

APPENDIX H

California Environmental Protection Agency
AIR RESOURCES BOARD

PROPOSED

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

Adopted: December 17, 2008
Amended: December 2, 2009
Amended: March 22, 2012
Amended: [insert date of amendment]

Note: The proposed amendments to this document are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions compared to the test procedures as amended March 22, 2012. [No change] indicates proposed federal provisions that are also proposed for incorporation herein without change. Existing intervening text that is not amended in this rulemaking is indicated by “* * *”.

NOTE: This document is incorporated by reference in section 1962.1, title 13, California Code of Regulations (CCR). Additional requirements necessary to complete an application for certification of zero-emission vehicles and hybrid electric vehicles are contained in other documents that are designed to be used in conjunction with this document. These other documents include:

**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**

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C. Zero-Emission Vehicle Standards.

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2. Percentage ZEV Requirements

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2.2 Requirements for Large Volume Manufacturers.

(d) *Requirements for Large Volume Manufacturers in Model Years 2012 through 2017.*

(1) *2012 through 2014 Requirements.* On an annual basis, a manufacturer must meet the total ZEV obligation with ZEVs or ZEV credits generated by such vehicles, excluding credits generated by NEVs and Type 0 ZEVs, equal to at least 0.79% of its annual sales, using either production volume determination method described in subdivision C.2.1(b). No more than 50% of the total obligation may be met with credits generated from PZEVs. No more than 75% of the total obligation may be met with credits generated from AT PZEVs. No more than 93.4% may be met with Enhanced AT PZEVs, Type 0 ZEVs, and NEVs, other than limits described in subdivision C.7.6. The entire obligation may be met solely with credits generated from ZEVs.

(2) *2015 through 2017 Requirements.* On an annual basis, a manufacturer must meet its ZEV obligation with ZEVs or ZEV credits generated by such vehicles, excluding credits generated by NEVs and Type 0 ZEVs, equal to at least 3% of its annual sales, using either production volume determination method described in subdivision C.2.1(b). No more than 42.8% of the total obligation may be met with credits generated from PZEVs. No more than 57.1% of the total obligation may be met with credits generated from AT PZEVs. No more than 78.5% may be met with credits generated from TZEVs, Type 0 ZEVs, and NEVs, other than limits described in

subdivision C.7.6. The entire obligation may be met solely with credits generated from ZEVs.

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3.3 Zero-Emission VMT PZEV Allowance.

(a) *Calculation of Zero Emission VMT Allowance.* A vehicle that meets the requirements of subdivision C.3.2 and has zero-emission vehicle miles traveled (“VMT”) capability will generate an additional zero emission VMT PZEV allowance, calculated as follows:

<i>Range</i>	<i>Zero-emission VMT Allowance</i>
$EAER_u < 10$ miles	0.0
$EAER_u \geq 10$ to 40 miles	$EAER_u \times (1 - UF_{R_{cda}}) / 11.028$
$EAER_u > 40$ miles	$\frac{(EAER_{u40}) \times [1 - (UF_{40} \times R_{cda} / EAER_u)]}{11.028}$ $3.627 \times (1 - UF_n)$ <p>Where, UF_{40} = utility factor at 40 miles $EAER_{u40}$ = 40 miles $n = 40 \times (R_{cda} / EAER_u)$</p>

A vehicle cannot generate more than 1.39 zero-emission VMT PZEV allowance.

The urban equivalent all-electric range ($EAER_u$) and urban charge depletion range actual (R_{cda}) shall be determined in accordance with section G.5.4 and G.11.9, respectively, of these test procedures. The utility Factor (UF) shall be determined according to SAE J2841 SEP2010 from the Fleet Utility Factors (FUF) Table in Appendix B or using a polynomial curve fit with “FUF Fit” coefficients from Table 2 Utility Factor Equation Coefficients based on the charge depleting actual range (urban cycle) (R_{cda}) shall be determined according to Section 4.5.2 Equation 6 and the “Fleet UF” Utility Factor Equation Coefficients in Section 4.5.2, Table 3 of SAE J2841 March 2009.

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F. Test Procedures for 2012 through 2017 Model Zero-Emission Vehicles (including Fuel Cell Vehicles and Hybrid Fuel Cell Vehicles) and All 2012 through 2017 Model Hybrid-Electric Vehicles, Except Off-Vehicle Charge Capable Hybrid Electric Vehicles.

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8. SFTP Emission Test Provisions for All Hybrid Electric Vehicles, Except Hybrid Fuel Cell Vehicles and Off-Vehicle Charge Capable Hybrid Electric Vehicles.

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8.2 US06 Emission Test.

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8.2.6 Amend subparagraph (f) as follows.

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8.2.6.2 Amend subparagraph (f)(2)(ix): At the conclusion of the US06 emission test, one of the following conditions shall apply:

(i) For hybrid electric vehicles that do not allow manual activation of the auxiliary power unit and are charge-sustaining over the US06, record the battery state-of-charge to determine if the SOC criterion in section FG.10 is satisfied. If the SOC criterion is not satisfied, then repeat dynamometer test run from subparagraph (f)(2)(i) without the preconditioning cycle. A total of three US06 emission tests shall be allowed to satisfy the SOC criterion.

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