

California Environmental Protection Agency
AIR RESOURCES BOARD

**CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR
2009 AND SUBSEQUENT MODEL ZERO-EMISSION VEHICLES, AND 2001 AND
SUBSEQUENT MODEL HYBRID ELECTRIC VEHICLES, IN THE PASSENGER CAR,
LIGHT-DUTY TRUCK AND MEDIUM-DUTY VEHICLE CLASSES**

Adopted: [Insert date of adoption]

TABLE OF CONTENTS

| Section No. | Page |
|--|----------------------------|
| A Applicability | A-1 |
| B. Definitions | B-1 |
| C. Zero-Emission Vehicle Standards | C-1 |
| 1. ZEV Emission Standard..... | C-1 |
| 2. Percentage ZEV Requirements | C-1 |
| 3. Partial ZEV Allowance Vehicles (PZEVs) | C- 6 <u>7</u> |
| 4. Qualification for ZEV Multipliers and Credits | C- 40 <u>11</u> |
| 5. [Reserved] | C- 13 <u>15</u> |
| 6. [Reserved] | C- 13 <u>15</u> |
| 7. Generation and Use of ZEV Credits; Calculation of Penalties..... | C- 13 <u>15</u> |
| 8. Severability | C- 17 <u>20</u> |
| 9. Public Disclosure | C- 17 <u>20</u> |
| D. Certification Requirements | D-1 |
| 1. Durability and Emission Testing Requirements | D-1 |
| 2. Information Requirements: Application for Certification | D-1 |
| 3. ZEV Reporting Requirements..... | D-2 |
| E. Test Procedures | E-1 |
| 1. Electric Dynamometer | E-1 |
| 2. Vehicle and Battery Break-In Period..... | E-1 |
| 3. All-Electric Range Test | E-1 |
| 4. Determination of Battery Specific Energy for ZEVs | E-3 |
| 5. Determination of the Emissions of the Fuel-fired Heater | E-3 |
| 6. Hybrid Electric Vehicle FTP Emission Test Provisions | E-3 |
| 7. Hybrid Electric Vehicle Highway Emission Test Provisions | E-8 |
| 8. Hybrid Electric Vehicle SFTP Emission Test Provisions..... | E-10 |
| 9. State-of-Charge Net Change Tolerances | E-15 |

CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 2009 AND SUBSEQUENT MODEL ZERO-EMISSION VEHICLES, AND 2001 AND SUBSEQUENT MODEL HYBRID ELECTRIC VEHICLES, IN THE PASSENGER CAR, LIGHT-DUTY TRUCK AND MEDIUM-DUTY VEHICLE CLASSES

A. Applicability

The emission standards and test procedures in this document are applicable to 2009 and subsequent model-year zero-emission passenger cars, light-duty trucks and medium-duty vehicles, and 2001 and subsequent model-year hybrid electric passenger cars, light-duty trucks and medium-duty vehicles. The general procedures and requirements necessary to certify a vehicle for sale in California are contained in the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" (hereinafter "LDV/MDV TPs"), and apply except as amended herein. A manufacturer may elect to certify a 2000 model-year hybrid electric vehicle under these standards and test procedures and the LDV/MDV TPs.

B. Definitions

In addition to the following, these test procedures incorporate by reference the definitions and abbreviations set forth in the Title 40 Code of Federal Regulations § 86.1803-01, the definitions and abbreviations set forth in the LDV/MDV TPs, and the definitions set forth in section 1900, title 13, CCR.

"Advanced technology PZEV" or "AT PZEV" means any PZEV with an allowance greater than 0.2 before application of the PZEV early introduction phase-in multiplier.

"All-Electric Range Test" means a test sequence used to determine the range of an electric vehicle or of a hybrid electric vehicle without the use of its auxiliary power unit. The All-Electric Range Test cycle consists of the Highway Fuel Economy Schedule and the Urban Dynamometer Driving Schedule (see section E of these test procedures).

"Auxiliary power unit" means a device that converts consumable fuel energy into mechanical or electrical energy. Some examples of auxiliary power units are internal combustion engines, gas turbines, or fuel cells.

"Battery electric vehicle" or "BEV" means any vehicle that operates solely by use of a battery or battery pack, or that is powered primarily through the use of an electric battery or battery pack but uses a flywheel or capacitor that stores energy produced by the electric motor or through regenerative braking to assist in vehicle operation.

"Battery or Battery pack" means any electrical energy storage device consisting of any number of individual battery modules or cells that is used to propel a

battery electric or hybrid electric vehicle. These terms may also generically refer to capacitor and flywheel energy storage devices in the context of hybrid electric vehicles.

“Battery state-of-charge” means the quantity of electrical energy remaining in the battery relative to the maximum rated capacity of the battery expressed in percent.

“Charge-depleting” means that the battery of a hybrid electric vehicle ultimately fully discharges and impairs vehicle operation as the vehicle continuously operates over a given driving cycle when no off-vehicle charging is performed and the consumable fuel is regularly replenished. Hybrid electric vehicles are required to be classified as either charge-sustaining or charge-depleting over each driving cycle (i.e. UDDS, HFEDS, US06, or SC03).

“Charge depletion range actual or R_{cda} ” means the distance achieved by a hybrid electric vehicle on a specified driving cycle at the point when the zero emission energy storage device is depleted of off-vehicle charge and regenerative braking derived energy.

“Charge-sustaining” means that the battery of a hybrid electric vehicle ultimately does not fully discharge and impair vehicle operation as the vehicle continuously operates over a given driving cycle when no off-vehicle charging is performed and the consumable fuel is regularly replenished. Hybrid electric vehicles are required to be classified as either charge-sustaining or charge-depleting over each driving cycle (i.e. UDDS, HFEDS, US06, or SC03).

“Consumable fuel” means any solid, liquid, or gaseous matter that releases energy when consumed by an auxiliary power unit.

“Electric drive system” means an electric motor and associated power electronics which provide acceleration torque to the drive wheels sometime during normal vehicle operation. This does not include components that could act as a motor, but are configured to act only as a generator or engine starter in a particular vehicle application.

“Electric range fraction” means the fraction of electrical energy derived from off-vehicle charging and regenerative braking energy relative to total traction energy used over the charge depletion range on a specified drive cycle.

“Enhanced AT PZEV” means any PZEV that has an allowance of 1.0 or greater per vehicle without multipliers and makes use of a ZEV fuel

“Equivalent all electric range” means the charge depletion range multiplied by the electric range fraction ($EAER = R_{cd} \times ERF$).

“Fuel-fired heater” means a fuel burning device that creates heat for the purpose of warming the passenger compartment of a vehicle but does not contribute to the propulsion of the vehicle.

“HFEDS” means highway fuel economy driving schedule. See 40 CFR 600.109(b).

“Hybrid electric vehicle” or “HEV” means any vehicle that can draw propulsion energy from both of the following on-vehicle sources of stored energy: 1) a consumable fuel and 2) an energy storage device such as a battery, capacitor, or flywheel.

“Neighborhood Electric Vehicle” or “NEV” means a motor vehicle that meets the definition of “low-speed vehicle” either in section 385.5 of the Vehicle Code or in 49

CFR 571.500 (as it existed on July 1, 2000), and is certified to zero-emission vehicle standards.

“Off-vehicle charge capable” means having the capability to charge a battery from an off-vehicle electric energy source that cannot be connected or coupled to the vehicle in any manner while the vehicle is being driven.

“Placed in service” means having been sold or leased to an end-user and not just to a dealer or other distribution chain entity, and having been individually registered for on-road use by the California Department of Motor Vehicles.

“PZEV” means any vehicle that is delivered for sale in California and that qualifies for a partial ZEV allowance of at least 0.2.

“Regenerative braking” means the partial recovery of the energy normally dissipated into friction braking that is returned as electrical current to an energy storage device.

“SC03” means the U.S. EPA SC03 driving schedule representing vehicle operation with air conditioning, as set forth in Appendix I of 40 CFR Part 86.

“SOC Net Change Tolerance” means the state-of-charge net change tolerance that is applied to the SOC Criterion for charge-sustaining hybrid electric vehicles when validating an emission test. See section D.8 of these procedures for tolerance specifications.

“SOC Criterion” means the state-of-charge criterion that is applied to charge-sustaining hybrid electric vehicle to validate an emission test. The SOC Criterion requires that no net change in battery energy occurs over a given test cycle, i.e. the final battery state-of-charge that is recorded at the end of the emission test must be equivalent to the initial battery state-of-charge that is set at the beginning of the emission test. The SOC Net Change Tolerance shall be applied to the SOC Criterion.

“Section 177 State” means a state that is administering the California ZEV requirements pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507).

“Type 0, I, I.5, II, III, and IV, and V ZEV” all have the meanings set forth in section C.4.4(a).

“US06” means the US06 driving schedule for aggressive driving as set forth in Appendix I of 40 CFR Part 86.

“UDDS” means urban dynamometer driving schedule as set forth Appendix I of 40 CFR Part 86.

“Zero-emission vehicle” or **“ZEV”** means any vehicle certified to zero-emission standards.

“Zero-emission VMT” means the vehicle miles traveled with zero exhaust emissions of any criteria pollutant (or precursor pollutant).

“ZEV fuel” means a fuel that provides traction energy in on-road ZEVs. Examples of current technology ZEV fuels include electricity, hydrogen, and compressed air.

C. Zero-Emission Vehicle Standards.

1. ZEV Emission Standard. The Executive Officer shall certify new 2009 and subsequent model passenger cars, light-duty trucks and medium-duty vehicles as

ZEVs if the vehicles produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) under any and all possible operational modes and conditions.

2. Percentage ZEV Requirements

2.1 General Percentage ZEV Requirement.

(a) *Basic Requirement.* The minimum percentage ZEV requirement for each manufacturer is listed in the table below as the percentage of the PCs and LDT1s, and LDT2s to the extent required by section C.2.2(c), produced by the manufacturer and delivered for sale in California that must be ZEVs, subject to the conditions in section C.2.2.

| <i>Model Years</i> | <i>Minimum ZEV Requirement</i> |
|---------------------|--------------------------------|
| 2009 through 2011 | 11 % |
| 2012 through 2014 | 12 % |
| 2015 through 2017 | 14 % |
| 2018 and subsequent | 16 % |

(b) *Calculating the Number of Vehicles to Which the Percentage ZEV Requirement is Applied.* For the 2009 through 2011 model years, a manufacturer's production volume of PCs and LDT1s, and LDT2s as applicable, produced and delivered for sale in California ~~to comply with a given model year ZEV requirement~~ will be based on the a three-year average of the manufacturer's volume of PCs and LDT1s, and LDT2s as applicable, produced and delivered for sale in California in the prior fourth, fifth and sixth years (e.g. 2010 model year ZEV requirements will be based on California production volumes of PCs and LDT1s, and LDT2s as applicable, for the ~~2004 to 2006~~2003 through 2005 model years). For 2012 and subsequent model years, a manufacturer's production volume for the given model year and two subsequent model years will be based on the three-year average of the manufacturer's volume of PCs and LDT1s, and LDT2s, as applicable, produced and delivered for sale in California in the prior fourth, fifth and sixth years [for example, 2013 model year ZEV requirements (for the 2013 through 2015 model years) will be based on California production volumes of PCs and LDT1s, and LDT2s as applicable, for the 2007 to 2009 model years]. This production averaging is used to determine ZEV requirements only, and has no effect on a manufacturer's size determination. As an alternative to the three year averaging of prior year production described above, a manufacturer may elect to base its ZEV obligation on the number of PCs and LDT1s, and LDT2s, as applicable, to the extent required by section C.2.1(c) produced by the manufacturer and delivered for sale in California that same model year. For 2012 and subsequent model years, A manufacturer may, on an annual basis, select either the three year average or the same model year calculation method. In applying the ZEV requirement, a PC, LDT1, or LDT2 as applicable, that is produced by a ~~small volume~~one manufacturer (e.g., Manufacturer A), but is marketed in California by another manufacturer (e.g., Manufacturer B) under the other manufacturer's (Manufacturer B) nameplate, shall be

treated as having been produced by the marketing manufacturer (Manufacturer B).

(c) *Phase-in of ZEV Requirements for LDT2s.* Beginning with the ZEV requirements for the 2009 model year, a manufacturer's LDT2 production shall be included in determining the manufacturer's overall ZEV requirement under section C.2.1(a) in the increasing percentages shown in the table below.

| | | | |
|------|------|------|-------|
| 2009 | 2010 | 2011 | 2012+ |
| 51% | 68% | 85% | 100% |

(d) *Exclusion of ZEVs in Determining a Manufacturer's Sales Volume.* In calculating for purposes of sections C.2.1(b) and (c) the volume of PCs, LDT1s and LDT2s a manufacturer has produced and delivered for sale in California, the manufacturer shall exclude the number of ZEVs produced by the manufacturer, or by a subsidiary in which the manufacturer has a greater than 50 percent ownership interest, and delivered for sale in California.

2.2 Requirements for Large Volume Manufacturers.

(a) *Primary Requirements for Large Volume Manufacturers through Model Year 2011.* In the 2009 through 2011 model years, a ~~large-volume~~ manufacturer must meet at least 22.5 percent of its ZEV requirement with ZEVs or ZEV credits generated by such vehicles, and at least another 22.5 percent with ZEVs, ~~advanced technology~~ AT PZEVs, or credits generated by such vehicles. The remainder of the ~~large-volume~~ manufacturer's ZEV requirement may be met using PZEVs or credits generated by such vehicles.

(b) *Alternative Requirements for Large Volume Manufacturers.*

(1) *Minimum Floor for Production of Type III ZEVs.*

(A) [RESERVED]

(B) *Requirement For the 2009-2011 Model Years.* A ~~large-volume~~ manufacturer electing ~~to be subject to the alternative compliance requirements during model years 2009 through 2011 must produce, deliver for sale, and place in service in California enough 2009-2011 model year Type III ZEVs to generate ZEV credits equal to sufficient to meet a cumulative percentage ZEV requirement of 0.800.82 percent of the manufacturer's average annual California sales of PCs and LDT1s, and LDT2s, as applicable, over the three year period from model years 2003 through 2005, sales, using either production volume determination method described in section C.2.1(b) though production, delivery for sale, and placement in service of ZEVs, other than NEVs and Type 0s ZEVs, using credit ratios for each ZEV Type compared to a Type III prescribed in the table below, of the manufacturer's average annual California sales of PCs, and LDT1s over the three year period from model years 2003 through 2005, or~~

submit an equivalent number of credits generated by such vehicles. ~~The manufacturer may meet this requirement with [i] 2009-2011 model-year Type I or Type II ZEVs, provided that 2 Type I ZEVs or 1.33 Type II ZEVs or 0.8 Type IV ZEVs will equal one Type III ZEV~~

| <u>ZEV Types</u> | <u>Credit Substitution Ratio</u> |
|------------------|----------------------------------|
| <u>Type I</u> | <u>2</u> |
| <u>Type I.5</u> | <u>1.6</u> |
| <u>Type II</u> | <u>1.33</u> |
| <u>Type IV</u> | <u>0.8</u> |
| <u>Type V</u> | <u>0.57</u> |

(i) Manufacturers may use credits generated by 1997-2003 model-year ZEVs that qualify for an extended service multiplier under section C.6 for a year primarily during calendar years 2009-2011, provided that 33 years of such a multiplier will equal 4 ZEV credits.

~~(ii) Manufacturers may elect, on an annual basis, to determine their alternative requirement using either production volume determination methods described in section C.2.1(b).~~

(C) [RESERVED]

(D) [RESERVED]

(E) [RESERVED]

(F) *Exclusion of Additional Credits for Transportation Systems.* Any additional credits for transportation systems generated in accordance with section C.7.5 shall not be counted towards compliance with this section C.2.2(b)(1)(B).

(G) *Carry-over of Excess Credits.* ZEV credits generated from excess production in model years 2005 through 2008 may be carried forward and applied to the 2009 through 2011 minimum floor requirement specified in ~~1962.1(b)(2)(B)1.b.~~ section C.2.2(b)(1)(B) provided that the value of these carryover credits shall be based on the model year in which the credits are used. ~~Beginning in~~ Beginning with the 2012 model year, these credits may no longer be used to meet the ZEV requirement; they may be used as Enhanced AT PZEV, AT PZEV, or PZEV credits. ZEV credits earned in model year 2009 and subsequent would be allowed to be carried forward for two years for application to the ZEV requirement. For example, ZEV credit earned in the 2010 model year would retain full flexibility through the 2012 model year, at which time that credit could only be used as Enhanced AT PZEV, AT PZEV, or PZEV credits, and could not be used to satisfy the ZEV credit obligation, which may only be satisfied with credit generated from ZEVs.

(H) *Failure to Meet Requirement for Production of ~~Type III~~ ZEVs.* A manufacturer that, after electing to be subject to the alternative requirements in section C.2.2(b) for any model year from 2009 through 2011, fails to meet the requirement in section C.2.2(b)(1)(B) by the end of the 2011 model year~~the specified three year period in which the model year falls~~, shall be treated as subject to the primary requirements in section C.2.1(a) for the 2009 through 2011 model years~~all model years in the specified three year period~~.

(I) *Rounding Convention.* The number of ~~Type III~~ ZEVs needed for a manufacturer under section C.2.2(b)(1)(B) shall be rounded to the nearest whole number.

(2) *Compliance With Percentage ZEV Requirements.* In the 2009 through 2011 model years, a ~~large volume~~ manufacturer electing to be subject to the alternative compliance requirements in a given model year must meet at least 45 percent of its ZEV requirement for that model year with ZEVs, ~~advanced technology~~ AT PZEVs or Enhanced AT PZEVs, or credits generated from such vehicles. ZEV credits generated for compliance with the alternative requirements during any given model year will be applied to the 45 percent which may be met with ZEVs, AT PZEVs, Enhanced AT PZEVs, or credits generated from such vehicles, but not PZEVs. The remainder of the ~~large volume~~ manufacturer's ZEV requirement may be met using PZEVs or credits generated from such vehicles.

(3) *Sunset of Alternative Requirements After the 2011 Model Year.* The alternative requirements in section C.2.2(b) are not available after the 2011 model year.

(c) *Election of the Primary or Alternative Requirements for Large Volume Manufacturers.* A ~~large volume~~ manufacturer shall be subject to the primary ZEV requirements for the 2009 model year unless it notifies the Executive Officer in writing prior to the start of the 2009 model year that it is electing to be subject to the alternative compliance requirements for that model year. Thereafter, a manufacturer shall be subject to the same compliance option as applied in the previous model year unless it notifies the Executive Officer in writing prior to the start of a new model year that it is electing to switch to the other compliance option for that new model year. However, a ~~large volume~~ manufacturer that has previously elected to be subject to the primary ZEV requirements for one or more of the -2009 through 2011 model years~~in the three year period identified in section C.2.2(b)(1)(A)-(D)~~ may prior to the end of the 2011 model year~~three year period~~ elect to become subject to the alternative compliance requirements for the 2009 through 2011 model years~~the full three year period~~ upon a demonstration that it has complied with all of the applicable requirements for that period in section C.2.2(b)(1)(B).

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

(1) 2012 through 2014 Requirements. ~~In the 2012 through 2017 model~~

~~years, a large-volume manufacturer must meet the total ZEV obligation total percent requirement as shown in the table below with ZEVs or ZEV credits generated by such vehicles, excluding NEVs and Type 0 ZEVs, equal to at least 0.81%0.79% of its annual sales, using either production volume determination method described in section C.2.1(b). No more than 50% of the total obligation may be met with PZEVs, No more than 75% of the total obligation may be met with AT PZEVs. No more than 92.593.4% may be met with Enhanced AT PZEVs, Type 0 ZEVs, and NEVs, other than limits described in section C.7.6. The entire requirement may be met solely with ZEVs. Optionally, a manufacturer may choose to meet or exceed the minimum ZEV floor and then stasify the remainder of the manufacturer requirement using Enhanced AT PZEVs, AT PZEVs, and PZEVs.~~

(2) 2015 through 2017 Requirements. A manufacturer must meet its ZEV obligation with ZEVs or ZEV credits generated by such vehicles, excluding NEVs and Type 0 ZEVs, equal to at least 3% of its annual sales, using either production volume determination method described in section C.2.1(b). No more than 42.8% of the total obligation may be met with PZEVs, No more than 57.1% of the total obligation may be met with AT PZEVs. No more than 78.5% may be met with Enhanced AT PZEVs, Type 0 ZEVs, and NEVs, other than limits described in section C.7.6. The entire requirement may be met solely with ZEVs.

(3) The following table enumerates a manufacturer's annual percentage obligation for the 2012 though 2017 model years if it were to the manufacturer produces the minimum number of credits required to meet the its ZEV obligation and the total annual percent ZEV requirement and the maximum percentage for the optional Enhanced AT PZEV, AT PZEV, and PZEV categories that may be used to meet the total percentage ZEV requirement.

| Years | Total ZEV Percent Requirement | Minimum ZEV floor percentage range | Enhanced AT PZEVs, Type 0s, or NEVs percentage range | AT PZEVs | PZEVs up to |
|-------------|-------------------------------|------------------------------------|--|----------|-------------|
| 2012 – 2014 | 12 | 0.79810.3 – 3.0 | 2.21190.0 – 2.7 | 3.0 | 6.0 |
| 2015 – 2017 | 14 | 3.0 – 6.0 | 0.0 – 3.0 | 2.0 | 6.0 |

(4) ~~Exclusion of Use of Additional Credits for Transportation Systems.~~ Any additional credits for transportation systems generated in accordance with section C.7.5 ~~shall not be counted towards compliance with~~ may be used to meet up to one tenth of the portion of the ZEV obligation which must be met with ZEVs, specified in section C.2.2(d)(1).

(e) *Requirements for Large Volume Manufacturers in Model Year 2018 and Subsequent.* In the 2018 and subsequent model years, a ~~large-volume~~ manufacturer must meet a ZEV total percent requirement of 16 percent. The maximum portion of a ~~large-volume~~ manufacturer's percentage ZEV requirement that may be satisfied by PZEVs that are not Enhanced AT PZEVs or advanced technology AT PZEVs, or credits generated by such vehicles, is limited to 6 percent of the manufacturer's applicable California PC, LDT1, and LDT2 production volume; Enhanced AT PZEVs and AT advanced technology PZEVs or credits generated by such vehicles may be used either alone or in combination, to meet up to one-half of the manufacturer's remaining ZEV requirement.

2.3 Requirements for Intermediate Volume Manufacturers. In 2009 and subsequent model years, an intermediate volume manufacturer may meet its ZEV requirement with up to 100 percent PZEVs or credits generated by such vehicles.

2.4 Requirements for Small Volume Manufacturers and Independent Low Volume Manufacturers. A small volume manufacturer or an independent low volume manufacturer is not required to meet the percentage ZEV requirements. However, a small volume manufacturer or an independent low volume manufacturer may earn and market credits for the ZEVs or PZEVs it produces and delivers for sale in California.

2.5 Counting ZEVs and PZEVs in Fleet Average NMOG Calculations. For purposes of calculating a manufacturer's fleet average NMOG value and NMOG credits under sections ~~1960.4(g)(2) and 1961(b)~~ and (c), title 13, CCR, a vehicle certified as a ZEV is counted as one ZEV, and a PZEV is counted as one SULEV certified to the 150,000 mile standards, regardless of any ZEV or PZEV multipliers.

2.6 [RESERVED].

2.7 Changes in Small Volume, Independent Low Volume, and Intermediate Volume Manufacturer Status.

(a) *Increases in California Production Volume.* In 2009 and subsequent model years, if a small volume manufacturer's average California production volume exceeds 4,500 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, or if an independent low volume manufacturer's average California production volume exceeds 10,000 units of new PCs, LDTs, and MDVs based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, the manufacturer shall no longer be treated as a small volume, or independent low volume manufacturer, as applicable, and shall comply with the ZEV requirements for ~~independent low volume~~ or intermediate volume manufacturers, as applicable, beginning with the sixth model year after the last of the three consecutive model years.

If an intermediate volume manufacturer's average California production volume exceeds 60,000 units of new PCs, LDTs, and MDVs based on the average number of

vehicles produced and delivered for sale for the three previous consecutive model years (i.e., total production volume exceeds 180,000 vehicles in a three year period), the manufacturer shall no longer be treated as an intermediate volume manufacturer and shall, beginning with the sixth model year after the last of the three consecutive model years, ~~meet the ZEV requirements with PZEVs, of which at least one fourth would have to be AT PZEVs and shall, beginning with the ninth model year after the last of the three consecutive model years, meet the ZEV regulation requirements with PZEVs, of which at least one third would have to be AT PZEVs. The manufacturer would comply with all ZEV requirements for large volume manufacturers beginning with the twelfth~~sixth model year after the last of the three consecutive model years.

Requirements will begin in the fourth model year rather than the sixth model year~~The lead time shall be four rather than six years where~~when a manufacturer ceases to be a small or intermediate volume manufacturer in 2003 or subsequent years due to the aggregation requirements in majority ownership situations, except that if the majority ownership in the manufacturer was acquired prior to the 2001 model year, the manufacturer must comply with the stepped-up ZEV requirements starting in the 2010 model year.

(b) *Decreases in California Production Volume.* If a manufacturer's average California production volume falls below 4,500, 10,000 or 60,000 units of new PCs, LDTs, and MDVs, as applicable, based on the average number of vehicles produced and delivered for sale for the three previous consecutive model years, the manufacturer shall be treated as a small volume, independent low volume, or intermediate volume manufacturer, as applicable, and shall be subject to the requirements for a small volume, independent low volume, or intermediate volume manufacturer beginning with the next model year. ~~In determining small volume manufacturer status, vehicles produced by one manufacturer and marketed in California by another manufacturer under the other manufacturer's nameplate shall be treated as part of the California production volume of the sales of the marketing manufacturer.~~

(c) *Calculating California Production Volume in Change of Ownership Situations.* Where a manufacturer experiences a change in ownership in a particular model year, the change will affect application of the aggregation requirements on the manufacturer starting with the next model year. The manufacturer's small or intermediate volume manufacturer status for the next model year shall be based on the average California production volume in the three previous consecutive model years of those manufacturers whose production volumes must be aggregated for that next model year. For example, where a change of ownership during the 2010 model year results in a requirement that the production volume of Manufacturer A be aggregated with the production volume of Manufacturer B, Manufacturer A's status for the 2011 model year will be based on the production volumes of Manufacturers A and B in the 2008-2010 model years. Where the production volume of Manufacturer A must be aggregated with the production volumes of Manufacturers B and C for the 2010 model year, and during that model year a change in ownership eliminates the requirement that Manufacturer B's production volume be aggregated with Manufacturer A's, Manufacturer A's status

for the 2011 model year will be based on the production volumes of Manufacturers A and C in the 2008-2010 model years. In either case, the lead time provisions in sections C2.57(a) and (b) will apply.

3. Partial ZEV Allowance Vehicles (PZEVs).

3.1 Introduction. This section C.3 sets forth the criteria for identifying vehicles delivered for sale in California as PZEVs. A PZEV is a vehicle that cannot be certified as a ZEV but qualifies for a PZEV allowance of at least 0.2.

3.2 Baseline PZEV Allowance. In order for a vehicle to be eligible to receive a PZEV allowance, the manufacturer must demonstrate compliance with all of the following requirements. A qualifying vehicle will receive a baseline PZEV allowance of 0.2.

(a) *SULEV Standards.* Certify the vehicle to the 150,000-mile SULEV exhaust emission standards for PCs and LDTs in section 1961(a)(1), title 13, CCR. Bi-fuel, fuel-flexible and dual-fuel vehicles must certify to the applicable 150,000-mile SULEV exhaust emission standards when operating on both fuels;

(b) *Evaporative Emissions.* Certify the vehicle to the evaporative emission standards in section 1976(b)(1)(E), title 13, CCR zero-fuel evaporative emissions standards);

(c) *OBD.* Certify that the vehicle will meet the applicable on-board diagnostic requirements in sections 1968.1 or 1968.2, title 13, CCR, as applicable, for 150,000 miles; and

(d) *Extended Warranty.* Extend the performance and defects warranty period set forth in sections 2037(b)(2) and 2038(b)(4~~2~~) to 15 years or 150,000 miles, whichever occurs first, except that the time period is to be 10 years for a zero emission energy storage device used for traction power (such as a battery, ultracapacitor, or other electric storage device).

3.3 Zero-Emission VMT PZEV Allowance.

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

| Urban Equivalent All-Electric-Range (EAER) R_{cda} | Zero-emission VMT Allowance |
|---|---|
| $EAER < 10$ miles | 0.0 |
| $EAER \geq 10$ miles and $R_{cda} = 10$ miles to 100 <u>40</u> miles | $EAER \times (1 - UF_{R_{cda}}) / 14.611.028$ |
| $R_{cda} > 100$ 40 miles | 1.58 $EAER_{40} / 29.63$ |

The urban equivalent all-electric range (EAER) and urban charge depletion range actual (R_{cda}) shall be determined in accordance with section E.3.2.1(2)(a) of these test procedures. The Utility Factor (UF) based on the charge depletion range actual (R_{cda}) shall be determined according to the 0-100 mile 4th order curve fit from SAE J1711J2841 PropDft 2008, issued March 1999, p52.

(b) *Alternative Procedures.* As an alternative to determining the zero-emission VMT allowance in accordance with the preceding section C.3.3(a), a manufacturer may submit for Executive Officer approval an alternative procedure for determining the zero-emission VMT potential of the vehicle as a percent of total VMT, along with an engineering evaluation that adequately substantiates the zero-emission VMT determination. For example, an alternative procedure may provide that a vehicle with zero-emissions of one regulated pollutant (e.g., NOx) and not another (e.g., NMOG) will qualify for a zero-emission VMT allowance of 1.5.

(c) [RESERVED].

3.4 PZEV Allowance for Advanced ZEV Componentry. A vehicle that meets the requirements of section C.3.2 may qualify for an advanced componentry PZEV allowance as provided in this section 3.4.

(a) *Use of High Pressure Gaseous Fuel or Hydrogen Storage System.* A vehicle equipped with a high pressure gaseous fuel storage system capable of refueling at 3600 pounds per square inch or more and operating exclusively on this gaseous fuel shall qualify for an advanced componentry PZEV allowance of 0.2. A vehicle capable of operating exclusively on hydrogen stored in a high pressure system capable of refueling at ~~5000~~ 3600 pounds per square inch or more, ~~or stored in nongaseous form,~~ or at cryogenic temperatures, shall instead qualify for an advanced componentry PZEV allowance of 0.3.

(b) *Use of a Qualifying HEV Electric Drive System*

(1) *Classification of HEVs.* HEVs qualifying for additional advanced componentry PZEV allowance or allowances that may be used in the AT PZEV category are classified in one of ~~four~~five types of HEVs based on the criteria in the following table. ~~HEVs must qualify for the Zero-Emission VMT Allowance in section C.3.3(a) of this document and achieve 10 miles or more of all-electric UDDS range in addition to meeting the requirements in the following table to qualify for Type F advanced componentry allowance.~~

| <i>Characteristics</i> | <i>Type C</i> | <i>Type D</i> | <i>Type E</i> | <i>Type F</i> | <u><i>Type G</i></u> |
|---|---------------|---------------|---------------|---|---|
| Electric Drive System Peak Power Output | ≥ 10 kW | ≥ 10 kW | ≥ 50 kW | Zero Emission VMT allowance; ≥ 10 mile all-electric range (<u>UDDS drive cycle</u>) | <u>Zero-Emission VMT allowance; ≥ 10 mile all-electric range (US06 drive cycle)</u> |
| Traction Drive System Voltage | < 60 Volts | ≥ 60 Volts | ≥ 60 volts | ≥ 60 volts | <u>≥ 60 volts</u> |
| Traction Drive Boost | Yes | Yes | Yes | Yes | <u>Yes</u> |
| Regenerative Braking | Yes | Yes | Yes | Yes | <u>Yes</u> |
| Idle Start/Stop | Yes | Yes | Yes | Yes | <u>Yes</u> |

(2) [RESERVED].

(3) [RESERVED].

(4) *Type C HEVs.* A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type C HEV, and that is equipped with an advanced traction energy storage system – such as lithium ion batteries, nickel metal-hydride batteries, ultracapacitors, or other similar systems – with a design lifetime of at least 10 years, qualifies for an additional advanced componentry allowance of 0.2 in the 2009 through 2011 model years, 0.15 in the 2012 through 2014 model years, and 0.1 in the 2015 and subsequent model years.

(5) *Type D HEVs.* A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type D HEV qualifies for an additional advanced componentry allowance of 0.4 in the 2009

through 2011 model years, 0.35 in the 2012 through 2014 model years, and 0.25 in the 2015 and subsequent model years.

(6) *Type E HEVs.* A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type E HEV qualifies for an additional advanced componentry allowance of 0.5 in the 2009 through 2011 model years, 0.45 in the 2012 through 2014 model years, and 0.35 in the 2015 and subsequent model years.

(7) *Type F HEVs.* A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type F HEV, including achieving 10 miles or more of all-electric UDDS range, qualifies for an additional advanced componentry allowance of 0.8572 in the 2009 through 2011 model years, 0.867 in the 2012 through 2014 model years, and 0.757 in the 2015 and subsequent model years.

(8) Type G HEVs. A PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a Type G HEV, including achieving 10 miles or more of all-electric US06 range, qualifies for an additional advanced componentry allowance of 0.95 in the 2009 through 2011 model years, 0.89 in the 2012 through 2014 model years, and 0.78 in the 2015 and subsequent model years.

~~(8)~~(9) *Severability.* In the event that all or part of section C.3.4(b)(1)-~~(78)~~ is found invalid, the remainder of these standards and test procedures, including the remainder of section C.3.4(b)(1)-~~(78)~~, remains in full force and effect.

3.5 PZEV Allowance for Low Fuel-Cycle Emissions. A vehicle that makes exclusive use of fuel(s) with very low fuel-cycle emissions shall receive a PZEV allowance of 0.3. In order to receive the PZEV low fuel-cycle emissions allowance, a manufacturer must demonstrate to the Executive Officer, using peer-reviewed studies or other relevant information, that NMOG emissions associated with the fuel(s) used by the vehicle (on a grams/mile basis) are lower than or equal to 0.01 grams/mile. Fuel-cycle emissions must be calculated based on near-term production methods and infrastructure assumptions, and the uncertainty in the results must be quantified.

3.6 Calculation of PZEV Allowance.

(a) *Calculation of Combined PZEV Allowance for a Vehicle.* The combined PZEV allowance for a qualifying vehicle in a particular model year is the sum of the PZEV allowances listed in this section C.3.6, multiplied by any PZEV introduction phase-in multiplier listed in section C.3.7, subject to the cap in section C.3.6(b).

(1) *Baseline PZEV Allowance.* The baseline PZEV allowance of 0.2 for vehicles meeting the criteria in section C.3.2;

(2) *Zero Emission VMT PZEV Allowance.* The zero-emission VMT PZEV allowance, if any, determined in accordance with section C.3.3.;

(3) *Advanced ZEV Componentry PZEV Allowance.* The advanced ZEV componentry PZEV allowance, if any, determined in accordance with section C.3.4; and

(4) *Fuel-cycle Emissions PZEV Allowance.* The fuel-cycle emissions PZEV allowance, if any, determined in accordance with section C.3.5.

(b) *Caps on the Value of an AT PZEV Allowance.*

(1) *Cap for 2012-2009 and Subsequent Model-Year Vehicles.* The maximum value an AT PZEV may earn before phase-in multipliers, including the baseline PZEV allowance, is 3.0.

(2) *[RESERVED].*

3.7 PZEV Multipliers

(a) *[RESERVED].*

(b) *Introduction Phase-In Multiplier for PZEVs That Earn a Zero Emission VMT Allowance.* Each 2009 through 2011 model year PZEV that earns a zero emission VMT allowance under section C.3.3 and is produced and delivered for sale in California sold to a California motorist or is leased for three or more years to a California motorist who is given the option to purchase or re-lease the vehicle for two years or more at the end of the first lease term, qualifies for a phase-in multiplier of 3.01.25.

4. Qualification for ZEV Multipliers and Credits.

4.1 *[RESERVED].*

4.2 *[RESERVED].*

4.3 *[RESERVED].*

4.4 ZEV Credits for 2009 and Subsequent Model Years.

(a) *ZEV Tiers for Credit Calculations.* ZEV credits from a particular ZEV are based on the assignment of a given ZEV into one of the following ~~six~~eight ZEV tiers:

| ZEV Tier | UDDS ZEV Range (miles) | Fast Refueling Capability |
|----------|------------------------|--|
| NEV | No minimum | N/A |
| Type 0 | < 50 | N/A |
| Type I | ≥ 50, <75 | N/A |
| Type I.5 | ≥ 75, <100 | N/A |
| Type II | ≥ 100 | N/A |
| Type III | ≥ 100 | Must be capable of replacing 95% maximum rated energy capacity in ≤ 10 minutes per section 4.4(b) |
| OR | ≥ 200 | N/A |
| Type III | ≥ 100 | Must be capable of replacing 95 miles (UDDS ZEV range) in ≤ 10 minutes per section C.4.4(b) |
| | ≥ 200 | N/A |
| Type IV | ≥ 200 | Must be capable of replacing 190 miles (UDDS ZEV range) in ≤ 10 ¹⁵ minutes per section 4962.1(d)(5)(B)C.4.4(ab) |
| Type V | ≥ 300 | Must be capable of replacing 285 miles (UDDS ZEV range) in ≤ 15 minutes per section C.4.4(ab) |

(b) *Fast Refueling.* The “fast refueling capability” requirement for a 2009 and subsequent model-year Type III, ~~or IV, or V~~ ZEV in section ~~4962(d)(5)(A)~~C.4.4.(a) will be considered met if the Type III ZEV has the capability to accumulate at least 95 miles of UDDS range in 10 minutes or less and the Type IV ~~or V~~ ZEV has the capability to accumulate at least 190 ~~or 285~~ miles, ~~respectively,~~ in 15 minutes or less. For ZEVs that utilize more than one ZEV fuel, such as plug-in fuel cell vehicles, the Executive Officer may choose to waive these section C.4.4.(b) fast fueling requirements and base the amount of credit earned on UDDS ZEV range, as specified in section C.4.4.(a).

(c) *ZEV Credits for 2009 and Subsequent Model-Year ZEVs.* A 2009 and subsequent model-year ZEV, other than a NEV or Type 0, earns 1 ZEV credit when it is produced and delivered for sale in California. A 2009 and subsequent model-year ZEV earns additional credits based on the earliest year in which the ZEV is placed in service (not earlier than the ZEV’s model year). The following table identifies the total credits

that a ZEV in each of the ~~six~~eight ZEV tiers will earn, including the credit not contingent on placement in service, if it is placed in service in the specified ~~model~~calendar year or by June 30 after the end of the specified calendar year.

| <i>Total Credit Earned by ZEV Type and Model Year for Production and Delivery for Sale and for Placement</i> | | |
|--|---|--------------|
| <i>Tier</i> | <i><u>Calendar</u> Year in Which ZEV is Placed in Service</i> | |
| | <i>2009-2017</i> | <i>2018+</i> |
| NEV | 0.30 | 0.30 |
| Type 0 | 1 | 1 |
| Type I | 2 | 2 |
| Type I.5 | 2.5 | 2.5 |
| Type II | 3 | 3 |
| Type III | 4 | 3 |
| Type IV | 5 | 3 |
| <u>Type V</u> | <u>7</u> | <u>3</u> |

(d) *Multiplier for Certain ~~Type I and Type II~~ ZEVs.* ~~A~~ 2009 through 2011 model-year ~~Type I and Type II~~ ZEVs, excluding NEVs or Type 0 ZEVs, shall qualify for a multiplier of 1.25 if it is either sold to a motorist or is leased for three or more years to a motorist who is given the option to purchase or re-lease the vehicle for two years or more at the end of the first lease term.

(e) *Counting Specified ZEVs Placed in a Section 177 State and in California.*

(1) Provisions for 2009 Model Year.

(A) ZEVs, excluding NEVs and Type 0 ZEVs, that are either certified to the California ZEV standards or approved as part of an advanced technology demonstration program and are placed in service in a section 177 state, may be counted towards compliance with the California percentage ZEV requirements in section C.2, including the requirements in section C.2.2(b), as if they were delivered for sale and placed in service in California.

(B) ZEVs, excluding NEVs and Type 0 ZEVs that are certified to the California ZEV standards or approved as part of an advanced technology demonstration program and are placed in service in California may be counted towards the percentage ZEV requirements of any section 177 state, including requirements based on section C.2.2(B).

(2) Provisions for 2010 and Subsequent Model Years. As specified in the table below, sSpecified model year Type I, I.5, II, III, or IV ZEVs, excluding NEVs and Type 0 ZEVs, that are either certified to the California ZEV standards applicable for the ZEV's model year or approved as part of an advanced technology demonstration program and are placed in service in California or in a state that is administering the California ZEV requirements pursuant to section 177 of the federal Clean Air Act (42 U.S.C. § 7507) (hereafter "section 177 state") applicable for the ZEV's model year may be counted towards compliance in California and in anyall section 177 states, with the California-percentage ZEV requirements in section C.2, including the requirements in section C.2.2(b) and (d), provided that the credits are multiplied by the ratio of an LVM's applicable production volume for a model year, as specified in section C.2.1(b)total sales in the state receiving credit to the LVM's applicable production volume (hereafter, "proportional value"), as specified in section C.2.1(b) for the same model yeartotal sales in California. Credits generated in a section 177 state will be earned at the proportional value in the section 177 state, and earned in California at the full value specified in section C.4.5(d) However, credits generated by 2010 and 2011 model-year vehicles produced, delivered for sale, and placed in service, or as part of an advanced technology demonstration program in California to meet the any section 177 state's requirements that implement section C.2.2(b) requirements are exempt from proportional value, with the maximum number of credits allowed to be counted towards compliance in a section 177 state being limited to the number of credits needed to satisfy a manufacturer's section 177 state's requirements to implement section C.2.2(b)(1)(B). The table below specifies the qualifying model years for each ZEV type that may be counted towards compliance in anyall section 177 states, as if they were delivered for sale and placed in service in California. Similarly, specified model year Type I, I.5, II, III or IV ZEVs that are certified to the California ZEV standards and are placed in service in California may be counted towards the percentage ZEV requirements of any state that is administering the California ZEV requirements pursuant to section 177 of the federal Clean Air Act, including requirements based on on section C.2.2(b).

| Vehicle Type | Through Model Years: |
|--------------------------|-----------------------------|
| Type I, I.5, or II ZEV | <u>2009 – 2014</u> |
| Type III or IV, or V ZEV | <u>2009 – 2017</u> |

(f) NEV Test Procedures. Beginning in 2010 model year, to be eligible for the

credit amount in section C.4.4.(c), NEVs must meet the following specifications and requirements in this section C.4.4(f):

(1) *Specifications.* A 2010 and subsequent model-year NEV, earns credit when it meets all the following specifications:

(A) *Acceleration.* The vehicle has a 0-20 mph acceleration of 6.0 seconds or less when operating with a payload of 332 pounds and starting with the battery at a 50% state of charge.

(B) *Top Speed.* The vehicle has a minimum top speed of 20 mph when operating with a payload of 332 pounds and starting with the battery at a 50% state of charge. The vehicle's top speed shall not exceed 25 mph when tested in accordance with 49 CFR 571.500 (68 FR 43972, July 25, 2003).

(C) *Constant Speed Range.* The vehicle has a minimum 25 mile range when operating at constant top speed with a payload of 332 pounds and starting with the battery at 100% state of charge.

(2) *Battery Requirement.* A qualifying NEV must be equipped with sealed, maintenance-free batteries.

(3) *Warranty Requirement.* A 2010 and subsequent model year NEV drive train, including battery packs, must be covered for a period of at least 24 months. ~~At least 6 months of the first 12 months of the NEV coverage warranty period must be covered shall be by a full warranty; the remainder of the first 12 months and all of the second 12 months of the coverage warranty period may be covered under optional extended warranties (available for purchase) extended warranties and may be prorated.~~ If the extended warranty is prorated, the percentage of the battery pack's original value to be covered or refunded must be at least as high as the percentage of the prorated coverage period still remaining. For the purpose of this computation, the age of the battery pack must be expressed in intervals no larger than three months. Alternatively, a manufacturer may cover 50 percent of the original value of the battery pack for the full period of the extended warranty.

(4) Prior to allowance approval, the Executive Officer may request that the manufacturer provide copies of representative vehicle and battery warranties.

5. **[Reserved]**

6. **[Reserved] Extended Service Multiplier for 1997-2003 Model-Year ZEVs and PZEVs With ≥ 10 Mile Zero Emission Range.** Except in the case of a NEV, an additional ZEV or PZEV multiplier will be earned by the manufacturer of a 1997 through 2003 model-year ZEV, or PZEV with ≥ 10 mile zero emission range for

each full year it is registered for operation on public roads in California beyond its first three years of service, in the 2009 through 2011 calendar years. For additional years of service starting earlier than April 24, 2003, the manufacturer will receive 0.1 times the ZEV credit that would be earned by the vehicle if it were leased or sold new in that year, including multipliers, on a year-by-year basis beginning in the fourth year after the vehicle is initially placed in service. For additional years of service starting April 24, 2003 or later, the manufacturer will receive 0.2 times the ZEV credit that would be earned by the vehicle if it were leased or sold new in that year, including multipliers, on a year-by-year basis beginning in the fourth year after the vehicle is initially placed in service. The extended service multiplier is reported and earned in the year following each continuous year of service. Additional credit cannot be earned after model year 2011.

7. Generation and Use of ZEV Credits; Calculation of Penalties

7.1 Introduction. A manufacturer that produces and delivers for sale in California ZEVs or PZEVs in a given model year exceeding the manufacturer's ZEV requirement set forth in section C.2 shall earn ZEV credits in accordance with this section C.7.

7.2 ZEV Credit Calculations.

(a) *Credits from ZEVs.* The amount of g/mi ZEV credits earned by a manufacturer in a given model year from ZEVs shall be expressed in units of g/mi NMOG, and shall be equal to the number of credits from ZEVs produced and delivered for sale in California that the manufacturer applies towards meeting the ZEV requirements for the model year subtracted from the number of ZEVs produced and delivered for sale in California by the manufacturer in the model year and then multiplied by the NMOG fleet average requirement for PCs and LDT1s, or LDT2s as applicable, for that model year.

(b) *Credits from PZEVs.* The amount of g/mi ZEV credits from PZEVs earned by a manufacturer in a given model year shall be expressed in units of g/mi NMOG, and shall be equal to the total number of PZEV allowances from PZEVs produced and delivered for sale in California that the manufacturer applies towards meeting its ZEV requirement for the model year subtracted from the total number of PZEV allowances from PZEVs produced and delivered for sale in California by the manufacturer in the model year and then multiplied by the NMOG fleet average requirement for PCs and LDT1s, or LDT2s as applicable, for that model year.

(c) *Separate Credit Accounts.* The number of credits from a manufacturer's [i] ZEVs, [ii] enhanced AT PZEVs, [iii] ~~advanced technology~~ AT PZEVs, and [iv] all other PZEVs, and [v] NEVs shall each be maintained separately.

7.3 ZEV Credits for MDVs and LDTs Other Than LDT1s. ZEVs and PZEVs classified as MDVs or as LDTs other than LDT1s may be counted toward the ZEV requirement for PCs, LDT1s and LDT2s as applicable, and included in the calculation of ZEV credits as specified in this section C.4 if the manufacturer so designates.

7.4 ZEV Credits for Advanced Technology Demonstration Programs. In model years 2009 through 2014, ~~a vehicle~~ ZEVs and Enhanced AT PZEVs, ~~other than~~ excluding NEVs, which is placed in a California advanced technology demonstration program for a period of two or more years, may earn ZEV credits even if it is not “delivered for sale” or registered with the California Department of Motor Vehicles (DMV). To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicles will be regularly used in applications appropriate to evaluate issues related to safety, infrastructure, fuel specifications or public education, and that for 50 percent or more of the first two years of placement the vehicle will be ~~situated~~ operated in California. Such a vehicle is eligible to receive the same allowances and credits that it would have earned if placed in service. To determine vehicle credit, the model-year designation for a demonstration vehicle shall be consistent with the model-year designation for conventional vehicles placed in the same timeframe. Manufacturers may earn credit for as many as ~~six~~ 25 vehicles per model, per ZEV state, per year under this section C.7.4. A manufacturer’s vehicles in excess of the ~~six~~ 25-vehicle cap will not be eligible for advanced technology demonstration program credits.

7.5 ZEV Credits for Transportation Systems.

(a) *General.* In model years 2009 and subsequent, a ZEV placed, for two or more years, as part of a transportation system may earn additional ZEV credits, which may used in the same manner as other credits earned by vehicles of that category, except as provided in section C.7.5(c) below. In model years 2009 through 2011, an ~~advanced technology~~ Enhanced AT PZEV, AT PZEV or PZEV placed as part of a transportation system may earn additional ZEV credits, which may be used in the same manner as other credits earned by vehicles of that category, except as provided in section C.7.5(c) below. A NEV is not eligible to earn credit for transportation systems. To earn such credits, the manufacturer must demonstrate to the reasonable satisfaction of the Executive Officer that the vehicle will be used as a part of a project that uses an innovative transportation system as described in section C.7.5(b) below.

(b) *Credits Earned.* In order to earn additional credit under this section C.7.5, a project must at a minimum demonstrate [i] shared use of ZEVs, Enhanced AT PZEVs, AT PZEVs or PZEVs, and [ii] the application of “intelligent” new technologies such as reservation management, card systems, depot management, location management, charge billing and real-time wireless information systems. If, in addition to factors [i] and [ii] above, a project also features linkage to transit, the project may receive further additional credit. For ZEVs only, not including NEVs, a project that features linkage to transit, such as dedicated parking and charging facilities at transit stations, but does not demonstrate shared use or the application of intelligent new

technologies, may also receive additional credit for linkage to transit. The maximum credit awarded per vehicle shall be determined by the Executive Officer, based upon an application submitted by the manufacturer and, if appropriate, the project manager. The maximum credit awarded shall not exceed the following:

| <i>Type of Vehicle</i> | <i>Model Year</i> | <i>Shared Use, Intelligence</i> | <i>Linkage to Transit</i> |
|-------------------------|----------------------------|---------------------------------|---------------------------|
| PZEV | through 2011 | 2 | 1 |
| AT PZEV | through 2011 | 4 | 2 |
| <u>Enhanced AT PZEV</u> | <u>2009 through 2011</u> | <u>4</u> | <u>2</u> |
| ZEV | 2009 through 2011 | 6 | 3 |
| <u>Enhanced AT PZEV</u> | <u>2012 and subsequent</u> | <u>1</u> | <u>1</u> |
| ZEV | 2012 and subsequent | 2 | 1 |

(c) *Cap on Use of Credits.*

(1) *ZEVs.* Credits earned or allocated by ZEVs pursuant to this section C.7.5, not including all credits earned by the vehicle itself, may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation in any given model year, and may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation which must be met with ZEVs, as specified in section C.2.2(d)(3).

(2) *Enhanced AT PZEVs.* Credits earned or allocated by Enhanced AT PZEVs pursuant to this section C.7.5, not including all credits earned by the vehicle itself, may be used to satisfy up to one-tenth of a manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

~~(2)~~(3) *AT PZEVs.* Credits earned or allocated by AT PZEVs pursuant to this section C.7.5, not including all credits earned by the vehicle itself, may be used to satisfy up to one-twentieth of a manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

~~(3)~~(4) *PZEVs.* Credits earned or allocated by PZEVs pursuant to this section C.7.5, not including all credits earned by the vehicle itself, may be used to satisfy up to one-fiftieth of the manufacturer's ZEV obligation in any given model year, but may only be used in the same manner as other credits earned by vehicles of that category.

(d) *Allocation of Credits.* Credits shall be assigned by the Executive Officer to the project manager or, in the absence of a separate project manager, to the vehicle manufacturers upon demonstration that a vehicle has been placed in a project. Credits shall be allocated to vehicle manufacturers by the Executive Officer in accordance with a recommendation submitted in writing by the project manager and signed by all manufacturers participating in the project, and need not be allocated in direct proportion to the number of vehicles placed.

7.6 Use of ZEV Credits. A manufacturer may meet the ZEV requirements in any given model year by submitting to the Executive Officer a commensurate amount of g/mi ZEV credits, consistent with section C.2. Credits in each of the categories may be used to meet the requirement for that category as well as the requirements for lesser credit earning ZEV categories, but shall not be used to meet the requirement for a greater credit earning ZEV category. For example, credits produced from Enhanced AT PZEVs may be used to comply with AT PZEV requirements, but not with the portion that must be satisfied by ZEVs. These credits may be earned previously by the manufacturer or acquired from another party, ~~except that,~~

(a) NEVs. Credits earned from NEVs offered for sale or placed in service in model years 2001 through 2005 cannot be used to satisfy more than the percentage limits described in the following table: ~~50 percent of a manufacturer's percentage ZEV obligation that may only be satisfied with credits from ZEVs. The manufacturer's percentage ZEV obligation that may be satisfied by credits from AT PZEVs but not PZEVs is listed in the table below:~~

| <u>AT PZEV Category</u> | |
|-------------------------|------------------------|
| <u>2009</u> | <u>2010 and beyond</u> |
| <u>75%</u> | <u>50%</u> |

| <u>Model Years</u> | <u>ZEV Obligation that:</u> | <u>Percent limit for NEVs allowed to meet each Obligation:</u> |
|--------------------|---|--|
| <u>2009 – 2011</u> | <u>Must be met with ZEVs</u> | <u>50%</u> |
| <u>2009</u> | <u>May be met with AT PZEVs but not PZEVs</u> | <u>75%</u> |
| <u>2010 – 2011</u> | | <u>50%</u> |
| <u>2009 – 2011</u> | <u>May be met with PZEVs</u> | <u>No Limit</u> |
| <u>2012 –</u> | <u>Must be met with ZEVs</u> | <u>0%</u> |

| | | |
|-------------|---|-----------------|
| <u>2014</u> | <u>May be met with Enhanced AT PZEVs and AT PZEVs</u> | <u>50%</u> |
| | <u>May be met with PZEVs</u> | <u>No Limit</u> |

Additionally, credits earned from NEVs offered for sale or placed in service in model years 2006 or later can be used to the percentage limits described in the following table:

| <u>Model Years</u> | <u>ZEV Obligation that:</u> | <u>Percent Limit for NEVs allowed to meet each Obligation:</u> |
|--------------------|--|--|
| <u>2009 - 2011</u> | <u>May be met through compliance with Primary Requirements</u> | <u>No Limit</u> |
| | <u>May be met through compliance with Alternative Requirements, and must be met with ZEVs</u> | <u>0%</u> |
| | <u>May be met through compliance Alternative Requirements, and may be met with AT PZEVs or PZEVs</u> | <u>No Limit</u> |
| <u>2012 – 2014</u> | <u>Must be met with ZEVs</u> | <u>0%</u> |
| | <u>May be met with Enhanced AT PZEVs, AT PZEVs, or PZEVs</u> | <u>No Limit</u> |

~~This limitation applies to credits earned in model years 2001 through 2005 by the same manufacturer or earned in model years 2001 through 2005 by another manufacturer and acquired. The amount of g/mi ZEV credits required to be submitted shall be calculated according to the criteria set forth in this section C.7.~~

(b) Carry forward provisions for Large Volume Manufacturers. ZEV credits generated from excess production in model years 2009 and subsequent, including those acquired from another party, may be carried forward and applied to the ZEV minimum floor requirement specified in sections C.2.2(b)(1)(B) and (d) for two subsequent model years. Beginning with the third subsequent model year, those earned ZEV credits may no longer be used to satisfy the manufacturer's percentage ZEV obligation that may only be satisfied by credits from ZEVs, but may be used to satisfy the manufacturer's percentage ZEV obligation that may be satisfied by credits from Enhanced AT PZEVs, AT PZEVs, or PZEVs. For example, ZEV credit earned in 2010 would retain full flexibility through 2012, at which time that credit could only be used as Enhanced AT PZEV, AT PZEV, or PZEV credits.

(c) Carry forward provisions for manufacturers other than Large Volume

Manufacturers. ZEV credits generated from 2009 and subsequent model year production by manufacturers that are not LVMs large volume manufacturers may be carried forward by the manufacturer producing the ZEV credit until the manufacturer becomes subject to the LVM large volume manufacturer requirements, after the transition period permitted in section C.2.7(a). When subject to the LVM large volume manufacturer requirements, a manufacturer must comply with the provisions of section C.7.6(b).

ZEV credits traded by a manufacturer other than a LVM large volume manufacturer to any other manufacturer, including a LVM large volume manufacturer, are subject to section C.7.6(b), beginning in the model year in which they were produced (e.g., a 2009 model year ZEV credit traded in calendar year 2010 can only be applied towards the portion of the manufacturer's requirement that must be met with ZEVs through model year 2011; beginning in model year 2012, the credit can only be applied to the portion of the manufacturer's requirement that may be met with Enhanced AT PZEVs, AT PZEVs, or PZEVs).

7.7 Requirement to Make Up a ZEV Deficit.

(a) *General.* A manufacturer that produces and delivers for sale in California fewer ZEVs than required in a given model year shall make up the deficit by the end of the third model year by submitting to the Executive Officer a commensurate amount of g/mi ZEV credits. The amount of g/mi ZEV credits required to be submitted shall be calculated by [i] adding the number of ZEVs produced and delivered for sale in California by the manufacturer for the model year to the number of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California by the manufacturer for the model year (for a ~~large volume manufacturer~~ LVM large volume manufacturer, not to exceed that permitted under section C.2.1), [ii] subtracting that total from the number of ZEVs required to be produced and delivered for sale in California by the manufacturer for the model year, and [iii] multiplying the resulting value by the fleet average requirements for PCs and LDT1s for the model year in which the deficit is incurred.

7.8 Penalty for Failure to Meet ZEV Requirements. Any manufacturer that fails to produce and deliver for sale in California the required number of ZEVs and submit an appropriate amount of g/mi ZEV credits and does not make up ZEV deficits within the ~~specified time production period~~ specified time allowed by section C.7.7(a) shall be subject to the Health and Safety Code section 43211 civil penalty applicable to a manufacturer that sells a new motor vehicle that does not meet the applicable emission standards adopted by the state board. The cause of action shall be deemed to accrue when the ZEV deficits are not balanced by the end of the ~~specified time production period~~ specified time allowed by section C.7.7(a). For the purposes of Health and Safety Code section 43211, the number of vehicles not meeting the state board's standards shall be calculated according to the following equation, provided that the percentage of a ~~large volume manufacturer~~ LVM large volume manufacturer's ZEV

requirement for a given model year that may be satisfied with ~~partial~~ PZEV allowance vehicles or ZEV credits from such vehicles may not exceed the percentages permitted under section C.2.1(a):

(No. of ZEVs required to be produced and delivered for sale in California for the model year) - (No. of ZEVs produced and delivered for sale in California for the model year) - (No. of ZEV allowances from partial ZEV allowance vehicles produced and delivered for sale in California for the model year) - [(Amount of ZEV credits submitted for the model year) / (the fleet average requirement for PCs and LDT1s for the model_year)]

8. Severability. Each provision of these standards and test procedures is severable, and in the event that any provision of these standards and test procedures is held to be invalid, the remainder of the standards and test procedures remains in full force and effect.

9. Public Disclosure. Records in the Board's possession for the vehicles subject to the requirements of section ~~1962.1C~~ shall be subject to disclosure as public records as follows:

(a) Each manufacturer's annual production data and the corresponding credits per vehicle earned for ZEVs (including ZEV type), Enhanced AT PZEVs, AT PZEVs, and PZEVs for the 2009 and subsequent model years; and

(b) Each manufacturer's Annual Credit balances for 2010 and subsequent years for:

(1) Each type of vehicle: ZEVs (minus NEVs), NEVs, Enhanced AT PZEVs, AT PZEVs, and PZEVs; and

(2) Advanced technology demonstration programs; and

(3) Transportation systems; and

(4) Credits earned under section ~~1962.1(d)(5)(C)~~ C.4.4(c), including credits acquired from, or transferred to another party.

D. Certification Requirements [NO CHANGE]

45-day Notice 02/08/08
Hearing Date: 03/27/08
2nd 15-day Notice: 10/03/08

E. Test Procedures [NO CHANGE]

45-day Notice 02/08/08
Hearing Date: 03/27/08
2nd 15-day Notice: 10/03/08