

ATTACHMENT I

PROPOSED MODIFIED TEXT OF THE "LEV II" AND "CAP 2000" AMENDMENTS

The following text shows the Board-approved modifications to the originally proposed regulatory text of the LEV II and CAP 2000 amendments, with additional conforming modifications prepared by staff. Unless otherwise indicated below, the proposed modifications are shown in underline to indicate additions to the originally proposed text, and ~~strikeout~~ to show deletions. Only those portions of the regulatory text that contain proposed substantive modifications are shown. The symbol "* * * *" means that unmodified text has been omitted.

A. Modifications Pertaining to the LEV II Exhaust Emission Standards, and to LEV I and LEV II TLEVs.

1.(a) Modify the lead-in paragraph of title 13, CCR, section 1960.1(g)(1), as follows (the originally proposed amendments are shown in underline and ~~strikeout~~; the modifications are shown in double underline and ~~bold-strikeout~~ to indicate additions and deletions):

(g)(1) "LEV I" Exhaust Emission Standards for PCs and LDTs. The exhaust emissions from new 1992 ~~through 2006~~ 2003 and subsequent model-year ~~light-duty~~ "LEV I" transitional low-emission vehicles, ~~and new 1992 through 2006 model-year "LEV I" low-emission vehicles;~~ and ultra-low-emission vehicles, ~~and new 2003 and subsequent model-year light-duty zero-emission vehicles;~~ in the passenger car and light-duty truck classes shall not exceed:

1.(b) Modify Part I, Section E.1.1.1 of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" (hereafter the 2001+ LDV/MDV Exhaust TPs) as follows:

1.1.1 LEV I and Tier 1 Exhaust Standards. The following standards represent the maximum exhaust emissions for the intermediate and full useful life from new 2001 through 2003 model-year Tier 1 passenger cars, light-duty trucks and medium-duty vehicles, and from new 2001 through 2003 model year "LEV I" TLEV passenger cars and light-duty trucks, 2001 through 2006 model year "LEV I" TLEVs, LEVs, and ULEVs in the light- and medium-duty vehicle classes and 2001 through 2006 model year "LEV I" SULEVs in the medium-duty vehicle classes, including bi-fuel, fuel-flexible and dual fuel vehicles when operating on the gaseous or alcohol fuel they are designed to use:

<p>Exhaust Mass Emission Standards for New 2001 - 2003 Model Year Tier 1 Vehicles and TLEV Passenger Cars and Light-Duty Trucks; and 2001 - 2006 Model Year <u>LEV I</u> TLEVs, LEVs, and ULEVs in the Passenger Cars and Light-Duty Trucks Vehicle Classes; 2001-2003 Model Year Tier 1 Medium-Duty Vehicles; and 2001-2006 Model Year <u>LEV I</u> LEV, ULEV and SULEV Medium-Duty Vehicles</p>
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[No other changes to the Section E.1.1.1 table]

In accordance with the successful motion at the November 5, 1998 hearing, these modifications eliminate the LEV I TLEV standard starting with the 2004 model year. The Board concluded it was inappropriate to continue the TLEV standard after that time, since it is the standard most likely to be met by diesel vehicles that emit considerably more toxic particulate than other vehicles.

2. Modify title 13, CCR, section 1960.1(r) footnote (1) as follows (and make analogous modifications to Part I, Section 1.E.1.2.2. of the 2001+ LDV/MDV Exhaust TPs):

**SFTP EXHAUST EMISSION STANDARDS
FOR LOW-EMISSION VEHICLES, ULTRA-LOW-EMISSION VEHICLES, AND
SUPER-ULTRA-LOW-EMISSION VEHICLES IN THE PASSENGER CAR, LIGHT-
DUTY TRUCK, AND MEDIUM-DUTY VEHICLE CLASSES**
(grams per mile)^{6,7,8,9,10,11}

Vehicle Type ¹	Loaded Vehicle Weight (lbs.) ²	US06 Test ¹		A/C Test ^{1,5}	
		NMHC ⁴ + NOx ¹	CO ¹	NMHC ⁴ + NOx ¹	CO ¹
PC	All	0.14	8.0	0.20	2.7
LDT	0-3750	0.14	8.0	0.20	2.7
LDT	3751-5750	0.25	10.5	0.27	3.5
MDV	3751-5750	0.40	10.5	0.31	3.5
MDV	5751-8500 ³	0.60	11.8	0.44	4.0

- (1) Abbreviations and Definitions. For the purposes of this SFTP standards table only, the following abbreviations and definitions apply:

"PC" means passenger car.

"LDT" means light-duty truck, defined as any motor vehicle rated at 6,000 pounds gross vehicle weight or less, which is designed primarily for purposes of transportation of property or is a derivative of such a vehicle, or is available with special features enabling off-street or off-highway operation and use.

"MDV" means medium-duty truck, defined as any motor vehicle having a manufacturer's gross vehicle weight rating of greater than 6,000 pounds and less than 14,001 pounds, except passenger cars.

[No further modifications]

These post-hearing modifications reflect the staff's original intent that the LEV II rulemaking does not change the vehicle weight classifications for the SFTP exhaust emission standards for LEVs, ULEVs and SULEVs. The added language sets forth the preexisting definitions of light-duty truck and medium-duty vehicle.

3. Modify title 13, CCR, section 1961(a)(1) and Part I, Section E.1.1.2 of the 2001+ LDV/MDV Exhaust TPs as follows:

(1) *"LEV II" Exhaust Standards.* The following standards represent the maximum exhaust emissions for the intermediate and full useful life from new 2004 and subsequent model-year "LEV II" ~~TLEVs~~, LEVs, ULEVs, and SULEVs, including fuel-flexible, bi-fuel and dual fuel vehicles when operating on the gaseous or alcohol fuel they are designed to use:

[or E.1.1.2 **LEV II Exhaust Standards.** The following "LEV II" standards represent the maximum exhaust emissions for the intermediate and full useful life from new 2004 and subsequent model-year ~~TLEVs~~, LEVs, ULEVs, and SULEVs, including fuel-flexible, bi-fuel and dual fuel vehicles when operating on the gaseous or alcohol fuel they are designed to use. Prior to the 2004 model year, a manufacturer that produces vehicles meeting these standards has the option of certifying the vehicles to the standards, in which case the vehicles will be treated as LEV II vehicles for purposes of the fleet-wide phase-in requirements.]

<u>LEV II</u> Exhaust Mass Emission Standards for New 2004 and Subsequent Model TLEVs, LEVs, ULEVs, and SULEVs in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes							
Vehicle Type	Durability Vehicle Basis (mi)	Vehicle Emission Category	NMOG (g/mi)	Carbon Monoxide (g/mi)	Oxides of Nitrogen (g/mi)	Formaldehyde (mg/mi)	Particulate from diesel vehicles (g/mi)
All PCs; LDTs <8,500 lbs. GVW Vehicles in this category are tested at their loaded vehicle weight.	50,000	TLEV	0.125	3.4	0.4	15	n/a
		LEV	0.075	3.4	0.05	15	n/a
		LEV, Option 1	0.075	3.4	0.09	15	n/a
		ULEV	0.040	1.7	0.05	8	n/a
	120,000	TLEV	0.156	4.2	0.6	18	0.04
		LEV	0.090	4.2	0.07	18	0.01
		LEV, Option 1	0.075 <u>0.090</u>	3.4 <u>4.2</u>	0.07 <u>0.10</u>	15 <u>18</u>	n/a <u>0.01</u>
		ULEV	0.055	2.1	0.07	11	0.01
		SULEV	0.010	1.0	0.02	4	0.01

Vehicle Type	Durability Vehicle Basis (mi)	Vehicle Emission Category	NMOG (g/mi)	Carbon Monoxide (g/mi)	Oxides of Nitrogen (g/mi)	Formaldehyde (mg/mi)	Particulate from diesel vehicles (g/mi)
	150,000 (Optional)	TLEV	0.156	4.2	0.6	18	0.04
		TLEV, Option 1	0.125	3.4	0.5	15	n/a
		LEV	0.090	4.2	0.07	18	0.01
		LEV, Option 1	0.075 0.090	3.4 4.2	0.07 0.10	15 18	n/a 0.01
		ULEV	0.055	2.1	0.07	11	0.01
		SULEV	0.010	1.0	0.02	4	0.01
MDVs 8500 1 - 10,000 lbs. GVW Vehicles in this category are tested at their adjusted loaded vehicle weight	120,000	LEV	0.195	6.4	0.2	32	0.12
		ULEV	0.143	6.4	0.2	16	0.06
		SULEV	0.100	3.2	0.1	8	0.06
	150,000 (Optional)	LEV	0.195	6.4	0.2	32	0.12
		ULEV	0.143	6.4	0.2	16	0.06
		SULEV	0.100	3.2	0.1	8	0.06
MDVs 10,001-14,000 lbs. GVW Vehicles in this category are tested at their adjusted loaded vehicle weight	120,000	LEV	0.230	7.3	0.4	40	0.12
		ULEV	0.167	7.3	0.4	21	0.06
		SULEV	0.117	3.7	0.2	10	0.06
	150,000 (Optional)	LEV	0.230	7.3	0.4	40	0.12
		ULEV	0.167	7.3	0.4	21	0.06
		SULEV	0.117	3.7	0.2	10	0.06

At the November 5, 1998 hearing, the Board approved a modification eliminating the LEV II TLEV standard. The Board concluded it was inappropriate to establish LEV II TLEV standards, since it is the standard most likely to be met by diesel vehicles that emit considerably more toxic particulate than other vehicles.

The modifications to the standards for LEVs correct errors in the originally proposed regulatory text to reflect the staff's initial intent; this includes post-hearing conforming corrections to the PM standards for LEV, Option 1 vehicles. The correct proposed standards were shown on pages II-7 and II-8 of the Staff Report: Initial Statement of Reasons. Another post-hearing modification corrects the lowest weight for MDVs.

4. Modify the table in title 13, CCR, section 1961(a)(3), and in Part I, Section E.1.3.2 of the 2001+ LDV/MDV Exhaust TPs, as follows:

LEV II NMOG Standards for Bi-Fuel, Fuel-Flexible and Dual-Fuel Vehicles Operating on Gasoline (g/mi)			
Vehicle Type	Vehicle Emission Category	Durability Vehicle Basis	
		50,000 mi	120,000 mi
All PCs; LDTs, 0-8500 lbs. GVW	TLEV	0.25	0.31
	LEV	0.125	0.156
	ULEV	0.075	0.090
	SULEV	0.010	0.040
MDVs, 8501-10,000 lbs. GVW	LEV	n/a	0.230
	ULEV	n/a	0.167
	SULEV	n/a	0.117
MDVs, 10,000 1 -14,000 lbs. GVW	LEV	n/a	0.280
	ULEV	n/a	0.195
	SULEV	n/a	0.143

Part of the elimination of the LEV II TLEV standards. A post-hearing modification corrects an MDV weight cutoff.

5. Modify the title 13, CCR, section 1961(a)(4) text and table, and the Part I, Section E.1.4.2 table in the 2001+ LDV/MDV Exhaust TPs, as follows:

(4) *50°F Exhaust Emission Standards.* All light- and medium-duty ~~TLEVs~~, LEVs, ULEVs and SULEVs must demonstrate compliance with the following exhaust emission standards for NMOG and formaldehyde (HCHO) measured on the FTP (40 CFR, Part 86, Subpart B) conducted at a nominal test temperature of 50°F, as modified by Part II, Section C of the "California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" incorporated by reference in section 1961(d). The NMOG mass emission result shall be multiplied by the applicable reactivity adjustment factor, if any, prior to comparing to the applicable adjusted 50,000 mile certification standards set forth below. Emissions of CO and NOx measured at 50°F shall not exceed the standards set forth in §1961(a)(1) applicable to vehicles of the same emission category and vehicle type subject to a cold soak and emission test at 68° to 86°F. Natural gas and diesel-fueled vehicles are exempt from the 50° F test requirements.

[1.4.2. Standards for Vehicles Certified to the LEV II Standards]

Vehicle Weight Class	Vehicle Emission Category (g/mi)							
	TLEV		LEV		ULEV		SULEV	
	NMOG	HCHO	NMOG	HCHO	NMOG	HCHO	NMOG	HCHO
PCs; LDTs 0-8500 lbs. GVW	0.25	0.030	0.150	0.030	0.080	0.016	0.02	0.008
MDVs 8501-10,000 lbs. GVW	n/a	n/a	0.390	0.044 <u>0.064</u>	0.286	0.022 <u>0.032</u>	0.200	0.012 <u>0.016</u>
MDVs 10,001-14,000 lbs. GVW	n/a	n/a	0.460	0.056 <u>0.080</u>	0.334	0.028 <u>0.040</u>	0.234	0.014 <u>0.020</u>

The deletion of references to TLEVs is part of the elimination of the LEV II TLEV standards. The post-hearing modifications to the 50°F formaldehyde exhaust emission standards for LEV II MDVs conform those standards with the protocol for setting the 50°F standard for formaldehyde at two times the formaldehyde standard at ambient temperatures. This adjustment was inadvertently omitted in the originally proposed text.

6. Modify title 13, CCR, section 1961(a)(8)(c), and Part I, Section E.1.7(c) of the 2001+ LDV/MDV Exhaust TPs, as follows:

(8) [or E.1.7] *Requirements for Vehicles Certified to the Optional 150,000 Mile Standards.*

* * * *

(c) ~~—TLEV, Option 1 Requirement. For vehicles certifying to the TLEVs, Option 1 standard, the 50,000 and 150,000 mile standards are the same. A manufacturer that certifies to this standard must extend the warranty on high cost parts to 8 years or 100,000 miles, whichever occurs first, and agree to extend the limit on high mileage in-use testing to 105,000 miles. The fleet average NMOG value for these vehicles shall be 0.125 g/mi NMOG.~~

Part of the elimination of the LEV II TLEV standards.

7. Modify title 13, CCR, section 1961(a)(10), and Part I, Section E.4.3 of the 2001+ LDV/MDV Exhaust TPs, as follows:

(10) [or E.4.3] *Intermediate In-Use Compliance Standards.* ~~Prior to the~~ For vehicles introduced in the 2004 through 2006 model years, the following intermediate in-use compliance standards shall apply for the first two model years after introduction of a test group certified to a new standard. For SULEVs certified prior to the 2004 model year, the following intermediate in-use compliance SULEV standards shall apply through the 2006 model year.

Emission Category	Durability Vehicle Basis	LEV II PCs and LDTs		LEV II MDVs 8500 - 10,000 lbs. GVW
		NMOG	NOx	NOx
LEV/ULEV	50,000	n/a	0.07	n/a
	120,000	n/a	0.10	0.3
SULEV	120,000	0.015	0.025	0.15

This modification is to provide SULEVs that are introduced prior to the 2004 model year with an additional compliance margin for early introduction of this emission category.

8.(a) Modify title 13, CCR, section 1961(a)(11) as follows:

(11) *NMOG Credit for Vehicles with Zero-Evaporative Emissions.* In determining compliance of a vehicle with the applicable exhaust NMOG standard, an 0.006 g/mi NMOG value a gram per mile NMOG factor, to be determined by the Executive Officer based on available data, shall be subtracted from the reactivity-adjusted NMOG exhaust emission results for any vehicle that has been certified to the "zero" evaporative emission standard set forth in title 13, CCR, section 1976(b)(1)(E). This credit shall not apply to a SULEV that generates a partial ZEV allowance.

8.(b) Modify Part I, Section E.1.9 of the 2001+ LDV/MDV Exhaust TPs, as follows:

1.9 NMOG Credit for Vehicles with Zero-Evaporative Emissions. ~~A manufacturer that certifies to the "zero" evaporative emission standard set forth in title 13, CCR section 1976(b)(1)(E) shall be eligible to receive an 0.006 g/mi NMOG credit to be subtracted from the reactivity-adjusted NMOG exhaust mass emission certification level to demonstrate compliance with the standard. This credit shall not apply to SULEVs eligible to receive a partial ZEV allowance.~~ In determining compliance of a vehicle with the applicable exhaust NMOG standard, a gram per mile NMOG factor, to be determined by the Executive Officer based on available data, shall be subtracted from the reactivity-adjusted NMOG exhaust emission results for any vehicle that has been certified to the "zero" evaporative emission standard set forth in title 13, CCR, section 1976(b)(1)(E). This credit shall not apply to a SULEV that generates a partial ZEV allowance.

The modification is proposed because subsequent analysis revealed the original proposed NMOG credit value overestimated the g/mi NMOG from evaporative emissions. Under the modified language, the Executive Officer will identify the appropriate gram per mile NMOG factor based on available data. To correct an oversight, additional modifications to the language in the test procedures make it parallel to the language in section 1961(a)(11); this has no substantive effect.

9.(a) Add the following new language as title 13, CCR, section 1961(a)(13), and Part I, Section E.1.11 of the 2001+ LDV/MDV Exhaust TPs:

(a)(13)[or E.1.11] *NOx Credits for Pre-2004 MDVs Certified to the LEV I LEV or ULEV Standards.* Prior to the 2004 model year, a manufacturer may earn a 0.02 g/mi per vehicle NOx credit for MDVs between 6,000-8500 lbs. GVW certified to the LEV I LEV or ULEV standards for PCs and LDTs set forth in section 1960.1(g)(1) [or section E.1.1.1 of these test procedures]. The manufacturer may apply the credit on a per vehicle basis to the NOx emissions of LDTs between 6,000-8500 lbs. GVW certified to the PC/LDT LEV or ULEV standards in section 1961(a)(1) [or section E.1.1.2] for the 2004 through 2008 model years.

9.(b) Modify title 13, CCR, section 1961(c)(2)(A), and Part I, Section E.3.2 of the 2001+ LDV/MDV Exhaust TPs by adding the following at the end of the existing text:

MDVs certified prior to the 2004 model year to the LEV I LEV or ULEV standards for PCs and LDTs 0-3750 lbs. LVW set forth in section E.1 of these test procedures shall receive VECs calculated in accordance with the following equation, where the term "produced" means produced and delivered for sale in California:

[(1.6) x (No. of MDVs meeting the LEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW excluding HEVs) + (No. of HEVs meeting the LEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW x HEV VEC factor for MDVs meeting the LEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW)]+ [(1.65 x No. of MDVs certified to the 150,000 mile LEV I LEV standards for PCs and LDTs 0-3750 lbs.)] +

[(1.8) x (No. of MDVs meeting the LEV I ULEV standards for PCs and LDTs 0-3750 lbs. LVW excluding HEVs) + (No. of HEVs meeting the LEV I ULEV standards for PCs and LDTs 0-3750 lbs. LVW x HEV VEC factor for MDVs meeting the LEV I ULEV standards for PCs and LDTs 0-3750 lbs. LVW)]+ [(1.85 x No. of MDVs certified to the 150,000 mile LEV I ULEV standards for PCs and LDTs 0-3750 lbs.).]

9.(c) Modify title 13, CCR, section 1961(c)(2)(B), and section E.3.2.1 of the 2001+ LDV/MDV Exhaust TPs by adding the following at the end of the existing text:

The HEV VEC factor for MDVs prior to model year 2004 meeting the LEV I LEV and ULEV standards for PCs and LDTs 0-3750 lbs. LVW is calculated as follows:

1 + [(MDV SULEV standard - PC LEV I LEV standard) x (Zero-emission VMT Factor) ÷ PC LEV I LEV standard] for MDVs meeting the LEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW;
1 + [(MDV SULEV standard - PC ULEV standard) x (Zero-emission VMT Factor) ÷ PC LEV I ULEV standard] for MDVs meeting the ULEV I LEV standards for PCs and LDTs 0-3750 lbs. LVW.

These modifications are designed to provide manufacturers with credit for the early introduction of larger trucks and sport utility vehicles meeting a 0.2 g/mi NOx emission level. This credit can be used in the 2004-2008 model years on like vehicles certifying to the LEV and ULEV 0.05 g/mi NOx standards. Post-hearing

modifications correct the language to reflect staff's intent that the credits be generated by vehicles meeting the LEV I LEV and ULEV standards in section 1960.1(g)(1), and that they be applied to vehicles certified to standards in section 1961(a) rather than section 1960.1(a)(1). The post-hearing modifications in (b) and (c) above are designed to allow MDVs certifying to the LEV I LEV and ULEV standards for PCs and LDTs prior to model year 2004 to earn the appropriate VECs.

10. Modify title 13, CCR, section 1961(b)(1)(B)1. and Part I, Section E.2.1.1. [renumbered] of the 2001+ LDV/MDV Exhaust TPs as follows:

(B) [or 2.1.1.] *Calculation of Fleet Average NMOG Value.*

1. Each manufacturer's fleet average NMOG value for the total number of PCs and LDTs produced and delivered for sale in California shall be calculated as follows:

$$\frac{\sum [\text{Number of vehicles in a test group} \times \text{applicable emission standard}] + \sum [\text{Number of hybrid electric vehicles in a test group} \times \text{HEV NMOG factor}]}{\text{Total Number of Vehicles Produced, Including ZEVs and HEVs}}$$

The applicable emission standards to be used in the above equation are as follows:

Model Year	Emission Category	Emission Standard Value	
		All PCs; LDTs 0-3750 lbs. LVW	LDTs 3751-5750 lbs. LVW
2001 and subsequent (§1960.5 "AB 965" vehicles only)	Tier 1	0.25	0.31
2001 - 2003 (§1960.1(f)(2))	Tier 1	0.25	0.31
2001 - 2006 model year vehicles certified to the "LEV I" standards in §1960.1(g)(1) (For TLEVs, 2001 - 2003 model years only)	TLEVs	0.125	0.160
	LEVs	0.075	0.100
	ULEVs	0.040	0.050
Model Year	Emission Category	All PCs; LDTs 0-3750 lbs. LVW	LDTs 3751 lbs. LVW - 8500 lbs. GVW
2004 and subsequent model year vehicles certified to the "LEV II" standards in §1961(a)(1)	TLEVs	0.125	0.125
	LEVs	0.075	0.075
	ULEVs	0.040	0.040
	SULEVs	0.01	0.01

Model Year	Emission Category	All PCs; LDTs 0-3750 lbs. LVW	LDTs 3751 lbs. LVW - 8500 lbs. GVW
2004 and subsequent model year vehicles certified to the optional 150,000 mile "LEV II" standards for PCs and LDTs in 1961(a)(1)	TLEVs	0.11	0.11
	LEVs	0.06	0.06
	ULEVs	0.03	0.03
	SULEVs	0.0085	0.0085

Part of the elimination of the LEV II TLEV standard.

11.(a) Delete title 13, CCR, section 1961(c)(1)(B) and section E.3.1.2 of the LDV/MDV TPs, as follows:

~~(B) [or 3.1.2] For 2004 through 2006 model years, a manufacturer shall equalize emission debits within three model years and prior to the end of the 2007 model year by earning g/mi NMOG emission credits in an amount equal to the g/mi NMOG debits, or by submitting a commensurate amount of g/mi NMOG credits to the Executive Officer that were earned previously or acquired from another manufacturer. For 2007 and subsequent model years, manufacturers shall equalize emission debits by the following model year:~~

11.(b) Replace the first sentence of title 13, CCR, section 1961(c)(3)(A), and of section E.3.3.1 of the 2001+ LDV/MDV Exhaust TPs, as follows:

(A) [or 3.3.1] A manufacturer shall equalize emission debits by earning g/mi NMOG emission credits or VECs in an amount equal to the g/mi NMOG debits or VEDs, or by submitting a commensurate amount of g/mi NMOG credits or VECs to the Executive Officer that were earned previously or acquired from another manufacturer. For 2001 [added in test procedures only] through 2003 and for 2007 and subsequent model years, manufacturers shall equalize emission debits by the following model year. For 2004 through 2006 model years, a manufacturer shall equalize NMOG debits for PCs and LDTs within three model years and prior to the end of the 2007 model year, and shall equalize VEDs for MDVs by the following model year. [The rest of the paragraph would be unchanged]

These modifications consolidate the provisions on equalizing emission debits and specify the requirements for equalizing VEDs for MDVs accrued in the 2004 through 2006 model years.

12. Modify section 3.(a) i. of the "Emission Control and Smog Index Label Specifications" referred to in title 13, CCR, section 1965 as follows:

3. Emission Control Labels

(a) i. The label heading shall read: "Vehicle Emission Control Information" for passenger cars, light-duty trucks, medium-duty vehicles and motorcycles, and, "~~Important Vehicle Information~~" for light-duty and medium-duty trucks; and "Important Engine Information" for heavy-duty engines.

This post-hearing modification conforms the required tune-up label heading for passenger cars and light-duty trucks with the label heading required by the U.S. EPA.

13. Modify sections 3.5(b), (c) and (d) of the "Emission Control and Smog Index Label Specifications," incorporated by reference in title 13, CCR, section 1965, as follows (the originally proposed amendments are shown in underline and ~~strikeout~~; the modifications are shown in double underline and ~~bold strikeout~~ to indicate additions and deletions):

3.5 Smog Index Labels.

* * * *

(a) 1998 ~~and 1999~~ Through 2000 Model-Years:

The following smog indices shall apply to 1998 ~~and 1999~~ subsequent through 2000 model-year light-duty vehicles:

* * * *

(b) 2000~~1~~ Through 2003 Model-Years:

The following smog indices shall apply to 2000~~1~~ through 2003 model-year light-duty vehicles:

<u>LEV I⁽¹⁾</u>			
	<u>2.0g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 100,000 miles</u>	<u>Evap. Exempt</u>	<u>Diesel Vehicle - Evap. Exempt</u>
<u>Passenger Car/Light-Duty Truck 1 (0-3750 lbs. LVW)</u>			
<u>Tier 1</u>	<u>1.00</u>	<u>0.90</u>	<u>1.82</u>
<u>TLEV</u>	<u>0.83</u>	<u>0.73</u>	<u>0.73</u>
<u>LEV</u>	<u>0.48</u>	<u>0.38</u>	<u>0.38</u>
<u>ULEV</u>	<u>0.43</u>	<u>0.33</u>	<u>0.33</u>
<u>ZEV</u>	<u>n/a</u>	<u>0.00</u>	<u>n/a</u>
<u>Light-Duty Truck 2 (3751-5750 lbs. LVW)</u>			
<u>Tier 1</u>	<u>1.51</u>	<u>1.42</u>	<u>2.64</u>
<u>TLEV</u>	<u>1.29</u>	<u>1.19</u>	<u>1.19</u>
<u>LEV</u>	<u>0.79</u>	<u>0.69</u>	<u>0.69</u>
<u>ULEV</u>	<u>0.72</u>	<u>0.63</u>	<u>0.63</u>

LEV I⁽¹⁾			
	<u>2.0g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 100,000 miles</u>	<u>Evap. Exempt</u>	<u>Diesel Vehicle - Evap. Exempt</u>
ZEV	n/a	n/a	0.00

⁽¹⁾ The smog index for diesel vehicles certifying to Tier 1 standards for passenger cars and light-duty truck 1 shall be 1.82. The smog index for diesel vehicles certifying to Tier 1 standards for light-duty truck 2 shall be 2.64.

LEV II					
	<u>Enhanced Evap. 2.0g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 100,000 miles</u>	<u>PCs 0.5 g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 150,000 miles</u>	<u>LDTs < 6,000 lbs. GVW 0.65 g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 150,000 miles</u>	<u>LDTs 6,001-8,500 lbs. GVW 0.90 g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 150,000 miles</u>	<u>Evap. Exempt</u>
Passenger Cars; Light-Duty Truck 1 (0-3750 lbs. LVW); Light-Duty Truck 2 (3751 lbs. LVW - 8500 lbs. GVWR)					
LEV	<u>0.27</u>	<u>0.23</u>	<u>0.24 (0.27)⁽¹⁾</u>	<u>0.24 (0.27)⁽¹⁾</u>	<u>0.17</u>
ULEV	<u>0.22</u>	<u>0.19</u>	<u>0.19</u>	<u>0.20</u>	<u>0.13</u>
SULEV	<u>0.14</u>	<u>0.10</u>	<u>0.11</u>	<u>0.11</u>	<u>0.04</u>
ZEV	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>0.00</u>

⁽¹⁾ The smog index in parentheses applies to the optional LEV II LEV standard. Up to 4% of a manufacturer's LDT2 fleet with a maximum base payload of 2500 lbs may be certified to a standard of 0.07 g/mi NOx at 50,000 miles.

(c) 2004 and sSubsequent Model-Years:

The following smog indices shall apply to 2004 and subsequent model-year passenger cars and light-duty trucks 0-8500 lbs. GVW:

	<u>Enhanced Evap. 2.0g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 100,000 miles</u>	<u>PCs and LDTs 0.5 g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 150,000 miles</u>	<u>LDTs < 6,000 lbs. GVW 0.65 g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 150,000 miles</u>	<u>LDTs 6,001-8,500 lbs. GVW 0.90 g/ diurnal + hot soak test, 0.05 g/mi - running loss test, at 150,000 miles</u>	<u>Evap. Exempt</u>
LEV I					
Passenger Cars and Light-Duty Trucks 1 (0-3750 lbs. LVW)					
TLEV	<u>1.00</u>	<u>0.91</u>	<u>0.92</u>	<u>0.94</u>	<u>0.88</u>
LEV	<u>0.58 1.00</u>	<u>0.49 0.92</u>	<u>0.50 0.93</u>	<u>0.52 0.94</u>	<u>0.46 0.80</u>
ULEV	<u>0.52 0.90</u>	<u>0.43 0.82</u>	<u>0.44 0.83</u>	<u>0.46 0.84</u>	<u>0.40 0.70</u>
ZEV	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>0.00</u>
Light-Duty Trucks 2 (3751-5750 lbs. LVW)					
TLEV	<u>1.56</u>	<u>1.47</u>	<u>1.48</u>	<u>1.50</u>	<u>1.45</u>
LEV	<u>0.96 1.65</u>	<u>0.87 n/a</u>	<u>0.88 1.58</u>	<u>0.89 1.60</u>	<u>0.84 1.45</u>
ULEV	<u>0.87 1.51</u>	<u>0.79 n/a</u>	<u>0.79 1.44</u>	<u>0.81 1.45</u>	<u>0.76 1.30</u>
ZEV	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>0.00</u>
LEV II					

Passenger Cars; Light-Duty Trucks 1 (0-3750 lbs. LVW); Light-Duty Trucks 2 (3751 lbs. LVW - 8500 lbs. GVWR)					
TLEV	1.00	0.91	0.92	0.94	0.88
LEV	<u>0.33</u> <u>0.57</u>	<u>0.24</u> <u>0.49</u>	<u>0.25</u> <u>0.50</u> (0.55) ⁽¹⁾	<u>0.26</u> <u>0.51</u> (0.57) ⁽¹⁾	<u>0.21</u> <u>0.36</u>
ULEV	<u>0.27</u> <u>0.46</u>	<u>0.18</u> <u>0.39</u>	<u>0.19</u> <u>0.40</u>	<u>0.20</u> <u>0.41</u>	<u>0.15</u> <u>0.26</u>
SULEV	<u>0.17</u> <u>0.29</u>	<u>0.08</u> <u>0.21</u>	<u>0.09</u> <u>0.22</u>	<u>0.10</u> <u>0.23</u>	<u>0.05</u> <u>0.09</u>
ZEV	n/a	n/a	n/a	n/a	0.00

⁽¹⁾ The smog index in parentheses applies to the optional LEV II LEV standard. Up to 4% of a manufacturer's LDT2 fleet with a maximum base payload of 2500 lbs may be certified to a standard of 0.07 g/mi NOx at 50,000 miles.

(d) Fleet Average Smog Indices:

The following fleet average smog indices shall apply to 2000~~1~~ through 2003 model-year passenger cars and light-duty trucks 0-5750 lbs. LVW, and 2004 and subsequent model-year passenger cars and light-duty trucks 0-8500 lbs. GVW:

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 and subsequent
0.54	<u>0.53</u>	<u>0.52</u>	<u>0.50</u>	0.47 <u>1.02</u>	0.36 <u>0.80</u>	0.27 <u>0.58</u>	0.19 <u>0.40</u>	0.18 <u>0.38</u>	0.18 <u>0.37</u>	0.17 <u>0.36</u>

These post-hearing modifications primarily reflect the Board's action to eliminate the LEV II TLEV standard, and the LEV I TLEV standard after the 2003 model-year. The originally proposed smog indices for 2004 and subsequent model-years assigned the 1.00 baseline value to TLEVs meeting the enhanced evaporative emissions requirements. With elimination of the TLEV standard, the 1.00 baseline value for these model-years would be assigned to LEV I LEVs and the indices for the remaining emission categories would be adjusted accordingly. The modifications in baseline values also result in changes to the fleet average smog indices.

The table for 2000 - 2003 model-years has been changed to be applicable for the 2001-2003 model-years, since the regulations will become effective too late for the 2000 model-year. In addition, the table has been modified to accommodate early-introduction LEV II vehicles, in order to allow an accurate comparison to LEV I vehicles in those model-years. For 2001 and subsequent model-years, two new smog indices have been added to the LEV II LEV light-duty truck categories to cover the 4% of a manufacturer's LDT2 fleet with a maximum base payload rating of 2500 lbs. or higher that may be certified to the 0.07 NOx standard. Finally, very minor modifications have been made to the smog indices for vehicles certified to the new evaporative standards to correct for a miscalculation of the evaporative g/mi HC estimates. The correction reduces only the diurnal + hot soak portion (approximately 50%) of the HC estimate by the percentage of increased stringency of the new diurnal + hot soak evaporative emission standards.

B. Modifications to the LEV II Evaporative Emission Standards

1. Modify title 13, CCR, section 1976(b)(1)(E), and Section I.E.1.(c) of the proposed new "California Evaporative Emissions Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" (hereafter the 2001+ Evap TPs) as follows:

(E) The optional zero-fuel evaporative emission standards for the three-day and two-day diurnal-plus-hot-soak tests are 0.35 grams per test for passenger cars, 0.50 grams per test for light-duty trucks ~~under~~ 6,000 lbs. GVWR and under, and 0.75 grams per test for light-duty trucks from 6,001 to 8,500 lbs. GVWR, to account for vehicle non-fuel evaporative emissions (resulting from paints, upholstery, tires, and other vehicle sources). Vehicles demonstrating compliance with ~~the~~ these evaporative emission standards shall have zero (0.0) grams of fuel evaporative emissions. The "useful life" shall be 15 years or 150,000 miles, whichever occurs first. The manufacturer shall submit for advance Executive Officer approval a test plan to demonstrate that the vehicle has zero fuel evaporative emissions throughout its useful life.

Additionally, in the case of a SULEV vehicle for which a manufacturer is seeking a partial ZEV credit, the manufacturer may prior to certification elect to have measured fuel evaporative emissions reduced by a specified value in all certification and in-use testing of the vehicle as long as measured mass exhaust emissions of NMOG for the vehicle are increased in all certification and in-use testing. The measured fuel evaporative emissions shall be reduced in increments of 0.1 gram per test, and the measured mass exhaust emissions of NMOG from the vehicle shall be increased by a gram per mile factor, to be determined by the Executive Officer, for every 0.1 gram per test by which the measured fuel evaporative emissions are reduced. For the purpose of this calculation, the evaporative emissions shall be measured, in grams per test, to a minimum of three significant figures.

The useful life definition has been added for clarification of the optional zero-evaporative emission standard requirements. The new paragraph is designed to allow regulatory flexibility in the certification of SULEV vehicles for which partial ZEVs credits are desired. Trading of exhaust hydrocarbon emissions compliance margin to cover shortfalls in evaporative emissions control will provide this flexibility. A post-hearing modification corrects the weight cutoff for light-duty trucks.

2. Modify title 13, CCR, section 1976(b)(1)(F) note (3)(a), and Section I.E.1.(d) note (1)(a) of the 2001+ Evap TPs, as follows:

(3) (a) These evaporative emission standards shall be phased-in beginning with the 2004 model year. Each manufacturer, except small volume manufacturers, shall certify at a minimum the specified percentage of ~~passenger cars, light-duty trucks, medium-duty vehicles, and heavy-duty vehicles~~ its vehicle fleet to these evaporative emission standards in this table or the optional zero-evaporative emission standards in section 1976(b)(1)(E) [or E.1.(c)] according to the following schedule: set forth below. For purposes of this paragraph (a), each manufacturer's vehicle fleet consists of the

total projected California sales of the manufacturer's gasoline-fueled, liquefied petroleum-fueled and alcohol-fueled passenger cars, light-duty trucks, medium-duty vehicles, and heavy-duty vehicles.

<i>Model Year</i>	<i>Minimum Percentage of Vehicles Certified to the Standards in §§1976(b)(1)(F) and (b)(1)(E) [or E.1.(c) and E.1.(b)]</i>
2004	40
2005	80
2006 and subsequent	100

A small volume manufacturer shall certify 100 percent of its 2006 and subsequent model ~~passenger cars, light-duty trucks, medium-duty vehicles, and heavy-duty vehicles~~ vehicle fleet to these evaporative emission standards in the table or the optional zero-evaporative emission standards in section 1976(b)(1)(E) [or E.1.(c)] .

All 2004 through 2005 model-year motor vehicles which are not subject to these standards or the standards in section 1976(b)(1)(E) [or E.1.(c)] pursuant to the phase-in schedule shall comply with the requirements of sections 1976(b)(1)(B) and (C)[or E.1.(a)].

These post-hearing modifications clarify the phase-in requirements for the LEV II evaporative emission standards by expressly allowing vehicles that are certified to the optional zero-evaporative standards to be included towards compliance with the required phase-in percentage, and by defining the vehicle fleet to which these standards are applicable.

3. Modify title 13, CCR, section 1976(b)(1)(F) note (4), and Section I.E.1.(d) note (2) of the 2001+ Evap TPs, as follows:

(4) [or (2)] In-use compliance whole vehicle testing shall not begin until the motor vehicle is at least one year from the production date and has accumulated a minimum of 10,000 miles. For vehicles introduced prior to the 2007 model year, in-use compliance standards of 1.75 times the "Three-Day Diurnal + Hot-Soak" and "Two-Day Diurnal + Hot-Soak" gram per test standards shall apply for only the first three model years of an evaporative family certified to a new standard.

This modification is designed to reduce a manufacturer's in-use compliance risk during the introduction of the more stringent evaporative emission controls. It will provide manufacturers the ability to make small vehicle adjustments for unanticipated problems encountered in the field during the first three years of the new evaporative family introduction.

The modification originally proposed in the Staff's Suggested Changes distributed at the

beginning of the November 5, 1998 hearing would have simply applied to all vehicles produced in the 2004-2006 model-years, which are the three phase-in years for the more stringent LEV II evaporative emission standards. At the conclusion of testimony, staff proposed a further modification — the language set forth above, but through an oversight applicable prior to the 2006 rather than the 2007 model years. The objective was to assure that all evaporative families would qualify during the first three years under the new standard, including evaporative families introduced before the 2004 model year. Since the phase-in schedule does not require 100% compliance with the new standards until the 2006 model year, staff had intended that the in-use compliance standard be applicable to any vehicles certified to the more stringent evaporative emission standards for the first time in the 2006 model year. The language now being made available has been revised to reflect that underlying intent and clarify the reference to the new standards.

4. Modify the standards table in title 13, CCR, section 1976(b)(1)(F) and in Section I.E.1.(d) of the 2001+ Evap TPs to change "under 6,000 lbs. GVWR" to "~~under~~ 6,000 lbs. GVWR and under".

This modification assures that there is a standard applicable to 6000 lb. GVWR light-duty trucks.

5. Modify Section III.A.2.1.1. of the 2001+ Evap TPs as follows:

2.1.1. The measurement of vehicle running loss fuel vapor emissions shall be conducted in a test facility which is maintained at a nominal ambient temperature of 105.0°F. Manufacturers have the option to perform running loss testing in either an enclosure incorporating atmospheric sampling equipment, or in a cell utilizing point source sampling equipment. Confirmatory testing or in-use compliance testing may be conducted by the Executive Officer using either sampling procedure. The test facility shall have space for personnel access to all sides of the vehicle and shall be equipped with the following test equipment:

-A chassis dynamometer which meets the requirements of 40 CFR §86.108-00 79 with the following addition to §86.108-00(d):

Another dynamometer configuration may be used for running loss testing if approved in advance by the Executive Officer based on a demonstration that measured running loss emissions are equivalent to the emissions using the single-roll electric dynamometer described in 86.108-00(b)(2).

* * * *

This post-hearing modification aligns the dynamometer requirements in the running loss enclosure to the federal requirements, with the result that for vehicles subject to the

Supplemental Federal Test Procedure, a single-roll electric dynamometer will be required for running loss emission testing. The modification also provides added flexibility not in the current federal requirements to permit the use of other qualified dynamometer configurations for running loss testing.

C. Modifications to the CAP 2000 Provisions

1. Modify Part I, Section D.1(f) of the 2001+ LDV/MDV Exhaust TPs, as follows:

(f) ~~through~~ Altitude Requirements. Delete and replace with: Altitude Requirements. Except for supplemental exhaust emission standards (which apply only at low altitude conditions), all emission standards apply at low altitude conditions and only CO emission standards apply at high altitude conditions.

(g) [No change.]

This modification conforms the text with section G.3. (p. G-1) of the originally proposed test procedures document, under which the California high altitude requirements only apply to carbon monoxide emissions.

2. Add the following language at the end of section A.1 of the "California Assembly-Line Test Procedures for 2001 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles":

These test procedures also apply to any 2000 model-year vehicle that a manufacturer elects to make subject to 40 CFR, part 86, subpart S in lieu of subpart A.

This modification corrects an oversight in the original proposal. Since 40 CFR section 86.1801-01(c)(2) allows a manufacturer to elect to use subpart S in lieu of subpart A for any 2000 model-year vehicles, it is appropriate for any such vehicles to be subject to the new assembly-line test procedures designed to be used in conjunction with subpart S.

3. Modify Part I, Section I.A. of the proposed new 2001+ Evap TPs, as follows:

A. 40 CFR §86.1801-~~00~~ 01 Applicability.

This modification corrects the CFR reference from §86.1801-00 to §86.1801-01.

D. Modifications Pertaining to Hybrid-Electric Vehicles and Zero-Electric Vehicles

1. Modify the title and section A of the originally-named "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2003 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles" (hereafter the ZEV/HEV TPs) as follows (and make the same modifications to the title of the ZEV/HEV TPs when the document is identified in sections 1961(a)(8)(B), 1961(d), 1962(c)(3)(B), 1962(d)(1)(B)1., and 1962(e), title 13, CCR; in Part I, Sections III.D.1.1., III.D.4., and III.D.6. of the 2001+ Evap TPs, and in the Note and Part I, Sections B.2, E.1.7(b), E.2.1.2.2, E.2.1.4, E.3.2.1, G.8.2(b), and H.4.3 of the 2001+ LDV/MDV Exhaust TPs):

CALIFORNIA ZERO-EMISSION AND HYBRID-ELECTRIC VEHICLE 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 CARS, LIGHT-DUTY TRUCKS AND MEDIUM-DUTY VEHICLES CLASSES

A. Applicability

The emission standards and test procedures in this document are applicable to 2003 and subsequent model-year zero-emission and hybrid electric 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.

These post-hearing conforming modifications reflect the staff's original intent that the new HEV test procedures be applicable to all 2001 and subsequent model-year hybrid electric vehicles, and be optionally available along with the CAP 2000 procedures in the 2000 model year. The modifications to the references in the 2001+ Evap TPs supersede minor corrections to the original references included in the Staff's Suggested Changes document distributed at the November 5, 1998 hearing.

2.(a) Modify title 13, CCR, section 1900(a)(17), as follows (the originally proposed amendments are shown in underline and ~~strikeout~~; the modifications are shown in double underline and ~~bold strikeout~~ to indicate additions and deletions):

(a)(17) "Small volume manufacturer" means, ~~==except as otherwise provided in sections 1960.1(g)(2) (compliance with fleet average NMOG requirements for 1994 - 2000 model-year passenger cars, light-duty trucks); 1960.1(h)(2) ("LEV I" requirements for 1992 through~~

~~2006 medium-duty vehicles) and 1960.1(n) (vehicles subject to the federal "in lieu" standards) — any~~ with respect to the 2001 and subsequent model-years, a manufacturer with California sales less than 4,500 new passenger cars, light-duty trucks, medium-duty vehicles, heavy-duty vehicles and heavy-duty engines based on the average number of vehicles sold for the three previous consecutive model years for which a manufacturer seeks certification; however, for manufacturers certifying for the first time in California model-year sales shall be based on projected California sales. A manufacturer's California sales shall consist of all vehicles or engines produced by the manufacturer and delivered for sale in California, except that vehicles or engines produced by the manufacturer and marketed in California by another manufacturer under the other manufacturer's nameplate shall be treated as California sales of the marketing manufacturer. For purposes of compliance with the zero-emission vehicle requirements, heavy-duty vehicles and engines shall not be counted as part of a manufacturer's sales.

2.(b) Modify the first paragraph of title 13, CCR, section 1962(b), and of Section C.2. of the ZEV/HEV TPs, as follows:

(b) [or 2.1] *Percentage ZEV Requirements.* The ZEV requirement for each manufacturer in 2003 and subsequent model years is that at least 10% of the PCs and LDT1s produced by the manufacturer and delivered for sale in California must be ZEVs, subject to the following conditions: [in this section 1962(b)] [or in Section C.2.1 through C.2.4]. In applying the ZEV requirement, a PC or LDT1 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.

2.(c) Modify title 13, CCR, section 1962(b)(4), and Section C.2.4 of the ZEV/HEV TPs, as follows:

(b)(4) [or 2.4] *Changes in Small and Intermediate Volume Manufacturer Status.* In 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 intermediate volume manufacturer's average California production volume exceeds 35,000 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 intermediate manufacturer, as applicable, and shall comply with the ZEV requirements for intermediate or large volume manufacturers, as applicable, beginning with the fourth model year after the last of the three consecutive model years. If a manufacturer's average California production volume falls below 4,500 or 35,000 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 or intermediate volume manufacturer, as applicable, and shall be subject to the requirements for a small 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.

These post-hearing modifications address an ambiguity in the treatment of small volume manufacturers (SVMs) under the ZEV requirements. SVMs, who are exempt from the ZEV requirements, are defined as manufacturers with “California sales” below specified levels (proposed §1900(a)(17); see current §1960.1(g)(2) note (6)). In a “multi-manufacturer” arrangement where a potential SVM produces vehicles that are marketed in California by another manufacturer under the marketing manufacturer’s nameplate, it is unclear whether those vehicles are to be counted as part of the producing manufacturer’s “California sales.” However, the current regulations (§1960.1(g)(2) note (9)) and LEV II amendments (§1962(b)), clearly provide that the 2003 model-year 10% ZEV requirements for a given manufacturer are calculated on the basis of the number of passenger cars and LDTs produced by that manufacturer and then delivered for sale in California. Thus the ZEV responsibilities are assigned to the producing manufacturer and not the marketing manufacturer in a multi-manufacturer situation.

Staff believes that a manufacturer’s marketing presence in California would have a significant impact on its ability to sell California ZEVs. Thus it is appropriate to modify the small volume manufacturer definition to exclude from a producing manufacturer’s vehicle count those vehicles that are marketed in California by another manufacturer under the marketing manufacturer’s nameplate. An initial shortcoming of this approach is that even though an SVM in a multi-manufacturer agreement may produce more than 5000 vehicles destined for California, none of the vehicles would trigger a ZEV responsibility. Accordingly, staff has included an additional modification providing that where a manufacturer is marketing vehicles produced by a SVM, the marketing manufacturer incurs a ZEV responsibility for the vehicles it is marketing. As is the case with most other responsibilities, manufacturers in a multi-manufacturer arrangement may agree to assign the ZEV responsibility to the producing manufacturer.

Heavy-duty vehicles and engines would not be counted in California sales for ZEV purposes, as is the case in the current regulations; they will be counted for SVM certification purposes to be consistent with U.S. EPA’s CAP 2000 regulations. The modifications to the first sentence of section 1900(a)(17) are nonsubstantive, and the modifications to §1962(b)(4) conform that provision to the modified SVM definition.

3. Modify Part III, Section D.1. of the 2001+ Evap TPs, as follows:

1. General Requirements

The following language shall be applicable in lieu of 40 CFR §86.130-78:

The test sequence shown in Figure 2 (Figure 3A or 3B for hybrid electric vehicles) describes the steps encountered as the vehicle undergoes the three-day diurnal sequence and the supplemental two-day diurnal sequence to determine conformity with the standards set forth.

* * * *

The three-day diurnal test sequence shown in Figure 2 (and Figure 3A or 3B for hybrid electric vehicles) is briefly described as follows:

This modification clarifies the originally proposed text. The figures are at the end of this Attachment I.

4. Add Part III, Section D.1.7.1 to the 2001+ Evap TPs, as follows:

1.7.1 For hybrid electric vehicles, a four phase exhaust test shall be performed as shown in Figure 3A pursuant 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" as incorporated by reference herein. Following the four phase exhaust test, the test sequence shall repeat from step 1.3 of this section to conduct the evaporative test using the standard cold start test and hot start test (standard three phase test) without emission sampling. Battery state-of-charge setting prior to the standard three phase test shall be performed pursuant to section 6.1.6 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 herein. Four phase exhaust testing may be performed in conjunction with evaporative testing as shown in Figure 3B with advance Executive Officer approval if the manufacturer is able to provide data demonstrating compliance with evaporative emission standards using the standard three phase test.

This text would be added to retain evaporative emission testing stringency by separating the four phase hybrid electric vehicle exhaust emission test from the evaporative emission test that requires a three phase test. A post-hearing conforming modification corrects an error in the second-to-last line.

5. Modify Part I, Section III.D.1.12. of the 2001+ Evap TPs, as follows:

The supplemental two-day diurnal sequence in Figure 2 (and Figure 3A or 3B for hybrid electric vehicles) shall be conducted according to the steps described in 1.1 through 1.4, 1.6, 1.7, followed by 1.10 through 1.12 of this paragraph except that the ambient temperature of the hot soak test is conducted at an ambient temperature between 68°F and 86°F at all times and that the diurnal test will consist of a two-day test.

This text would be modified to clarify the requirements.

6. Modify Part III, Section D.3.1. of the 2001+ Evap TPs, as follows:

3. Vehicle Preconditioning

~~3.1 Amend paragraph 40 CFR §86.132-90 by adding the following subparagraph (a)(2)(i) which reads:~~

This text would be struck to correct an oversight in the original text.

7. Add Part III, Section D.3.1. and delete Part III, Sections D.3.1.1. through D.3.1.7. to the 2000+ Evap TPs, as follows:

3.1 For supplemental vehicle preconditioning requirements for hybrid electric vehicles, refer 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" as incorporated by reference herein.

~~3.1.1 For hybrid electric vehicles, battery state-of-charge shall be set prior to fuel drain and fill:~~

~~3.1.2 For hybrid electric vehicles that do not allow manual activation of the auxiliary power unit, battery state-of-charge shall be set at a level that causes the hybrid electric vehicle to operate the auxiliary power unit for the maximum possible cumulative amount of time during the preconditioning drive:~~

~~3.1.3 For hybrid electric vehicles that allow manual activation of the auxiliary power unit, battery state-of-charge shall be set at a level that satisfies one of the following conditions:~~

~~(i) If the hybrid electric vehicle is charge-sustaining over the UDDS, battery state-of-charge shall be set at the lowest level allowed by the manufacturer:~~

~~(ii) If the hybrid electric vehicle is charge-depleting over the UDDS, battery state-of-charge shall be set at the level recommended by the manufacturer for activating the auxiliary power unit when operating in urban driving conditions:~~

~~3.1.4 After setting battery state-of-charge, the hybrid electric vehicle shall be pushed or towed to a work area for fuel drain and fill according to section D.1. of these procedures:~~

~~3.1.5—Following fuel drain and fill, the vehicle shall be pushed or towed into position on a dynamometer and preconditioned. If the auxiliary power unit is capable of being manually activated, the auxiliary power unit shall be manually activated at the beginning of and operated throughout the preconditioning drive.~~

~~3.1.6—Within five minutes of completing preconditioning drive, battery state-of-charge shall be set at a level that satisfies one of the following conditions:~~

~~(i)—If the hybrid electric vehicle does not allow manual activation of the auxiliary power unit and is charge-sustaining over the UDDS, then set battery state-of-charge to a level such that the SOC Criterion (see section B., Definitions, "California Zero-Emission and Hybrid Electric Vehicle Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles") would be satisfied for the dynamometer procedure (section D.4. of these procedures). If off-vehicle charging is required to increase battery state-of-charge for proper setting, off-vehicle charging shall occur during soak period prior to exhaust emission test.~~

~~(ii)—If the hybrid electric vehicle does not allow manual activation of the auxiliary power unit and is charge-depleting over the UDDS, then no battery state-of-charge adjustment is permissible.~~

~~(iii)—If the hybrid electric vehicle does allow manual activation of the auxiliary power unit, then set battery state-of-charge to manufacturer recommended level for activating the auxiliary power unit when the hybrid electric vehicle is operating in urban driving conditions.~~

This text would be modified to relocate vehicle preconditioning requirements from the 2001+ Evap TPs to the ZEV/HEV TPs.

8. Modify Part III, Section D.3.3.1. of the 2001+ Evap TPs, as follows:

3.3.1 Within five minutes of completion of preconditioning, the vehicle shall be driven off the dynamometer to a work area. For hybrid electric vehicles following battery state-of-charge setting, the vehicle shall only be pushed or towed off the dynamometer to a work area to avoid disturbing battery state-of-charge setting.

These modifications clarify vehicle movement requirements for hybrid electric vehicles.

9. Modify renumbered section 1962(c)(5), title 13, CCR, and section C.3.4 of the ZEV/HEV TPs, as follows:

(4) (5) *Partial ZEV Allowance for Fuel-Cycle Emissions.* A vehicle that uses fuel(s) with very low fuel-cycle emissions shall receive a partial ZEV allowance not to exceed 0.2. In order to receive the fuel-cycle partial ZEV 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 partial ZEV allowance is calculated according to the following formula:

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

A manufacturer's demonstration to the Executive Officer that a vehicle qualifies for a fuel-cycle partial ZEV 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.

This post-hearing modification corrects a drafting error; the result in the formula needs to be divided by 100, since the percent of VMT will be expressed as a number between 1 and 100.

10. Modify renumbered section 1962(d)(1)(B)1., title 13, CCR, and section C.4.1(a) of the ZEV/HEV TPs, as follows:

(a) Each ZEV and full ZEV allowance vehicle that is produced and delivered for sale in California in the 1999 to 2007 model years and that has an extended electric range shall ~~earn credits that may be counted~~ qualify for a ZEV multiplier as follows:

All-electric range	MY 1999-2000	MY 2001 -2002	MY 2003-2005	MY 2006-2007
100-175	6-10	4-6	2-4	1-2

ZEV ~~credits~~ 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 these test procedures. ZEVs that have a refueling time of less than 10 minutes and a range ~~in excess of 100 miles~~ or more shall be counted as having unlimited all-electric range, and shall consequently ~~qualify to receive~~ 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 1999-2002 model years in accordance with the following equation:

$$\text{ZEV multiplier} = \frac{(\text{minimum allowable ZEV multiplier per above table for a model year}) \times (\text{AER equivalent to a 10 minute recharge}/100) \times 0.5.}{}$$

These post-hearing modifications were prepared by staff in response to comments

at the November 5, 1998 hearing on behalf of the Advanced Lead Acid Battery Consortium. Because fast-charge capability can extend the meaningful range of ZEVs with an initial all-electric range of somewhat less than 100 miles, the modification provides limited multiple ZEV credits to fast charge ZEVs with an all-electric range from 80 to 99 miles.

11. Modify section E.3.(2) and (3) of the ZEV/HEV TPs, as follows:

3. All-Electric Range Test.

* * * *

(2) Driving schedule.

(a) Determination of All-Electric Range-Urban. At the end of the cold soak period, the vehicle shall be placed, either driven or pushed, onto a dynamometer and operated through successive Urban Dynamometer Driving Schedules (UDDS), 40 CFR, Part 86, Appendix I, which is incorporated herein by reference, until the vehicle is no longer able to maintain the speed or time tolerances contained in 40 CFR §86.115-00(b)(1) and (2). A 10-minute soak ~~will~~ shall follow each UDDS cycle. This test sequence ~~will~~ shall be repeated until the vehicle is no longer able to maintain either the speed or time tolerances in 40 CFR §86.115-00 (b)(1) and (2), or the manufacturer determines that the test should be terminated for safety reasons, e.g. excessively high battery temperature, abnormally low battery voltage, etc. For off-vehicle charge capable hybrid electric vehicles, this determination shall be performed without the use of the auxiliary power unit.

(b) Determination of All-Electric Range-Highway. At the end of the cold soak period, the vehicle shall be placed, either driven or pushed, onto a dynamometer and operated through two successive Highway Fuel Economy Driving Schedules (HFEDS), found in 40 CFR, Part 600, Appendix I, which is incorporated herein by reference the speed or time tolerances contained in 40 CFR §86.115-00(b)(1) and (2). There shall be a 15 second zero speed with key on and brake depressed between two cycles and a 10-minute soak following the two HFEDS cycles. This test sequence ~~will~~ shall be repeated until the vehicle is no longer able to maintain either the speed or time tolerances in 40 CFR §86.115-00 (b)(1) and (2), or the manufacturer determines that the test should be terminated for safety reasons, e.g. excessively high battery temperature, abnormally low battery voltage, etc. For off-vehicle charge capable hybrid electric vehicles, this determination is optional and shall be performed without the use of the auxiliary power unit.

(3) Recording requirements. Once the vehicle is no longer able to maintain the speed and time requirements specified in (2) above, or once the auxiliary power unit turns on, in the case of an off-vehicle charge capable hybrid electric vehicle, ~~the~~

~~accumulated mileage and energy usage of the vehicle from the point where electricity is introduced from the electrical outlet (AC energy) and the battery output (DC energy) shall be recorded, and the vehicle shall be brought to an immediate stop, thereby concluding the All-Electric Range Test. the vehicle shall be brought to an immediate stop and the following data recorded:~~

- (a) mileage accumulated during the All-Electric Range Test;
- (b) Net DC energy from the battery that was expended during the All-Electric Range Test (may be reported as the total DC battery energy output and the total DC; battery energy input during the All-Electric Range Test);
- (c) AC energy required to fully charge the battery after the All-Electric Range Test from the point where electricity is introduced from the electric outlet to the battery charger; and
- (d) DC energy required to fully charge the battery after the All-Electric Range Test from the point where electricity is introduced from the battery charger to the battery.

Battery charging shall begin within 1 hour after terminating the All-Electric Range Test.

These post-hearing modifications clarify various provisions and provide allowances for safety considerations when electric vehicles are tested.

12. Modify section E.6.1 of the ZEV/HEV TPs, as follows:

6.1 Vehicle Preconditioning

To be conducted pursuant to the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as incorporated by reference herein with the following supplemental requirements:

6.1.1 Battery state-of-charge shall be set prior to initial fuel drain and fill before vehicle preconditioning.

6.1.2 For hybrid electric vehicles that do not allow manual activation of the auxiliary power unit, battery state-of-charge shall be set at a level that causes the hybrid electric vehicle to operate the auxiliary power unit for the maximum possible cumulative amount of time during the preconditioning drive.

6.1.3 For hybrid electric vehicles that allow manual activation of the auxiliary power unit, battery state-of-charge shall be set at a level that satisfies one of the following conditions:

- (i) If the hybrid electric vehicle is charge-sustaining over the UDDS, battery state-of-charge shall be set at the lowest level allowed by the manufacturer.

(ii) If the hybrid electric vehicle is charge-depleting over the UDDS, battery state-of-charge shall be set at the level recommended by the manufacturer for activating the auxiliary power unit when operating in urban driving conditions.

6.1.4 After setting battery state-of-charge, the hybrid electric vehicle shall be pushed or towed to a work area for fuel drain and fill according to sections D.1.1. and D.1.2. of the "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as incorporated by reference herein.

6.1.5 Following fuel drain and fill, the vehicle shall be pushed or towed into position on a dynamometer and preconditioned. If the auxiliary power unit is capable of being manually activated, the auxiliary power unit shall be manually activated at the beginning of and operated throughout the preconditioning drive.

6.1.6 Within five minutes of completing preconditioning drive, battery state-of-charge shall be set at a level that satisfies one of the following conditions:

(i) If the hybrid electric vehicle does not allow manual activation of the auxiliary power unit and is charge-sustaining over the UDDS, then set battery state-of-charge to a level such that the SOC Criterion (see section B., Definitions, of these procedures) would be satisfied for the dynamometer procedure (section 6.2 of these procedures). If off-vehicle charging is required to increase battery state-of-charge for proper setting, off-vehicle charging shall occur during 12 to 36 hour soak period.

(ii) If the hybrid electric vehicle does not allow manual activation of the auxiliary power unit and is charge-depleting over the UDDS, then no battery state-of-charge adjustment is permissible.

(iii) If the hybrid electric vehicle does allow manual activation of the auxiliary power unit, then set battery state-of-charge to manufacturer recommended level for activating the auxiliary power unit when the hybrid electric vehicle is operating in urban driving conditions.

This text would be transferred from section III.D.3.1 of the 2001+ Evap TPs with some modifications for clarity.

13. Modify section E.8.2.4 (i) and (ii) of the ZEV/HEV TPs, as follows:

(i) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-sustaining over the ~~HFEDS~~ US06, the vehicle shall be momentarily turned off for 5 seconds and turned back on during the idle period. The battery state-of-charge shall be recorded after the hybrid electric vehicle has fully turned on.

- (ii) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-depleting over the ~~HFEDS~~ USO6, the vehicle shall remain turned on during the idle period.

This modification corrects errors in the original proposal that cited the incorrect test cycle for this section.

- 14. Modify section E.8.2.5(ii) of the ZEV/HEV TPs, as follows:

- (ii) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-depleting over the ~~HFEDS~~ USO6, turn off vehicle 2 seconds after the end of the last deceleration.

This modification corrects an error in the original proposal that cited the incorrect test cycle for this section.

- 15. Modify section E.8.4.6 of the ZEV/HEV TPs, as follows:

8.4.6 Amend subparagraph (d)(10): At the conclusion of the ~~USO6~~ SCO3 emission test, one of the following conditions shall apply:

- (i) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-sustaining over the SCO3, record the battery state-of-charge to determine if the SOC Criterion (see Definitions, section B of these procedures) is satisfied. If the SOC Criterion is not satisfied, then turn off cooling fan(s), allow vehicle to soak in the ambient conditions of paragraph (c)(5) of this section for 10 minutes, and repeat dynamometer test run from subparagraph (d). A total of three SCO3 emission tests shall be attempted to satisfy the SOC Criterion. Manufacturers may elect to repeat dynamometer test run from subparagraph (d) following a 10 minute soak in the ambient conditions of paragraph (c)(5) of this section if battery energy level increased significantly relative to the initial battery state-of-charge set at the beginning of SCO3 emission test.
- (ii) For hybrid electric vehicles that do not allow the auxiliary power unit to be manually activated and are charge-depleting over the ~~HFEDS~~ SCO3, turn off vehicle 2 seconds after the end of the last deceleration.

This modification corrects an error in the original proposal that cited the incorrect test cycle for this section.

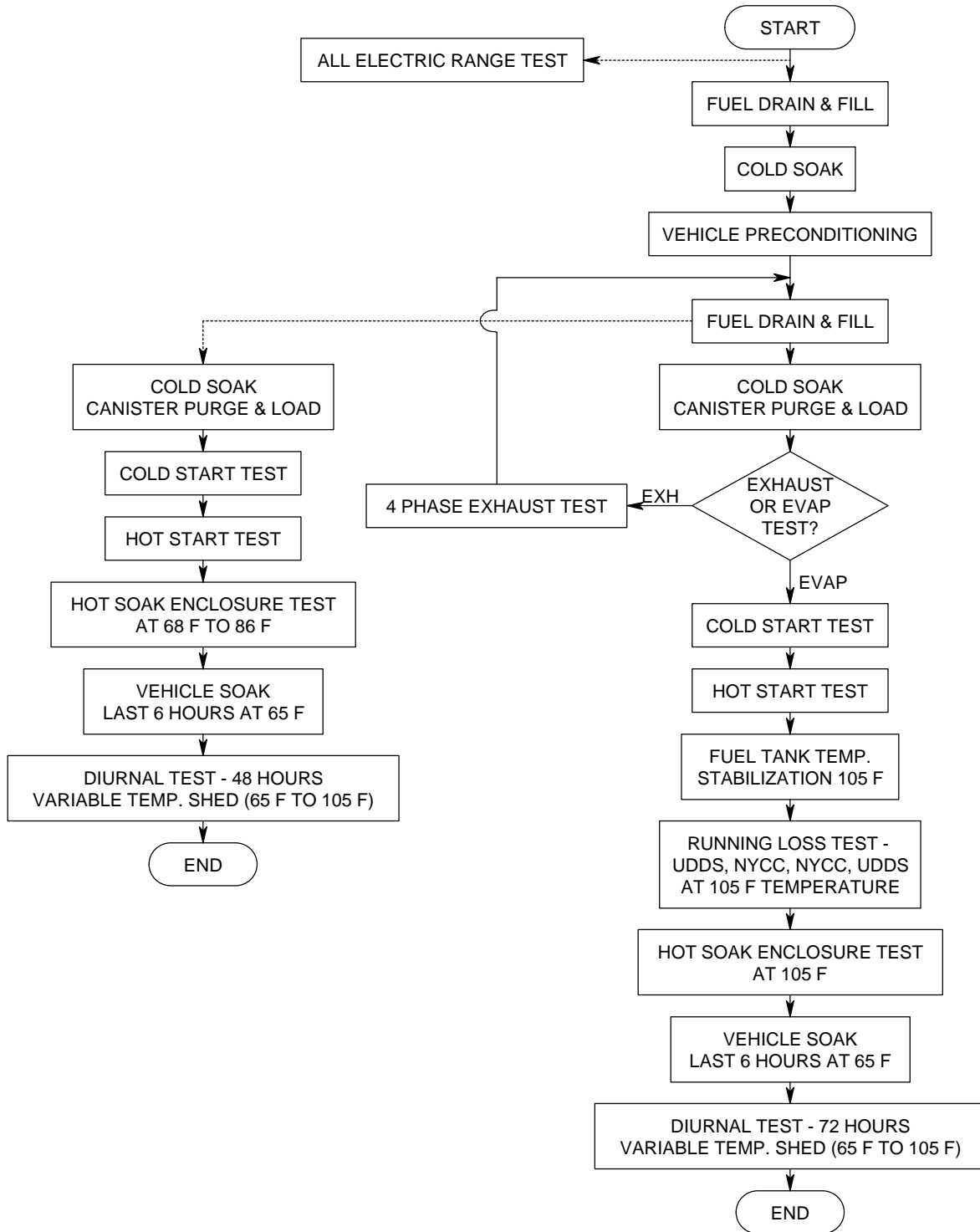


Figure 3A: Test Procedure for 2001 and Subsequent Model Hybrid Electric Vehicles

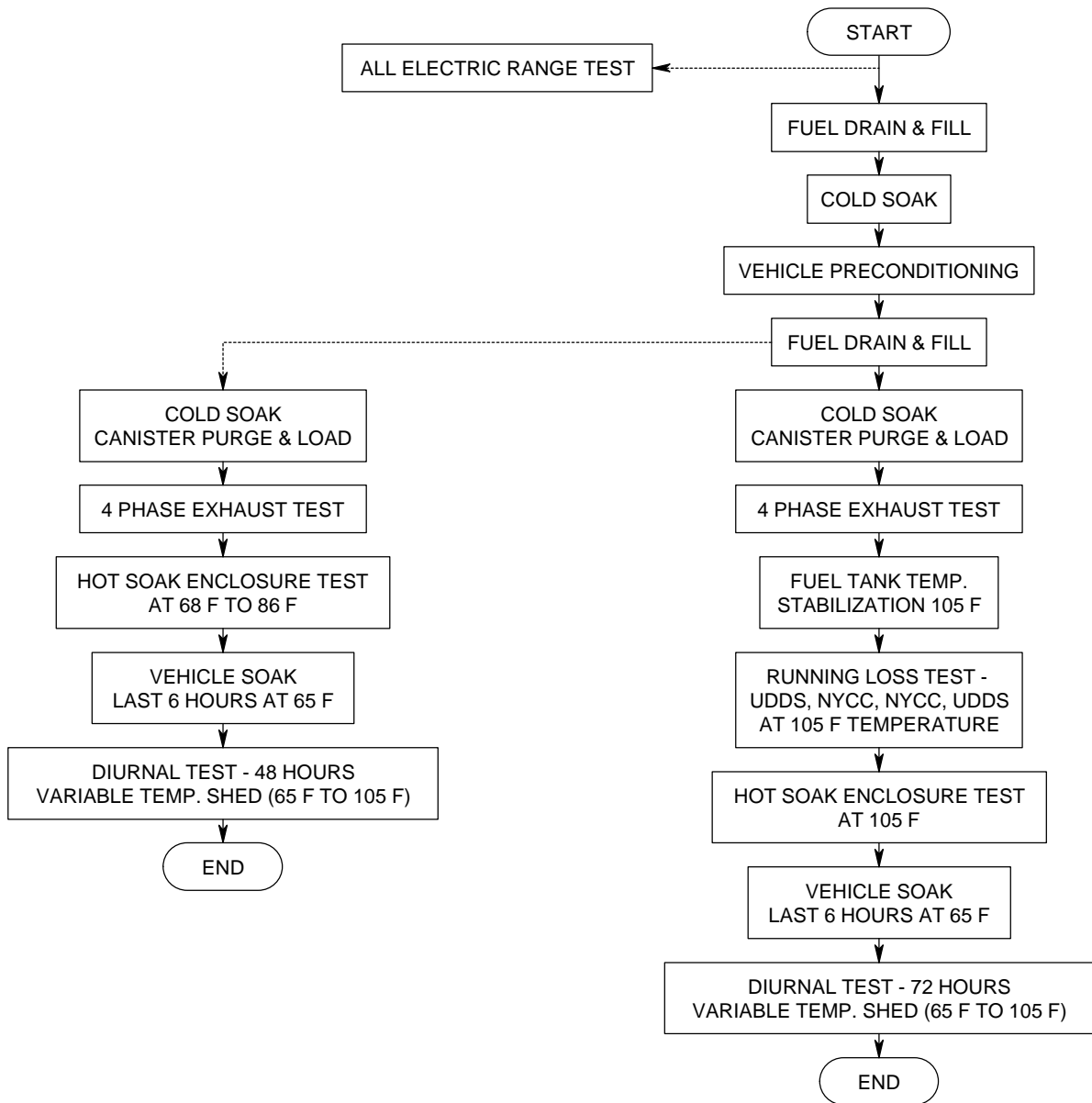


Figure 3B: Test Procedure for 2001 and Subsequent Model Hybrid Electric Vehicles