State of California
AIR RESOURCES BOARD

STAFF REPORT: INITIAL STATEMENT OF REASONS FOR RULEMAKING

PROPOSED AMENDMENTS TO NEW PASSENGER MOTOR VEHICLE GREENHOUSE GAS EMISSION STANDARDS FOR MODEL YEARS 2017-2025 TO PERMIT COMPLIANCE BASED ON FEDERAL GREENHOUSE GAS EMISSION STANDARDS AND ADDITIONAL MINOR REVISIONS TO THE LEV III AND ZEV REGULATIONS

Date of Release: September 14, 2012
Scheduled for Consideration: November 15, 2012

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Staff Report: Initial Statement of Reasons for Proposed Rulemaking

PUBLIC HEARING TO CONSIDER THE PROPOSED AMENDMENTS TO NEW PASSENGER MOTOR VEHICLE GREENHOUSE GAS EMISSION STANDARDS FOR MODEL YEARS 2017-2025 TO PERMIT COMPLIANCE BASED ON FEDERAL GREENHOUSE GAS EMISSION STANDARDS AND ADDITIONAL MINOR REVISIONS TO THE LEV III AND ZEV REGULATIONS

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I. INTRODUCTION AND BACKGROUND

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 AB 1493 (Chapter 200, Statutes 2002, Pavley). AB 1493 directed the Air Resources Board (ARB or Board) to adopt the maximum feasible and cost-effective reductions in greenhouse gas emissions from light-duty vehicles. Vehicle greenhouse gas emissions included carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) that are emitted from the tailpipe, as well as emissions of HFC134a, the refrigerant currently used in most vehicle air conditioning systems.

In 2004, in response to AB 1493, ARB approved what are commonly referred to as the Pavley regulations, the first in the nation to require significant reductions of greenhouse gases from motor vehicles. These regulations, covering the 2009-2016 and later model years, call for a 17% overall reduction in climate change emissions from the light-duty fleet by 2020 and a 25% overall reduction by 2030. They also formed the foundation for the national greenhouse gas program for light-duty vehicles for 2012-2016 model years that was developed by the U.S. Environmental Protection Agency (USEPA), in coordination with the National Highway Traffic Safety Administration (NHTSA), which administers Corporate Average Fuel Economy (CAFE) Standards.

This initial national greenhouse gas program extended California's promotion of lower greenhouse gas technologies (e.g., for engines, transmission, and air-conditioning technologies) nationwide to achieve comparable 2016 new vehicle fleet greenhouse gas emission reductions nationally. The national 2012 through 2016 model year greenhouse gas program was also the subject of commitment letters from the State of California and major automakers. As a result, ARB modified its regulations to explicitly accept federal compliance with the USEPA standards as sufficient to demonstrate compliance with California's standards for the 2012-2016 model years.

Subsequent to ARB's adoption of 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 ARB with the responsibility of monitoring and regulating greenhouse gas emissions in the State. AB 32 also directed ARB to prepare a Scoping Plan outlining the State's strategy to achieve the maximum feasible and cost-effective reductions in furtherance of reducing greenhouse gas emissions to 1990 levels by 2020. Measure T1 of the Scoping Plan anticipates an additional 3.8 million metric tons carbon dioxide equivalent ($MMTCO_2e$) reduction by 2020 beyond the reductions from the 2009-2016 Pavley standards, with greater reductions in subsequent years. 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 greenhouse gas 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. AB 32 and Executive Order S-3-05, combined with

AB 1493, drove development of California's second generation passenger vehicle greenhouse gas regulations for model years 2017 and beyond.

In May of 2010, a Presidential Memorandum[1] directed USEPA and NHTSA to work jointly to develop continuing national greenhouse gas standards for model years 2017 through 2025. The Memorandum requested that USEPA and NHTSA work closely with ARB on a 2010 technical assessment that would assess technologies and costs to achieve varying levels for greenhouse gas emission reduction through model year 2025. The result was a September 2010 *Interim Technical Assessment Report,* jointly authored by USEPA, NHTSA, and ARB. Subsequent to that collaborative technical work ARB staff closely monitored the work of USEPA and NHTSA, and the staffs continued to jointly hold meetings with various stakeholders (e.g., individual automakers), examine updated technical materials, and develop consistent technology assumptions.

In July 2011, automakers, California, and the federal government committed to a series of actions that would allow for the development of national greenhouse gas standards for model years 2017-2025 that would meet the needs of California as well as the nation as a whole. The Notice of Proposed Rulemaking (NPRM) for the 2017-2025 model year national greenhouse gas program was issued on December 1, 2011. 76 Fed.Reg. 74854 (December 1, 2011). California's commitments (as conveyed by a letter[2] from Chairman Mary Nichols to USEPA and the U.S. Department of Transportation) are:

(1) California committed that if USEPA proposed federal greenhouse gas standards and NHTSA proposed CAFE standards for model years 2017 and beyond substantially as described in the July 2011 Notice of Intent (published in the Federal Register on August 9, 2011), and the agencies adopted standards substantially as proposed, California would not contest such standards;

(2) California committed to propose to revise its standards on greenhouse gas emissions from new motor vehicles for the 2017 through 2025 model years, such that compliance with the greenhouse gas emissions standards adopted by USEPA for those model years that are substantially as described in the July 2011 Notice of Intent, even if amended after 2012, shall be deemed compliance with the California greenhouse gas emissions standards, in a manner that is applicable to states that adopt and enforce California's greenhouse gas standards under Clean Air Act (CAA) Section 177; and

[1] The Presidential Memorandum is found at: http://www.whitehouse.gov/the-press-office/presidential-memorandum-regarding-fuel-efficiency-standards

[2] California Air Resources Board, Letter from Mary D. Nichols, Chairman, to The Honorable Lisa Jackson, Administrator, United States Environmental Protection Agency and The Honorable Ray LaHood, Secretary, United States Department of Transportation, July 28, 2011, available at http://www.epa.gov/otaq/climate/letters/carb-commitment-ltr.pdf

(3) California committed to propose that its revised Zero-Emission Vehicle (ZEV) program for the 2018 through 2021 model years include a provision providing that over-compliance with the federal greenhouse gas standards in the prior model year may be used to reduce in part a manufacturer's ZEV obligation in the next model year.

USEPA and the U.S. Department of Transportation also committed to re-evaluate the state of vehicle technology no later than April 1, 2018, to determine whether any adjustments to the stringency of the 2022 through 2025 model year national greenhouse gas standards, adopted as a result of these commitments are appropriate. This re-evaluation of vehicle technology is referred to federally as a "Mid-term Evaluation" and in prior Board documents as the "Mid-term Review. Regarding the evaluation, Chairman Nichols' commitment letter stated "California will fully participate in the mid-term evaluation, however, California reserves all rights to contest final actions taken or not taken by EPA or NHTSA as part of or in response to the mid-term evaluation." The Board confirmed California's commitment to participating in the Mid-term Evaluation by including the following language in Resolution 12-11[3], "BE IT FURTHER RESOLVED that the Board directs the Executive Officer to participate in U.S. EPA's mid-term review of the 2022 through 2025 model year passenger vehicle greenhouse gas standards being proposed under the 2017 through 2025 MY National Program;" In addition to California's commitments, EPA has stated its understanding that "The rules submitted to EPA for a waiver under the CAA will include such a mid-term evaluation" and "that California's 2017–2025 standards to be submitted to EPA for a waiver under the Clean Air Act will deem compliance with EPA greenhouse gas emission standards, even if amended after 2012, as compliant with California's." (76 Fed.Reg. at 74987).

In January 2012, the ARB adopted its second generation greenhouse gas regulations as part of the Low-Emission Vehicle III (LEV III) element of the Advanced Clean Cars program. This program combines the control of smog-causing pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2017 through 2025 and assures the development of environmentally superior cars that will continue to deliver the performance**,** utility, and safety vehicle owners have come to expect. A second element of the Advanced Clean Cars program, the ZEV regulations, includes regulatory changes that implement California's third (3) commitment above. (Another element of the Advanced Clean Cars program, the Clean Fuels Outlet regulations, designed to assure ultra-clean fuels such as hydrogen are available to meet vehicle demands brought on by these amendments to the ZEV program, is mentioned here for completeness. However, there are no proposed amendments to the Clean Fuels Outlet regulations at this time and none are needed to meet the above-described commitments.)

[3] State of California, Air Resources Board, Resolution 12-11, January 26, 2012, Agenda Item No.: 12-1-2, ADVANCED CLEAN CARS REGULATION PACKAGE, **http://www.arb.ca.gov/regact/2012/cfo2012/res12-11.pdf**

The second generation greenhouse gas regulations contained in the Advanced Clean Cars program require significant reductions in greenhouse gas emissions from passenger cars and light-duty trucks (i.e., vehicles less than 8,500 lbs. gross vehicle weight) and sport utility vehicles (i.e., medium-duty passenger vehicles). These requirements will reduce car CO_2 emissions by about 36% and truck CO_2 emissions by about 32% from model year 2016 through 2025. The ZEV element of the Advanced Clean Cars program also fulfills California's third commitment towards the development of the 2017 through 2025 model year national greenhouse gas program, as discussed above.

At the January 2012 hearing, the Board also confirmed California's commitment to make regulatory changes that implement California's first (1) commitment above by including the following language in Resolution 12-11, "BE IT FURTHER RESOLVED that the Board directs the Executive Officer to either propose modifications to the approved regulatory amendments, or to return to the Board with a new regulatory proposal, to accept compliance with the 2017 through 2025 MY National Program as compliance with California's greenhouse gas emission standards in the 2017 through 2025 model years, if the Executive Officer determines that U.S. EPA has adopted a final rule that at a minimum preserves the greenhouse reduction benefits set forth in U.S. EPA's December 1, 2011 Notice of Proposed Rulemaking for 2017 through 2025 model year passenger vehicles;" The Board re-iterated this commitment at the March 2012 "Public Hearing to Consider Approval of Responses to Public Comments on the Environmental Analysis for the Advanced Clean Cars Regulations and to Take Final Action on These Regulations" by including the following language in Resolution 12-21[4], "WHEREAS, in consideration of the proposed Final Regulation Orders, written comments, and public testimony it has received to date, the Board finds that: It is appropriate to accept compliance with the 2017 through 2025 model year National Program as compliance with California's greenhouse gas emission standards in the 2017 through 2025 model years, once United States Environmental Protection Agency (U.S. EPA) issues their Final Rule on or after its current July 2012 planned release, provided that the greenhouse gas reductions set forth in U.S. EPA's December 1, 2011 Notice of Proposed Rulemaking for 2017 through 2025 model year passenger vehicles are maintained, except that California shall maintain its own reporting requirements."

II. DESCRIPTION OF PUBLIC PROBLEM, ADMINISTRATIVE CIRCUMSTANCE PROPOSAL IS INTENDED TO ADDRESS; PROPOSED SOLUTIONS TO THE PUBLIC PROBLEM AND RATIONALE SUPPORTING THE PROPOSED SOLUTIONS

California committed to accept national program compliance for model years 2017 through 2025 with the understanding that it would provide equivalent or better overall greenhouse gas reductions nationwide than California's program. Consistent with

[4] State of California, Air Resources Board, Resolution 12-21, March 22, 2012, Agenda Item No.: 12-2-7, ADVANCED CLEAN CARS REGULATION PACKAGE, http://www.arb.ca.gov/regact/2012/leviiighg2012/res12-21.pdf

this understanding, ARB has continued to work with USEPA to ensure that the final federal rule and California's regulations are harmonized to the extent that they meet both agencies' air quality and greenhouse gas reduction needs.

On August 28, 2012, USEPA and NHTSA issued their final 2017 through 2025 model year federal greenhouse gas standards (FRM)[5]. This triggered the ARB's need to review the final federal program and compare it to that originally proposed. Staff have done so, and as discussed in Section III, staff have determined that the final rulemaking adopts greenhouse gas standards substantially as proposed in the NPRM. Hence, staff recommends that the Board fulfill its first commitment, discussed above, by not contesting the federal standards. The current proposed amendments to California's passenger motor vehicle regulations, which are discussed in greater detail below, fulfill the second commitment made by California and the direction of the Board.

III. SUMMARY OF RECOMMENDED BOARD ACTION

In this rulemaking, staff is proposing to accept manufacturer-demonstrated compliance with the final national passenger motor vehicle greenhouse gas regulations for the 2017 through 2025 model years, as an alternative option to achieve compliance with California's regulations.

This proposal also makes minor changes to ARB's regulations. In general these proposed changes correct errors, and update procedures to reflect information received since adoption of the regulations in January, 2012. Staff is not proposing to amend the California regulations to be identical to the final National Program. For example ARB's regulation would continue to treat upstream emissions differently than the final National Program. Other areas in which the California rule and the final federal greenhouse rule do not align are discussed below. In practice, most if not all manufacturers are expected to use compliance with the national rule to satisfy California requirements. However a manufacturer may choose to comply with the ARB requirements, and the ARB regulation would remain in place in the event the National Program ceases.

It should be noted that adoption of this proposal would not eliminate the reporting requirements for California that have already been adopted by the Board prior to this hearing. Specifically, a manufacturer will still be required to submit emission testing data and sales data for California and each of the Section 177 states in sufficient detail to allow staff to verify the manufacturer's average greenhouse gas levels for each model year. In addition, staff is also proposing minor revisions to the LEV III criteria pollutant regulations and the ZEV regulations to correct errors and to clarify the regulations.

[5] "2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards" final rule, adopted August 28, 2012, available at http://epa.gov/otaq/climate/documents/2017-2025-ghg-cafe-standards-frm.pdf

It should also be noted that the final 2017 through 2025 model year national greenhouse gas rule also contains a few minor modifications to the 2012 through 2016 model year national greenhouse gas program. Staff has also examined these changes, as summarized below, and determined that, since they have little or no impact on the stringency of the federal rule, it is appropriate for California to continue to accept compliance with the national greenhouse gas regulations as compliance with California's regulations for these earlier model years.

Areas Where California's 2017 through 2025 Model Year Greenhouse Gas Regulations Differ from the 2017 through 2025 Model Year National Greenhouse Gas Regulations

1. Treatment of Advanced Technology Vehicles: Since California requires the production of zero emission vehicles (e.g. plug-in hybrid electric vehicles, battery electric vehicles, and fuel cell vehicles), LEV III provides a performance based, technology neutral approach for these ultra-low greenhouse gas technologies by assigning upstream emissions to these technologies when demonstrating compliance to the greenhouse gas requirements. However, the federal program, which does not require the production of these zero emission technologies, provides a temporary incentive for their production by assigning an upstream emission factor of zero. Specifically, for the 2017 through 2022 model years, an upstream emission factor of zero applies to all qualifying vehicles. For the 2022 through 2025 model years, the use of zero grams per mile CO_2 is limited to the first 600,000 combined plug-in hybrid electric vehicles, battery electric vehicles and fuel cell vehicles for a manufacturer that sold 300,000 or more plug-in hybrid electric vehicles, battery electric vehicles and fuel cell vehicles combined in the 2019 through 2021 model years, and 200,000 for all other manufacturers. Net upstream emissions would be accounted for vehicles exceeding these caps.

   In addition to the zero upstream emission provision, the federal program provides an additional incentive to advanced technology vehicles such as plug-in hybrid electric vehicles, battery electric vehicles, and fuel cell vehicles, dedicated natural gas and dual fuel natural gas vehicles in the form of a vehicle multiplier (i.e., each vehicle would count as more than one vehicle when determining compliance with the greenhouse gas requirements). These vehicle multipliers apply to model years 2017 through 2022 with higher values assigned to plug-in hybrid electric vehicles, battery electric vehicles and fuel cell vehicles and lower values assigned to natural gas vehicles. These vehicle multipliers decrease over time.

   The impact of these additional provisions in the national program for advanced technology vehicles results in a slight decrease in accumulated CO_2 reductions in California in 2025. In the Initial Statement of Reasons[6] for LEV III (page 162), staff estimated that including the NPRM provisions in the California program would result in a 4.5% loss of accumulated CO_2 emission reductions in 2025. As

[6] The Initial Statement of Reasons can be found at http://www.arb.ca.gov/regact/2012/leviiighg2012/levisor.pdf

discussed in Section IV, the loss from applying a zero upstream factor federally will be more than offset by reductions from the substantially greater number of vehicles covered by the National Program compared to the California program.

2. Indirect Air Conditioning Credits: Manufacturers may receive credits for improving the efficiency of vehicle air conditioning (A/C) systems. The amount of credit available for different efficiency technologies is listed in a credit menu and manufacturers may claim up to a 5.0 grams carbon dioxide-equivalent per mile (gCO_2e/mile) for cars and 7.2 gCO_2e/mile for trucks. The LEV III rule, as approved January 26, 2012, contains the same credit structure as the final rule for the 2017 through 2025 model year national greenhouse gas program. However, based on further testing and comments from manufacturers on the NPRM, USEPA made minor modifications to the process by which manufacturers qualify for indirect A/C credits. The primary change made by USEPA was to allow manufacturers to test only those vehicles for which they are seeking indirect A/C credits, with no requirement to compare those vehicles with improved A/C systems to baseline vehicles through model year 2019. Beginning in 2020, manufacturers will be required to demonstrate that the benefits of the improved A/C system are equivalent to the amount of credits generated from the indirect credit menu. From 2020 through 2025, the federal program as finalized in 40 CFR §86.1868-12 is substantially similar to the LEV III indirect credit program (title 13, CCR, §1961.3 (a)(7)(E)) in place from 2017 through 2025. Thus, the primary differences between the ARB and USEPA programs are largely limited to the first three years of the program, with the ARB program requiring a slightly higher bar for credit qualification during that period. The total number of indirect A/C credits available to manufacturers through each program remains equivalent.

3. Off Cycle Credits: Similar to the A/C provisions, off-cycle credits can be used by manufacturers to offset some tailpipe emissions and thus provide additional flexibility for achieving compliance with the CO_2 standards. In their final rulemaking for the 2017-2025 model year national greenhouse gas program, USEPA refined the off-cycle credit program based on additional testing and simulations. These refinements did not change the overall structure of the off-cycle credit program nor the total number of credits available, but did change how the credits are calculated for several technologies and the amount of credits available for a small number of individual technologies. Despite the fact that some individual technology credit amounts differ between the final USEPA rule and the LEV III program approved January 26, 2012, the two off-cycle credit programs are largely identical given that the structure of the two programs has not changed (see 40 CFR §86.1869-12 (a) and the introduction to title 13, CCR §1961.3 (a)(8)) and manufacturers may only claim a maximum of 10 gCO_2e/mile off-cycle credits regardless of which accounting mechanism is used (as per 40 CFR §86.1869-12 (b)(2) and title 13, CCR §1961.3 (a)(8)(A)(2). As such, the final federal program is sufficiently similar to the LEV III program.

4. Full-Size Truck Credits: The full-size truck provisions provide special emission-reduction credit for the use of mild and strong hybrid technology in order to incentivize the widespread adoption of these technologies. Because full-size pick-up truck hybrid technologies are still in their infancy, in their final rulemaking for the 2017 through 2025 model year national greenhouse gas program USEPA slightly loosened the qualification requirements for hybrid truck credits, primarily by decreasing the minimum percentage penetration requirements for mild hybrids by 10 percent for each of the first two years of their program, model years 2017 and 2018. Because full-size hybrid truck technologies are not in widespread use and the loosening of the penetration requirements applies for only the first two years of the federal program, the final federal full-size truck provisions can be considered sufficiently equivalent to those in LEV III, as approved January 26, 2012.

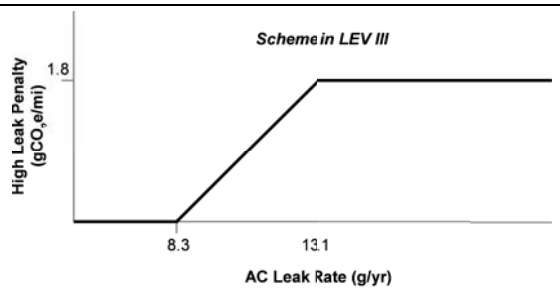
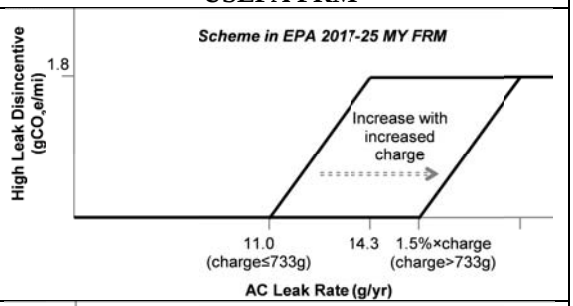
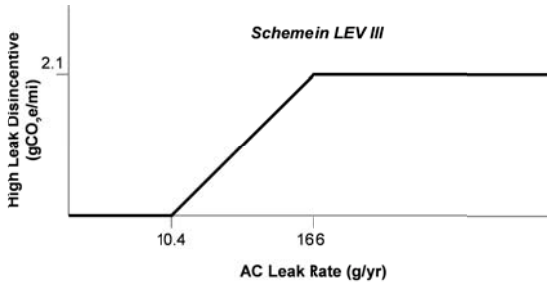
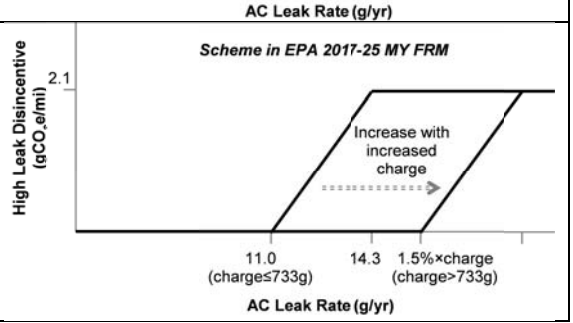
5. Motor Vehicle High Leak Disincentive: Both the ARB and the USEPA programs include credits and disincentives that encourage manufacturers to employ A/C systems having low refrigerant leak rates. In both programs, the high leak disincentive for A/C systems employing a refrigerant having a 100-year global warming potential ≤ 150 is calculated as follows:

$$HiLeakDis = MaxDis \times \left(\frac{LeakRate - LeakThresh\,old}{DfltLeakRa\,te - LeakThresh\,old} \right)$$

However, the ARB program and USEPA program use different values for *LeakThreshold* and *DfltLeakRate* as shown in the Table below.

		ARB	**USEPA**
Passenger Cars	*LeakThreshold (g/yr)*	8.3	11.0 if charge≤733g; 1.5%×charge otherwise
	DfltLeakRate (g/yr)	13.1	*LeakThreshold* + 3.3
Light-Duty Trucks	*LeakThreshold (g/yr)*	10.4	11.0 if charge≤733g; 1.5%×charge otherwise
	DfltLeakRate (g/yr)	16.6	*LeakThreshold* + 3.3

The effect of those differences is that under the ARB program, A/C systems must have lower leak rates than required under the USEPA program in order to avoid the high leak disincentive or to minimize it to a given level. The differences are illustrated in the Figures below.

	LEV III	USEPA FRM
Passenger Cars		
Light-Duty Trucks		

ARB's program is more stringent. Compared to USEPA's program, the ARB program

- Provides stronger driving force for industry to move toward best low leak technologies
- Generates additional greenhouse gas emission reductions between 0.2 and 0.8 gCO_2e/mi (based on preliminary estimates)
- Does not interfere with industry's continuous trend in reducing refrigerant charge size
- Reduces the lifetime cost of low Global Warming Potential A/C systems

Nevertheless, ARB believes that inclusion of high leak disincentives provided by the USEPA program offers substantial benefits compared to having no high leak disincentive. For this reason, staff believes the lesser stringency of the federal requirement compared to California's requirement does not negate the substantial benefits and advantages of having a single unified program.

Changes to the 2012 through 2016 Model Year National Greenhouse Gas Regulations Included in the 2017 through 2025 Model Year National Greenhouse Gas Regulations Rulemaking

1. Small Business Provision: Automobile manufacturers that qualify as a small business under the Small Business Administration regulations in 13 CFR part 121 (i.e., those with fewer than 1,000 employees) are exempt from the 2012 through 2016 model year national greenhouse gas program. However, the national program originally allowed these manufacturers to optionally comply with these regulations and earn credits for their compliance beginning with the 2014 model year. USEPA's final rule for the 2017 through 2025 model year national

greenhouse gas program changes this provision to allow these manufacturers to optionally comply with the 2012 through 2016 model year national greenhouse gas program beginning with the 2013 model year. Staff is aware of only a few small manufacturers that are affected by this regulatory change. Therefore, the effect of this change is negligible.

2. Test Procedure for Calculating Air Conditioner Refrigerant Leakage: The 2012 through 2016 model year national greenhouse gas program originally required a manufacturer to calculate the annual rate of refrigerant leakage from an air conditioning system according to the provisions of §86.166-12 of the Code of Federal Regulations (CFR) (40 CFR §86.166-12). This reference to the CFR has been changed to require Society of Automobile Engineers (SAE) test procedure J2727 to be used instead of 40 CFR §86.166-12. §86.166-12 was adapted from SAE J2727, but may not reflect all the latest improvement to the SAE procedure. By requiring the use of SAE J2727 instead of §86.166-12, the USEPA program uses the best available engineering method for evaluating the annual rate of refrigerant leakage. This change does not affect the stringency of this provision.

3. Indirect Air Conditioning Credits: In its final 2017 through 2025 model year national greenhouse gas program, USEPA also provided additional flexibility to manufacturers attempting to qualify for indirect A/C credits for model years 2014 through 2016. These additional flexibilities allow manufacturers to utilize either a modified AC Idle test (40 CFR §86.1868-12 (e)(3)) or the "AC17 Air Conditioning Efficiency Test Procedure" (40 CFR §86.167-17) in lieu of the unmodified AC Idle test (40 CFR §86.165-12) in order to qualify for indirect A/C credits as listed on the credit menu. The credit menu specified in 40 CFR §86.1868-12 (a)(1) has not been altered for these model years. Because this change to the 2012 through 2016 model year national greenhouse gas program does not change the amount of credits allowed to manufacturers and only provides additional flexibilities for credit qualification, this change is not considered a substantial modification to the 2012 through 2016 model year national greenhouse gas program. As such, this modification should not affect the current provision (title 13, CCR §1961.1(a)(1)(A)(ii)) that allows manufacturers to demonstrate compliance with California's 2012 through 2016 model year greenhouse gas program by demonstrating compliance with the national greenhouse gas program.

Differences Between the Final 2017 through 2025 Model Year National Greenhouse Gas Regulations and the Proposed Rule that have a Minor Impact or No Impact on the Stringency of the Rule

1. Manufacturers that use the Temporary Lead-Time Allowance Alternative Standards (TLAAS) in the 2016 model year may use additional lead-time provisions. Manufacturers using additional lead-time may not trade credits generated in a model year where the alternative phase-in is used.

2. Measurement of N_2O will not be required prior to the 2017 model year, except that manufacturers can continue to use a compliance statement instead of measuring N_2O emissions for carry-over test groups until the 2019 model year.
3. Manufacturer in-use compliance testing will not be required for N_2O for test groups that are certified using a compliance statement.
4. Manufacturers may apply for operational independence designation. Those granted an operational independence designation may use the small volume manufacturer exemption prior to the 2017 model year, and apply for alternative CO_2 standards under the small volume manufacturer provisions (if they meet the other small volume manufacturer eligibility criteria).
5. Dedicated and dual fuel natural gas vehicles are eligible for the same advanced technology multiplier as plug-in hybrid electric vehicles.
6. The number of vehicles that must be test for the "AC17 Air Conditioning Efficiency Test Procedure" has been reduced.
7. The off-cycle pre-defined technology list and credit values have been revised.
8. The requirement that at least 10 percent of a manufacturer's use an off-cycle greenhouse gas technology before the manufacturer can earn credits for that technology has been removed.
9. The testing requirement for demonstrating off-cycle emission reductions has been reduced for those technologies that demonstrate a CO_2 reduction of 3 percent or greater over the initial set of 5-cycle tests.
10. Manufacturers may now submit an engineering analysis demonstrating that one of the 5-cycle procedures has no effect on emissions instead of running the test procedure.
11. Crash avoidance, safety critical technologies, or systems affecting the safety-critical functions and technologies required by title 49 of the CFR are not eligible for off-cycle credits.
12. Full-size pickup trucks that implement hybrid electric vehicle technology may earn CO_2 credits, if a manufacturer produces a minimum percentage of its full-size pickup fleet that uses the technology. For mild hybrid electric vehicles, the minimum percentages of vehicles that must use the technology to be eligible for the credit in the 2017 and 2018 model years have been reduced from 30 percent to 20 percent, and from 40 percent to 30 percent, respectively.
13. Emergency vehicles, which were originally only exempt from meeting the CO_2 requirements, are now also exempt from meeting the N_2O and CH_4 standards.
14. Language has been added that states that where two TLAAS eligible companies merge, but one of the companies foregoes eligibility entirely, the company already using TLASS at the time of the merger must stop using TLAAS in the model year following the merger.

IV. AIR QUALITY

The national greenhouse gas program for the 2017 through 2025 model years is marginally less stringent than California's program due to differences between the two programs in their treatment of advanced technology vehicles and the application and calculation of credits for improved air conditioning systems, off-cycle technologies and hybridization of full-size trucks. Staff has determined that the

differences in the federal credit scheme for select technologies are largely limited to the early years of the program and will have a minimal impact on greenhouse gas emission reductions from the light-duty fleet. The combined impact of these federal provisions results in a slight decrease in accumulated CO_2 reductions in California in 2025. On page 162 of the Initial Statement of Reasons[7] for LEV III (LEV III ISOR), staff estimated that the impact of these provisions would result in a 4.5% loss of accumulated CO_2 emission reductions in 2025.

Nonetheless, while implementation of a compliance option that allows manufacturers to certify to the 2017 through 2025 model year national greenhouse gas program instead of the California program would result in a slight decrease in accumulated CO_2 reductions in California, greater CO_2 reductions would be achieved nationwide, as was the case when California adopted the federal program option for the 2012 through 2016 model years. For 2017 and later model years, staff estimated that in 2050, the California program would reduce greenhouse gas emissions from light-duty vehicles by 43 million metric tons (MMT) (LEV III ISOR page 176). USEPA has estimated greenhouse gas reductions of 569 MMTs from the national program in 2050.[8] This occurs because the national program applies to a national fleet that is approximately ten times larger than the California fleet.

Additionally, as noted in Appendix J, staff is proposing to correct an error in the carbon monoxide (CO) standards for medium-duty vehicles that were adopted as part of the original LEV III rulemaking. The CO standards that are currently in place were inadvertently copied from an earlier proposal and are not consistent with those presented in the LEV III ISOR.

V. ENVIRONMENTAL IMPACTS ANALYSIS [CEQA Analysis]

A. Introduction

This chapter provides an environmental analysis (EA) for the proposed regulatory amendments to the Advanced Clean Cars Program's suite of regulations. Appendix J of this Staff Report provides a detailed description of the proposed amendments to the LEV III Greenhouse Gas and Criteria Pollutant and the ZEV regulations. Based on ARB's review, staff has determined that implementation of the proposed amendments would not result in a significant or potentially significant adverse impact on the environment. This analysis provides the basis for reaching this conclusion.

[7] The Initial Statement of Reasons can be found at http://www.arb.ca.gov/regact/2012/leviiighg2012/levisor.pdf
[8] "2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards" final rule, adopted August 28, 2012, available at http://epa.gov/otaq/climate/documents/2017-2025-ghg-cafe-standards-frm.pdf

B. Environmental Review Process

ARB is the lead agency for the proposed regulatory amendments, and has prepared this EA pursuant to its regulatory program certified by the Secretary of the Natural Resources Agency (14 CCR 15251(d); 17 CCR 60005-60007). In accordance with Public Resources Code section 21080.5 of the California Environmental Quality Act (CEQA), public agencies with certified regulatory programs are exempt from the requirements for preparing environmental impact reports, negative declarations, and initial studies (14 CCR 15250). As required by ARB's certified regulatory program and the policy and substantive requirements of CEQA, ARB has prepared an assessment of the potential for significant adverse and beneficial environmental impacts associated with the proposed regulation and a succinct analysis of those impacts (17 CCR 60005(b)). This EA is included as part of the Staff Report prepared for the rulemaking (17 CCR 60005). The resource areas identified in the CEQA Guidelines Environmental Checklist were used as a framework for assessing the potential for significant impacts (17 CCR 60005(b)).

If comments received during the public review period raise significant environmental issues, staff will summarize and respond to the comments in writing. The written responses will be included in the Final Statement of Reasons for the regulation. Before taking final action on any proposed action for which significant environmental issues have been raised, the decision maker shall approve the written responses to these issues (17 CCR 60007(a)). If the regulatory amendments are adopted, a Notice of Decision will be posted on ARB's website and filed with the Secretary of the Natural Resources Agency for public inspection (17 CCR 60007(b)).

C. Prior Environmental Analysis

The Board approved the EA prepared for the Advanced Clean Cars Program and Responses to Environmental Comments on March 22, 2012. The EA for the Advanced Clean Cars Program analyzed potential impacts related to amendments to existing regulations for LEV III, ZEV and Clean Fuels Outlet. It combined the three regulations to control smog-forming, particulate matter, toxic air contaminants (TACs), and greenhouse gas emissions in a single coordinated package of requirements for model years 2015 through 2025. The ZEV regulatory amendments require manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018 through 2025 model years. The LEV III and ZEV regulations became effective on August 7, 2012. The Clean Fuels Outlet regulation is not yet effective.

The EA concluded that the regulated communities' compliance with the LEV III and the ZEV regulations would result in beneficial impacts to air quality through reductions in emissions, including greenhouse gases, criteria pollutants, and TACs, in addition to beneficial impacts to energy demand. It

further concluded that the regulations would result in less-than-significant impacts or no impacts to aesthetics, agricultural and forest resources, hazards, land use, noise, employment, population and housing, public services, recreation, transportation and traffic, and utilities /service systems.

The Advanced Clean Cars Program EA concluded that the Clean Fuels Outlet regulation could result in potentially significant adverse impacts to biological resources, cultural resources, geology/soils and minerals, and hydrology/water quality largely due to construction activities for facility-specific projects. Since the Clean Fuels Outlet regulation is not yet effective and is not part of the proposed rulemaking, no further discussion on the Clean Fuels Outlet regulation will be provided in this EA.

D. Proposed Regulation

1. Description

Appendix J of this Staff Report describes the proposed amendments to the LEV III and ZEV regulations in detail. Briefly, the proposed LEV III and ZEV regulatory amendments consist of the following:

<u>LEV III Amendments</u>

- Administrative and clarifying changes to the greenhouse gas and criteria pollutant provisions;
- Flexibility to allow demonstrated compliance with federal greenhouse gas program as meeting California's requirements;
- Changes to test procedures for criteria pollutant and greenhouse gas exhaust emissions, and fuel evaporative emissions; and
- Changes to the method for estimating initial refrigerant leak from new motor vehicle A/C systems.

<u>ZEV Amendments</u>

- Administrative modifications and corrections that provide clarity and updates references made to the greenhouse gas fleet standards.

2. Methods of Compliance

The compliance responses would remain the same as those described in Chapter 4 of the "Draft Environmental Analysis for the Advanced Clean Cars Program"[9]. In summary, the EA indicates that in order to comply with the LEV III regulation, manufacturers would be expected to comply with the fleet average standards that affect the mix of vehicle models and types sold and leased in California. They would also be

[9] The " Draft Environmental Analysis for the Advanced Clean Cars Program" is found at: http://www.arb.ca.gov/regact/2012/leviiighg2012/levappb.pdf

expected to implement technological improvements that would reduce greenhouse gas emissions. These include improved engine and emission control systems, more efficient transmissions and A/C systems, installation of lighter materials and low-rolling resistance tires. They would also comply with California evaporative emission test requirements, and install the Environmental Performance Label. Additionally, the EA also indicates that compliance by manufacturers with the ZEV regulation would increase the number of ZEVs and TZEVs sold and leased in California, and address battery manufacture, charging and infrastructure needs.

For this proposed rulemaking, manufacturers would be subject to administrative, testing and procedural changes that would further align California's program with the federal program, and be consistent with best engineering practices. The proposed amendments would not cause or require the regulated community to construct structures or disturb the existing physical environment.

E. Environmental Impacts

Based on ARB's review of the proposed regulatory amendments, staff concludes that the proposed regulatory amendments would not result in any new compliance responses by the regulated community that would result in new significant or potentially significant adverse impacts on the environment. Compliance with the proposed amendments would not result in any physical change to the existing environment. The amendments consist of administrative and procedural changes that do not involve or result in any new development, modifications to buildings, or new land use designations.

Further, compliance with the proposed amendments would not involve any activity that would involve or adversely affect aesthetics, air quality, agricultural and forestry resources, biological resources, cultural resources, geology and soils, greenhouse gases, hazardous material, hydrology and water quality, land use planning, mineral resources, noise, population and housing, public services, recreation, or traffic and transportation because they would not require any activity that could affect these resource areas.

As described in Section V.C, above, the EA prepared for the Advanced Clean Cars Program indicated that there are beneficial impacts to air quality due to this program through reductions in emissions, including greenhouse gases, criteria pollutants, and TACs, in addition to beneficial impacts to energy demand. The degree of benefits that may occur as a result of the proposed amendments is somewhat uncertain, although ARB expects that the increase in numbers of cleaner cars in California - and nationwide, would result in an overall decrease in greenhouse gas emissions.

No discussion of alternatives or mitigation measures is necessary because no significant or potentially significant adverse environmental impacts are identified.

VI. ENVIRONMENTAL JUSTICE

"Environmental Justice" is defined as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (Government Code §65040.12(c).

Staff does not believe that this proposal will have any adverse environmental justice impacts because the stringency of California's passenger vehicle greenhouse gas requirements is not affected by the proposed changes to the regulations. Furthermore, since the proposed changes to the criteria pollutant regulations and zero-emission vehicle regulations do not change the stringency of the emission standards, but rather are limited to the correction of errors and providing clarification to the current regulations, there will be no increase in criteria pollutants in California due to mix shifting of vehicles between California and other states.

VII. ECONOMIC IMPACTS

There are no additional costs due to these amendments. The proposed amendments impact only the approximately thirty vehicle manufacturers subject to the LEV III (and ZEV) regulations, most of which are headquartered outside of California. Staff believes that manufacturers will continue to utilize the same types of technologies at the same incremental vehicle costs. However, allowing manufacturers to demonstrate compliance with California's greenhouse gas standards using compliance with essentially equivalent federal standards could potentially benefit manufacturers.

The alternative compliance option will simply allow manufacturers to calculate compliance averages from a single new vehicle fleet, instead of two regional fleets, which manufacturers have stated provides them with greater flexibility in where they place individual vehicle models. The benefits of this additional flexibility are not quantified due to the confidential nature of manufacturers' product placement strategies. However, these benefits are expected to be relatively small so that no businesses or jobs would be created or eliminated as a result of the proposed amendment. Additionally, the alternative compliance option is an additional compliance pathway; a manufacturer may continue to comply with California's regulations independently from compliance with the National Program, in which case there would be no economic impact from these amendments on that manufacturer.

Other modifications in this rulemaking are corrective, clarifying, or updating in nature and are intended to ensure the emissions benefits expected from the program are achieved. The stringency of the programs remains unchanged. The modifications

related to the ZEV over-compliance provision were anticipated and accounted for during development of the original Advanced Clean Cars rulemaking. Thus, this amendment formalizes ARB's commitment to this provision but, like the other minor revisions, does not introduce any new economic impacts.

There will be no fiscal impacts to the State from the proposed amendments, either in terms of tax revenue or personnel requirements. These amendments are not expected to change vehicle prices in a way that would alter vehicle purchase decisions. The inclusion of an alternative compliance option does not substantially increase the volume of data to review or the enforcement burden to the ARB that would justify hiring additional staff.

A. Alternatives

1. Evaluation of alternatives considered and reasons for rejecting them

Staff considered the following regulatory alternative to the proposed amendments: Do not amend current LEV III and ZEV regulations. This alternative would require all vehicle manufacturers to calculate footprint-based fleet averages for vehicles sold in California and its partner states and separate footprint-based fleet averages for vehicles sold in all remaining states; additionally, compliance with the ZEV program would remain unaffected by over-compliance with the national greenhouse gas program.

This alternative was rejected because California committed to making the proposed amendments as part of the commitments made by California, the federal government, and other parties on July 28, 2011, as discussed above in Section I. These commitments were based on the belief that the national program would result in greater nationwide greenhouse gas emission reductions, and possibly lower compliance costs to vehicle manufacturers due to a single nationwide regulation.

No alternative considered by the agency would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective or less burdensome to affected private persons than the proposed regulation.

2. **Description of reasonable alternatives considered that would lessen impact on small business**

No alternatives were considered to lessen the impact on small business because small businesses are not subject to the LEV III or ZEV regulations and would not be impacted by these proposed amendments.

3. **Evidence relied upon to support initial determination in the notice that the regulation will not have a significant adverse economic impact on business**

The proposed amendments will not significantly affect businesses, since vehicle purchase price and model availability will not be adversely impacted. Vehicle manufacturers will not be required to expend any money to comply with the new requirements and have stated they may potentially benefit from increased flexibility from the alternative compliance option.

4. **Justification for adoption of regulations different from federal regulations contained in the Code of Federal Regulations**

To the extent California's regulations differ from current federal requirements affecting the same pollutants, California has authority to set its own standards to reduce emissions further to meet federal and state ambient air quality standards and climate change requirements and goals, and to require additional and separate reporting. The differing state requirements proposed are necessary to achieve additional benefits for human health, public welfare, and the environment as envisioned by authorizing legislation.

These proposed amendments do not replace California's own passenger motor vehicle greenhouse gas regulations. Rather, they provide an additional compliance option to manufacturers by allowing them to demonstrate compliance with California regulations by demonstrating compliance with federal requirements. For any manufacturer that elects to pursue this compliance pathway, there would be no substantive difference between California requirements and the National Program. However, in the event a National Greenhouse Gas Program ceases to be in effect, that alternative compliance option would no longer be available; compliance would be exclusively to the differing California regulations to meet federal and state ambient air quality standards and climate change requirements and goals, and to require additional and separate reporting.

VIII. SUMMARY AND RATIONALE FOR EACH REGULATORY PROVISION[10]

Proposed modifications to the regulations that are corrections to errors in the text or are editorial in nature are not summarized below.

[10] A more detailed list and description of all of the proposed changes are found in Appendix J.

PROPOSED AMENDMENT TO CALIFORNIA'S PASSENGER VEHICLE GREENHOUSE GAS REGULATIONS

"Deemed to Comply" Provision

In accordance with California's commitment, the current proposed amendments to California's passenger motor vehicle regulations would accept compliance with the national greenhouse gas program as compliance with the California program for the 2017 through 2025 model years.

Changes to Motor Vehicle A/C Direct Credits

Section 1961.3 (a)(6)(C) prescribes a method for estimating initial refrigerant leak from new motor vehicle A/C systems. This method incorporates SAE J2727 by reference. The regulation is being amended to use the February 2012 version of SAE J2727 instead of the August 2008 version of SAE J2727. These changes are needed to use the most up to date procedures and be consistent with best engineering practice.

PROPOSED AMENDMENT TO CALIFORNIA'S LIGHT- AND MEDIUM-DUTY EXHAUST EMISSION REGULATIONS

Changes to Supplemental Federal Test Procedure Requirements

Staff is proposing a number of modifications to the California Supplemental Federal Test Procedure (SFTP) requirements in order to add clarity. Such changes include clarifications of vehicle test weight, LEV III bin value restrictions, the treatment of federally-certified vehicles that certify in California in accordance with section H subparagraph 1.4 of the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," and specifications for fixed speed cooling fans used during testing. Staff is also proposing a number of corrections to the existing SFTP regulations and test procedures. The proposed changes, further detailed in Appendix J, are administrative in nature and would not have an impact on emissions.

Changes to the Carbon Monoxide Standards for Medium-Duty Vehicles

Staff inadvertently included the incorrect CO standards for LEV III medium-duty vehicles (MDVs) in the regulations. The correct standards are listed table II-A-2-6 in the "Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider the "LEV III" Amendments to the

California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards and Test Procedures and to the On-Board Diagnostic System Requirements for Passenger Cars, Light-Duty Trucks, and Medium-duty vehicles, and to the Evaporative Emission Requirements for Heavy-Duty Vehicles,"[11] (LEV III ISOR). The CO standards in the LEV III ISOR are the standards ARB presented at the LEV III public workshops, but for some reason were not included in the regulations. The LEV III emission benefits will not change as a result of this correction, since the published emission benefits for LEV III included the correct CO standards as listed in the ISOR.

Changes to the High Mileage Testing Requirements for LEV III Vehicles and LEV II Vehicles that Certify to 150,000-mile Emission Standards

The regulations require in-use verification high mileage testing of LEV III vehicles and LEV II Vehicles that Certify to 150,000-mile Emission Standards to be conducted at a minimum odometer mileage of 112,500 miles. However, for certain test groups, it is extremely difficult to find test vehicles that meet this minimum odometer requirement. It is, therefore, necessary to amend this requirement to lower the minimum allowable odometer mileage to 105,000 miles.

PROPOSED AMENDMENT TO CALIFORNIA'S EVAPORATIVE EMISSION REGULATIONS

Staff is proposing to amend the evaporative emission program to clarify that for evaporative families carried over in accordance with 13 CCR 1976 (b)(1)(G)3., in-use compliance is based on the actual emission standards they certify to and not on the emission limits assigned to the families for the purpose of calculating the fleet-average hydrocarbon emission values. This change is only being proposed for clarification purposes and, therefore, would not have an impact on emissions.

PROPOSED AMENDMENT TO CALIFORNIA'S HEAVY-DUTY EXHAUST EMISSION REGULATIONS

Staff is proposing modifications to the exhaust test procedures for heavy-duty gasoline engines and for heavy-duty diesel engines, which clarify that all medium-duty vehicles with a gross vehicle weight of 8,501 to 10,000 pounds gross vehicle weight must certify to LEV III chassis standards for the 2022 and subsequent model years. Staff is proposing to allow incomplete heavy-duty vehicles that share engines with medium-duty

[11] The "Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider the "LEV III" Amendments to the California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards and Test Procedures and to the On-Board Diagnostic System Requirements for Passenger Cars, Light-Duty Trucks, and Medium-duty vehicles, and to the Evaporative Emission Requirements for Heavy-Duty Vehicles," is found at: http://www.arb.ca.gov/regact/2012/leviiighg2012/levisor.pdf.

vehicles to be certified to medium-duty chassis standards if they share the same engine.

PROPOSED AMENDMENT TO THE "SMALL VOLUME MANUFACTURER" DEFINITION IN TITLE 13, CCR, SECTION 1900

The definition of a "small volume manufacturer" contains qualifying language that allows manufacturers that meet the 4,500 vehicle sales threshold for a small volume manufacturer, but are partially or fully owned by another manufacturer, to still qualify as "small volume manufacturers," if they remain operationally independent from the company that owns them. This definition is being modified to remove language that restricts the model years to which this qualifying language applies.

PROPOSED AMENDMENT TO CALIFORNIA'S ZERO-EMISSION VEHICLE REGULATIONS

In changes presented to the Board in January 2012, staff proposed a provision in the ZEV regulation that rewarded systematic over-compliance with the greenhouse gas fleet standard. At the time, references to the greenhouse gas fleet standard were made to only the California greenhouse gas fleet standard, since there was no national greenhouse gas fleet standard to reference. With this rulemaking and changes proposed for the greenhouse gas fleet standard, regulatory language in title 13, section 1962.2, and the incorporated test procedure is proposed for updating to reference the national greenhouse gas fleet standard, if manufacturers choose to comply in California by demonstrating compliance with those federal standards. Additionally, the ZEV regulation has proposed minor modifications to improve readability, and update references to J2481 and the incorporated test procedures.

X. REFERENCES

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XI. APPENDICES

Appendix A: Proposed Regulation Order

Appendix B: Proposed Amendments to the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles"

Appendix C: Proposed Amendments to the "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Model Passenger Cars, Light Duty Trucks, and Medium Duty Vehicles"

Appendix D: Proposed Amendments to the "California Non-Methane Organic Gas Test Procedures"

Appendix E: Proposed Amendments to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles"

Appendix F: Proposed Amendments to the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines"

Appendix G: Proposed Amendments to the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles"

Appendix H: Proposed Amendments to the : Proposed Amendments to the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes"

Appendix I: Proposed Amendments to the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes"

Appendix J: List of Proposed Changes to Title 13, CCR and Incorporated Test Procedures