

STAFF'S SUGGESTED MODIFICATIONS TO THE PROPOSED REGULATION ORDER

PROPOSED 2003 AMENDMENTS TO THE CALIFORNIA ZERO EMISSION VEHICLE REGULATION

Note: Set forth below are the proposed 2003 amendments to the California zero emission vehicle (ZEV) regulation. The text of the originally proposed amendments is shown in underline to indicate additions and ~~strikeout~~ to indicate deletions, compared to the preexisting regulatory language. The staff's suggested modifications to the original proposal are shown in double underline to indicate additions and ~~double-strike-out~~ to indicate deletions.

1. Amend California Code of Regulations, title 13, section 1962 to read as follows:

§ 1962. Zero-Emission Vehicle Standards for ~~2003~~ 2005 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.

(a) *ZEV Emission Standard.* The Executive Officer shall certify new ~~2003~~ 2005 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. Incorporation of a fuel-fired heater shall not preclude a vehicle from being certified as a ZEV provided: (1) the fuel-fired heater cannot be operated at ambient temperatures above 40°F, (2) the heater is demonstrated to have zero fuel evaporative emissions under any and all possible operational modes and conditions, and (3) the emissions of any pollutant from the fuel-fired heater when operated at an ambient temperature between 68°F and 86°F do not exceed the emission standard for that pollutant for a ULEV under section 1961(a)(1).

A vehicle that would meet the emissions standards for a ZEV except that it uses a fuel-fired heater that can be operated at ambient temperatures above 40°F, that cannot be demonstrated to have zero fuel evaporative emissions under any and all possible operation modes and conditions, or that has emissions of any pollutant exceeding the emission standard for that pollutant for a ULEV under section 1961(a)(1), shall be certified based on the emission level of the fuel-fired heater.

(b) *Percentage ZEV Requirements.*

(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 (b)(1)(C), produced by the manufacturer and delivered for sale in California that must be ZEVs, subject to the conditions in this section 1962(b).

| <i>Model Years</i> | <i>Minimum ZEV Requirement</i> |
|-----------------------------------|--------------------------------|
| 2003 2005 through 2008 | 10 percent |
| 2009 through 2011 | 11 percent |
| 2012 through 2014 | 12 percent |
| 2015 through 2017 | 14 percent |
| 2018 and subsequent | 16 percent |

(B) *Calculating the Number of Vehicles to Which the Percentage ZEV Requirement is Applied.* A manufacturer's volume of PCs and LDT1s produced and delivered for sale in California will be averaged for the 1997, 1998, and 1999 model years to determine the California PC and LDT1 production volume for the model year ~~2003~~ to 2005 ZEV requirements. For subsequent three-year periods following model years ~~2003~~ to 2005, a manufacturer's California production volume of PCs and LDT1s, and LDT2s as applicable, will be based on 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. 2006 to 2008 model-year ZEV requirements will be based on California production volumes of PCs and LDT1s, and LDT2s as applicable, for 2000 to 2002 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 during model year 2005 or the first model year of a subsequent three year period elect to base its ZEV obligation on the number of PCs and LDT1s, and LDT2s to the extent required by section (b)(1)(C), produced by the manufacturer and delivered for sale in California that same year. If a manufacturer elects to use this method after model year 2005 it must be used for each year of the three-year period. In applying the ZEV requirement, a PC, LDT1, or LDT2 (beginning in the 2007 model year) that is produced by a small volume manufacturer, but is marketed in California by another manufacturer under the other manufacturer's nameplate, shall be treated as having been produced by the marketing manufacturer.

(C) *Phase-in of ZEV Requirements for LDT2s.* Beginning with the ZEV requirements for the 2007 model year, a manufacturer's LDT2 production shall be included in determining the manufacturer's overall ZEV requirement under section (b)(1)(A) in the increasing percentages shown the table below.

| | | | | | |
|-------------|-------------|-------------|-------------|-------------|--------------|
| <i>2007</i> | <i>2008</i> | <i>2009</i> | <i>2010</i> | <i>2011</i> | <i>2012+</i> |
| 17% | 34% | 51% | 68% | 85% | 100% |

(D) *Exclusion of ZEVs in ~~a~~ Determining a ~~##~~ Manufacturer's ~~§~~ Sales ~~¶~~ Volume.* In calculating for purposes of sections 1962(b)(1)(B) and 1962(b)(1)(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% ownership interest, and delivered for sale in California.

(2) ~~Requirements for Large Volume, Intermediate Volume, Independent Low Volume, and Small Volume Manufacturers.~~

(A) Primary Requirements for Large Volume Manufacturers.

~~1. Model Years 2005-2008. In the 2003 2005 through 2008 model years, a large-volume manufacturer must meet at least 20% 10% 20% of its ZEV requirement with ZEVs or ZEV credits generated by such vehicles, and at least another 20% 30% 20% with ZEVs, advanced technology 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.~~

~~2. Model Years 2009-2011. In 2009 through 2011 model years, the maximum portion of a large volume manufacturer's 11% percentage ZEV requirement that may be satisfied by 0.2 allowance PZEVs, or credits generated by such vehicles, is limited to 6% of the manufacturer's applicable California PC, LDT1, and LDT2 production volume. The maximum portion of the ZEV requirement that may be satisfied by advanced technology PZEVs, or credits generated by such vehicles, is limited to 3.75% of the manufacturer's applicable California PC, LDT1, and LDT2 production volume. The 1.25% of the manufacturer's applicable California PC, LDT1, and LDT2 production volume that remains must be met only with ZEVs or credits generated by ZEVs.~~

~~3. Model Years 2012 and subsequent. As the ZEV requirement increases over time (from 10% from 12% 10% in model year 2003 2012 2003 to 16% in model years 2018 and subsequent), the maximum portion of the a large volume manufacturer's percentage ZEV requirement that may be satisfied by 0.2 allowance PZEVs that are not advanced technology PZEVs, or credits generated by such vehicles, is limited to 6% of the manufacturer's applicable California PC, LDT1, and LDT2 production volume; advanced technology PZEVs or credits generated by such vehicles may be used to meet up to one-half of the manufacturer's remaining ZEV requirement.~~

(B) Optional Requirements for Large Volume Manufacturers.

1. Minimum Floor for Production of Type III ZEVs.

a. Requirement. A large volume manufacturer electing to be subject to the optional compliance requirements during model years 2005 through 2008 must produce, deliver for sale, and place in service in California enough 2001-2008 model-year Type III ZEVs to generate ZEV credits sufficient to meet a cumulative percentage ZEV requirement of 1.09 percent of the manufacturer's average annual California sales of PCs and LDT1s over the five year period from model years 1997 through 2001, or submit an equivalent number of credits generated by such vehicles. Any additional credits for transportation systems generated in accordance with section 1962(g)(5) shall not be counted towards compliance with this section 1962(b)(2)(B)1.

b. *Failure to Meet Requirement for Production of Type III ZEVs.* A manufacturer that, after electing to be subject to the optional requirements in section 1962(b)(2)(B) for any model year from 2005 through 2008, fails to meet the requirement in section 1962(b)(2)(B)1.a. by the end of the 2008 model year, shall be treated as subject to the primary requirements in section 1962(b)(2)(A) for all model years from 2005 through 2008.

2. *Compliance With Percentage ZEV Requirements.* In 2005 through 2008 model years, a large volume manufacturer electing to be subject to the optional compliance requirements in a given model year must meet at least 40 percent of its ZEV requirement for that model year with ZEVs, advanced technology PZEVs, or credits generated from such vehicles. The remainder of the large volume manufacturer's ZEV requirement may be met using PZEVs or credits generated from such vehicles. As the ZEV requirement increases over time from 11% in model year 2009 to 16% in model years 2018 and subsequent, the maximum portion of the large volume manufacturer's percentage ZEV requirement that may be satisfied by PZEVs that are not advanced technology PZEVs, or credits generated by such vehicles, is limited to 6% of the manufacturer's applicable California PC, LDT1, and LDT2 production volume; ZEVs, advanced technology PZEVs, or credits generated by such vehicles may be used to meet the manufacturer's remaining ZEV requirement.

(C) *Election of the Primary or Optional Requirements for Large Volume Manufacturers.* A large volume manufacturer shall be subject to the primary ZEV requirements for the 2005 model year unless it notifies the Executive Officer in writing prior to the start of the 2005 model year that it is electing to be subject to the optional 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 model years 2005, 2006 or 2007 may prior to the end of the 2008 model year elect to become subject to the optional compliance requirements for model years 2005 through 2008 upon a demonstration that it has complied with the requirements in section 1962(b)(2)(B)1.a. If a large volume manufacturer elects to be subject to the optional compliance requirements in section 1962(b)(2)(B) for any model year from 2005 through 2008, it shall be subject to the full floor requirements in section 1962(b)(2)(B)1.

(D) *Use of Credits from Model Year 2003-2004 PZEVs.* A large volume manufacturer may produce, and deliver for sale in California, model year 2003 or 2004 PZEVs that generate credits exceeding the number of credits equal to 6 percent of the average annual volume of 1997, 1998 and 1999 PCs and LDT1s produced and delivered for sale in California by the manufacturer. In that event, the manufacturer may use those excess credits as AT PZEV credits in the 2005 and 2006 model years.

~~(B)~~(3) *Requirements for Intermediate Volume Manufacturers.* In ~~the 2003~~ 2005 and subsequent model years, an intermediate volume manufacturer may meet its ZEV requirement with up to 100 percent partial ZEV allowance vehicles or credits generated by such vehicles.

~~(C)~~(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.

~~(B)~~(5) *Counting ZEVs and PZEVs in Fleet Average NMOG Calculations.* For the purposes of calculating a manufacturer's fleet average NMOG value and NMOG credits under sections 1960.1(g)(2) and 1961(b) and (c), 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.

~~(A)~~(6) *Implementation Prior to 2003 2005 Model Year.* Prior to the ~~2003~~ 2005 model year, a manufacturer that voluntarily produces vehicles meeting the ZEV emission standards applicable to ~~2003~~ 2005 and subsequent model year vehicles may certify the vehicles to those standards and requirements for purposes of calculating fleet average NMOG exhaust emission values and NMOG credits under sections 1960.1(g)(2) and 1961(b) and (c), and for calculating ZEV credits as set forth in section 1962(d).

~~(B)~~(7) *Changes in Small Volume, Independent Low Volume, and Intermediate Volume Manufacturer Status.*

(A) *Increases in California Production Volume.* In the 2003 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, or 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, the manufacturer shall no longer be treated as a small volume, independent low volume, or intermediate volume manufacturer, as applicable, and shall comply with the ZEV requirements for independent low volume, intermediate volume or large volume manufacturers, as applicable, beginning with the sixth model year after the last of the three consecutive model years. The lead time shall be four rather than six years where a manufacturer ceases to be a small or intermediate volume manufacturer in the 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 2004 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 2005 model year will be based on the production volumes of Manufacturers A and B in the 2002-2004 model years. Where the production volume of Manufacturer A must be aggregated with the production volumes of Manufacturers B and C for the 2004 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 2005 model year will be based on the production volumes of Manufacturers A and C in the 2002-2004 model years. In either case, the lead time provisions in section 1962(b)(5)(A) and (B) will apply.

(c) *Partial ZEV Allowance Vehicles (PZEVs).*

(1) *Introduction.* This section 1962(c) 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.

(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) (for model years 2003 through 2006, existing SULEV intermediate in-use compliance standards shall apply to all PZEVs). 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) ("zero" evaporative emissions standards);

(C) *OBD.* Certify that the vehicle will meet the applicable on-board diagnostic requirements in section 1968.1 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)(2) to 15 years or 150,000 miles, whichever occurs first. ~~For HEVs that are advanced technology PZEVs, the traction battery must be included as a warranty item.~~ 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, an ultracapacitor, or a hydraulic, pneumatic and hydrogen other electric storage device) other than the device's on-board diagnostic elements.

(3) *Zero-Emission VMT PZEV Allowance.*

(A) *Calculation of Zero Emission VMT Allowance.* A vehicle that meets the requirements of section 1962(c)(2) and has zero-emission vehicle miles traveled (“VMT”) capability will generate an additional zero emission VMT PZEV allowance calculated as follows:

| <i>Urban All-Electric Range</i> | <i>Zero-emission VMT Allowance</i> |
|--|---|
| < 10 miles | 0.0 |
| 10 miles to 120 <u>90</u> miles | (10 33.8 + [0.5 x Urban AER])/35 |
| > 120 <u>90</u> miles | 2.0 <u>2.25</u> |

The urban all-electric range shall be determined in accordance with section E.3.(2)(a) of the “California Exhaust Emission Standards and Test Procedures for 2003 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,” incorporated by reference in section 1962(h).

(B) *Alternative Procedures.* As an alternative to determining the zero-emission VMT allowance in accordance with the preceding section 1962(c)(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 ~~one-half that of a vehicle with zero emissions of all regulated pollutants~~ 1.5.

(C) *Additional Allowances for Qualifying HEVs.* The Executive Officer shall approve an additional 0.1 zero-emission VMT partial ZEV allowance for an HEV with an all-electric range if the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer that the HEV is equipped with software and/or other strategies that would promote maximum use of off-vehicle charging, and that the strategies employed are reasonably reliable and tamper-proof.

(4) *PZEV Allowance for Advanced ZEV Componentry.* A vehicle that meets the requirements of section 1962(c)(2) ~~but does not qualify for any zero-emission VMT PZEV allowance under section 1962(c)(3)~~ may qualify for an advanced componentry PZEV allowance as provided in this section 1962(c)(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 ~~0.1~~ 0.2. A vehicle ~~equipped~~ capable of operating exclusively ~~by~~ on hydrogen stored in a high pressure system capable of refueling at 3600 pounds per square inch or more, or stored in nongaseous form, shall ~~also~~ instead qualify for an advanced componentry PZEV allowance of ~~0.1~~ ~~0.2~~ 0.3.

(B) ~~*Other Advanced ZEV Componentry*~~ *Use of a Qualifying HEV Electric Drive System.*

~~1. *Qualification for Allowance.* A vehicle shall qualify for an additional advanced componentry allowance of 0.4 in the 2003 through 2011 model years, and 0.35 in the 2012 and subsequent model years, if the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer that the vehicle is equipped with advanced ZEV componentry such as an advanced battery integral to the operation of the vehicle power train or an electric power train and qualifies under one of the two methods listed below. The allowance earned by a vehicle shall be calculated according to one of the following methods, as elected by the manufacturer:~~

~~a. The maximum system power output available from the electrical storage device divided by the sum of the electrical storage device and the SAE net power of the heat engine is greater than 13%; or~~

~~b. The maximum system power output available from the electrical storage device divided by the sum of the electrical storage device and the SAE net power of the heat engine is greater than 8% and the maximum power rating of the zero-emission drive system is at least 10 kilowatts.~~

~~1. *Criteria for Low Voltage, High Voltage, and High Voltage/High Power HEVs.* The criteria for a low voltage, a high voltage, and a high voltage/high power HEV are as follows:~~

| <u>Characteristics</u> | <u>Low Voltage HEV</u> | <u>High Voltage HEV</u> | <u>High Voltage/High Power HEV</u> |
|--|------------------------|-------------------------|------------------------------------|
| <u>Traction Drive System Voltage</u> | <u>< 60 Volts</u> | <u>>= 60 Volts</u> | <u>>= 60 Volts</u> |
| <u>Rated Peak Power of Electric Drive System</u> | <u>>= 4 kW</u> | <u>>= 10 kW</u> | <u>>= 50 kW</u> |
| <u>Traction Drive Boost</u> | <u>Yes</u> | <u>Yes</u> | <u>Yes</u> |
| <u>Regenerative Braking</u> | <u>Yes</u> | <u>Yes</u> | <u>Yes</u> |
| <u>Idle Start/Stop</u> | <u>Yes</u> | <u>Yes</u> | <u>Yes</u> |

2. Low Voltage HEVs. A 2008 or earlier model-year PZEV that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a low voltage HEV does not receive an additional allowance for meeting those criteria but generates credits that may be used in the AT PZEV category through the 2008 model year.

3. High Voltage HEVs. A vehicle that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a high voltage HEV qualifies for an additional advanced componentry allowance of 0.4 in the 2003 through 2011 model years, 0.35 in the 2012 through 2014 model years, and 0.25 in the 2015 and subsequent model years.

4. High Voltage/High Power HEVs. A vehicle that the manufacturer demonstrates to the reasonable satisfaction of the Executive Officer meets all of the criteria for a high voltage/high power HEV qualifies for an additional advanced componentry allowance of 0.5 in the 2003 through 2011 model years, 0.45 in the 2012 through 2014 model years, and 0.35 in the 2015 and subsequent model years.

5. Severability. In the event that one of the two methods in all or part of section 1962(c)(4)(B)1.-4. is found invalid, the remainder of section 1962, including the remainder of section 1962(c)(4)(B)1.-4. if any, remains in full force and effect. In the event that both of the two methods in section 1962(c)(4)(B)1. are found invalid, the remainder of section 1962 without section 1962(c)(4)(B)1. remains in full force and effect.

1. CO₂ Reduction Method.

a. General. A vehicle whose operation results in reduced CO₂ emissions as compared to the average vehicle in its class may qualify for an additional advanced componentry allowance in accordance with this section (c)(4)(B)1. The vehicle's class is determined in accordance with section 1962(e)(3).

b. ~~Equation for Determining Additional Allowance.~~ The following equation is used to calculate the additional allowance, provided that in order to earn any additional allowance, the CO₂ Savings must be at least 39,000:

$$\text{Advanced Componentry Allowance} = \text{CO}_2 \text{ Savings} \div 250,000$$

Where: ~~CO₂ Savings = (Class Average CO₂ Production) - (Vehicle CO₂ Production)~~
~~Vehicle CO₂ Production = (150,000 ÷ CMPEG) × 19.564~~
~~CMPEG is determined in accordance with section (e)(2)~~
~~Class Average CO₂ Production for the 2000-2007 model years is determined using the following table:~~

| <i>Vehicle Class</i> | <i>Class Average CO₂ Production, 2000-2007 MY</i> |
|----------------------|--|
| Subcompact PC | 95,902 |
| Compact PC | 96,533 |
| Midsize PC | 108,689 |
| Large PC | 114,633 |
| Small Truck | 117,384 |
| Medium Truck | 137,131 |
| Large Truck | 161,242 |

~~Class Average CO₂ Production for the 2008-2014 model years is determined in accordance with the following equation:~~

$$\text{Class Average CO}_2 \text{ Production} = (150,000 / \text{Baseline Fuel Economy for model years 2008-2014}) \times 19.564$$

Where: ~~Baseline Fuel Economy for model years 2008-2014 means Baseline Fuel Economy for either the 2008-2011 or 2012-2014 model years, as applicable, as determined in accordance with section (e)(5).~~

e. ~~Alternative Method for Determining CO₂ Savings of a Vehicle That Is Not Gasoline Fueled.~~ For purposes of the equation in section (c)(4)(B)1.b., the Executive Officer shall approve an alternative method for determining CO₂ savings of a vehicle that is not gasoline-fueled, if the manufacturer submits the alternative method with an engineering evaluation that demonstrates to the reasonable satisfaction of the Executive Officer that the alternative method fairly represents the CO₂ impacts of the vehicle.

2. *Alternative Efficiency Method.* A manufacturer may elect to have a vehicle's additional advanced componentry allowance determined according to the Efficiency Method, in which case the allowance shall be determined in accordance with the following equation:

$$\text{Advanced Componentry Allowance} = ((\text{CMPEG} / (1.3 * \text{Baseline Fuel Economy})) - 1) * 0.5$$

Where: ~~CMPEG is determined in accordance with section (e)(2).~~

~~Baseline Fuel Economy is determined in accordance with section (e)(4).~~

~~A vehicle earning an Efficiency Method advanced componentry allowance of less than zero pursuant to this subsection will be treated as having an Efficiency Method advanced componentry allowance of zero.~~

3. *Alternative Percent Peak Power Method For the 2000-2007 Model Years.* For the 2000-2007 model years only, a manufacturer may elect to have a vehicle's additional advanced componentry allowance determined using the Percent Peak Power method, in which case the allowance shall be determined in accordance with the following equation:

~~Advanced Componentry Allowance = Percentage of "maximum available power" from the electric storage device~~

~~Where: Percentage of "maximum available power" means the maximum system power output available from the electrical storage device divided by the sum of the electrical storage device and the SAE net power of the heat engine.~~

~~In order to earn any score using the Percent Peak Power method a vehicle must be able to recover kinetic energy through regenerative braking and provide at least 13 percent of "maximum available power" from the electrical storage device.~~

(5) *PZEV Allowance for Low Fuel-Cycle Emissions.* A vehicle that uses fuel(s) with very low fuel-cycle emissions shall receive a PZEV allowance not to exceed ~~0.2~~ 0.3 (0.15 in the case of an HEV that uses for propulsion any fuel that does not have very low fuel-cycle emissions). In order to receive the fuel-cycle PZEV 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. The fuel-cycle PZEV allowance is calculated according to the following formula:

$$\text{PZEV Fuel Cycle Allowance} = \del{0.2} \u{0.3} \times [(\text{percent of VMT using fuel(s) meeting the requirements of the preceding paragraph}) / 100]$$

A manufacturer's demonstration to the Executive Officer that a vehicle qualifies for a fuel-cycle PZEV allowance shall include test results and/or empirical data supporting the estimate of the relative proportion of VMT while operating on fuel(s) with very low fuel-cycle emissions.

(6) Combined ZEV Allowance.

(A) Calculation of Combined ZEV 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 1962(c)(6), multiplied by any PZEV introduction phase-in multiplier ~~or PZEV high efficiency multiplier~~ listed in section 1962(c)(7) ~~(if a 2002 through 2005 model year PZEV qualifies for both multipliers listed in section 1962(c)(7), the product of the two multipliers is used as the PZEV multiplier)~~, subject to the cap in section 1962(c)(6)(B) ~~for 2002~~ 2012 and subsequent model-year vehicles.

~~(A)~~ 1. Baseline PZEV Allowance. The baseline PZEV allowance of 0.2 for vehicles meeting the criteria in section 1962(c)(2);

~~(B)~~ 2. Zero-Emission VMT PZEV Allowance. The zero-emission VMT PZEV allowance, if any, determined in accordance with section 1962(c)(3);

~~(C)~~ 3. Advanced Componentry PZEV Allowance. The advanced ZEV componentry ZEV allowance, if any, determined in accordance with section 1962(c)(4); and

~~(D)~~ 4. Fuel-Cycle Emissions PZEV Allowance. The fuel-cycle emissions ZEV allowance, if any, determined in accordance with section 1962(c)(5).

(B) Cap for 2012 and Subsequent Model-Year Vehicles. The maximum value of AT PZEV allowances a 2012 and subsequent model-year vehicle may earn, including the baseline PZEV allowance, is 3.0.

(7) PZEV Multipliers.

(A) PZEV Introduction Phase-In Multiplier. Each 2000 through 2005 model-year PZEV that is produced and delivered for sale in California, other than a PZEV qualifying for a phase-in multiplier under section 1962(c)(7)(B), qualifies for a PZEV introduction phase-in multiplier as follows:

| | <i>MY 2000-2003</i> | <i>MY 2004</i> | <i>MY 2005</i> |
|------------|---------------------|----------------|----------------|
| Multiplier | 4.0 | 2.0 | 1.33 |

~~(B)~~ AT PZEV High Efficiency Multiplier. ~~An AT PZEV qualifies for a full high efficiency multiplier in accordance with section 1962(e) starting with the 2002 model year.~~

~~(C)~~ (B) Introduction Phase-In Multiplier for PZEVs with > 10 Mile That Earn a Zero Emission Range VMT Allowance. Each 2000 through 2011 model year PZEV ~~with > 10~~

miles that earns a zero emission range VMT allowance under section 1962(c)(3) and is produced and delivered for sale in California qualifies for a phase-in multiplier as follows:

| | | | |
|------------|-------------------------------------|-------------------------------------|-------------------------|
| | MY 2000-2007 <u>2008</u> | MY 2008-2009 <u>2011</u> | MY 2010-2011 |
| Multiplier | 2.0 <u>6.0</u> | 1.5 <u>3.0</u> | 1.25 |

(d) *Qualification for ZEV Multipliers and Credits.*

(1) *1996-1998 Model-Year ZEV Multipliers.*

(A) *1996-1998 Model-Year ZEV Multiplier Based on Vehicle Range.*

1996-1998 model-year ZEVs shall qualify for a ZEV multiplier based on vehicle range as follows:

| ZEV Multiplier | Vehicle Range (miles) | |
|----------------|---------------------------|-----------------|
| | Model Years 1996 and 1997 | Model Year 1998 |
| 2 | any | ≥100 |
| 3 | ≥70 | ≥130 |

Range shall be determined in accordance with section 9.f.(2)(a) of the “California Exhaust Emission Standards and Test Procedures for 1988 Through 2000 Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles,” incorporated by reference in section 1960.1(k).

(B) *1996-1998 Model-Year ZEV Multiplier Based on Specific Energy of Battery.* 1996-1998 model-year ZEVs shall qualify for a ZEV multiplier based on specific energy of the battery as follows:

| ZEV Multiplier | Specific Energy of Battery (w-hr/kg) |
|----------------|--------------------------------------|
| 2 | any |
| 3 | ≥40 |

(C) *Election of Multiplier.* A 1996-1998 model-year ZEV may qualify for a ZEV multiplier according to section 1962(d)(1)(A) or section 1962(d)(1)(B), but not both.

(2) *1999-2000 Model-Year ZEV Multiplier Calculation for Extended Electric Range Vehicles.* Each ZEV that is produced and delivered for sale in California in the 1999-2000 model years and that has an extended electric range shall qualify for a ZEV multiplier as follows:

| | |
|---------------------------|---------------------|
| <i>All-electric range</i> | <i>MY 1999-2000</i> |
| 100-175 | 6-10 |

ZEV multipliers under the above schedule will be determined by linear interpolation between the values shown in the above schedule. Range shall be determined in accordance with Section E.3.(2)(a) of the “California Exhaust Emission Standards and Test Procedures for 2003 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,” incorporated by reference in section 1962(h). ZEVs that have a refueling time of less than 10 minutes and a range of 100 miles or more shall be counted as having unlimited all-electric range, and shall consequently earn the maximum allowable ZEV multiplier for a specific model year. ZEVs that have a range of 80 to 99 miles shall qualify for ZEV multipliers in the 1999-2000 model years in accordance with the following equation:

$$\text{ZEV multiplier} = (6) \times (\text{AER equivalent to a 10 minute recharge}/100) \times 0.5.$$

As an option to the above mechanism, the manufacturer of a 1999 model-year ZEV may elect to have its multiplier based on the regulatory requirements pertaining to multipliers based on range or specific energy in section 1960.1(g)(2) and (h)(2), title 13, California Code of Regulations that were applicable to 1999 model-year ZEVs immediately before this section 1962 became operative on November 27, 1999 as a result of the “LEV II” rulemaking.

(3) *ZEV Multipliers for 2001-2002 and Subsequent Model Years.*

(A) *ZEV Phase-In Multiplier.* Each 2001 ~~to 2005~~ and 2002 model-year ZEV that is placed in service in California by ~~April 15~~ September 30, 2003 qualifies for a ZEV phase-in multiplier ~~as follows:~~ of 4.0. A 2001 ~~to~~ or 2002 model-year ZEV that is placed in service in California after ~~April 15~~ September 30, 2003 earns credits in accordance with section 1962(d)(5) instead of section 1962(d)(3).

| | | |
|-------------------|---------------------|---------------------|
| | <i>MY 2001-2002</i> | <i>MY 2003-2005</i> |
| Multiplier | 4.0 | 1.25 |

(B) *ZEV Discount Multiplier for NEVs.* Each 2004 and subsequent model-year NEV that is produced and delivered for sale in California is subject to a ZEV discount multiplier for NEVs as follows:

| | | |
|----------------------------|--------------------------|--------------------------------|
| | <i>MY 2004 – MY 2005</i> | <i>MYs 2006 and Subsequent</i> |
| Discount Multiplier | 0.5 | 0.15 |

~~(C)~~(B) *ZEV Extended Electric Range Multiplier.*

1. *Basic Multiplier Schedule.* Each 2001 and subsequent 2002 model-year ZEV that is placed in service in California and that has an extended urban electric range qualifies for a ZEV extended electric range multiplier as follows:

| <i>Urban All-Electric Range</i> | <i>Multiplier</i> |
|---------------------------------|-------------------|
| < 50 miles | 1 |
| > 50 miles to < 275 miles | (Urban AER-25)/25 |
| > 275 miles | 10 |

A NEV is not eligible to earn a ZEV extended electric range multiplier. In determining ZEV range multipliers, specialty ~~electric vehicles~~ ZEVs may, upon Executive Officer approval, be tested at the parameters used to determine the ZEV multipliers for the existing ~~electric vehicle~~ ZEV.

2. *Fast refueling.*

a. *Full Fueling in 10 Minutes or Less.* A ~~2008 and earlier~~ 2001-2002 model-year ZEV with the demonstrated capability to accept fuel or electric charge until achieving at least 95% SOC or rated fuel capacity in 10 minutes or less when starting from all operationally allowable SOC or fuel states is counted as having unlimited zero emission range and qualifies for the maximum allowable ZEV extended electric range multiplier.

b. *At Least 60-Mile Range in Less Than 10 Minutes.* A ~~2008 and earlier~~ 2001-2002 model year ZEV with the demonstrated capacity to accept fuel or electric charge equivalent to at least 60 miles of UDDS range when starting from 20% SOC in less than 10 minutes is counted as having 60 additional miles (up to a 275 mile maximum) of UDDS range in the range multiplier determination in section 1962(d)(3)(C)1.

~~3. *Multiplier Phase Down.* Starting with the 2005 model year, the ZEV extended electric range multiplier is phased down to 0.15 of its value in accordance with section 1962(e)(6).~~

~~(D)~~(C) *Combined ZEV Multiplier.* ~~Starting with~~ During the 2001-2002 model years, the combined ZEV multiplier for each ZEV in a specific model year is the product of:

1. The ZEV phase-in multiplier if any as set forth in section 1962(d)(3)(A), times

~~2. In the case of a NEV, the ZEV discount multiplier for NEVs if any as set forth in section 1962(d)(3)(B), times~~

~~32.~~ The extended electric range multiplier if any as set forth in section 1962(d)(3)(~~C~~)(B), times.

4. The high efficiency multiplier if any as set forth in section 1962(e).

(4) (E) *Effect of ZEV Multipliers in the 1996-2002 Model Years.* In calculating the number of ZEVs produced and delivered for sale in California by a manufacturer in a the 1996-2002 model years and the ZEV credits from such vehicles, the number of ZEVs qualifying for a particular ZEV multiplier shall be multiplied by the combined ZEV multiplier.

(5) *ZEV Credits for 2003 and Subsequent Model Years.*

(A) *ZEV Tiers for Credit Calculations.* Starting in the 2003 model year, ZEV credits from a particular ZEV are based on the assignment of a given ZEV into one of the following five ZEV tiers:

| <u>ZEV Tier</u> | <u>Common Description</u> | <u>UDDS ZEV Range</u> | <u>Fast Refueling Capability</u> |
|-----------------|---------------------------|--------------------------------|---|
| <u>NEV</u> | <u>NEV</u> | <u>No minimum</u> | <u>N/A</u> |
| <u>Type 0</u> | <u>Utility EV</u> | <u><50 miles</u> | <u>N/A</u> |
| <u>Type I</u> | <u>City EV</u> | <u>>= 50, <100 miles</u> | <u>N/A</u> |
| <u>Type II</u> | <u>Full Function EV</u> | <u>>= 100 miles</u> | <u>N/A</u> |
| <u>Type III</u> | <u>Fuel Cell EV</u> | <u>>= 100 miles</u> | <u>Must be capable of replacing 95% maximum rated energy capacity in <= 10 minutes</u> |

A specialty ZEV that has the same zero emission energy storage device and chassis as an existing ZEV from which it was modified may, upon Executive Officer approval, be categorized on the basis of the that existing ZEV from which it is modified. A specialty vehicle that is optimized for a particular duty cycle that conflicts with optimization for maximum vehicle range may be promoted to the next higher ZEV tier upon a determination by the Executive Officer that the specialty vehicle has ZEV componentry equivalent to that utilized by ZEVs in the next tier and would meet the requirements for the next tier if optimized for maximum range.

(B) *ZEV Credits for 2003 and ~~Subsequent~~ ~~Model~~ ~~Year~~ ZEVs.* A 2003 and subsequent model-year ZEV, other than a NEV, earns 1 ZEV credit when it is produced and delivered for sale in California. A 2003 and subsequent model-year ZEV earns additional credits based on the earliest model year in which the ZEV is placed in service (not earlier than the ZEV's model year). The following table identifies the credits that a ZEV in each of the five ZEV tiers will earn, including the credit not contingent on placement in service, if it is placed in service in the specified model year or by ~~March 31~~ June 30 after the end of the specified model year.

| <i>Tier</i> | <i>Model Year in Which ZEV is Placed in Service</i> | | | | | | | | | |
|-------------------------|---|--------------|--------------|-------------------------|-------------------------|-------------------------|-------------|-------------|-------------|--------------|
| | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> | <u>2011</u> | <u>2012+</u> |
| <u>NEV</u> | <u>1.25</u> | <u>0.625</u> | <u>0.625</u> | <u>0.15</u> | <u>0.15</u> | <u>0.15</u> | <u>0.15</u> | <u>0.15</u> | <u>0.15</u> | <u>0.15</u> |
| <u>Type 0 (Utility)</u> | <u>1.5</u> | <u>1.5</u> | <u>1.5</u> | <u>1.5</u> | <u>1.5</u> | <u>1.5</u> | <u>1</u> | <u>1</u> | <u>1</u> | <u>1</u> |
| <u>Type 1 (City)</u> | <u>8</u> | <u>8</u> | <u>8</u> | <u>7</u> | <u>7</u> | <u>7</u> | <u>2</u> | <u>2</u> | <u>2</u> | <u>2</u> |
| <u>Type II</u> | <u>12</u> | <u>12</u> | <u>12</u> | <u>10</u> | <u>10</u> | <u>10</u> | <u>3</u> | <u>3</u> | <u>3</u> | <u>3</u> |
| <u>Type III</u> | <u>40</u> | <u>40</u> | <u>40</u> | 15 <u>40</u> | 15 <u>40</u> | 15 <u>40</u> | <u>4</u> | <u>4</u> | <u>4</u> | <u>3</u> |

(C) Counting a Type III ZEV Placed in a Section 177 State. A Type III ZEV that is certified to the California ZEV standards and is placed in service 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) applicable for the ZEV's model year may be counted towards compliance with the California percentage ZEV requirements in section 1962(b) as if it were delivered for sale and placed in service in California.

(e) ZEV and Advanced Technology PZEV High Efficiency Multipliers

(1) Eligibility. Beginning with the 2005 model year for ZEVs and the 2002 model year for advanced technology PZEVs, both ZEVs and advanced technology PZEVs are eligible for a high efficiency multiplier. A NEV is not eligible to earn an efficiency multiplier. A vehicle earning an efficiency multiplier value of less than 1.00 pursuant to section 1962(e)(3) will be treated as having an efficiency multiplier of 1.

(2) Calculation of CMPEG Rating. For all vehicle types, a CMPEG (California miles per equivalent gallon) rating is determined as follows:

(A) For gasoline fueled vehicles and HEVs with < 10 mile zero emission range, CMPEG = Combined Fuel Economy determined in accordance with 40 CFR Part 600 = 1/ [.55 / (EPA city mpg, unadjusted) + .45 / (EPA highway mpg, unadjusted)].

(B) For BEVs and off vehicle charge capable HEVs with ≥ 10 mile zero emission range, CMPEG = [33,705 AC whr/gal / (.55 (AC whr/mile UDDS) + .45 (AC whr/mile HFEDS))] where AC whr/ mile values are determined in accordance with section E.3. "Determination of All Electric Range Urban," and "Determination of All Electric Range Highway" of the "California Exhaust Emission Standards and Test Procedures for 2003 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," as incorporated by reference in section 1962(h). Qualifying HEV CMPEG determination shall be

based solely on electric mode operating efficiency for vehicles that are able to maintain test cycle speed and time tolerances for the entire zero emission range test.

(C) *Alternative Fuel Vehicles.*

1. For vehicles operating on an alternative fuel other than hydrogen, including CNG or alcohol, CMPEG = Combined Fuel Economy as determined in accordance with 40 CFR Part 600. Alternate fuel vehicle CMPEG shall not be compensated with the federal (1/0.15) "fuel content" factor used in determining average fuel economy.

2. For vehicles operating on hydrogen, CMPEG shall be determined by converting the combined fuel economy value measured on the basis of miles per kg of hydrogen (MPkg) into CMPEG as follows:

$$\text{Hydrogen MPkg} \times (1.0 \text{ kg H}_2/\text{gallon gasoline}) = \text{CMPEG}$$

(D) For flexible fuel or dual fuel vehicles, CMPEG is the lowest of the federal combined fuel economy values determined for any fuel or fuel mixture on which the vehicle is certified to operate.

(3) *Vehicle classes.*

(A) *List of vehicle classes.* Efficiency multipliers will be determined based on assignment of a vehicle to one of the following vehicle classes; interior volume is determined in accordance with SAE Recommended Practice J1100 and U.S. EPA Fuel economy regulations, 40 CFR 600.315-82.

| <i>Vehicle Class</i> | <i>Class Description</i> |
|---|---|
| City Vehicle (effective beginning in 2008 model year) | 2-passenger electric vehicle with length < 3 meters |
| Subcompact PC | Interior volume up to 99 ft ³ , and not a City Vehicle |
| Compact PC | Interior volume 100-109 ft ³ |
| Midsize PC | Interior volume 110-119 ft ³ |
| Large PC | Interior volume over 120 ft ³ |
| Small Truck | LDT 1 |
| Medium Truck | LDT 2 |
| Large Truck | LDT 3 & 4 |

~~(B) *Assignment of derivative or converted vehicles.* A derivative station wagon shall be placed in the same class as the sedan on which it is based. A minivan shall be placed in the appropriate truck category based on adjusted or adjusted loaded vehicle weight. A derivative or conversion ZEV that shares a production platform with one or more gasoline engine versions shall be placed in the same class as the smallest or lightest gasoline version of the same platform for that model year.~~

~~(4) *High efficiency multipliers for the 2002-2007 model years.* For model years 2002-2007, the efficiency multiplier for each vehicle class is determined according to the following equation:~~

$$\text{High Efficiency Multiplier} = \text{CMPEG} / (1.5 * \text{Baseline Fuel Economy})$$

~~Where: ——— Baseline Fuel Economy is determined in accordance with the following table:~~

| <i>Vehicle Class</i> | <i>Baseline Fuel Economy MY 2002-2007</i> |
|----------------------|---|
| Subcompact PC | 30.6 |
| Compact PC | 30.4 |
| Midsized PC | 27.0 |
| Large PC | 25.6 |
| Small Truck | 25.0 |
| Medium Truck | 21.4 |
| Large Truck | 18.2 |

(5) ~~High efficiency multipliers for the 2008 and subsequent model years. For the 2008 and subsequent model years, the efficiency multiplier for each vehicle class is determined in accordance with the following equations:~~

~~For ZEVs and PZEVs with > 10 mile Zero Emission Range: Efficiency multiplier = CMPEG / (2.0 * Baseline Fuel Economy)~~

~~For all other AT PZEVs: Efficiency multiplier = CMPEG / (1.5 * Baseline Fuel Economy)~~

~~Where: Baseline Fuel Economy for model years 2008-2011 is the model year 2004 unadjusted combined federal sales weighted fuel economy for the vehicle class as determined by U.S. EPA. For a City Vehicle, the baseline fuel economy is 45.9.~~

~~Baseline Fuel Economy for Model Years 2012-2014 is the model year 2008 unadjusted combined federal sales weighted fuel economy for the vehicle class as determined by U.S. EPA. For a City Vehicle, the baseline fuel economy is 45.9.~~

~~Baseline Fuel Economy for model years 2015 and beyond shall be determined using the same methodology.~~

(6) ~~Phasing in the High Efficiency Multiplier for ZEVs.~~

(A) ~~Range and Efficiency Phasing Factors. For ZEVs, the high efficiency multiplier is phased in, and the extended electric range multiplier is phased down to 0.15 of its initial value, using the phasing factors in the following schedule:~~

Range and Efficiency Phasing Factors for Each Model Year

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012+ |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Range | 1.000 | 0.825 | 0.600 | 0.450 | 0.300 | 0.250 | 0.200 | 0.200 | 0.150 |
| Efficiency | 0.000 | 0.100 | 0.350 | 0.550 | 0.600 | 0.700 | 0.800 | 0.800 | 0.825 |

(B) ~~Application of the Range and Efficiency Phasing Factors.~~ The range and efficiency phasing factors are applied as follows:

$$\text{Phased range multiplier} = ((\text{range multiplier} - 1) \times \text{range phasing factor}) + 1$$

$$\text{Phased efficiency multiplier} = ((\text{efficiency multiplier} - 1) \times \text{efficiency phasing factor}) + 1$$

(f) *In-Service Warranty Multiplier for 2001-2004 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 ~~for the by a 2001 through 2011 2004 model years by a ZEV, or a PZEV~~ with ≥ 10 mile zero emission range, whose zero-emission energy storage or conversion system is under an original warranty from the vehicle manufacturer beyond three years of service and is registered for operation on public roads in California. ~~For the 2001 through 2007 model years, a~~ 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 the 2008 through 2011 model years, a manufacturer will receive 0.05 times the ZEV credit 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.~~ The warranty multiplier is reported and earned in the year following each continuous year of service. ZEVs, other than NEVs, re-leased prior to January 25, 2001 for a period beyond three years of service will earn an additional ZEV multiplier of 0.1 times the ZEV credit earned by the vehicle if it were leased or sold new in that year, including multipliers, for each additional year that they are in service and registered for operation on public roads in California. Such vehicles are not required to have the zero emission energy storage or conversion system under an original warranty from the vehicle manufacturer.

(g) *Generation and Use of ZEV Credits; Calculation of Penalties*

(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 1962(b) shall earn ZEV credits in accordance with this section 1962(g).

(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 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 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 for that model year.

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

(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 and LDT1s, and included in the calculation of ZEV credits as specified in this section 1962(g) if the manufacturer so designates.

(4) *ZEV Credits for Advanced Technology Demonstration Programs.* A vehicle, other than a NEV, that is placed in a California advanced technology demonstration program may earn ZEV credits even if it is not "delivered for sale." 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 more than 50 percent of the first year of placement the vehicle will be situated 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.

(5) *ZEV Credits for Transportation Systems.*

(A) *General.* In model years 2001 through ~~2007~~ 2011, a ZEV, advanced technology PZEV or PZEV placed 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 (g)(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 (g)(5)(B) below.

(B) *Credits Earned.* In order to earn additional credit under this section (g)(5), a project must at a minimum demonstrate [i] shared use of ZEVs, 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>Shared Use, Intelligence</i> | <i>Linkage to Transit</i> |
|--------------------------|---------------------------------|---------------------------|
| PZEV | 2 | 1 |
| Advanced Technology PZEV | 4 | 2 |
| ZEV | 6 | 3 |

(C) *Cap on Use of Credits.*

1. *ZEVs.* Credits earned or allocated by ZEVs pursuant to this section (g)(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.

2. *AT PZEVs.* Credits earned or allocated by AT PZEVs pursuant to this section (g)(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. *PZEVs.* Credits earned or allocated by PZEVs pursuant to this section (g)(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.

(6) *Submittal 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 1962(b). These credits may be earned previously by the manufacturer or acquired from another manufacturer party, except that beginning with the 2006 model year 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 following portion of any program category (ZEV, AT PZEV, PZEV) a manufacturer's percentage ZEV obligation that may not only be satisfied with credits from AT PZEVs or PZEVs ZEVs and, starting with the 2009 model year,

the manufacturer's percentage ZEV obligation that may be satisfied by credits from AT PZEVs but not PZEVs:

| <u>ZEV Category</u> | | <u>AT PZEV Category</u> | |
|---------------------|------------------------|-------------------------|------------------------|
| <u>2006</u> | <u>2007 and beyond</u> | <u>2009</u> | <u>2010 and beyond</u> |
| 75% | 50% | 75% | 50% |

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 1962(g).

(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 next model year by submitting to the Executive Officer a commensurate amount of g/mi ZEV credits, except that credits generated from PZEVs may be used to offset deficits for two model years. 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, not to exceed that permitted under section 1962(b)(2)), [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.

~~(B) *Additional Time to Make Up ZEV Deficits for the 2003-2004 Model Years.*~~

~~1. *Model-Year 2003 ZEV Deficits.* A manufacturer that produces, and delivers for sale in California, model-year 2003 or earlier PZEVs that generate at least twice as many credits as are necessary to take full advantage of the manufacturer's 60% PZEV option for the 2003 model year has through the 2007 model year to fully exercise its option to meet an additional 20% of its ZEV requirement for the 2003 model year with credits from advanced technology PZEVs.~~

~~2. *Model-Year 2004 ZEV Deficits.* A manufacturer that qualifies under section 1962(g)(7)(B) 1., and produces, and delivers for sale in California, model-year 2004 or earlier PZEVs that generate at least twice as many credits as are necessary to take full advantage of the manufacturer's 60% PZEV option for the 2003 and 2004 model years, has through the 2008 model year to fully exercise its option to meet an additional 20% of its ZEV requirement for the 2004 model year with credits from advanced technology PZEVs.~~

(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 or submit an appropriate amount of g/mi ZEV credits and does not make up ZEV deficits within the specified time period

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 period. 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's ZEV requirement for a given model year that may be satisfied with partial ZEV allowance vehicles or ZEV credits from such vehicles may not exceed the percentages permitted under section 1962(b)(2)(A):

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

(h) *Test Procedures.* The certification requirements and test procedures for determining compliance with ~~the~~ this section 1962 are set forth in "California Exhaust Emission Standards and Test Procedures for 2003 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 by the state board on August 5, 1999, and last amended ~~July 30, 2002~~ [Insert date of amendments], which is incorporated herein by reference.

(i) *ZEV-Specific Definitions.* The following definitions apply to this section 1962.

(1) "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 ~~or the high efficiency multiplier.~~

(2) "Battery electric vehicle" 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.

(3) "Neighborhood electric vehicle" 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.

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

(4.5) "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.

(5) “Specialty electric vehicle ZEV” means a version of an existing electric vehicle ZEV that is designed for a commercial or governmental fleet application, and either [i] has the same battery pack zero emissions energy storage device and chassis as the an existing electric vehicle ZEV from which it is modified, or [ii] in the case of a vehicle that is not based on an existing ZEV platform, is optimized for a particular duty cycle, such as urban delivery service, that conflicts with optimization for maximum vehicle range.

(6) “Type 0, I, II, and III ZEV” all have the meanings set forth in section 1962(d)(5)(A).

(j) *Abbreviations.* The following abbreviations are used in this section 1962:

“AER” means all-electric range.

“BEV” means battery electric vehicle.

~~“CMPEG” means California miles per equivalent gallon.~~

“HEV” means hybrid-electric vehicle.

“HFEDS” means highway fuel economy driving cycle.

“LDT” means light-duty truck.

“LDT1” means a light-truck with a loaded vehicle weight of 0-3750 pounds.

“LDT2” means a “LEV II” light-duty truck with a loaded vehicle weight of 3751 pounds to a gross vehicle weight of 8500 pounds, or a “LEV I” light-duty truck with a loaded vehicle weight of 3751-5750 pounds.

“MDV” means medium-duty vehicle.

“Non-Methane Organic Gases” or “NMOG” means the total mass of oxygenated and non-oxygenated hydrocarbon emissions.

“MY” means model year.

“NEV” means neighborhood electric vehicle.

“NOx” means oxides of nitrogen.

“PC” means passenger car.

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

“SOC” means state of charge.

“SULEV” means super-ultra-low-emission-vehicle.

“UDDS” means urban dynamometer driving cycle.

“ULEV” means ultra-low emission vehicle.

“VMT” means vehicle miles traveled.

“ZEV” means zero-emission vehicle.

(k) *Severability.* Each provision of this section is severable, and in the event that any provision of this section is held to be invalid, the remainder of this article remains in full force and effect.

Note: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43104 and 43105, Health and Safety Code. Reference: Sections 39002, 39003, 39667, 43000, 43009.5, 43013, 43018, 43100, 43101, 43101.5, 43102, 43104, 43105, 43106, 43107, 43204, and 43205.5, Health and Safety Code.

2. Make comparable amendments to the “California Exhaust Emission Standards and Test Procedures for 2003 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.” In addition, add section D.3. reading as follows:

3. ZEV Reporting Requirements. In order to verify the status of each manufacturer’s compliance with the ZEV requirements for a given calendar year, each manufacturer shall submit a report to the Executive Officer at least annually, by May 1 of the calendar year following the close of the model year, that identifies the necessary delivery and placement data of all vehicles generating ZEV credits or allowances, and all transfers and acquisitions of ZEV credits. The manufacturer may update the report by September 1 to cover activities occurring between April 1 and June 30.