

**BEFORE THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**In the Matter of California's Request for)
Waiver Action Pursuant to Clean Air)
Act Section 209(b) for Amendments to)
California's Zero Emission Vehicle)
Regulation and Low Emission Vehicle)
Regulations)**

**CLEAN AIR ACT § 209(b) WAIVER SUPPORT DOCUMENT SUBMITTED BY THE
CALIFORNIA AIR RESOURCES BOARD**

May 2012

I. INTRODUCTION

California's Air Resources Board (CARB or the Board) has developed the Advanced Clean Cars program, a pioneering approach of a "package" of regulations that, although separate in construction, are related in terms of the synergy developed to address interrelated ambient air quality needs and climate change.

The Advanced Clean Cars program combines the control of smog, soot causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years (MY) 2015 through 2025 and assures the development of environmentally superior passenger vehicles. The Advanced Clean Cars package includes amendments to three regulations: the Low Emission Vehicles regulation (LEV), the Zero Emission Vehicles regulation (ZEV), hereinafter "2012 ZEV/LEV Amendments," and the Clean Fuels Outlet regulation. Two of these regulations, LEV and ZEV, require a federal waiver submittal under the Clean Air Act (CAA).

The earliest requirements of the LEV regulation as amended are set to affect MY 2014 vehicles. Consequently, manufacturers would benefit from the increased lead time that an expedited consideration of this waiver request would allow. The remainder of this support document provides background for California's LEV and ZEV regulations, details their recent amendments, and gives the basis for CARB's waiver or within the scope request for each.

II. ZEV REGULATION

A. BACKGROUND AND WAIVER HISTORY

In 1990, CARB adopted an ambitious program to significantly reduce the environmental impact of light-duty vehicles through the commercial introduction of ZEVs into the California fleet. The ZEV program, which was a part of California's first-generation low-emission

vehicle regulations (LEV I), has been modified five times since its inception – in 1996, 1998/1999, 2001, 2003, 2008, and most recently in 2012.¹

The 2012 ZEV amendments flow from the Board's 2008 direction to CARB staff to redesign the 2015 and subsequent MY requirements for the ZEV regulation. The Board directed its staff to strengthen the regulation above what was currently required and focus primarily on zero emission drive, that is battery electric vehicle (BEV), hydrogen fuel cell electric vehicle (FCV), and plug-in hybrid electric vehicle (PHEV) technologies. The goal of the Board direction was to maintain California as the central location for moving advanced, low greenhouse gas (GHG) technology vehicles from the demonstration phase to commercialization.

In 2009, CARB staff analyzed pathways to meeting California's long term 2050 GHG reduction goals in the light-duty vehicle subsector. The analysis showed that ZEVs would need to reach nearly 100 percent of new vehicle sales between 2040 and 2050, with commercial markets for ZEVs launching in the 2015 to 2020 timeframe. The analysis concluded that even widespread adoption of advanced conventional technologies, like non-plug-in hybrid electric vehicles (HEV), would not be enough to meet the 2050 GHG targets. Staff presented its findings at the December 2009 Board hearing.

At the December 2009 hearing, the Board adopted Resolution 09-66, reaffirming its commitment to meeting California's long term air quality and climate change reduction goals through commercialization of ZEV technologies. The Board further directed staff to consider shifting the focus of the ZEV regulation to both GHG and criteria pollutant emission reductions, commercializing ZEVs and PHEVs in order to meet the 2050 goals, and to take into consideration the new LEV fleet standards and propose revisions to the ZEV regulation accordingly.

In addition to the Board's directives, in 2010, President Barack Obama directed the United States Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) to work with California to develop GHG fleet standards for MY 2017 through 2025 LDVs. The Joint Technical Assessment Report (TAR), which was developed by EPA, NHTSA, and CARB, was released in September 2010. The report concluded "electric drive vehicles including hybrid(s)...battery electric vehicles...plug-in hybrid(s)...and hydrogen fuel cell vehicles...can dramatically reduce petroleum consumption and GHG emissions compared to conventional technologies.... The future rate of penetration of these technologies into the vehicle fleet is not only related to future GHG and corporate average fuel economy (CAFE) standards, but also to future reductions in HEV/PHEV/EV [electric vehicle] battery costs, [and] the overall performance and consumer demand for the advanced technologies...."² Manufacturers confirmed in meetings leading up to the release of the TAR their commitment to develop

¹ A detailed account of these modifications, and their waiver history, can be found in 71 Fed Reg 78190-78191 (Dec. 28, 2006) and 76 Fed Reg 61095-61096 (Oct 3, 2011).

² EPA, 2010. United States Environmental Protection Agency, National Highway Safety and Traffic Administration and California Air Resources Board. September 2010. "Interim Joint Technical Assessment Report: Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2017-2025" (p. vii).

ZEV technologies. "...[A] number of the firms suggested that in the 2020 timeframe their U.S. sales of HEVs, PHEVs, and EVs [electric vehicle] combined could be on the order of 15-20 percent of their production."³

For the California ZEV rulemakings described above, the Board sought and obtained waivers of federal preemption from the EPA under Clean Air Act (CAA) section 209(b). EPA granted California an initial waiver of federal preemption for California's original 1990 ZEV requirements in January 1993 as part of the LEV I waiver.⁴ In January 2001, it found that the Board's 1996 ZEV amendments, which amended manufacturer ZEV production mandates for MY 1998 through 2002, were within the scope of the originally granted 1993 waiver.⁵ In December 2006, EPA determined that the 1999, 2001, and 2003 ZEV amendments as they applied to 2007 and prior MY passenger cars and light-duty trucks equal to or less than 3,750 pounds loaded vehicle weight (LDT1) also fell within the scope of the 1993 waiver.⁶ It further granted California a new waiver for MY 2007 through 2011 passenger cars and light-duty trucks, including light-duty trucks with a loaded vehicle weight greater than 3,750 pounds (LDT2).⁷

In its December 2006 decision, EPA expressly made no finding as to MYs 2012 and later.⁸ In September 2009, CARB submitted a Waiver request to EPA seeking confirmation that amendments to the ZEV regulation adopted in 2008, as they relate to the vehicles of 2011 and earlier MYs, were within the scope of EPA's prior ZEV waivers. Additionally, CARB sought confirmation that its 2008 ZEV amendments, as they relate to 2012 and later MYs, were within the scope of EPA's prior waivers or otherwise met the criteria for a waiver of preemption. On October 3, 2011, EPA determined that amendments to the ZEV regulations, as they affected 2011 and prior MYs, were within the scope of previous waivers for the ZEV regulations (or in the alternative qualified for a new waiver).⁹ At that time EPA also granted a waiver allowing California to enforce the 2008 ZEV amendments as they affected 2012 and later MYs.¹⁰

B. 2012 ZEV AMENDMENTS

The subject amendments to California's ZEV regulation are described below in two parts based on the timeframe during which they apply. These timeframes are: 1) MY 2012 through 2017; and 2) MY 2018 and beyond. The amendments identified in this section B. represent the most significant changes during each of these timeframes.

³ *Id.* at pp. 2-5.

⁴ 58 Fed.Reg. 4166 (Jan. 13, 1993).

⁵ 66 Fed.Reg. 7751 (Jan. 25, 2001). See section IV.A.1., *infra*, for discussion of EPA's within the scope analysis.

⁶ 71 Fed.Reg. 78190 (Dec. 28, 2006). In the alternative, EPA found that the amendments affecting these vehicles also met the requirements for a granting of a full waiver. *Id.*, Decision Document accompanying waiver decision at p. 61.

⁷ *Id.*

⁸ *Id.*

⁹ 76 Fed.Reg. 61095 (Oct. 3, 2011).

¹⁰ *Id.*

1. 2009 through 2017 Model Year Amendments

CARB's goal for amendments affecting the current ZEV regulation through MY 2017 was to make minor mid-course corrections and clarifications and to enable manufacturers to successfully meet 2018 and subsequent MY requirements. These amendments included:

- a. *Provision of Compliance Flexibility:*** Removed carry forward credit limitations for ZEVs, allowing manufacturers to bank ZEV credits indefinitely for use in later years. Slightly reduced the 2015 through 2017 credit requirement for intermediate volume manufacturers (IVM, less than 60,000 vehicles produced each year), to allow them to better prepare for requirements in 2018. Extended the provision that allows ZEVs placed in any state that has adopted the California ZEV regulation to count towards the ZEV requirement through 2017 (i.e. extending the "travel provision" for BEVs through 2017).
- b. *Adjustment of Credits and Allowances:*** Increased credits for Type V (300 mile FCV) ZEVs to appropriately incentivize this longer-term technology.
- c. *Addition of New Vehicle Category:*** Added Type I.5x and Type IIx vehicles (collectively "BEVx" vehicles) as a compliance option for manufacturers to meet up to half of their minimum ZEV requirement. The proposed vehicle types are closer to a BEV than to a PHEV, in that they are vehicles primarily designed for zero-emission operation but are equipped with a small non-ZEV fuel auxiliary power unit (APU) to be used only for limited range extension if the zero-emission capacity is depleted.

2. 2018 and Subsequent Model Year Amendments

CARB's goal for amendments affecting 2018 and subsequent MYs is to achieve ZEV and transitional zero-emission vehicle (TZEV; most commonly a PHEV) commercialization through simplifying the regulation and pushing technology to higher volume production in order to achieve cost reductions. The amendments included:

- a. *Increased ZEV Requirement for 2018 and Subsequent MYs:*** Increased requirements which push ZEVs and TZEVs to over 15 percent of new sales by 2025. This will ensure production volumes are at a level sufficient to bring battery and fuel cell technology down the cost curve and reduce incremental ZEV prices.
- b. *Regulation Focused on ZEVs and TZEVs:*** Removed PZEV (near-zero emitting conventional technologies) and advanced technology PZEV (AT PZEV, typically non-plug-in HEVs) credits as compliance options for

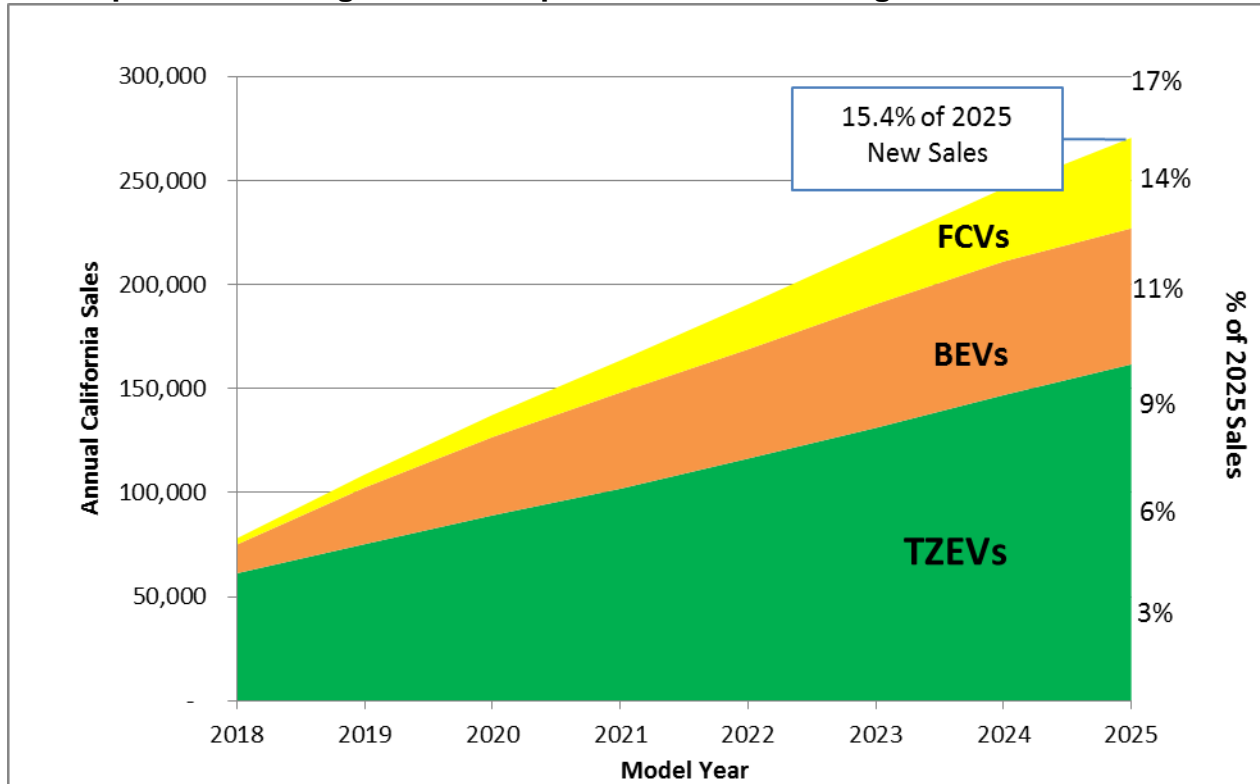
manufacturers because these technologies are now commercialized and their emissions are better reflected in the LEV III program. Allowed manufacturers to use banked PZEV and AT PZEV credits earned in 2017 and previous MYs, but discount the credits, and place a cap on usage in 2018 and subsequent MYs. Focused the 2018 and subsequent MY requirements on ZEVs and TZEVs

- c. *Amended Manufacturer Size Definitions, Ownership Requirements, and Transitions:* Amended IVM and large volume manufacturer (LVM) size definitions to bring all but the smallest manufacturers under the full ZEV requirements by MY 2018. Aligned LEV III and ZEV ownership requirements, so that manufacturers who own more than 33.4 percent of each other are considered as the same manufacturer for determination of size. Modified transition periods for manufacturers switching size categories. These changes result in applying the ZEV regulation to manufacturers that represent 97 percent of the light-duty vehicle market.
- d. *Modified Credit System:* Based credits for ZEVs on range, with 50 mile BEVs earning 1 credit each and 350 Mile FCVs earning 4 credits each. Allowed extended range BEVs (BEVx) which have a limited combustion engine range extender to meet up to half of a manufacturer's minimum ZEV requirement. The range of credit reflects the utility of the vehicle (i.e. the zero emitting miles it may travel) and its expected timing for commercialization. Simplified and streamlined TZEV credits based on the vehicle's zero-emission range capability, and their ability to perform at least 10 miles on the more aggressive US06 drive schedule. In addition to simplifying the program, reducing the spread of credits makes the technologies more evenly treated and reduces the variation in compliance outcomes (numbers of vehicles produced to meet the regulation requirements).
- e. *Modified Travel Provision:* Ended the Travel Provision for BEVs after MY 2017. Extended the Travel Provision for FCVs until sufficient complementary policies are in place in states that have adopted the California ZEV regulation. This will allow FCV technology to continue to mature and provide time for Section 177 states to build infrastructure and put in place incentives to foster FCVs.
- f. *Added GHG-ZEV Over-Compliance Credits:* Allows manufacturers who systematically over comply with the proposed LEV III GHG fleet standard to offset a portion of their ZEV requirement in 2018 through 2021 MYs only.

3. Effect of Amendments

As a result of the 2012 amendments, over 1.4 million ZEVs and TZEVs are expected to be produced cumulatively in California by 2025, with 500,000 of those vehicles being pure ZEVs (BEVs and FCVs) as represented in the top two wedges in the figure below.

Expected ZEV Regulation Compliance for 2018 through 2025 Model Years



During this timeframe, the incremental price of a ZEV or TZEV is expected to rapidly decline, yet remain higher than a conventional vehicle by approximately \$10,000 (high-end estimate in 2025).

The 2012 amendments will also result in an emissions benefit as compared to the earlier ZEV regulations and will likely provide benefits beyond one achieved by complying with the LEV III criteria pollutant standard with conventional vehicles only. This is due to increased electricity and hydrogen use that is more than offset by decreased gasoline production and refinery emissions.

III. CALIFORNIA'S LOW EMISSION VEHICLE PROGRAM FOR LIGHT-DUTY VEHICLES

A. BACKGROUND

Despite significant progress in reducing smog-forming and particulate matter criteria emissions from the passenger vehicle fleet, California needs further reductions in order to meet State and federal ambient air quality standards. Additionally, climate change continues to pose a serious threat to the economic well-being, public health, natural resources, and environment of California. To address the challenge presented by climate change, vehicle GHG emissions must be drastically reduced to meet our state goal of an 80 percent reduction from 1990 levels by 2050. To address these issues, CARB adopted its LEV III program as described below.

1. Criteria Emissions

In 1990, CARB established the LEV program that contained the most stringent exhaust emission regulations ever for light-duty passenger cars and trucks. The regulations included three primary elements: 1) tiers of increasingly stringent exhaust emission standards; 2) a fleet-average emission requirement for 1994-2003 that required manufacturers to phase-in a progressively cleaner mix of vehicles from year to year; and 3) a requirement that a specified percentage of passenger cars and lighter light-duty trucks be ZEVs, vehicles with zero emissions of any pollutants. EPA granted CARB's associated waiver request on February 13, 1993.¹¹

In 1999, CARB adopted the second phase of the LEV program. These amendments, known as LEV II, set more stringent fleet average non-methane organic gas (NMOG) requirements for MYs 2004-2010 for passenger cars and light-duty trucks and established a new more stringent super ultra-low emission vehicle (SULEV) standard. In addition, a partial zero-emission vehicle (PZEV) category was established for vehicles meeting the SULEV emission standard that also included extended 150,000-mile durability, zero fuel evaporative emissions, and extended emission warranty requirements. PZEVs could be used to meet a portion of the zero-emission vehicle requirement. The amendments also expanded the light-duty truck category to include trucks and sports utility vehicles (SUV) up to 8,500 lbs. gross vehicle weight rating (GVWR) and required these vehicles to meet the same emission standards as passenger cars and extended full useful life from 100,000 miles to 120,000 miles. The LEV II amendments also established more stringent emission standards for medium-duty vehicles (MDV) between 8,501-14,000 lbs. GVW. EPA granted CARB's associated waiver request on August 5, 1999.¹² EPA has also found that CARB's other amendments to the LEV program were either within the scope of previous waivers or qualified for a waiver on their own. EPA took final action on these waiver requests on April 22, 2003¹³, April 28, 2005¹⁴, and July 30, 2010.¹⁵

¹¹ 58 Fed.Reg. 4166 (January 13, 1993).

¹² 64 Fed.Reg. 42689 (August 5, 1999).

¹³ 68 Fed.Reg. 19811 (April 22, 2003).

2. Greenhouse Gas Emissions

Recognizing the increasing threat of climate change to the well-being of California's citizens and the environment, in 2002 the legislature adopted and the Governor signed Assembly Bill (AB) 1493 (Chapter 200, Statutes 2002, Pavley). AB 1493 directed CARB to adopt the maximum feasible and cost-effective reductions in GHG emissions from light-duty vehicles. Vehicle GHG emissions included carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) that are emitted from the tailpipe, as well as emissions of HFC134a, the refrigerant then currently used in most vehicle air conditioning systems.

As directed by AB 1493, CARB adopted what is commonly referred to as the Pavley regulations, the first in the nation to require significant reductions of GHGs from motor vehicles. These regulations, covering the 2009-2016 and later MYs, call for a 17 percent overall reduction in climate change emissions from the light-duty fleet by 2020 and a 25 percent overall reduction by 2030. They also formed the foundation for the federal GHG program for light-duty vehicles for 2012-2016 MYs. EPA granted CARB's associated waiver request on July 8, 2009.¹⁶

After the Board adopted the Pavley regulations, the legislature adopted and the Governor signed AB 32, the California Global Warming Solutions Act (Chapter 488, Statutes 2006, Nuñez/Pavley). AB 32 charges CARB with the responsibility of monitoring, regulating, and reducing GHG emissions in the State. AB 32 also directed CARB to prepare a Scoping Plan outlining the State's strategy to achieve the maximum feasible and cost-effective reductions in furtherance of reducing GHG emissions to 1990 levels by 2020. Measure T1 of the Scoping Plan anticipates an additional 3.8 million metric tons carbon dioxide equivalent (MMTCO₂e) reduction by 2020 from the subject regulatory amendments, beyond the GHG reductions arising from the 2009-2016 AB 1493 standards.

In addition, in 2005, in order to mitigate the long-term impacts of climate change, the Governor issued Executive Order S-3-05. Among other actions, the Executive Order called for reducing GHG emissions to 80 percent below 1990 levels by 2050. This ambitious yet achievable reduction path and goal are considered necessary to stabilize the long-term climate. The subject amendments' 2021-2025 MY requirements will further both AB 32 and the 2050 reduction goal.

As mentioned earlier, in 2010, President Barack Obama directed the EPA and NHTSA to work with California to develop GHG fleet standards for MY 2017 through 2025 LDVs.¹⁷ The resulting jointly developed report concluded "electric drive vehicles

¹⁴ 70 Fed.Reg. 22034 (April 28, 2005).

¹⁵ 75 Fed.Reg. 44951 (July 30, 2010).

¹⁶ 74 Fed.Reg. 32744 (July 8, 2009).

¹⁷ <http://www.whitehouse.gov/the-press-office/presidential-memorandum-regarding-fuel-efficiency-standards>

including hybrid(s)...battery electric vehicles...plug-in hybrid(s)...and hydrogen fuel cell vehicles...can dramatically reduce petroleum consumption and GHG emissions compared to conventional technologies.... The future rate of penetration of these technologies into the vehicle fleet is not only related to future GHG and CAFE standards, but also to future reductions in HEV/PHEV/EV [electric vehicle] battery costs, [and] the overall performance and consumer demand for the advanced technologies...."¹⁸ Following development of this report, NHTSA and EPA formally issued a Notice of Joint intent to develop strong greenhouse gas and fuel economy standards for the 2017 to 2025 timeframe,¹⁹ and 14 automobile manufacturers have joined CARB in submitting letters to EPA committing to a continued national program of light-duty GHG and CAFE standards²⁰.

B. SUMMARY OF RECENT LEV III AMENDMENTS INCLUDING GHG COMPONENTS

In order to achieve further emission reductions from the light- and medium-duty fleet, CARB adopted several amendments that together represent a significant strengthening of the LEV program. Specifically, the criteria emission requirements of the program are made substantially more stringent, and the GHG requirements are restructured to provide for later acceptance of the EPA and National Highway Traffic Safety Administration (NHTSA) proposed 2017-2025 federal GHG emission and fuel economy standards for light-duty vehicles as compliance with CARB standards.²¹ Effectively, these amendments will do the following:

Criteria Pollutants:

- Reduce fleet average emissions of new light-duty vehicles to SULEV levels by 2025, an approximate 75 percent reduction from 2010 levels;
- Replace separate NMOG and oxides of nitrogen (NOx) standards with combined NMOG plus NOx standards, in order to provide manufacturers with compliance flexibility to more cost-effectively meet SULEV emission levels across their light-duty fleets;
- Establish additional emission standard categories, such as ULEV70, ULEV50, and SULEV20 in order to provide additional options for compliance with the SULEV fleet average;
- Eliminate intermediate useful life (50,000 miles) standards;
- Increase full useful life durability requirements from 120,000 miles to 150,000 miles;

¹⁸ EPA, 2010. United States Environmental Protection Agency, National Highway Safety and Traffic Administration and California Air Resources Board. September 2010. "Interim Joint Technical Assessment Report: Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2017-2025" (p. vii).

¹⁹ 76 Fed.Reg. 48758 (August 9, 2011).

²⁰ <http://www.epa.gov/otaq/climate/letters.htm#2011al>

²¹ CARB Resolution 12-11, January 26, 2012 (p. 6).

- Provide a backstop to help ensure continued production of SULEVs after PZEVs migrate from the ZEV program to the LEV program in 2018. Without a backstop, beginning in 2018, manufacturers would not need to produce SULEVs until 2023 in order to meet the fleet average requirement;
- Establish more stringent emission requirements for MDVs;
- Require all MDVs between 8,501-10,000 lbs., GVWR to certify on a chassis dynamometer, which would greatly enhance the ability to perform in-use compliance evaluation of these vehicles;
- Establish more stringent 3 mg/mi and 1 mg/mi particulate matter (PM) standards for light-duty vehicles and more stringent PM standards for medium-duty vehicles;
- Establish zero fuel evaporative emission standards for light-duty vehicles, and more stringent evaporative emission standards for medium-, and heavy-duty vehicles;
- Establish more stringent supplemental federal test procedure (SFTP, reflecting more aggressive driving) standards for light-duty vehicles and, for the first time, require medium-duty vehicles to meet SFTP standards;
- Allow pooled fleet average NMOG plus NOx emissions from California and the federal CAA Section 177 States that adopt the LEV III program; and
- Revise the NMOG Test Procedures.

Greenhouse Gases:

- Reduce new light-duty CO₂ emissions from new light-duty regulatory MY 2016 levels by approximately 34 percent by MY 2025, and from about 251 grams of CO₂ per mile to 166 grams, based on the projected mix of vehicles sold in California;
- Set emission standards for CO₂, CH₄, and N₂O;
- Establish footprint based CO₂ emission standards, as distinguished from the current California GHG requirement of a fleet average GHG standard. This will allow manufacturers' new vehicle fleet CO₂ emissions to fluctuate according to their car-truck composition and sales according to vehicle footprint and will align the requirement with current federal GHG requirements;
- Provide credits toward the CO₂ standard if a manufacturer reduces refrigerant emissions from the vehicle's air-conditioning system;
- Provide credits toward the ZEV standards if a manufacturer over complies with the LEV III GHG fleet requirement;
- Provide credits towards the CO₂ standards if a manufacturer produces full size pickups with high efficiency drivetrains;

- Provide credits for deployment of technologies that reduce off-cycle CO₂ emissions; and
- Unlike the proposed federal GHG program for 2017-2025, require upstream emissions from zero-emission vehicles to be counted towards a manufacturer's light-duty vehicle GHG emissions.

IV. WAIVER ANALYSIS

A. CRITERIA FOR DETERMINING WHETHER AMENDMENTS QUALIFY FOR A WAIVER OF PREEMPTION OR ARE WITHIN THE SCOPE OF PREVIOUS WAIVERS OF FEDERAL PREEMPTION

1. The Clean Air Act Section 209(b) Waiver Mechanism

CAA section 209(a) preempts states from adopting or enforcing any emission standard for new motor vehicles and from requiring certification, inspection, or any other approval relating to the control of emissions from any new motor vehicle as a condition of registration or titling in the states. However, section 209(b) directs the Administrator to waive federal preemption for new motor vehicle emission standards adopted and enforced by California²² if the State determines that the State standards will be, in the aggregate, at least as protective of public health and welfare as applicable federal standards. The Administrator is to deny a waiver on a finding: (1) that the protectiveness determination of the State is arbitrary and capricious, (2) that California does not need separate State standards to meet compelling and extraordinary conditions, or (3) that the State standards and accompanying enforcement procedures are not consistent with CAA section 202(a). With regard to the consistency criterion, the Administrator has stated that California's standards and accompanying test procedures are inconsistent with section 202(a) if: (1) there is inadequate lead time to permit the development of technology to meet those requirements, giving appropriate consideration to the cost of compliance within that timeframe, or (2) the federal and California test procedures impose inconsistent certification requirements so as to make manufacturers unable to meet both sets of requirements with the same vehicle.²³

For nearly 30 years, EPA has administered a mechanism under which, in appropriate cases, no new waiver is needed for amendments to California's motor vehicle emission control regulations for new motor vehicles because the amendments are within the

²² The section 209(b) waiver provisions apply to any state which has adopted standards (other than crankcase emission standards) for the control of emissions from new motor vehicles or motor vehicle engines prior to March 30, 1966. (Clean Air Act §209(b)(1).) California is the only state that meets this condition. (S. Rep. No. 403, 90th Cong. 1st Sess., 532 (1967); *Motor and Equipment Manufacturers Ass'n v. EPA* [MEMA I], 627 F.2d 1095, 1100 note 1 (D.C.Cir. 1979).)

²³ See, e.g., 46 Fed.Reg. 26371 (May 12, 1981). Even where there is incompatibility between the California and federal test procedures, EPA has granted a waiver under circumstances where EPA accepts a demonstration of federal compliance based on California test results, thus obviating the need for two separate tests. (43 Fed.Reg. 1829, 1830 (Jan. 12, 1978); 40 Fed.Reg. 30311, 30314 (July 18, 1975).)

scope of previously issued waivers.²⁴ As the Assistant Administrator stated in the 2001 finding that repeal of the ZEV sales requirements for MYs 1998-2002 was within the scope of previous waivers, an amendment may be considered to be within the scope of a previously granted waiver if it does not undermine California's determination that its standards, in the aggregate, are at least as protective of public health and welfare as comparable Federal standards, does not affect the consistency of California's requirements with CAA section 202(a), and raises no new issues affecting EPA's previous waiver determination.²⁵

The individual elements of section 209(b) are discussed below as follows. CARB's protectiveness determination for the 2012 amendments to both the ZEV and LEV regulations is discussed below in Section IV. B. The necessity of the amendments to both the ZEV and LEV regulations to meet compelling and extraordinary conditions is discussed in Section IV. C. The ZEV amendments' consistency with section 202(a) is discussed in Section IV. D. and E. The ZEV amendments' qualifications for a waiver if they are not deemed to qualify as within the scope are discussed in Section IV. F. The LEV amendments' qualifications for a waiver are discussed in Section IV. G.

2. The Scope of EPA's Inquiry in a Waiver Proceeding Is Limited

The scope of the Administrator's inquiry in determining whether to deny a waiver or within-the-scope request is limited by the express terms of CAA section 209(b). Thus, once California determines that its standards are, in the aggregate, at least as protective of public health and welfare as applicable federal standards, the Administrator must grant the waiver request unless one of the three specified findings can be made. As Administrator Ruckelshaus stated in a 1971 decision:

The law makes clear that the waiver request cannot be denied unless the specific findings designated in the statute can properly be made. The issue of whether a proposed California requirement is likely to result in only marginal improvement in air quality not commensurate to its costs or is otherwise an arguably unwise exercise of regulatory power is not legally pertinent to my decision under Section 209, so long as the California requirement is consistent with Section 202(a) and is more stringent than applicable Federal requirements in the sense that it may result in some further reduction in air pollution in California.²⁶

²⁴ See, e.g., 46 Fed.Reg. 36742 (July 15, 1981); 51 Fed.Reg. 12391 (April 10, 1986).

²⁵ Decision Document accompanying scope of waiver determination in 66 Fed.Reg. 7751 (Jan. 25, 2001) at 9.

²⁶ 36 Fed.Reg. 17458 (Aug. 31, 1971), quoted on pp. 8-9 of the Decision Document accompanying 66 Fed.Reg. 7751 (Jan. 25, 2001), which notes that the "more stringent" terminology reflected the section 209(b) requirement before the 1977 amendments to the Clean Air Act substituted the reference to California standards that are, in the aggregate, at least as protective as comparable Federal standards.

3. Deference Should be Given to California's Policy Judgments

In granting waivers to California's motor vehicle program, EPA has routinely deferred to the policy judgments of California's decision makers. The agency has recognized that the intent of Congress in creating a limited review of California's determinations that California needs its own State separate standards was to ensure that the federal government would not second-guess the wisdom of State policy.²⁷ Administrators have recognized that the deference is wide-ranging:

The structure and history of the California waiver provision clearly indicate both a Congressional intent and an EPA practice of leaving the decision on ambiguous and controversial matters of public policy to California's judgment.

* * * * *

It is worth noting . . . I would feel constrained to approve a California approach to the problem which I might also feel unable to adopt at the federal level in my own capacity as a regulator. The whole approach of the Clean Air Act is to force the development of new types of emission control technology where that is needed by compelling the industry to "catch up" to some degree with newly promulgated standards. Such an approach . . . may be attended with costs, in the shape of a reduced product offering, or price or fuel economy penalties, and by risks that a wider number of vehicle classes may not be able to complete their development work in time. Since a balancing of these risks and costs against the potential benefits from reduced emissions is a central policy decision for any regulatory agency under the statutory scheme outlined above, *I believe I am required to give very substantial deference to California's judgments on this score.*²⁸

In 2009, EPA reiterated its recognition that Congress intended EPA to show great deference to California's decision making when analyzing a waiver request for California's GHG standards for new vehicles.²⁹ In that decision, the administrator considered the fact that Congress had the opportunity to restrict CAA's waiver provision as part of its 1977 amendments to the CAA and had instead elected to highlight the utility of California's flexibility to adopt a complete program of motor vehicle emission controls as the state saw fit. The administrator interpreted Congress' act as showing its intent "to afford California the broadest possible discretion in selecting the best means to protect the health of its citizens and the public welfare."³⁰

²⁷ 40 Fed.Reg. 23102, 23103 (May 28, 1975).

²⁸ 40 Fed.Reg. 23102, 23104 (May 28, 1975; emphasis added). See also Decision Document accompanying waiver determination in 58 Fed.Reg. 4166 (Jan. 13, 1993).

²⁹ 74 Fed.Reg. 32744 (July 8, 2009).

³⁰ *Id.* at p. 32748.

4. The Burden of Proof Is On Those Opposed to the Waiver Request

It is well settled that the burden to demonstrate that EPA should not grant a waiver is on the opponents of the waiver. The *MEMA I* Court expressly held that the burden of proof to show that there is a basis for making one of the three findings is squarely on the opponents of a waiver:

It is not necessary for the Administrator affirmatively to find that these conditions do not exist before granting a waiver. The statute does not say “the Administrator shall grant a waiver only if” he makes the negative of these findings. That he must deny a waiver if certain facts exist does not mean that he must independently proceed to make the opposite of those findings before he grants the waiver regardless of the state of the record. . . . The language of the statute and its legislative history indicate that California’s regulations, and California’s determination that they comply with the statute, when presented to the Administrator are presumed to satisfy the waiver requirements and that the burden of proving otherwise is on whoever attacks them. California must present its regulations and findings at the hearing, and thereafter the parties opposing the waiver request bear the burden of persuading the Administrator that the waiver request should be denied.³¹

B. PROTECTIVENESS REQUIREMENT OF CLEAN AIR ACT SECTION 209

Section 209(b)(1)(A) of the CAA requires EPA to deny a waiver if the Administrator finds that California was arbitrary and capricious in its determination that its State standards will be, in the aggregate, at least as protective of public health and welfare as applicable Federal standards. Historically, EPA has simply compared the California standards to any comparable Federal standard, and that comparison has been undertaken within the broader context of the previously waived California program, which relies upon protectiveness determinations that EPA has previously found were not arbitrary and capricious.³²

Traditionally, EPA’s evaluation of the stringency of California’s standards relative to comparable EPA emission standards has followed the instruction of section 209(b)(2), which states: “If each State standard is at least as stringent as the comparable applicable Federal standard, such State standard shall be deemed to be at least as protective of health and welfare as such Federal standards for purposes of [209(b)(1)].”³³ A finding that California’s determination was arbitrary and capricious under section 209(b)(1)(A) would need to be based upon “‘clear and compelling evidence’ to show that proposed [standards] undermine the protectiveness of California’s standards.”³⁴ Even if EPA’s own analysis of comparable protectiveness or

³¹ *MEMA I*, *supra*, 627 F.2d at 1120-1121.

³² 74 Fed.Reg. 32744, at p. 32749 (July 8, 2009).

³³ *Ibid.*

³⁴ *Ibid.*

that suggested by a commenter might diverge from California's protectiveness finding, that is not a sufficient basis on its own for EPA to make a section 209(b)(1)(A) finding that California's protectiveness finding is arbitrary and capricious.³⁵

Additionally, in granting California's past waiver requests EPA has acknowledged that a given California standard may, by itself, be less protective than comparable federal standards so long as California's regulations *in the aggregate* are at least as protective of comparable federal standards.³⁶ "California could enforce emission control standards which it determined to be in its own best interest even if those standards were in some respects less stringent than comparable federal ones."³⁷

1. PROTECTIVENESS OF ACC PACKAGE

Here, California made a protectiveness determination with regard to the 2012 ZEV and LEV amendments in CARB's Resolution 12-11, finding that the amendments would not cause the California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards. This protectiveness determination is the logical extension of the comparable findings that were found to be sufficient in the analysis of California's previous protectiveness determinations for its ZEV regulation³⁸, its LEV regulation³⁹, and its GHG regulation.⁴⁰ In analyzing CARB's protectiveness finding for the 2012 ZEV and LEV amendments, EPA should consider that – as was the case with the granted waivers cited above - there are either no comparable Federal standards or the Federal standards that exist are quantifiably less protective than those included in the 2012 ZEV and LEV amendments.

Moreover, as detailed below, the ACC program will result in reductions of both criteria pollutants and GHG emissions that, in the aggregate, are more protective than the federal standards that exist. Criteria pollutant emission benefits for the ACC program are fully realized in the 2035-2040 timeframe when nearly all vehicles operating in the fleet are expected to be compliant with the proposed standards. By 2035, reactive organic gas (ROG) emissions would be reduced by an additional 34 percent, and NOx emissions by an additional 37 percent, compared to 2035 without the proposed ACC rules. Under the amended rule, the new PM_{2.5} standard is reduced to 3 mg/mi in 2020 and 1 mg/mi in 2028. With these standards, PM_{2.5} emissions will be essentially unchanged between 2010 and 2040 despite growth in vehicle miles traveled.

There is no criteria emissions benefit from including the ZEV proposal in terms of vehicle (tank-to-wheel or TTW) emissions. The LEV III criteria pollutant fleet standard is responsible for those emission reductions in the fleet; the fleet would become cleaner

³⁵ *Ibid.*

³⁶ 74 Fed.Reg. 32744, 32761 (July 8, 2009).

³⁷ *Motor & Equip. Mfrs. Ass'n v. Nichols*, 142 F.3d 449, 464 (D.C. Cir. 1998, citation omitted).

³⁸ 76 Fed.Reg. 61095 (October 3, 2011).

³⁹ 68 Fed.Reg. 19811 (April 22, 2003).

⁴⁰ 74 Fed.Reg. 32744 (July 8, 2009).

regardless of the ZEV regulation because manufacturers would adjust their compliance response to the standard by making less polluting conventional vehicles. However, since upstream criteria and PM emissions are not captured in the LEV III criteria pollutant standard, net upstream emissions are reduced through the increased use of electricity and concomitant reductions in fuel production.

The table below presents the emissions impacts in well-to-wheel (WTW) criteria pollutant and PM emissions in 2030 due to the 2012 Amendments. 2030 was chosen as a reference year to account for a significant amount of fleet turn-over.

Statewide Criteria and PM Emissions in 2030 (tons per day)

2030	ROG	NMOG+ NOx	PM
LEVIII fleet WTW emissions <u>without</u> new ZEV proposal	231	233	56.4
LEVIII fleet WTW emissions <u>with</u> new ZEV proposal	225	229.5	56.2

The upstream emissions from the production of hydrogen and electricity represent a very small fraction of the combined vehicle and upstream emissions impacts of the fleet, and are far outweighed by the reduction in gasoline production emissions. Additionally, a portion of these upstream emissions are in non-urban areas.

Criteria and PM emission benefits will vary by region throughout the state depending on the location of emission sources. Refinery emission reductions will occur primarily in the east Bay Area and South Coast region where existing refinery facilities operate. As refinery operations reduce production and emissions, the input and output activities, such as truck and ship deliveries, will also decline. This includes crude oil imported through the Los Angeles and Oakland ports, as well as pipeline and local gasoline truck distribution statewide.

As noted below in the discussion on the criteria emission element of LEV III (Section IV.G.3.a.(i)), the primary fleet average emission requirement, beginning in 2015, declines every year to a fleet average NMOG plus NOx emission standard of 0.030 g/mi in 2025. Clearly, this is significantly more stringent than the current federal Tier 2 fleet average NOx emission requirement of 0.07 g/mi NOx⁴¹, with its implied fleet average NMOG plus NOx emission requirement of 160 g/mi (a 0.07 g/mi NOx emission level is equal to the NOx emission standard for Tier 2 Bin 5 (0.090 g/mi NMOG, 0.07 g/mi NOx)⁴², implying a Tier 2 NMOG plus NOx fleet average requirement of 0.160 g/mi). LEV III PM standards of 0.003 g/mi and 0.001 g/mi are also significantly more stringent than the Tier 2 PM standards of 0.02 g/mi and 0.01 g/mi⁴³.

The ZEV regulation does not provide GHG emission reductions in addition to the LEV III GHG regulation given that ZEV emissions are included in determining compliance with the GHG standard. Specifically, because the California GHG standard

⁴¹ 40 C.F.R. section 86.1811-04(d)

⁴² 40 C.F.R. section 86.1811(c)(6)

⁴³ *Id.*

includes upstream emissions, in addition to the vehicle emissions, there is no difference in GHG emissions under varying ZEV scenarios. However, the ACC program as a whole – i.e. the California fleet - would provide major reductions in GHG emissions. By 2025, CO₂ emissions would be reduced by almost 14 million metric tonnes (MMT) per year, which is 12 percent from baseline levels. The reduction increases in 2035 to 32 MMT which is a 27 percent reduction from baseline levels. By 2050, the proposed regulation will reduce emissions by more than 42MMT per year, which is a reduction of 33 percent from baseline levels. Currently, there are no federal GHG standards for these 2017-2025 MYs, though CARB understands they will soon be finalized.

For these reasons it is clear that California's fleet under these amendments will be at least as protective as a comparably sized fleet of vehicles that only meet the existing federal rules. Should CARB adopt an amendment later this year to allow federal GHG compliance to serve as compliance with California's LEV (including GHG) standards, California's program will be necessarily as protective as the federal program.

C. THE 2012 ZEV AND LEV AMENDMENTS ARE NECESSARY TO MEET COMPELLING AND EXTRAORDINARY CONDITIONS

Under section 209(b)(1)(B) of the CAA, the Administrator may not grant a waiver if they find that California "does not need such State standards to meet compelling and extraordinary conditions." EPA has traditionally interpreted this provision to require a consideration of whether California needs a separate motor vehicle program to meet compelling and extraordinary conditions.⁴⁴ In granting past waivers, EPA has noted that "Congress requires EPA to allow California to promulgate individual standards that, in and of themselves, might not be considered needed to meet compelling and extraordinary circumstances, but are part of California's overall approach to reducing vehicle emissions to address air pollution problems."⁴⁵ EPA has repeatedly determined that CARB has demonstrated the need for its motor vehicle program to address compelling and extraordinary conditions in California and has based such determinations on the fact that California's essential "geographic and climactic conditions" remained the same as they were under earlier determinations.⁴⁶

The relevant inquiry under this criterion is whether California needs its own motor vehicle pollution control program to meet compelling and extraordinary conditions, not whether any particular standards are necessary to meet such conditions.⁴⁷ The Administrator has determined that the phrase "compelling and extraordinary conditions" refers to:

... certain general circumstances, unique to California, primarily responsible for causing its air pollution problem [including] . . . geographical and climatic factors [as well as] ... the presence and growth

⁴⁴ 74 Fed.Reg. 32744, at p. 32759 (July 8, 2009).

⁴⁵ *Id.* at p. 32761.

⁴⁶ *Id.* at pp. 32761-32762.

⁴⁷ See, e.g., 49 Fed.Reg. 18887, 18889-18890 (May 3, 1984).

of California's vehicle population, whose emissions were thought to be responsible for ninety percent of the air pollution problem in certain parts of California.⁴⁸

Thus, the Administrator has stated,

It is evident from [the legislative history of the Clean Air Act] that “compelling and extraordinary conditions” does [sic] not refer to levels of pollution directly, but primarily to the factors that tend to produce them: geographical and climatic conditions that, when combined with large numbers and high concentrations of automobiles, create serious air pollution problems.⁴⁹

In granting previous waiver requests, EPA has noted that CARB has repeatedly demonstrated the need for its motor vehicle program to address compelling and extraordinary conditions in California.⁵⁰ To explain this, EPA has previously referenced the fact that California—the South Coast and San Joaquin Air basins in particular—continues to experience some of the worst air quality in the nation and that California had an ongoing need for dramatic emission reductions generally and from passenger vehicles specifically.⁵¹ EPA also referenced California’s unique geographical and climatic conditions and the tremendous growth in the vehicle population and use which had initially moved Congress to authorize California to establish separate vehicle standards in 1967.⁵² In granting previous waivers, EPA has noted that – as in 1967 - California then continued to have geographic and climatic conditions that, when combined with the large numbers and high concentrations of automobiles, created a serious pollution problem.⁵³

For purposes of the instant request for the 2012 ZEV and LEV amendments, CARB submits that those same compelling and extraordinary conditions justifying previous waivers continue to exist in California and so the requirements of section 209(b)(1)(B) are satisfied.

⁴⁸ 49 Fed.Reg. at 18890.

⁴⁹ *Id.*

⁵⁰ *Id.* at p. 32762.

⁵¹ *Ibid.*

⁵² *Id.* at pp. 32762-327623.

⁵³ *Id.* at p. 32763.

D. THE 2012 ZEV AMENDMENTS TO THE REQUIREMENTS FOR 2009 THROUGH 2017 MODEL YEARS ARE WITHIN THE SCOPE OF THE PREVIOUS WAIVERS FOR CALIFORNIA'S ZERO-EMISSION VEHICLE STANDARDS⁵⁴

For the reasons detailed below, CARB believes that the 2012 ZEV amendments for MY 2009 through 2017 are within the scope of previous waivers. Specifically, the 2012 ZEV amendments related to MY 2009 through 2017 fall within the scope of the waiver granted in October 2011.⁵⁵

Changed circumstances prompted California to amend the original ZEV requirements since the Administrator's issuance of the initial waiver of preemption in 1993.⁵⁶ Those changed circumstances were the driving force behind the substantial changes CARB made to the ZEV requirements in the 1999-2003 ZEV amendments and again in the more limited changes adopted in the 2008 ZEV amendments.

Corresponding with CARB's amendments to the ZEV requirements, EPA has issued a series of waiver determinations after its issuing of the original 1993 waiver. Most recently, in 2011, EPA determined that California's ZEV standards for passenger cars and light-duty trucks were either within the scope of earlier waivers or covered by a new waiver of preemption under CAA section 209(b).⁵⁷

Past EPA waiver and within-the-scope findings make it clear that the 2012 ZEV amendments fall within the scope of the previous waivers granted in 1993, 2006, and 2011. In its 2006 waiver determination, EPA stated that it will conduct a two-part inquiry when considering whether CARB amendments to a previously waived regulation fall within the scope of the previously granted waiver or require a new waiver:

EPA believes it is important to distinguish between the threshold issue of whether CARB's amendments should be subjected to either the within-the-scope criteria or the full waiver, and separately determining whether the same amendments actually meet the applicable criteria for actually confirming the within-the-scope request or granting a full waiver of federal preemption.⁵⁸

In determining the threshold question, EPA will consider whether the amendments make minor technical revisions or provide compliance flexibility to manufacturers on the one hand or whether the amendments

⁵⁴ CARB respectfully submits that no reasonable basis exists for the Administrator not to confirm that the 2012 ZEV amendments as they apply to MYs 2012 through 2017 do not fall within the scope of the waivers previously granted in 1993, 2008, and 2011. If the Administrator determines otherwise, a new waiver should be granted for the reasons set forth in section IV. F.

⁵⁵ 76 Fed.Reg. 61095 (Oct. 3, 2011).

⁵⁶ 58 Fed.Reg. 4166 (Jan. 13, 1993).

⁵⁷ 76 Fed.Reg. 61095 (Oct. 3, 2011).

⁵⁸ Decision Document accompanying waiver determination in 71 Fed.Reg. 78190 (Dec. 28, 2006), at 17.

add new or more stringent pollutant standards or new motor vehicle categories on the other.⁵⁹

Following this precedence, the 2012 ZEV amendments as applied to MYs 2009 to 2017 should be analyzed under the within-the-scope criteria – that is, do the amendments undermine CARB’s original protectiveness determination, and, as amended, does the regulation remain consistent with CAA section 202(a)? As described above, the 2012 ZEV amendments as applied to MYs 2009 to 2017 are a critical component of the ACC package which will result in fleet standards that are at least as protective as would exist under federal standards, so the protectiveness determination requirement should be deemed satisfied. The 2012 ZEV amendments’ consistency with section 202(a) is discussed next.

1. Consistency with CAA Section 202(a)

a. Effect of the Amendments on Lead Time Considerations

The first prong of the two-part consistency analysis requires those opposed to California obtaining a favorable within-the-scope determination to show that the regulation, as amended, provides insufficient lead time to permit the development of technology to meet those requirements, giving appropriate consideration to the cost of compliance within the time provided for compliance. It is incontrovertible that if the amendments make compliance more feasible for a regulation for which EPA has already weighed feasibility and waived preemption then the amendments meet the lead-time element of the CAA section 202(a) consistency test applied to within-the-scope determinations.

Even in situations where a regulatory amendment shortens lead time, EPA has found the amendments to be within the scope where there would be a “lengthy” time period (e.g. five years) before compliance was required, and CARB has addressed any theoretical objections claiming that the amendment was technologically infeasible.⁶⁰

CARB’s goal for amendments affecting the current ZEV regulation through 2017 was in part to make compliance with the regulation more feasible. Specifically, the removal of the limitations on carrying ZEV credits forward, the reduction of the credit requirements for IVMs during MYs 2015 through 2017, and the extension of the section 177 state “travel provision” for BEVs through 2017 will make it more feasible for regulated parties to comply. Additionally, the increase in credits for Type V (i.e. 300 or greater mile FCVs) vehicles and addition of two new types of qualifying ZEVs (i.e. Type I.5x and Type IIx vehicles) will create more favorable conditions for compliance.

⁵⁹ *Id.* at 18-19.

⁶⁰ 74 Fed.Reg. 32744, 32768 (July 8, 2009). Citing *National Resources Defense Council v. EPA* 655 F.2d 318, 331 (D.C. Cir.1981).

Consequently, the amendments do not materially affect the lead time provided to manufacturers under earlier iterations of the ZEV program, which EPA has found to be consistent with CAA section 202(a) in the 1993, 2006, and 2011 waivers.⁶¹

b. Test Procedure Consistency

The second prong of the consistency criteria requires that the federal and California test procedures not impose inconsistent certification requirements so as to make manufacturers unable to meet both sets of requirements with the same vehicle.⁶² The test procedures for certifying ZEVs are contained in the ZEV Standards and Test Procedures documents incorporated by reference in sections 1962.1(h) and 1962.2(h).

The 2012 ZEV amendments primarily affect only the standards portions of the incorporated documents and hence do not generally change the pre-existing testing requirements for certification. Accordingly, there also are no inconsistencies in the federal and California test procedures for PZEVs and AT PZEVs that would preclude a manufacturer from conducting one set of tests to demonstrate compliance or would prohibit a confirmation that the 2012 ZEV amendments are within the scope of 1993, 2006, and 2011 waivers.

2. New Issues Affecting Previous Waiver Determinations

CARB is not aware of any new issues affecting the previous waiver determinations that are raised by the 2012 ZEV amendments as they affect MYs 2009-2017.

E. THE 2012 ZEV AMENDMENTS TO THE REQUIREMENTS FOR 2018 AND LATER MODEL-YEAR VEHICLES ARE WITHIN THE SCOPE OF EXISTING WAIVERS FOR CALIFORNIA'S ZERO-EMISSION VEHICLE STANDARDS

1. Consideration of the Amendments Applicable to 2018 and Later Model-Year Vehicles as Within the Scope of Existing Waivers

In light of EPA's earlier decisions waiving preemption of the ZEV standards, the 2012 ZEV amendments are also within the scope of the previous waivers⁶³ as they apply to 2018 and later MY vehicles because the standards contained in the 2012 amendments are at least as protective as those in earlier versions of the waived ZEV standards.⁶⁴ In those earlier versions, manufacturers' 2018 and subsequent MY ZEV

⁶¹ 58 Fed.Reg. 4166 (Jan. 13, 1993), 71 Fed.Reg. 78190 (Dec. 28, 2006), 76 Fed.Reg. and 61095 (Oct. 3, 2011).

⁶² *Id.*

⁶³ 58 Fed.Reg. 4166 (January 13, 1993) and 71 Fed.Reg. 78190 (Dec. 28, 2006), and , and 76 Fed.Reg. 61095 (Oct. 3, 2011).

⁶⁴ There is one aspect of the 2012 ZEV amendments as applied to MYs 2018 and later that opponents could argue is not within the scope of earlier waivers. Specifically, there is a group of current IVMs that will become subject to LVM requirements in 2018, due to the 2012 amendments to the definition thresholds. Some of these current IVMs are closer to becoming an LVM under the current definition of 60,000 vehicles sold, and others will only become an LVM due to the amended definition changes. The

requirements were held at the same percentage each year, as shown in the table below.

2018 and Subsequent ZEV Credit Requirement *Before* 2012 Amendments

Credit Category	Credit Requirement
Minimum ZEV	5.0%
Maximum TZEV*	3.0%
Maximum AT PZEV*	2.0%
Maximum PZEV	6.0%
Total ZEV Requirement	16.0%

*The regulation did not specify the split between TZEVs and AT PZEVs. For this analysis, staff assumed AT PZEV and TZEV credit requirements would remain the same from the 2015 through 2017 requirements. The PZEV and AT PZEVs (highlighted in grey) were moved to the LEV III program so the remaining ZEV requirement under the current regulation would be 8 percent.

To address one of the program's primary objectives (i.e. ZEV technology commercialization and long-term GHG and criteria emission goals), CARB's 2012 ZEV amendments increased each manufacturer's compliance requirements for 2018 and subsequent MYs, ultimately reaching credit requirements of 6 percent for TZEVs and 16 percent for pure ZEVs in 2025. This increase is outlined in the table below.

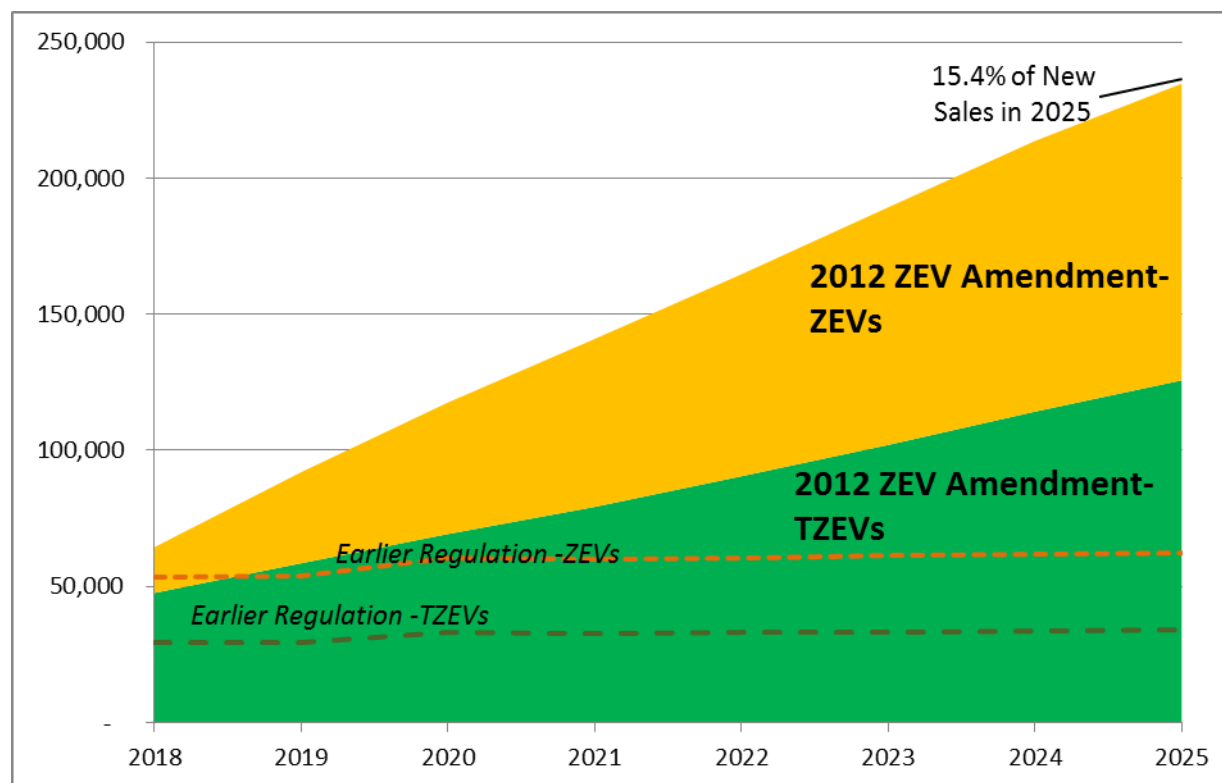
ZEV Credit Requirement for 2018 and Subsequent *After* 2012 Amendments

Model Year	2018	2019	2020	2021	2022	2023	2024	2025 and Subsequent
Overall ZEV Requirement	4.5%	7.0%	9.5%	12.0%	14.5%	17.0%	19.5%	22.0%
Min. ZEV	2.0%	4.0%	6.0%	8.0%	10.0%	12.0%	14.0%	16.0%
Max. TZEV	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	5.5%	6.0%

As shown in the post-2012 Amendment table above, while the overall ZEV credit requirement between MY 2018 and MY 2022 is less than the current program, CARB has revised the number of credits earned per vehicle (typically by one half), and PZEVs and AT PZEVs no longer count towards meeting a manufacturer's ZEV obligation. Accordingly, it is more illustrative to compare the actual number of ZEVs required to be produced given the current and proposed crediting structure. This is shown in the figure below.

purpose of the 2012 amendments is to bring a larger percentage of manufacturers under the full ZEV requirements. This amendment to the lead time provision ensures a level playing field, making manufacturers close to the current definition thresholds (60,000 vehicles per year), subject to LVM requirements at the same time as manufacturers affected by staff's proposed definition change. CARB agrees that this aspect of the 2012 ZEV amendments can be analyzed as qualifying for a new waiver as detailed in the alternative analysis below in section IV. F.

2012 Amendments vs. Earlier Regulation – Annual Sales Requirements



2. 2012 ZEV Amendment's Protectiveness for Model Years 2018 and Later

As described above, the 2012 ZEV Amendments as applied to MYs 2018 and later are a critical component of the ACC package which will be at least as protective as federal standards, so the protectiveness determination requirement should be deemed satisfied. The 2012 ZEV amendment's consistency with section 202(a) is discussed immediately below.

3. Consistency with CAA 202(a) – Effect of the Amendments on Lead-Time Considerations and on Test Procedure Consistency

The 2012 Amendments do not affect lead time except as described below. Before the 2012 Amendments, manufacturers were given five years of lead time when transitioning into a larger size definition. For example, if a manufacturer were to increase its sales, such that their 2011 through 2013 sales average exceeded the current LVM threshold of 60,000 sales, the manufacturer would be subject to the full ZEV requirements in MY 2019. With the 2012 amendments, manufacturers starting their transition before 2018 will be subject to full ZEV requirements starting in the 2018 MY. This means, for example, if a manufacturer's 2013 through 2015 sales average (for the first time) is 61,000 vehicles, then instead of being subject to LVM requirements in 2021, the manufacturer will be subject to LVM requirements in 2018.

These facts are relevant to the analysis EPA has previously applied in similar situations.⁶⁵ Specifically, the lack of objections from the regulated parties and the regulated parties' announcement of their planned ability to comply, show that the 2012 Amendment's decrease in lead time should not stand in the way of EPA determining that CAA 202(a) is satisfied.

The federal Tier 2 regulations require manufacturers to measure emissions from ZEVs in accordance with the California test procedures.⁶⁶ Accordingly, a manufacturer's adherence to the California test procedures will allow them to use the same test results to demonstrate compliance with federal certification emission standards, so there are effectively no inconsistencies between the federal and California test procedures.

4. New Issues Affecting Previous Waiver Determination

CARB is not aware of any new issues affecting the previous waiver determinations that are raised by the 2012 ZEV Amendments as they affect MYs 2018 and later.

F. CONSIDERATION OF THE 2012 ZEV AMENDMENTS APPLICABLE TO 2018 AND LATER MODEL-YEAR VEHICLES AS MEETING THE CRITERIA FOR A WAIVER OF FEDERAL PREEMPTION

Should EPA determine that a new waiver is needed for the 2012 ZEV Amendments as applied to 2018 and later MY vehicles, what follows is a discussion of how the 2012 ZEV Amendments meet the requirements for a waiver.

1. Public Health and Welfare – CARB's Protectiveness Determination Is Not Arbitrary or Capricious

As detailed in section IV. B., the Board found that that the ACC program was at least as protective as any applicable Federal standards

2. California Continues to Need Separate Emission Standards for New Motor Vehicles In Order to Meet Compelling and Extraordinary Conditions

As detailed in section IV. C. above, California continues to need separate emission standards for new motor vehicles in order to meet compelling and extraordinary conditions in the state.

⁶⁵ 74 Fed.Reg. 32744, 32768 (July 8, 2009). Citing *National Resources Defense Council v. EPA* 655 F.2d 318, 331 (D.C. Cir.1981).

⁶⁶ 40 C.F.R § 86.1811-04(n).

3. The 2012 ZEV Amendments to the Requirements for 2018 and Later Model-Year Vehicles Are Consistent With Clean Air Act Section 202(a)

a. Technological Feasibility in Consideration of the Cost of Compliance within the Lead Time Provided

i. The Technological Feasibility Test

As discussed below, the technological feasibility of the standards for PZEVs and AT PZEVs has already been abundantly demonstrated in commercially available, California-certified vehicles. Where substantial lead time is available, standards are considered technologically feasible and consistent with CAA section 202(a).⁶⁷ In granting past waiver requests, EPA has noted that the “whole approach of the Clean Air Act is to force development of new types of emission control technology,” and to that end “California must be given substantial deference when adopting motor vehicle emission standards which may require new and/or improved technology to meet challenging levels of compliance.”⁶⁸ It is well established that EPA will find a regulation to be technically feasible if “a reasonable basis [exists] that a new technology will be available and economically achievable” in the time provided for compliance.⁶⁹ To this end, EPA has followed the D.C. Circuit’s analysis that the time provided is reasonable if:

[the agency adopting the regulation] answers any theoretical objections to the [to the projected control technology], identifies the major steps necessary in refinement of the [technology], and offers plausible reasons for believing that each of those steps can be completed in the time available.⁷⁰

As a rule, greater deference will be accorded when a regulation provides substantial lead time for development before manufacturers must commit themselves to mass production of a chosen prototype.⁷¹ Such lead time gives the agency greater leeway to modify its standards if the actual future course of technology diverges from expectation.⁷²

The only relevance of costs in a Section 209(b) waiver proceeding is in the context of technological feasibility. Past EPA waiver determinations have made clear that for the cost of compliance to be found excessive it would need to be “very high” such that the

⁶⁷ 74 Fed.Reg. 32744, 32777 (July 8, 2009)

⁶⁸ *Id.* at p. 32768 (citations omitted).

⁶⁹ *Natural Resources Defense Council v. U.S. EPA*, 655 F.2d 318, 331-2 (D.C. Cir., 1981) (*NRDC*).

⁷⁰ See Decision Document accompanying EPA’s granting California a waiver for its OBD II regulation (61 Fed.Reg. 53371 (Oct. 11, 1996)), at 73.

⁷¹ *NRDC*, 655 F.2d at 329.

⁷² *Id.*

cost to consumers who purchased a complying vehicle would be doubled or tripled.⁷³ Additionally, the relevance of the cost of compliance analysis is limited to the question of whether such costs will adversely affect the timing of an emission standard.⁷⁴

ii. Technological Feasibility of the ZEV Requirements for MY 2018 and Later

In granting earlier waivers, the administrator found the requirements of earlier versions of the ZEV regulation to be technologically feasible. As described below, manufacturers have been able to adopt technologies satisfying the earlier ZEV requirements, and the recent changes will allow manufacturers greater technological flexibility in meeting the ZEV requirements; this will presumably only increase the technological feasibility of the regulation.

The four categories of vehicles used to meet the ZEV regulation are ZEVs, TZEVs, AT PZEV, and PZEV. Table 1.2, below, shows the cumulative number of vehicles placed in compliance with the ZEV regulation through MY 2010.

Table 1.2: Cumulative Vehicle Placement Through Model Year 2010

ZEV Credit Category	Technology Type	Quantity of Vehicles
ZEV	Fuel Cell	350
	Battery Electric	5,200
	Neighborhood Electric	28,800
AT PZEV	Hybrid or Compressed Natural Gas	380,000
PZEV	Conventional Gas	1,750,000

*On-road number is less for FCVs and NEVs.

Manufacturer Compliance Status and Near-term Production Plans

All manufacturers have complied with ZEV regulation requirements. For the 2012 MY, six LVMs are required to comply with the entire regulation, meaning these manufacturers must produce pure ZEVs: Chrysler, Ford Motor Company, General Motors, Honda, Nissan, and Toyota. Ten IVMs have the option to meet their entire requirement with credits from PZEV. These ten manufacturers include: BMW, Hyundai, Jaguar-Land Rover, Kia, Mazda, Mercedes Benz, Subaru, Volkswagen and Volvo.

Most manufacturers have near-term production plans to meet or over comply with the regulatory requirements through MY 2017. Additionally, several other non-regulated

⁷³ 74 Fed.Reg. 32744, 32774 (July 8, 2009, citations omitted).

⁷⁴ *MEMA I, supra*, 627 F.2d at 1105, 1114 n. 40 (“[T]he ‘cost of compliance’ consideration relates to the timing of standards and procedures.”) U.S. EPA has recognized that the only relevance of costs is there impact on timing, e.g. “Manufacturers do not contend that the cost of compliance will be significantly reduced by extending lead time beyond the minimal period required for compliance.” (36 Fed.Reg. 17459 (Aug. 31, 1971)).

manufacturers are actively producing ZEVs and neighborhood electric vehicles (NEV) and earning ZEV credits. This means there will be a sufficient number of credits available to those regulated manufacturers that are still developing technologies to comply with the ZEV regulation requirements.

Recently, a number of manufacturers have announced aggressive production plans for PHEVs and BEVs for the next three MYs. These announcements reflect technological advancement in lithium-ion battery technology and a general shift in customer demand and corporate environmental stewardship. The following table provides a summary of manufacturers' current ZEV and TZE program commitments, by technology category, as publicly stated.

Table 1.3: Manufacturer ZEV and TZE Announcements

Manufacturer	Model	Type	Timeframe	Reference
BMW	ActiveE	BEV	2011	BMW, 2011a
	i3	BEV	2013	BMW, 2011b
	i3 Rex	PHEV		BMW, 2011c
	i8	PHEV	2014	BMW, 2011b
BYD	e6	BEV	2012	BYD, 2010
CODA	(unknown)	BEV	2011	PopularMechanics, 2011
Chrysler	Fiat 500 EV	BEV	2012	Chrysler, 2010
Fisker	Karma	PHEV	2011	Fisker, 2011
Ford	C-MAX Energi	PHEV	2012	Ford, 2011a
	Focus Electric	BEV	2011	Ford, 2011b
	Transit Connect Electric	BEV	in production	n/a
GM	Cadillac ELR	PHEV	(unknown)	GM, 2011a
	Spark	BEV	2012	GM, 2011b
	Volt	PHEV	in production	n/a
	(unknown)	FCV	2015	USA TODAY, 2010
Honda	Fit EV	BEV	2012	Honda, 2011
	(unknown)	PHEV	2012	
	Clarity FCX	FCV	in production	n/a
Hyundai	Tucson IX	FCV	2015	Bloomberg, 2010
Mercedes Benz	(unknown)	BEV	2012	Mercedes, 2011
	F-Cell	FCV	in production	Autobloggreen, 2010
Mitsubishi	i	BEV	in production	n/a
	Outlander	PHEV	2013	Motor Trend, 2011
Nissan	LEAF	BEV	in production	n/a
Smart	fortwo ED	BEV	in production	n/a
Tesla	Model S	BEV	2012	Tesla, 2011
Think	City	BEV	in production	n/a
Toyota	Prius Plug-In	PHEV	2012	Toyota, 2011b
	RAV-4 EV	BEV	2012	Toyota, 2011c
	Scion iQ-EV	BEV	2012	

Manufacturer	Model	Type	Timeframe	Reference
	(unknown)	FCV	2015	Toyota, 2011d
Volkswagen	e-up!	BEV	2013	Volkswagen, 2011
Wheego	Whip LiFe	BEV	in production	n/a

The table reveals that nearly every manufacturer will be introducing production BEV and PHEV products within the next one to three years, and five manufacturers will commercially introduce FCVs by 2015. If manufacturers produce TZEVs and ZEVs at production levels announced in the table above, the requirements for MY 2012 through 2017 are therefore also feasible.

The technological sophistication of ZEVs currently being produced is anticipated to continue to advance, making commercial production and compliance of these vehicles by MY 2018 and later more feasible. Additionally in MYs 2018 and later, manufacturers are allowed to comply with any type of ZEV, meaning BEV or FCV, making compliance still more feasible. As noted above, during the rulemaking proceedings for the adoption of the 2012 ZEV amendments, CARB did not receive any comments questioning the overall technological feasibility of the amended standards. For these reasons, the finding of technological feasibility of the ZEV requirements within the lead time in MYs 2018 and later is well supported and a finding of inconsistency with CAA section 202(a) is not warranted.

4. Consistency of Certification Procedures

The test procedures for certifying ZEVs, AT PZEVs, and PZEVs are contained in the ZEV and LEV Standards and Test Procedures incorporated by reference in sections 1962.1(h) and 1962.2(h) and are largely un-amended by the 2012 ZEV Rulemaking. The federal Tier 2 regulations require manufacturers to measure emissions from ZEVs in accordance with the California test procedures.⁷⁵ Further, there are no inconsistencies in the test procedures for PZEVs and AT PZEVs that would justify the denial of a waiver. Accordingly, there are no inconsistencies between the federal and California test procedures that would preclude a manufacturer from conducting one set of tests to demonstrate compliance with the federal and California certification emission standards for ZEVs, TZEVs, AT PZEVs, and PZEVs.

G. THE 2012 AMENDMENTS TO THE CALIFORNIA'S LOW-EMISSION VEHICLE REGULATION MEET THE CRITERIA FOR A WAIVER OF FEDERAL PREEMPTION⁷⁶

As noted above, in Resolution 12-11 the Board found that the 2012 LEV amendments do not cause the California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards, are

⁷⁵ 40 C.F.R. section 86.1811-04(n).

needed to meet compelling and extraordinary conditions, and do not cause the California requirements to be inconsistent with CAA section 202(a). Each of the required elements for a waiver under section 209(b) is addressed in turn below.

1. Public Health and Welfare – CARB’s Protectiveness Determination Is Not Arbitrary or Capricious

In Resolution 12-11, the Board made the determinations section 209 requires, finding that the ACC program was at least as protective as any applicable Federal standards. The basis for this protectiveness determination is detailed in section IV. B. above.

2. California Continues to Need Separate Emission Standards for New Motor Vehicles In Order to Meet Compelling and Extraordinary Conditions

As detailed in section IV. C. above, California continues to need separate emission standards for new motor vehicles in order to meet compelling and extraordinary conditions in the state.

3. Consistency with CAA Section 202(a)

The Administrator has stated that California’s standards and accompanying test procedures are inconsistent with section 202(a) if: 1) there is inadequate lead time to permit the development of technology to meet those requirements, giving appropriate consideration to the cost of compliance within that timeframe; or 2) the federal and California test procedures impose inconsistent certification requirements so as to make manufacturers unable to meet both sets of requirements with the same vehicle.⁷⁷ As the following discussion demonstrates, the LEV III amendments are fully consistent with section 202(a) of the CAA.

a. Technological Feasibility and Lead Time Considerations

In developing the LEV III emission requirements CARB considered several factors that would impact a manufacturer’s ability to meet the requirements. These factors include technical feasibility, lead time available to meet the requirements, cost of compliance and the technical and resource challenges manufacturers face in complying with the requirement to simultaneously reduce criteria and GHG emissions. Regarding technical feasibility, ARB considered emission control technologies that are currently deployed on

⁷⁷ “Neither the court nor the agency has ever interpreted compliance with section 202(a) to require more.” *MEMA II*, 142 F.3d at 463 (citations omitted). See also 46 Fed.Reg. 26371 (May 12, 1981). Even where there is incompatibility between the California and federal test procedures, EPA has granted a waiver under circumstances where EPA accepts a demonstration of federal compliance based on California test results, thus obviating the need for two separate tests. (43 Fed.Reg. 1829, 1830 (January 12, 1978); 40 Fed.Reg. 30311, 30314 (July 18, 1975).).

vehicles manufactured today. CARB also anticipated continuing improvements in these deployed technologies, and in technologies already under development by vehicle manufacturers or component suppliers for future vehicle applications.

Concerning lead time, CARB considered the pace of implementation manufacturers would need in order to incorporate these technologies across their model lines. Implementation for the criteria emission element of LEV III occurs over an 11-year period from 2015 through 2025, while the GHG emission element is implemented over a 9-year period from 2017 through 2025. This extended implementation period provides manufacturers with regulatory certainty and lead time to incorporate new technologies across their vehicle models at a pace consistent with normal vehicle development and production. In addition to an extended implementation period and lead time, LEV III also provides manufacturers with significant compliance flexibility that will assist them in managing their resources when implementing new requirements to reduce both criteria and GHG emissions in the same timeframe.

The LEV III standards should be deemed technologically feasible and consistent with CAA section 202(a) if the CARB identifies or predicts the technology that can be used to comply with the standards, “answers any theoretical objections to the [projected control technology], identifies the major steps necessary for the refinement of the [technology], and offers plausible reasons for believing that each of these steps can be completed in the time available.”⁷⁸

(i) Criteria Pollutant Emission Standards.

What follows in Section (A) is a discussion of technologies, while section (B) is a discussion of lead times for those technologies.

(A) Technological Feasibility

There are two key elements of the criteria pollutant emissions portion of the LEV III program: 1) proposed amendments to California’s exhaust emission standards and 2) proposed amendments to California’s evaporative emission standards.

Exhaust Emission Standards Generally:

The technological feasibility demonstration for the exhaust emission requirements is set forth in Section II.A.3 of the Staff Report (pp. 29-37). The technological feasibility demonstration for the evaporative emission requirements is set forth in Section II.B.3 of the Staff Report (pp. 52-54). While emission control technology has undergone dramatic improvement over the last decade and is well understood by the industry, we provide a brief discussion of the technology and recent advancements that have been made by both vehicle manufacturers and emission control component suppliers.

⁷⁸ *Natural Resources Defense Council v. U.S. EPA*, 655 318, 331-2 (D.C. Cir., 1981).

The emission control technologies that can be used to meet the LEV III criteria pollutant standards for light- and medium-duty vehicles consist of technologies that have already been developed for use in complying with the LEV II standards and expected improvements to mature LEV II technologies that will help assure compliance with the LEV III criteria pollutant standards. In its Staff Report, staff identified and discussed 16 different low-emission technologies that are currently available to reduce exhaust emissions (pp. 29-37) and three different strategies/technologies that are currently available to reduce evaporative emissions (pp. 52-54); although, it is unlikely any single vehicle will feature all of these improvements. These currently-available LEV II technologies fall into four basic categories – improvements to the fuel control system, improvements in fuel atomization and delivery, improvements in catalyst performance, and methods to reduce engine-out emission levels. Many of the technologies discussed in the Staff Report are already in use on selected vehicle models, and during the California rulemaking no affected manufacturer questioned the overall technological feasibility of these standards. The additional improvements that are expected to be employed to comply with LEV III include increased catalyst volume and substrate cell density, increased catalyst loading and improved washcoats, and improved catalyst light-off with secondary air injection and retarded spark timing.

CARB also recognized that achieving SULEV emission levels across the light-duty fleet presents a significant challenge to vehicle manufacturers and, therefore, incorporated the provisions described below to provide compliance flexibility without compromising needed emission reductions.

NMOG and NOx Standards:

LEV III replaces separate NMOG and NOx emission standards with combined NMOG plus NOx standards. These standards were combined in part because of the inherent challenge to achieve SULEV emission levels for larger vehicles with larger displacement engines. Specifically, achieving very low levels of NMOG is more problematic for vehicles equipped with larger displacement engines than achieving very low levels of NOx. By providing an opportunity to offset marginal increases in NMOG emissions with lower NOx emissions, a combined NMOG plus NOx standard enables manufacturers to more cost-effectively tailor their emission control systems while still achieving SULEV emission levels across their light-duty fleet. In contrast, vehicles with smaller engines tend to be easier to control for NMOG emissions, but with more stringent GHG standards, these smaller engines will be under higher average loads, making NOx emission reductions comparatively more challenging. Second, LEV III establishes three additional light-duty vehicle emission standards (ULEV70, ULEV50, and SULEV20) to which manufacturers may certify their vehicles when meeting the fleet average emission requirement. Combined with an extended phase-in period and combined NMOG plus NOx emission standards, providing these additional emission standards will allow manufacturers to phase-in additional emission componentry across their fleet more cost-effectively.

Particulate Matter Standards

In the CARB rulemaking, some manufacturers commented that the 3 mg/mi and 1 mg/mi PM standards are technically infeasible and that current test procedures are inadequate for measuring PM emissions at these low levels. CARB believes that both the stringency and implementation schedules for the 3 mg/mi PM standard and the 1 mg/mi PM standard are technologically feasible within the proposed timeframe. (See the Staff Report and its Appendix P: Technical Support Document – Development of PM Standards for further discussion.) CARB test data have demonstrated PM levels from current port fuel injected (PFI) engines below 1 mg/mi and from late model gasoline direct injection engines (GDI) approaching 1 mg/mi. Staff expects that further technical improvements in GDI engines during the lead time provided will enable GDI engines to achieve parity with PFI engines in terms of their PM emissions. However, it is staff's intent, in accordance with the Board's direction (Resolution 12-11, p. 21), to conduct a review of the 1 mg/mi PM standard in the 2015 timeframe and report back to the Board on the results. If the outcome of that review indicates that modifications to the 1 mg/mi PM standard are warranted, staff will return to the Board soon after to propose changes to the standard and/or the implementation schedule. If instead the results of that review are inconclusive, staff will continue to monitor manufacturers' technical progress and measurement capabilities towards meeting the 1 mg/mi PM standard and report back to the Board at such time as more information becomes available.

Some manufacturers have also commented that the supplemental federal test procedure (SFTP) PM standard is infeasible, particularly for vehicles with low power to weight ratios. The SFTP PM standards were based on testing of a wide range of vehicles, including high mileage, older vehicles with direct injected engines, a technology projected to dominate powertrains in the near future that are known to have high PM emissions. Based on the test data, CARB is confident that manufacturers will not have difficulty meeting the proposed 10 mg/mi standard. Thus, despite the fact that a small number of manufacturers have raised the concern that potential future vehicles with low power-to-weight ratios may not be able to meet the proposed standard, based on testing and discussions with other manufacturers, CARB firmly believes that with properly designed engines the 10 mg/mi standard is achievable.

Evaporative Emission Standards

The emission control technologies that can be used to meet the LEV III evaporative emission standards for most vehicles consist of technologies that have already been developed for use in complying with the LEV II optional zero-evaporative standards. These technologies can be grouped into three basic strategies- improvements to the carbon canister system, improvements to the fuel storage/delivery system, and addition of air intake system evaporative controls. In the Staff Report, CARB described the various technologies that fall into these three basic strategies, from which manufacturers can choose to comply with the LEV III requirements. Hybrid vehicles may require some additional technology to meet the proposed canister bleed emission

standard, because they have less available purge to regenerate the carbon canister. A partially pressurized fuel tank and heated purge are both examples of technology which could be employed to compensate for a hybrid vehicle's reduced purge.

CARB recognized that achieving the LEV III objective of zero-evaporative emission levels across the fleet presents a significant challenge to vehicle manufacturers and, therefore, incorporated provisions to provide compliance flexibility without compromising needed emission reductions. One such provision is the availability of two compliance options for LEV III. Option 1 is essentially a duplicate of the LEV II zero-evaporative standards, whereas in Option 2, the fuel system rig test of Option 1 is omitted to address manufacturers' concern regarding the rig test's burden. Option 2 instead has a slightly lower whole vehicle standard as well as the canister bleed emission test/standard, which is a condensed version of the rig test. In order to provide additional flexibility, LEV III Option 2 allows manufacturers to demonstrate compliance with the proposed diurnal plus hot soak emission standard through fleet averaging. In contrast, the LEV II evaporative emission standards do not have a fleet averaging option. The various compliance options inherent in the LEV III evaporative emission program will enable manufacturers to achieve the standards in a more cost-effective manner.

(B) Lead Time Considerations

Exhaust Emission Standards (excluding particulate standards)

As noted above, implementation of the exhaust emission requirements for LEV III occurs over an 11-year period from 2015 through 2025. While LEV III implementation is scheduled to start within two MYs, the percentage emission reduction required by the exhaust fleet average emission requirement for LEV III is relatively minor in the first years of implementation. In addition, LEV III provides considerable compliance flexibility to manufacturers towards meeting the fleet average requirement by incorporating a combined NMOG plus NOX fleet average requirement, expanding the credit mechanism to a five-year carry forward and three-year carry back mechanism, providing additional emission standards and providing interim in-use emission standards for these additional standards. Therefore, manufacturers will need to incorporate only minor emission control improvements to their vehicles in the early years of LEV III. In fact, several manufacturers have indicated that they wish to take advantage of the early opt-in provision for LEV III by meeting the fleet average requirement for MY 2015 with their MY 2014 vehicles⁷⁹; this is an important reason for EPA to act on this waiver submission before the end of 2012.

Specifically, manufacturers must phase-in vehicles certified to the LEV III criteria pollutant exhaust emission standards ULEV70, ULEV50, SULEV30 and SULEV20

⁷⁹ While CARB is generally requesting that a new waiver be granted for the 2012 LEV Amendments, there is one portion of the amendments that is no more stringent than the earlier standards and so might be considered as being within the scope of previous waivers. Specifically, the 2014 LEV Criteria provisions could be considered as within the scope of EPA's April 22, 2003 waiver of preemption (68 Fed.Reg. 19811 (April 22, 2003)).

beginning with the 2015 MY. All other vehicles, including SULEV30 vehicles that are certified using “carryover” of emission test data from a previous MY can certify to LEV II requirements. In MY 2020, all vehicles must be fully phased-in to LEV III requirements (i.e., E10 certification fuel, 150,000 mile full useful life, 50 °F emission standards). The LEV III standards are listed in the following table.

Exhaust Federal Test Procedure Emission Standards for New 2015 and Subsequent Model Year LEV III Passenger Cars and Light-Duty Trucks

LEV III Exhaust Mass Emission Standards for New 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles					
Vehicle Type	Durability Vehicle Basis (mi)	Vehicle Emission Category	NMOG + Oxides of Nitrogen (g/mi)	Carbon Monoxide (g/mi)	Formaldehyde (mg/mi)
All PCs; LDTs 8500 lbs. GVWR or less; and MDPVs Vehicles in this category are tested at their loaded vehicle weight	150,000	LEV160	0.160	3.4	4
		ULEV125	0.125	1.7	4
		ULEV70	0.070	1.7	4
		ULEV50	0.050	1.7	4
		SULEV30	0.030	1.0	4
		SULEV20	0.020	1.0	4

In addition, the fleet average NMOG plus NOx standards for passenger cars, light-duty trucks, and medium-duty passenger vehicles become incrementally more stringent each MY from 2015 through 2025 as shown in the following table.

Fleet Average NMOG Plus NOx Exhaust Emission Requirements for Light-Duty Vehicles (150,000 Mile Durability Basis)

Model Year	Fleet Average NMOG plus NOx (grams per mile)	
	All PCs; LDT1s	LDT2s; MDPV
2015	0.100	0.119
2016	0.093	0.110
2017	0.086	0.101
2018	0.079	0.092
2019	0.072	0.083
2020	0.065	0.074
2021	0.058	0.065
2022	0.051	0.056
2023	0.044	0.047
2024	0.037	0.038
2025	0.030	0.030

Since small volume manufacturers are more resource limited than large volume manufacturers, LEV III provides these smaller manufacturers with slightly less stringent emission standards and a delayed phase-in period. Specifically, beginning in 2022, small volume manufacturers must meet a fleet average requirement equal to LEV III ULEV125 and, beginning in 2025, a fleet average requirement equal to LEV III ULEV70.

In the case of medium-duty vehicles, a manufacturer would be required to certify 20 percent of its fleet to the LEV III ULEV250 or ULEV400 standards in the 2016 MY. For each subsequent MY, an increasing percentage of a manufacturer's medium-duty vehicle fleet must be certified to increasingly more stringent LEV III criteria pollutant exhaust emission standards. For the 2022 and subsequent MYs, all medium-duty vehicles must be certified to LEV III standards. The table below lists the emission standards for MDVs.

Medium-Duty Vehicles 8,500-14,000 lbs. GVWR Federal Test Procedure Exhaust Emission Standards (150,000 Mile Durability Basis)

<i>Vehicle Type</i>	<i>Durability Vehicle Basis (mi)</i>	<i>Vehicle Emission Category²</i>	<i>NMOG + Oxides of Nitrogen (g/mi)</i>	<i>Carbon Monoxide (g/mi)</i>	<i>Formaldehyde (mg/mi)</i>
MDVs 8501 - 10,000 lbs. GVWR Vehicles in this category are tested at their adjusted loaded vehicle weight	150,000	LEV395	0.395	6.4	6
		ULEV340	0.340	3.2	6
		ULEV250	0.250	2.6	6
		ULEV200	0.200	2.6	6
		SULEV170	0.170	1.5	6
		SULEV150	0.150	1.5	6
MDVs 10,001-14,000 lbs. GVWR Vehicles in this category are tested at their adjusted loaded vehicle weight	150,000	LEV630	0.630	7.3	6
		ULEV570	0.570	3.7	6
		ULEV400	0.400	3.0	6
		ULEV270	0.270	3.0	6
		SULEV230	0.230	1.7	6
		SULEV200	0.200	1.7	6

Particulate Matter Standards

Substantial lead time has been provided toward compliance for the LEV III particulate matter (PM) standards of 3 mg/mi and 1 mg/mi. Specifically, for the 2017-2021 MYs, a percentage of each manufacturer's passenger car, light-duty truck, and medium-duty passenger vehicle fleet must comply with the LEV III 3 mg/mi particulate matter standards. From 2025 through 2028 MYs, a percentage of each manufacturer's

passenger car, light-duty truck, and medium-duty passenger vehicle fleet must comply with the LEV III 1 mg/mi particulate matter standards. Recognizing that improvements to current engine technology are needed to meet the 1 mg/mi standard, a four year period of stability is provided before phase-in of the standard begins in 2025 in order to provide manufacturers time to deploy low PM engine technology across their fleet. The phase-in schedule for these standards is as follows.

LEV III Particulate Emission Standard Values and Phase-in for Passenger Cars, Light-Duty Trucks, and Medium-Duty Passenger Vehicles		
Model Year	% of vehicles certified to a 3 mg/mi standard	% of vehicles certified to a 1 mg/mi standard
2017	10	0
2018	20	0
2019	40	0
2020	70	0
2021	100	0
2022	100	0
2023	100	0
2024	100	0
2025	75	25
2026	50	50
2027	25	75
2028 and subsequent	0	100

For the 2017 and subsequent MYs, a percentage of each manufacturer's fleet of medium-duty vehicles, other than the medium-duty passenger fleet, must comply with the LEV III 8 mg/mi particulate matter standard (for medium-duty vehicles 8,501-10,000 lbs. GVWR) or 10 mg/mi particulate matter standard (for medium-duty vehicles 10,001-14,000 lbs. GVWR), as applicable. Manufacturers must phase in vehicles meeting the LEV III particulate matter standards between the 2017 and 2021 MYs at a rate of at least 10 percent in 2017, 20 percent in 2018, 40 percent in 2019, 70 percent in 2020, and 100 percent in 2021 and subsequent MYs.

Evaporative Emission Standards

Manufacturers must phase in vehicles meeting the LEV III evaporative emission standards between the 2015 and 2022 MYs. For the 2015-2017 MYs, a manufacturer would be required to certify the same percentage of vehicles to the zero-evaporative emission standards each year that it certified to these standards in the 2012-2014 MYs. Since LEV III allows for carry over and carry across of LEV II certification data for these vehicles, compliance to LEV III evaporative requirements is not expected to present a compliance problem for manufacturers. Since LEV III requires manufacturers to certify

a set percentage of their fleets to LEV III evaporative emissions standards at a rate of at least 60 percent in 2018 and 2019, 80 percent in 2020 and 2021, and 100 percent in 2022 and subsequent MYs, substantial lead time is provided before manufacturers will need to certify the majority of their vehicles to the new evaporative emission requirements.

(ii). Greenhouse Gas Emission Standards.

Throughout the development of the LEV III GHG regulations, California coordinated with the EPA and NHTSA on technical and economic areas, and CARB has moved in parallel with the federal rulemaking in terms of stringency of the standards and lead time for compliance. Given this coordination, EPA clearly cannot determine that the LEV III GHG regulations are technologically infeasible or that the lead time provided is inadequate. This is true now, even before CARB proposes to amend its LEV III GHG regulations to allow National Program⁸⁰ compliance to serve as compliance in California. It will be undeniably true should California adopt its “deemed to comply” rule as planned. (Resolution 12-11. p. 20.) However, the following discussion presents an overview of these issues. Additional information can be found in the LEV III Staff Report for this rulemaking.

(A). Technological Feasibility

In May of 2010, a Presidential Memorandum directed EPA and NHTSA to work jointly to develop continuing GHG standards for MYs 2017-2025. The Memorandum requested that EPA and NHTSA work closely with CARB on a technical assessment that would assess technologies and costs to achieve varying levels for GHG emission reduction through MY 2025. The result was a September 2010 *Interim Technical Assessment Report*⁸¹ (TAR), jointly authored by EPA, NHTSA, and CARB. The TAR relied on an extended series of meetings by the agencies with vehicle manufacturers, component suppliers, environmental organizations and the United Autoworkers Union. Subsequent to that collaborative technical work, CARB closely monitored the work of EPA and NHTSA, and the agencies continued to jointly hold meetings with stakeholders, examined updated technical materials, and developed consistent technology assumptions. In November 2011, EPA and NHTSA proposed 2017-2025 federal standards for light-duty GHG emissions and fuel economy, respectively⁸². The relevant GHG technologies that CARB and the federal agencies identified for reducing GHG emissions are briefly described below.

The LEV III greenhouse standards are predicated on many existing and emerging technologies that increase engine and transmission efficiency, reduce vehicle energy loads, improve auxiliary and accessory efficiency, and incorporate increasingly electrified vehicle subsystems with hybrid and electric drivetrains. A comprehensive list of these technologies and the GHG reductions they provide can be found in Table III-A-

⁸⁰ <http://www.epa.gov/oms/climate/regulations/ldv-ghg-tar.pdf>

⁸¹ *Id.*

⁸² 76 Fed.Reg. 74854 (December 1, 2011).

4-8 of the ISOR. The previous GHG rulemakings (i.e., California's 2009-2016 MY and federal 2012-2016 MY standards) established an original technical basis for the proposed greenhouse standards. The LEV III GHG regulations build on this existing technical foundation with new technical data and understanding of evolving state-of-the-art engine, transmission, hybrid, and electric-drive technologies.

Several technologies particularly stood out as providing significant emission reductions at favorable costs. These include dual cam phasing, turbocharging with engine downsizing, automated manual transmissions, and cam-less valve actuation. Potential improvements in the air-conditioning system include an improved variable displacement compressor with revised controls, reduced leakage systems, and the use of an alternative refrigerant (e.g. HFO- 1234yf). The table below lists the technologies examined and their GHG reduction potentials.

CO₂ reduction from individual technologies from 2008 reference

Area	Technology	Small car	Mid-size car	Small light-duty truck	Large light-duty truck
Engine technologies	Engine friction reduction	3.5%	4.5%	3.4%	4.2%
	Cylinder deactivation	-	6.1%	4.7%	5.7%
	Dual cam phasing (DCP)	4.1%	5.2%	4.1%	4.9%
	Discrete variable valve lift (DVVL)	4.1%	5.2%	4.0%	4.9%
	sGDI (18-bar, 33% downsize)	12.2%	14.2%	12.1%	13.6%
	sGDI+DCP+DVVL (18-bar, 33% TDS)	14.9%	17.5%	14.8%	16.8%
	cEGR sGDI+DCP+DVVL (27-bar, 56% TDS)	21.4%	24.3%	21.2%	23.5%
Transmission technologies	Compression-ignition DCP diesel	19.8%	21.3%	19.1%	21.3%
	Torque convertor lock-up	0.4%	0.5%	0.5%	0.5%
	Aggressive shift logic	2.0%	2.5%	1.9%	2.4%
	High efficiency gearbox	3.3%	3.9%	3.8%	4.3%
	Optimized shifting	5.2%	6.6%	5.1%	6.2%
	6-speed automatic	1.8%	2.2%	1.7%	2.1%
	8-speed automatic	6.5%	7.8%	6.8%	7.8%
	Wet dual clutch 8-speed	9.7%	11.5%	10.5%	11.9%
Vehicle load and accessory technologies	Dry dual clutch 8-speed	10.3%	12.2%	11.1%	12.6%
	Continuously variable	11.0%	6.3%	6.0%	-
	Low drag brakes	0.8%	0.8%	0.8%	0.8%
	Secondary axle disconnect	1.2%	1.4%	1.4%	1.6%
	Electric power steering	1.5%	1.3%	1.2%	0.8%
	Improved accessory efficiency	3.3%	3.0%	2.6%	3.5%
	Mass reduction (-10% curb mass)	5.1%	5.1%	5.1%	5.1%
	Mass reduction (-20% curb mass)	10.4%	10.4%	10.4%	10.4%
	Tire low rolling resistance (-10% C_{rr})	1.9%	1.9%	1.9%	1.9%
Hybrid system technologies	Tire low rolling resistance (-20% C_{rr})	3.9%	3.9%	3.9%	3.9%
	Aerodynamics (-10% C_dA)	2.3%	2.3%	2.3%	2.3%
	Aerodynamics (-20% C_dA)	4.7%	4.7%	4.7%	4.7%
	12V stop-start	6.1%	6.8%	5.6%	6.5%
Reference vehicle characteristics	High-voltage belt-alternator system	7.4%	7.6%	6.8%	8.0%
	Parallel hybrid (23-40 kW)	34.3%	34.6%	32.8%	31.9%
	Test weight (lb)	2625	3625	4000	6000
	Rated power (hp)	106	158	169	300
	Rated torque (ft-lb)	103	161	161	365

Notes: All potential CO₂ improvements are from 2008 US baseline technology based on the combined US test procedure (55% UDDS, 45% highway); sGDI= stoichiometric gasoline direct injection; DCP=dual cam phasing; DVVL=discrete variable valve lift; TDS = turbocharged downsize; cEGR= cooled exhaust gas recirculation; DCT = dual clutch transmission

The rulemaking demonstrates that packages containing these and other technologies can provide substantial emission reductions at prices that typically deliver net cost savings to vehicle consumers in most cases within one to three years.

Estimates of Total Annualized Incremental Costs of the Proposed Advanced Clean Cars Program for 2015 through 2030 (millions of 2009 Dollars)

Year	Annualized GHG Costs to PC Consumers	Annualized GHG Costs to LDT Consumers	Annualized Criteria Pollutant Costs to LDV Consumers	Annualized Criteria pollutant Costs to MDV Consumers	Total Annualized Compliance Costs	Cumulative Annualized Incremental Cost
2015	\$0	\$0	\$1	\$0	\$1	\$1
2016	\$0	\$0	\$2	\$0	\$2	\$4
2017	\$16	\$9	\$4	\$0	\$29	\$33
2018	\$48	\$15	\$5	\$0	\$67	\$100
2019	\$98	\$20	\$6	\$0	\$124	\$225
2020	\$134	\$25	\$8	\$0	\$166	\$392
2021	\$176	\$32	\$9	\$0	\$217	\$609
2022	\$213	\$36	\$10	\$0	\$259	\$868
2023	\$244	\$40	\$11	\$0	\$295	\$1,163
2024	\$276	\$44	\$12	\$0	\$331	\$1,495
2025	\$270	\$49	\$13	\$1	\$332	\$1,827
2026	\$264	\$49	\$13	\$0	\$325	\$2,153
2027	\$262	\$48	\$12	\$0	\$322	\$2,475
2028	\$260	\$48	\$12	\$0	\$320	\$2,796
2029	\$258	\$48	\$12	\$0	\$318	\$3,114
2030	\$256	\$47	\$12	\$0	\$316	\$3,430

Note: Sum of individual columns may not match totals due to rounding.

Nearly all technology combinations modeled provide reductions in lifetime operating costs that greatly exceed the retail price of the technologies (Staff Report pp. 194-196).

(B). Lead Time Considerations

As noted above, LEV III provides manufacturers an extended lead time to phase in their light-duty vehicles to the LEV III GHG emission requirements over the 2017-2025 MYs, and as noted repeatedly throughout the rulemaking documents, the LEV III GHG regulations rely less on traditional “technology-forcing” than on repackaging a combination of “off-the-shelf” technologies to meet the adopted standards. With few exceptions, lead time to develop these individual technologies is simply not an issue. The issue is whether they can be combined in time across manufacturer fleets to meet the standards. There is abundant evidence in the record showing that they can.⁸³ Also, during the rulemaking proceedings for the adoption of the 2012 LEV amendments, CARB did not receive any significant comments questioning the overall technological feasibility of the amended standards.

⁸³ <http://www.epa.gov/oms/climate/regulations/ldv-ghg-tar.pdf>

(C). Test Procedure Consistency

We are not aware of any instances in which a manufacturer is precluded from conducting one set of tests on a motor vehicle to determine compliance with both California and federal procedures for both criteria and GHG emissions. As part of the LEV II rulemaking formally adopted by Executive Order G-99-059 on August 5, 1999, CARB adopted federal Compliance Assurance Program (CAP) 2000 requirements virtually identical to those adopted by EPA (64 Fed.Reg. 23906, May 4, 1999), significantly reducing any test inconsistencies between the two agencies.

There, however, remain differences for exhaust and evaporative emission testing under California and federal programs. LEV III vehicles are required to certify to exhaust emission standards using a certification fuel containing 10 percent ethanol. In addition, for evaporative emission testing, EPA requires a more volatile gasoline test fuel with an ethanol content of zero (E0) and a lower test temperature profile, while LEV III requires a lower volatile gasoline test fuel with an ethanol content of 10 percent (E10) and a higher temperature test temperature profile. However, it is CARB's intention to evaluate whether manufacturers could conduct both exhaust and evaporative testing using federal test fuel and procedures when EPA finalizes its Tier 3 program.

To conclude the consistency discussion, then, neither of the two considerations EPA may consider in reviewing consistency with section 202(a) applies here. There is adequate lead time giving appropriate consideration to costs, and there are no inconsistent test procedures. Thus, there is no basis for the Administrator to deny California's waiver request for inconsistency with CAA section 202(a).

V. CONCLUSION

For the reasons set forth in this document, the Administrator should confirm CARB's determination that the 2012 ZEV and LEV amendments are respectively within the scope of the previous waivers of preemption or otherwise qualify for a waiver of preemption.

In support of the CARB's request, the following documents pertaining to the ACC Package are enclosed on compact disc:

1. Board Resolution 12-11, January 26, 2012.
2. Board Resolution 12-21, March 22, 2012.
3. Notice of Public Hearing to Consider Adoption of the 2012 California Zero Emission Vehicle Regulation, issued November 29, 2011.
4. Initial Statement of Reasons for Amendments to the California Zero Emission Vehicle Regulation, issued December 7, 2011, (and associated appendixes).

5. Notice of Availability of Modified Text for Amendments to the California Zero Emission Vehicle Regulation, issued February 22, 2012, (and associated attachments).
6. Notice of Public Hearing to Consider Adoption of the 2012 California Low Emission Vehicle Regulation, issued December 7, 2011.
7. Initial Statement of Reasons for Amendments to the California Low Emission Vehicle Regulation, issued December 7, 2011, (and associated appendixes).
8. Notice of Availability of Modified Text for Amendments to the California Low Emission Vehicle Regulation, issued February 22, 2012, (and associated enclosures).
9. Form 400 Notice of Filing Adopted Regulations with California's Office of Administrative Law June 25, 2012, for ZEV. Under California Government Code section 11349.3 the Office of Administrative law must take action on the adopted regulations– see Final Regulation Orders in Items 11, 12, 13, 14, and 15 below – no later than August 7, 2012.
10. Form 400 Notice of Filing Adopted Regulations with California's Office of Administrative Law June 25, 2012, for LEV. Under California Government Code section 11349.3 the Office of Administrative law must take action on the adopted regulations – see Final Regulation Order in Item 16 below – no later than August 7, 2012.
11. Final Regulation Order: Section 1962.1 Zero Emission Vehicle Standards for 2009 through 2017 Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicle.
12. Final Test Procedure: 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.
13. Final Regulation Order: Section 1962.2 Zero Emission Vehicle Standards for 2018 and subsequent Model Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.
14. Final Test Procedure: 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.
15. Final Regulation Order: Section 1962.3 California Vehicle Charging Requirements.

16. Final Regulation Order: California Low Emission Vehicle Standards.