstream emissions from producing zero emission energy. The goal of the ZEV regulations is to commercialize ZEVs, not to control the upstream emissions. Adding GHGs to the ZEV Emission Standard, could be interpreted as including upstream emissions. Because GHGs can be so broad, that there could be consequences that are not highlighted here, which could result in the implementation being tied up in litigation due to different interpretations. The LVMs recommend retaining the current ZEV Emission Standard definition or, at minimum, the proposal should be revised to exclude air conditioning and upstream GHG emissions. (LVM)

Agency Response: Comment noted. ARB clarified the definition of a ZEV to reflect that GHG emissions from a vehicle’s air conditioning system will not exclude the vehicle from counting as a ZEV. ARB did not consider it appropriate to indicate that a vehicle’s upstream emissions should also be explicitly excluded from this definition. The definition clearly says “under any and all possible operational modes and conditions.” Upstream emissions do not occur during vehicle operation, but rather at the electricity plant or at the hydrogen production location.

145. Comment: Staff proposed to require SULEV 20 and/or SULEV 30 vehicles starting in the 2015 model year for manufacturers to continue to earn ZEV credit for PZEV type vehicles. This change is intended to match the new vehicle classifications under the LEV III program that will start in 2015. VW is concerned that this requirement may lead to the unintended consequences of forcing all manufacturers marketing PZEVs to recertify their PZEV vehicles to the new SULEV 20 and SULEV 30 categories for the 2015 model year. We believe staff intended that existing LEV II PZEV vehicles can be carried over into the new LEV III regulation as an initial compliance option for LEV III and that recertification to final LEV III standards (including new SFTP [supplement federal test procedure] requirements and new certification fuel) could occur later. We request that CARB evaluate this proposal and ensure that a complete changeover of a manufacturer's PZEV fleet in 2015 model year is not required due to this proposed language. (VW)

The PZEV provisions do not appear to allow carry-over PZEVs from the 2014MY [model year]. Specifically, §1962.1(c)(2)(A) specifies the LEV III exhaust regulations (§1961.2(a)(1)) for 2015-2017MY PZEV exhaust. However, this would require recertification on the new certification fuel and certification to SFTP [supplement federal test procedure] II. Moreover, the regulation also does not recognize early compliance with the LEV III SULEV standards. (The LEV III Evap Standards in §1976(b)(1)(G) recognize carryover PZEV evap as a LEV III Evap, so no changes are needed for evap.) Allow carry-over LEV II SULEV (i.e., §1961(a)(1)) for 2014-2017MYs [model years]. Allow compliance with PZEV using LEV III SULEV20 or SULEV30 in 2014MY [model year]. (Alliance)

Volvo recommends that CARB align the following areas in the ZEV regulation with the LEV III criteria emission regulations: 1) PZEV carryover from 2014 and prior model years: As written, the regulations would require manufacturers to recertify all PZEVs using the LEV III (or federal Tier 3) certification fuel and to the new SFTP [supplemental federal test procedure] emission standards; 2) revise the model year 2009 – 2017 ZEV Regulation §1962.1(c)(2) to allow manufacturers to carry over PZEV certification data to model year 2015 and beyond; and 3) Similar to Volvo abovementioned request concerning early certification to LEV III EVAP [LEV III evaporative standards], Volvo requests that equivalent changes be made to §1962.1(c)(2) to allow early certification of PZEVs to LEV III. (Volvo)

Agency Response: ARB agrees that manufacturers should be allowed to certify to LEV III SULEV and zero evaporative standards as early as possible, and to LEV II SULEV and zero evaporative standards as necessary. ARB modified subdivisions 1962.1(c)(2)(A) and (B), as well as subdivisions 1962.2(c)(2)(A) and (B) to allow manufacturers to certify to LEV III or LEV II SULEV and zero evaporate standards as appropriate.

146. Comment: We've seen the ZEV mandate, which, after decades on the books, and enormous publicly-funded subsidies has consistently failed to meet market share projections or offer vehicles that can compete with conventional vehicles in cost and performance. (Stein)

Agency Response: Manufacturers have always been in compliance with the ZEV regulation. The ZEV regulation has resulted in over 1 million PZEVs, more than 300,000 conventional hybrids, and thousands of ZEVs being placed on California's roads. PZEVs and AT PZEVs, the vehicles closest to commercialization, are cost competitive with other gasoline technologies. ARB believes the ZEV regulation has played an important role in the commercialization of these vehicle types, and will use the ZEV regulation to spur on commercialization of PHEVs and ZEVs. The regulation has been modified in the past to reflect the cost and status of technology (batteries and fuel cells). The regulation is being dramatically ramped up with these revisions because costs and performance of batteries and fuel cells have or are reaching commercial readiness to compete with conventional technologies. These amendments will bring vehicle volumes to commercial levels by 2025.

147. Comment: Create a transparent, expanding ZEV trading market system or a third-party system. This expanded system will accurately monetize the credits' value and ensure their liquidity and validity by allowing more trades and more frequent reporting of the value of the trades. Additionally, this system has the potential to reduce ARB operating costs and legal risks, while retaining its enforcement power. Critically, it would provide more transparency and certainty for investors committed to the sector, which would complement the program's states goals. ARB staff and the Board have recognized the merits such an idea and are currently evaluating and/or establishing something similar for the Low Carbon Fuel Standard (LCFS) and the cap-an-trade- program under AB32 [California Assembly Bill 32]. Importantly, with the expansion of the ZEV program in line with Staff's current recommendation, credit trading among manufacturers will be more commonplace, which makes not an appropriate and critical time to consider such measures. CODA proposes that

the Board adopt a resolution directing staff to develop regulatory language governing an expanded or third-party system within six months, or a timeframe that the Board deems reasonable. (CODA)

Agency Response: Manufacturers currently transfer credits directly with other manufacturers without the use of a third-party system. This method has been successfully used to date for all transactions. The regulatory language is clear in stating that only manufacturers can conduct transactions, i.e. third party participants are not allowed. ARB believes there is no need to modify an effective system successfully in use.

Y. Incentives

148. Comment: SCAQMD staff believes that near term increases in the penetration of AT PZEVs (sic) and ZEVs can be accommodated through increased manufacturer incentives to facilitate their accelerated market introduction. (SCAQMD)

Considering the targets being proposed for transitioning California's fleet to zero-emission vehicles and the higher incremental costs of these vehicles at least in the early stages of market adoption. We urge the Air Resources Board to institute incentive programs that will support mass ZEV adoption over the years between now and 2025. We believe such investment is crucial to ensuring the market for ZEVs remains robust and to ensuring that air quality and greenhouse gas emission. (BAAQMD)

Provide stronger incentivization (sic) for consumers to purchase ZEVs and TZEVs. (CNCDA)

Agency Response: Comments noted. ARB cannot provide financial incentives without authorization resulting from California Legislative action. Therefore, these comments are outside the scope of this rulemaking. However, ARB remains committed to working through regulations and programs outside of the ZEV regulation to provide consumers with incentives to purchase and use TZEVs and ZEVs.

149. Comment: In order to increase the reduction of pollutants from the air that are emitted by electric generation plants, regulators must provide incentives to the buyers of battery operated ZEVs to install on the property of the ZEV buyers a PV system that would provide a minimum daily amount of energy that could be used for charging the ZEV. (Gomez)

Agency Response: The ZEV regulation does not provide monetary incentives to vehicle operators for vehicles or infrastructure. Therefore, these comments are outside the scope of this rulemaking. However, ARB remains committed to working through regulations and programs outside of the ZEV regulation to provide consumers with incentives to purchase and use TZEVs and ZEVs, and the appropriate infrastructure.

150. Comment: While the ZEV regulation specifies the requirement for OEMs [original equipment manufacturers] to produce ZEV vehicles, it does not address the consumers who will make the decision whether or not to purchase or lease those vehicles. The volumes specified by the ZEV regulation will require a tremendous transformation of the transportation market. In order to promote this process, incentives to customers will be essential. These will need to include monetary incentives to buy down the higher up-front costs of ZEV technology as well as non-monetary incentives which add value to the customer such as HOV [high occupancy vehicle] lane access, parking policy, etc. (LVM)

Agency Response: The requests for complimentary policies made by the LVMs are not contained within the ZEV regulation and accordingly are outside the scope of this rulemaking.

151. Comment: The SCAQMD staff urges ARB to begin discussions on incentive mechanisms that will bring ZEVs and other near-zero emission vehicles into the market as early as possible. Such discussions could be part of the discussions on the Carl Moyer and AB 118 [California Assembly Bill 118] programs. In addition, consumer outreach and promotion of ZEVs and other near-zero emission vehicles must be a top priority for ARB in order to ensure strong market penetration. SCAQMD staff recommends that the state work with air districts to develop mechanisms that could significantly increase incentives to facilitate the sales of these cleaner vehicles prior to 2023. (SCAQMD)

Agency Response: Comments noted. ARB cannot provide financial incentives without authorization resulting from California Legislative action. Therefore, these comments are outside the scope of this rulemaking. However, ARB remains committed to working through regulations and programs outside of the ZEV regulation to provide consumers with incentives to purchase and use TZEVs and ZEVs.

Z. Comments Outside the Scope of the Rulemaking

152. Comment: In order to expand the use of ZEVs regulations must be written to facilitate the operation of these vehicles. An owner should not have to get a separate metered circuit in order to receive a lower electricity rate. (Gomez)

Agency Response: The ZEV regulation applies to manufacturers who produce new vehicles in California, and does not mandate metered circuits in residential or commercial properties. This comment is outside the scope of this rulemaking.

153. Comment: Reaching 75% of all vehicle in California in 2025 can be achieved if we include the existing old vehicles which have been converted into electric. On behalf of the Cleantech Institute, I hereby request the ARB to subsidize the cost of the electric vehicle conversion as part of the amendments to the California ZEV Regulation. (CI)

Agency Response: The ZEV regulation applies to manufacturers who produce new vehicles in California. Converted electric vehicles do not receive, nor are proposed to receive any credit and accordingly are outside the scope of this rulemaking.

154. Comment: There are over 500 million internal combustion engine (ICE) vehicles operating in the US today, approximately 1.5 vehicles per person in the U.S. Unless we have a program to not only purchase brand new electric vehicles, but to create a network of Green Vehicle Conversion Centers, we are not addressing the issue of climate change and meeting California's AB 32 mandate. I recommend that ARB pursue an aggressive Cash for EV [electric vehicle] Conversion Program. (USGVC)

Agency Response: The ZEV regulation applies to manufacturers who produce new vehicles in California. Converted electric vehicles do not receive, nor are proposed to receive any credit and accordingly are outside the scope of this rulemaking.

155. Comment: After reading the proposed emission standards for light duty trucks in the Air Resources Board's Report, I would like to state that objections to the proposed standards should be viewed skeptically. First, while automobile manufacturers can claim that stricter standards will result in higher costs, the overall percentage is minimal because it allows companies to produce vehicles that create lower emissions while at the same relying on those same vehicles to

alter their percentage of vehicles producing carbon emissions. Secondly, while corporations tout their production of hybrid vehicles they continue to maintain that production of vehicles remains costly. Automobile manufacturers have invested in research and development indicating that they believe corporate viability can be reached through the implementation of alternative fuels. This research alone should result in the implementation of new technology that may be expensive at the beginning, but should become less expensive as innovations are implemented. A case in point could be used by applying the Nissan Leaf and the Tesla Model S. Both rely on battery-powered engines, but the cost of the vehicles is significantly different. While the Model S will start 59,900 after government subsidies, the battery powered LEAF will cost 27,700 after government rebates. This allows customers as well as corporations to produce alternative fuel vehicles while making them available to the public. In this sense, as corporations continue to develop in this technology, such transitions will allow them to share technology with other vehicles reducing the overall cost of production. (Altman)

Agency Response: This comment addresses the regulated manufacturers and not the regulation nor the modifications to the regulation, and accordingly is outside the scope of this rulemaking.

156. Comment: Persuade the state and municipalities to purchase more ZEVs and TZEVs. (CNCDA)

Agency Response: The ZEV regulation requires manufacturers who produce new vehicles in California to produce ZEVs. The ZEV regulation does not apply to the State of California or municipalities; the comment is outside the scope of this rulemaking.

COMMENTS PRESENTED DURING THE POST-BOARD HEARING COMMENT PERIOD

Regulatory Comments

Comments grouped in this section responded to specific changes made available on February 22 through March 8, 2012.

A. GHG ZEV Over-Compliance Provision

161. Comment: Subaru is supportive of ZEV staff's proposed GHG-over-compliance ZEV offset option. (Subaru)

Agency Response: ARB appreciates support for the GHG-ZEV over-compliance provision, including the 15-day modifications made to the provision.

B. Manufacturer Size Definition

162. Comment: 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. (FSF)

Ferrari Beverly Hills and Ferrari of Silicon Valley 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 2013 and model year 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 be 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 correct SVMs from a sudden, drastic change in applicable standards. It is my understanding that Ferrari intends to apply to EPA [United States Environmental Protection Agency] for SVM status for model year 2013. If EPA [United States Environmental Protection Agency] grants this application and California does not clarify the applicability of its own provision, Ferrari could be considered a SVM for EPA [United States Environmental Protection Agency] purposes but not for compliance with California regulations. We respectfully request that ARB make some accommodation to resolve this issue. (FBH)

Agency Response: Staff disagrees with the commenters that under the current regulations, SVMs 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” GHG regulations. 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 should have been aware of the aggregation requirements and obligations of aggregated manufactures. These manufacturers are also aware 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 the U.S. EPA will include the “operationally independent” language in their final 2017 through 2025 national greenhouse rule (see response to Comment 117), so it is premature to change California’s regulatory language based on what the U.S. EPA might do in the future.

C. Optional Section 177 State Compliance Path

163. Comment: Oregon offers our support for the rule language proposed in this 15-day comment period. We would like to call specific attention to newly added reporting requirements that we consider to be critical to the effective implementation of the new compliance option. The pool-related reporting requirements are needed because they provide critical information about “Section 177 State” compliance overall-information that would not otherwise be available. This representation is necessary to enable individual states to assess compliance and pursue enforcement actions as appropriate. Without this, an underperforming manufacturer could assert it complies by virtue of vehicle placed elsewhere, but without having to provide evidence. Similarly, in the event a manufacturer fails to meet all requirements of the Optional Compliance Path, it is necessary for that manufacturer to be subject to the provisions of the base path in all states. Without such provisions, a noncomplying manufacturer could manipulate its compliance profile to its advantage and significantly hamper the ability of states to enforce their rules. (OR)

Agency Response: ARB appreciates support for the optional Section 177 state compliance path as written. However, manufacturers and Section 177 states have agreed to some changes to the language in this provision, to be made at a subsequent rulemaking. See response to Comment 164, 165, and 166.

164. Comment: Ford does not agree with the provision that manufacturers may only trade and transfer credits used to meet the same model year requirements. This “same model year” provision places a much more stringent constraint on the Optional Path, compared to the base regulation. Furthermore, the 15-Day Notice description of the Optional Section 177 State Compliance Path clearly states, “Existing carry-forward and carry-back provisions will remain available to manufacturers.” The regulatory language should be modified to be consistent with this description. Manufacturers should be encouraged to place vehicles in the S177 (section 177) states early and carry the ZEV credits earned forward to meet later obligations. Manufacturers use these provisions to “keep ahead of the curve”, especially considering the proposal to limit the use of carry-back credits to one year. Allow ZEV credits to be traded and transferred consistent with the usage of ZEV credits of the base regulation, including carry-forward and carry-back of ZEV credits. (Ford, 15-Comment 2)

The agreement between the LVMs and the Section 177 States is to freely allow transfers (and trading with a penalty) from states with banked credits to states with obligations. This Optional Compliance Path is based on an agreement between the LVMs and the Section 177 States. The agreement says that transferring and trading within the pools could not start until model year 2015 for TZEVs and model year 2016 for ZEVS, however there is no constraint that the credits traded could not be from prior years. Honda believes that the clear intent is to enable LVMs with excess credits banked in one state, regardless of how or when those credits were obtained to utilize those credits in other states where there is an obligation. (Honda)

Agency Response: It is now understood by both the Section 177 states and the manufacturers that 2012 through 2017 model year TZEVS and ZEVS credits will be allowed to pool starting in 2015 for TZEVS and starting in 2016 for ZEVS. This language will be modified in a subsequent rulemaking, likely later in 2012.

165. Comment: Once the manufacturer has met the additional Optional Path obligation in 2016 and 2017MYs [model years], penalty for a failure to comply for 2018 – 2021MY [model years] should be based on the Optional Path requirements. For example, a manufacturer making a good faith effort to meet the regulation may be one vehicle shy of meeting the 2020MY [model year] Optional Path in one state. The penalty calculation should be based on that one vehicle in that one state, and compliance should continue to be

based on the Optional Path for subsequent model years. As proposed, this example would require the manufacturer to go all the way back to 2018MY [model year] , undo all trades and transfers and be penalized based on the base ZEV regulations, which the manufacturer was no longer trying to meet once it selected the Optional Path. This would likely put the manufacturer significantly out of compliance in all states, retroactively back to 2018MY [model year], even though the manufacturer may already have demonstrated compliance for those model years. Base any penalties for failure to meet the Optional Section 177 State Compliance Path for 2018 – 2021MY [model years] on the requirements of the Optional Path, rather than reverting to the base path. Furthermore, if a penalty is paid, the provisions of the Optional Path should continue for subsequent model years, considering the manufacturer has already met their obligation to deliver ZEVs to the S177 [section 177] states early. (Ford)

The proposed failure to meet obligations in model year 2018 through 2021 is too severe a constraint on the OEM [original equipment manufacturers]. Honda believes the clear intent of the Section 177 States/LVM agreement was to have a rather severe penalty for not achieving the increased ZEV volumes of model year 2016 and model year 2017. That severe penalty is the loss of all benefits of the optional compliance path, and reversion to the basic compliance obligations. In later years, the decreased volumes should have the same penalties as the underlying regulation. Imagine an OEM [original equipment manufacturer] who has met all of the increased obligations in model year 2016 and 2017, and taken advantage of the decreased obligations in model years 2018, 2019, and 2020, but in the last year, model year 2020, fell just short of the ZEV goal. This OEM [original equipment manufacturer] would be required to go back to model year 2015, six years earlier and recalculate all their obligations as if they had never been on the optional path. This is too severe and will deter most LVMs from participating in this option. (Honda)

Agency Response: It is understood by both the Section 177 states and the manufacturers that failure to meet reduced percentages in 2018 through 2020 would mean the penalty would be applied to the modified percentage for those three model years. This language will be modified in a subsequent rulemaking, likely later in 2012.

166. Comment: The impact of “pooling” will be understood by the trading and transferring of credits, not by placement in service reporting requirements. At

the end of a model year, manufacturers must submit ZEV reports to each of the states. Those reports will include ZEV credits that were traded and transferred from other states. This ZEV credit report will provide the data needed for the states to evaluate the impact of “pooling”. Revise the Optional Section 177 State Compliance Path to only require state of vehicle placement and Vehicle Identification Number for vehicles that have a placed in service requirement in the base regulation. (Ford)

VINs should not be required for TZEVs because these vehicles do not have a placed-in-service requirement. We recognize that section 177 States want to track activity in their states. OEMs [original equipment manufacturers] will be submitting reports about actual state sales, however, OEMs [original equipment manufacturers] should be required to report VIN-level, placed-in-service information only for ZEVs that travel. (Honda1, 15-Comment 6)

Agency Response: It is understood by both the Section 177 states and the manufacturers that vehicle identification numbers will not be required for TZEVs, but can be requested by the Section 177 states or California at any time. This language will be modified in a subsequent rulemaking, likely later in 2012.

167. Comment: We understand that ARB worked privately with specific OEMs [original equipment manufacturers] and the 177 States to reach this agreement. In our discussions with representatives of these States, it was always their intention for all OEMs [original equipment manufacturers] to be able to participate -- but due to time constraints -- they were not able to address the iLVM/IVM concerns. Clearly, establishing these regional pools will allow OEMs and States to significantly reduce the paperwork required to demonstrate compliance. Unfortunately, the 15 Day Notice does not include clear direction how iLVM/IVMs are able to comply. ARB, 177 and iLVM/IVM OEM [original equipment manufacturers] staff should work to establish specific details are included in the FSOR to ensure iLVM/IVMs may participate in this Optional Compliance Path. (Mitsubishi)

Agency Response: IVMs may participate in the optional Section 177 state compliance path. IVMs have requirements in the section 177 states, and it is appropriate for them to participate in such a program. However, ILVMs have no requirement in the Section 177 states and are allowed to bank all credits generated in those states for future compliance. The fact that ILVMs have no ZEV requirement is sufficient compliance flexibility in the section 177 states.

ARB invites participation by LVMs and IVMs in the upcoming rulemaking to discuss changes mentioned in responses to Comments 164, 165, and 166.

D. Lead Time

168. Comment: Under California law, statutes and regulations can have an impermissible retroactive effect if they “operated retroactively to materially alter the legal significance of a prior event” in such a way as to “given a different and potentially unfair legal effect to actions taken in reliance on the preenactment law.” *California Trout, Inc. v. State Water Resources Control Bd.* (1988), 207 Cal.App.3d 585, 609 (1989), citing *Mahon v. Safeco Title Ins. Co.* (1988) 199 Cal.App.3d 616, 620–623, 245 Cal.Rptr. 103.) Here, although Staff has characterized this is a minor change, it does alter actions that manufacturers have already taken in reliance on the previous regulatory provisions. The ARB is proposing this change for the 2012MY which is near the end of production; moreover, the 2013MY is well underway (having begun on January 2, 2012) and the rule has not been finalized yet. This proposal provides no lead time for a manufacturer to make adjustments to their product plans to make up the reduction in the ZEV credits resulting from the regulatory change. This could put a manufacturer out of compliance in 2012MY, with no realistic opportunity to recover. The ARB should refrain from enacting retroactive changes in the rules that adversely affect the ZEV credits associated with vehicles already produced and delivered for sale. Defer proposed changes that have a negative impact on compliance until the 2014MY at the earliest. (Ford)

Agency Response: It appears that this comment is based upon an interpretation of the existing sections 1962.1(g)(2)(A) and (B) that would allow manufacturers to use different NMOG fleet averages when calculating credits earned by different vehicle classes. It was never the intent of ARB to allow manufacturers to use different NMOG fleet averages in calculating credits earned for various vehicle classes. The fact that manufacturers had adopted such an interpretation was first brought to ARBs attention in 2009. In response ARB released a statement on December 6, 2010, stating that the then-current language of sections 1962.1(g)(2)(A) and (B) was susceptible to the manufacturers’ interpretation, but that the manufacturers’ interpretation ran counter to ARB’s intent and that the rule’s language would be changed for the 2012 model year to clarify that the PC and LDT1 gm/mi NMOG multiplier is to be used. Accordingly, regulated parties have known that this change was planned since December 6, 2010, thus giving them adequate lead time to adapt their production as they saw fit.

E. Comments Submitted Outside of the 15-Day Comment Period

169. Comment: Travel provision credits are granted to our competitors for similar vehicles and ARB's action significantly reduces our companies' ability to gain credits. Given that iLVMs will be reclassified in 2018MY [model year], these credits may be necessary for compliance and therefore, very valuable to transitioning iLVMs such as Mitsubishi Motors. Allow OEMs [original equipment manufacturers] required to comply in 2018MY to bank Travel Provision credits. This will eliminate ARB Staff's fear of non-traditional OEMs [original equipment manufacturers] from stockpiling credits for sale and allow current iLVMs to transition to IVM status in 2018MY. (Mitsubishi)

Agency Response: In regard to additional early action offset protocols, this comment falls outside the scope of the 15-Day change Notice. Because the comment falls outside the scope of the notice, no further response is required. Responses to similar comments can be found in Part II, Section N "Travel Provision" under the 45-day comment responses.

170. Comment: NGVs [natural gas vehicles] – including both dedicated and dual-fuel vehicles – should be awarded partial TZEV credits beginning in 2018, reflecting the direct role NGV [natural gas vehicles] market development plays in facilitating the development of TZEV hydrogen ICEs [internal combustion engine] as well as ZEV FCVs. We propose that each dedicated NGV [natural gas vehicles] should receive 0.7 TZEV credits, and each dual fuel NGV [natural gas vehicles] should receive 0.5 TZEV credits. (VNG)

Agency Response: In regard to additional early action offset protocols, this comment falls outside the scope of the 15-Day change Notice. Because the comment falls outside the scope of the notice, no further response is required. Responses to similar comments can be found in Part II, Section X "Miscellaneous" under the 45-day comment responses.

171. Comment: In the hybrid test procedures, ARB requires that the battery state of charge (SOC) at the end of the test be within 1% of the battery's SOC at the beginning of the test. EPA recently adopted SAE J1711 and SAE J1634 which allows the variance between the starting and ending SOC to be within 5% of each other, and allows for an energy adjustment based on the SOC difference. Honda believes that the intent of ARB is to harmonize as much as possible the regulations between EPA and ARB. Additionally, Honda believes that the SAE procedures are a) more flexible, b) more realistic, and c) will reduce design and testing burdens that are unnecessarily the result of ARB's

current practice. We respectfully request that ARB consider this issue when harmonizing their regulations with EPA. (Honda)

Agency Response: In regard to additional early action offset protocols, this comment falls outside the scope of the 15-Day change Notice. Because the comment falls outside the scope of the notice, no further response is required. Responses to similar comments can be found in Part II, Section W “Test Procedures” under the 45-day comment responses.

172. Comment: We are submitting this docket correspondence to be on record with our continuing concern over no changes to the ZEV mandate definition of “Intermediate Volume Manufacturer”. Subaru agrees with Mazda Motor Company’s proposal that a manufacturer is classified as an IVM if it has average annual California sales for three previous consecutive model years between 4,502 and 20,000 per year or between 20,0001 and 40,000 per year and average annual global sales of less than 1.8 million vehicles per calendar year. It appears that CARB ZEV staff’s direction from management is to “monitoring the issue” without making any definition changes from comments received during the 15-day notice period. We are deeply concerned that this direction will have a significant financial hardship impact on Subaru. (Subaru)

Agency Response: In regard to additional early action offset protocols, this comment falls outside the scope of the 15-Day change Notice. Because the comment falls outside the scope of the notice, no further response is required. Responses to similar comments can be found in Part II, Section R “Manufacturer Size Definition” under the 45-day comment responses.

173. Comment: The GHG-ZEV over-compliance provision is a give-away to certain auto manufacturers that will result in a new increase in emissions of criteria air pollutants and precursors as well as toxic air contaminants, has no GHG emissions benefits, and undermines the objective to commercialize zero emission drive technology. The Board has nowhere justified this relaxation under the Board’s governing statutory authority and the increase in ROG + NOx [reactive organic gases plus oxides of nitrogen] that this provision will cause, which California AQMDs rely upon for achieving compliance with National Ambient Air Quality Standards (NAAQS). Finally, as a procedural matter, Chrysler is concerned that at the ARB hearing on January 26, 2012, the Board did not engage in discussion or consideration of these serious objections to this provision. (Chrysler)

Agency Response: In regard to additional early action offset protocols, this comment falls outside the scope of the 15-Day change Notice. Because the comment falls outside the scope of the notice, no further response is required. Responses to similar comments can be found in Part II, Section P “GHG-ZEV Over-Compliance Provision” under the 45-day comment responses.

174. Comment: Chrysler urged in its earlier comments that the Board consider the ROG + NOx [reactive organic gases plus oxides of nitrogen] benefits of the ZEV program that AQMDs have relied upon in their SIPs and that will be foregone by allowing over-compliance with the national GHG standards to substitute for ZEV compliance. In effect, rather than producing ZEVs that achieve reductions in ROG + NOx [reactive organic gases plus oxides of nitrogen], certain manufacturers with internal combustion products lines better positioned to achieve higher fuel economy will substitute such vehicles that over-comply with the national GHG standards but do not have lower ROG + NOx [reactive organic gases plus oxides of nitrogen] emissions or emission of toxic air contaminants as ZEVs do. Chrysler analyses, the GHG-ZEV Over-compliance Credits provision will result in additional ROG + NOx [reactive organic gases plus oxides of nitrogen] emissions to California’s inventory, and will cause additional toxic air contaminants as well. As a result, by adopting the GHG-ZEV Over-compliance Credits provision, the Board’s action fails to obtain the maximum benefit the ZEV program could achieve without the Over-compliance provision. (Chrysler)

Agency Response: In regard to additional early action offset protocols, this comment falls outside the scope of the 15-Day changes Notice. Because the comment falls outside the scope of the notice, no further response is required. Responses to similar comments can be found in Part II, Section P “GHG-ZEV Over-Compliance Provision” under the 45-day comment responses.

175. Comment: In section 43000 of the Health and Safety Code, the California Legislature has declared that the emission of air pollutants from motor vehicles is the primary cause of air pollution in many parts of the State, and Sections 39002 and 39003 of the Health and Safety Code charge the Board with the responsibility for controlling such air pollution. More specifically, Section 43018(a) of the Health and Safety Code directs the Board to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of the State ambient air quality standards at the earliest practicable date. Similarly, Section 396667 of the Health and Safety Code directs the Board to set standards to achieve the

maximum possible reduction in public exposure to substances that the Board has identified as toxic air contaminants pursuant to section 39662 of the Health and Safety Code; such regulations affecting new motor vehicles are to be based on the most advanced technology feasible for the model-year and may include, but are not limited to, the required installation of vehicular control measures on new motor vehicles.

Specially regarding ozone nonattainment, the Board is responsible for the mobile source portion of the SIP strategy for attaining the NAAQS [national ambient air quality standards] for ozone in all areas of the States. Part of that element in the SIP is to rely on the California LEV program to provide significant reductions of ozone precursor pollutant emissions from passenger cars and LDTs and to reach the 1997 ozone standard by attainment date in 2023, with emissions of NO_x [oxides of nitrogen] in the greater region reduced by two-thirds.

The Board's relaxation of the ZEV requirements for manufacturers who over-comply with the national GHG standards violates these statutory directives and undermines the SIP strategy. In theory, the Board could relax the ZEV requirements if they were not achievable. But in fact the Board has not demonstrated that the ZEV requirements with resulting reductions in ROG + NO_x [reactive organic gases plus oxides of nitrogen] and toxic air contaminants are not achievable. Indeed, the ARB has taken the position in promulgating the ZEV requirements that they are achievable and will result in such emission reductions. To relax those requirements, the ARB would have to abandon its earlier conclusions that the ZEV requirements represent the maximum achievable emissions reductions that the Health & Safety Code requires the ARB to adopt. The Board has not done this and thus the ZEV requirements are prohibited.

Indeed the ARB has not shown that the GHG-ZEV Over-Compliance Credits regulations will achieve any emissions benefits of any kind, including GHG emissions. Of course, ZEVs emit no GHGs from the tailpipe, and even accounting for upstream emissions, overall GHG emissions are lower. The ARB has not shown that the retired credits from over-compliance with the national GHG standards would more than offset the loss of GHG benefits from the sale of ZEVs. Furthermore, the primary goal of the ZEV program is to increase volumes of ZEV technology vehicle in the marketplace to reach a critical mass and thereby achieve even greater GHG, ROG + NO_x [reactive organic gases plus oxides of nitrogen], and toxic air contaminant reductions. Reducing ZEV obligations works counter to these stated air emissions objectives. In short, the ARB has offered no explanation whatsoever of the

environmental rationale for crediting GHG over-compliance to reduce ZEV obligations.

Regardless of potential GHG impacts from the proposed GHG-ZEV Over-Compliance Credit provision, even if the GHG over-compliance provision were to achieve new GHG benefits, reductions of the GHGs should not override the Board's obligation under the Health and Safety Code to achieve maximum reductions in criteria pollutants and air toxics. Emissions of these pollutants have direct health effects in California, and the cost to industry to reduce such pollutants is dramatic.

In sum, the proposed GHG-ZEV over-compliance credits provision seek to impose requirements that are outside the scope of the Board's statutory authority. Under Cal. Govt Code Section 11342.2 "no regulation adopted is valid or effective unless consistent and not in conflict with the statute and reasonable necessary to effectuate the purposes of the statute." Because the proposed regulations conflict with and fail to effectuate the purposes of the statute, ARB should withdraw the GHG-ZEV over-compliance credits provision. (Chrysler)

Agency Response: In regard to additional early action offset protocols, this comment falls outside the scope of the 15 day change notice. Because the comment falls outside the scope of the notice, no further response is required. Responses to similar comments can be found in part II, section P "GHG ZEV over compliance provision" under the 45 day comment responses.