

## Subchapter XI. Low Emission Vehicle Program.

### 5-1101 DEFINITIONS

The terms defined in this section shall apply to this subchapter only, and for purposes of this subchapter shall supersede definitions contained in any other regulation or in statutes. The definitions contained in *Air Pollution Control Regulations* § 5-101 shall govern in the absence of a superseding definition in this section.

- (a) "*California-certified*" means approved by CARB for sale in California.
- (b) "CARB" means the California Air Resources Board.
- (c) "*Dealer*" means any person engaged in the business of selling, offering to sell, soliciting or advertising the sale of *new vehicles* who holds a valid sales and service agreement, franchise or contract, granted by the *manufacturer* or distributor for the retail sale of said *manufacturer's* or distributor's *new vehicles*.
- (d) "*Emergency Vehicle*" means any authorized *vehicle* publicly owned and operated that is used by a peace officer, used for fighting fires or responding to emergency fire calls, used by emergency medical technicians or paramedics, used for towing or servicing other *vehicles*, or used for repairing damaged lighting or electrical equipment.
- (e) "*Emission Control Label*" means a paper, plastic, metal or other permanent material, welded, riveted or otherwise permanently attached to an area within the engine compartment (if any), or to the engine, in such a way that it will be visible to the average person after installation of the engine in all *new vehicles* certified for sale in California, in accordance with Title 13, California Code of Regulations Section 1965.
- (f) "*Environmental Performance Label*" means a paper or plastic decal securely affixed by the manufacturer to a window of all passenger cars, light-duty trucks, and medium-duty passenger vehicles which discloses the global warming and smog score for the vehicle in accordance with Title 13, California Code of Regulations Section 1965.
- (g) "*Fleet Average Emission*" means a *vehicle manufacturer's* average *vehicle* emissions of all greenhouse and non-methane organic gases from all *new vehicles* delivered for sale or lease in Vermont in any *model-year*.
- (h) "Greenhouse gas" means the following gases: carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons.
- (i) "GHG Credit" means *greenhouse gas* credit.
- (j) "*Light-duty Truck*" means any 2000 and subsequent model *vehicle* certified to standards in Title 13, California Code of Regulations Section 1961(a)(1) rated at 8500 pounds gross *vehicle* weight or less, and any other *vehicle* rated at 6000 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.

- (k) "*Manufacturer*" means any small, intermediate or large volume *vehicle manufacturer* as defined in Title 13, California Code of Regulations Section 1900.
- (l) "*Medium-duty passenger vehicle*" means any medium-duty vehicle with a gross vehicle weight rating of less than 10,000 pounds that is designed primarily for the transportation of persons. The medium-duty passenger vehicle definition does not include any vehicle which:
  - (1) is an "incomplete truck," i.e., a truck that does not have the primary load carrying device or container attached; or
  - (2) has a seating capacity of more than 12 persons; or
  - (3) is designed for more than 9 persons in seating rearward of the driver's seat; or
  - (4) is equipped with an open cargo area of 72.0 inches in interior length or more. A covered box not readily accessible from the passenger compartment will be considered an open cargo area, for purposes of this definition.
- (m) "*Medium-duty Vehicle*" means any 2000 through 2006 *model-year* heavy-duty low-emission, ultra-low-emission, super-ultra-low-emission or zero-emission *vehicle* certified to the standards in Title 13, California Code of Regulations Sections 1956.8 (g) or (h) or 1960.1(h)(2), having a *manufacturer's* gross *vehicle* weight rating of 14,000 pounds or less; any 2000 through 2003 *model-year* heavy duty *vehicle* certified to the standards in Title 13, California Code of Regulations Section 1960.1(h)(1) having a manufacturer gross vehicle weight rating of 14,000 lbs. or less; and any 2000 and subsequent model heavy-duty low-emission, ultra-low-emission, super-ultra-low-emission or zero-emission vehicle certified to the standards in Title 13, California Code of Regulations Sections 1956.8 (g) or (h), 1961(a)(1) or 1962 having a manufacturer's gross vehicle weight rating between 8,501 and 14,000 pounds.
- (n) "*Model-year*" means, for each vehicle manufacturer the period which begins January 1 of the calendar year in which the model is first offered for sale and ends December 31 of the final calendar year of sale or, if the manufacturer has no annual production period, the calendar year. In case of any vehicle manufactured in two or more stages, the time of manufacture shall be the date of completion of the chassis.
- (o) "*New Vehicle*" means any vehicle with 7,500 miles or fewer on its odometer.
- (p) "*NMOG Credit*" means non-methane organic gas credit.
- (q) "*Passenger Car*" means any vehicle designed primarily for transportation of persons and having a design capacity of twelve persons or less.

- (r) "PZEV Credit" means partial zero emission vehicle credit.
- (s) "Recall" means:
  - (1) the issuing of notices directly to consumers that vehicles in their possession or control should be corrected, and/or
  - (2) efforts to actively locate and correct vehicles in the possession or control of consumers.
- (t) "Smog Index Label" means a decal securely affixed by the manufacturer to a window of all passenger cars and light-duty trucks which discloses the smog index for the vehicle in accordance with Title 13, California Code of Regulations Section 1965.
- (u) "VECs" means vehicle equivalent credits.
- (v) "Vehicle" means a motor vehicle.
- (w) "ZEV Credit" means zero emission vehicle credit.

#### **5-1102 INCORPORATION BY REFERENCE**

- (a) This subchapter incorporates by reference certain sections of Title 13, California Code of Regulations. Appendix F lists the sections Title 13, California Code of Regulations incorporated by reference and the respective amended date for each section. The sections of Title 13, California Code of Regulations incorporated by reference in this subchapter are the version of the section as of the amended date in Appendix F.
- (b) For purposes of applying the incorporated sections of the California Code of Regulations, unless clearly inappropriate, "California" shall mean "Vermont". For example, "delivered for sale in California" and "placed in service" are interpreted, except for determinations of whether a manufacturer is a large, medium, small or independent low volume manufacturer, as referring to vehicles in "Vermont".

#### **5-1103 NEW VEHICLE EMISSION REQUIREMENTS**

- (a) No person, including a *manufacturer* or *dealer*, shall deliver for sale or lease, offer for sale or lease, sell or lease, import, acquire, receive, purchase, or rent a *new vehicle* that is a 2000 or subsequent *model-year passenger car* or *light-duty truck* or a 2004 or subsequent *model-year medium-duty vehicle* in Vermont unless the *vehicle* is *California-certified* and complies with the following criteria:
  - (1) the exhaust emissions standards in Title 13, California Code of Regulations Sections 1956.8(g) or (h), 1960.1, 1961(a), 1962(a), or 1962.1(a) and
  - (2) the *emission control label requirements*, the *smog index label requirements* for 2002 through 2009 *model-years*, and the *environmental performance label requirements* for 2010 and subsequent *model years* in accordance with Title 13, California Code of Regulations Section 1965, and

- (3) the evaporative emissions standards in Title 13, California Code of Regulations Sections 1976, and
  - (4) the refueling emissions standards in Title 13, California Code of Regulations Section 1978, and
  - (5) the malfunction and diagnostic system requirements in Title 13, California Code of Regulations Section 1968.1, and
  - (6) the assembly-line testing procedure requirements in Title 13, California Code of Regulations Section 2062, and
  - (7) the specifications for fill pipes and openings of motor *vehicle* fuel tanks in Title 13, California Code of Regulations Section 2235.
- (b) No person, including a *manufacturer* or *dealer*, shall deliver for sale or lease, offer for sale or lease, sell or lease, import, acquire, receive, purchase, or rent a *new* 2009 or subsequent *model-year passenger car, light-duty truck, or a medium-duty passenger vehicle* in Vermont unless the *vehicle* is *California-certified* and complies with the California *greenhouse gas* exhaust emission standards and meets all other applicable requirements of California Code, Title 13, Section 1961.1 and this Subchapter.
- (c) Subsections 5-1103(a) and 5-1103(b) shall not apply to a *new vehicle*:
- (1) defined as an *emergency vehicle*;
  - (2) with a right-hand drive configuration that is not available in a *California-certified* model, purchased by a rural route postal carrier and used primarily for work;
  - (3) designed exclusively for off-highway use; or
  - (4) certified to standards promulgated pursuant to the authority contained in 42 U.S.C. Section 7521 and which is in the possession of a vehicle rental agency in Vermont and is next rented with a final destination outside of Vermont.
- (d) Subsections 5-1103(a) and 5-1103(b) shall not apply to new vehicles in the following transactions:
- (1) a transfer by court decree;
  - (2) a transfer by inheritance;
  - (3) a purchase by a nonresident prior to establishing residency in Vermont; or
  - (4) a sale for the purpose of being wrecked or dismantled.

**5-1104 WARRANTY**

- (a) For all 2000 and subsequent model-year California-certified vehicles delivered for sale or lease in Vermont, each manufacturer shall provide a warranty for the ultimate purchaser and each subsequent purchaser that complies with the requirements of Title 13, California Code of Regulations Sections 2035 through 2038, 2040 and 2046.
- (b) For 2002 and subsequent model-years, each manufacturer shall include the emission control system warranty statement required by Title 13, California Code of Regulations Sections 2039, modified by some means (e.g. printed within the text or a sticker) to clearly inform Vermont owners of California-certified vehicles that the California Warranty applies to the vehicle. This statement shall provide a telephone number appropriate for Vermont.

**5-1105 RECALL**

- (a) For all 2000 and subsequent model-year California-certified vehicles registered in Vermont, each manufacturer shall undertake an action equivalent to that which is required by any order or enforcement action taken by CARB, or any voluntary or influenced emission related recall initiated by any manufacturer pursuant to Title 13, California Code of Regulations Sections 2101 through 2120, 2122 through 2133, 2135 through 2149, and 2166 through 2174 unless within 30 days of CARB approval of said recall, the manufacturer demonstrates to the Agency that such recall is not applicable to vehicles registered in Vermont. Each manufacturer must send to owners of Vermont registered California-certified vehicles the same notice that is used for California owners required by Title 13, California Code of Regulations Sections 2118 or 2127, except that it should contain a telephone number appropriate for Vermont.

**5-1106 MANUFACTURER FLEET REQUIREMENTS.**

- (a) Each manufacturer shall meet the following fleet requirements for the new vehicles delivered for sale or lease in Vermont.
  - (1) Effective for 2004 and subsequent model-years, each manufacturer shall comply with the fleet average emission requirements and, for 2000 and subsequent model-years, may earn and bank NMOG credits, both in accordance with Title 13, California Code of Regulations Section 1961, except NMOG credits earned prior to model-year 2004 shall be treated as though they were earned in model-year 2004.
  - (2) Each manufacturer shall comply with the medium-duty vehicle phase-in requirements and, for 2004 and subsequent model-years, may earn and bank VECs, both in accordance with Title 13, California Code of Regulations Section 1961, except VECs earned prior to model-year 2007 shall be treated as though they were earned in model-year 2007.

Starting with MY 2007, all medium-duty vehicles must be LEV II certified in accordance with Title 13, California Code of Regulations Section 1961.

- (3) Effective for 2004 and subsequent model years, each manufacturer shall comply with the LEV II phase-in requirements, in accordance Title 13, California Code of Regulations Section 1961.
- (4) Effective for 2007 and subsequent model year vehicles, each manufacturer shall comply with the Zero Emission Vehicle sales requirement and, for 2000 and subsequent model year vehicles, may earn and bank ZEV and PZEV credit, both in accordance Title 13, California Code of Regulations Sections 1962 and 1962.1.
- (5) Effective for the 2009 and subsequent *model-year passenger cars, light-duty trucks, and medium-duty passenger vehicles*, each *manufacturer* shall comply with the *fleet average emission greenhouse gas* requirements, and for 2000 and subsequent *model-years* may earn and bank *GHG credits*, both in accordance with Title 13, California Code of Regulations Section 1961.1.
- (6) If the ZEV and PZEV credit provisions in Title 13, California Code of Regulations Sections 1962 and 1962.1 or the GHG provisions in Title 13, California Code of Regulations Section 1961.1 are changed, application of the revised credit provisions will be taken into account in any enforcement decisions regarding compliance with the sales requirement imposed by paragraph (4).

#### **5-1107 MANUFACTURER REPORTING REQUIREMENTS**

(a) Delivery Reporting.

- (1) Commencing with the 1999 model-year for passenger cars and light-duty trucks and the 2000 model-year for medium-duty vehicles, each manufacturer shall submit annually, to the Agency, by March 1 following the end of each model-year, a report, itemized by test group and emissions standard, documenting total new vehicles delivered for sale or lease in Vermont.

(b) Fleet Reporting.

- (1) Each manufacturer shall submit annually to the Agency, by March 1 following the end of each model-year, a report, itemized by test group and emissions standard, that demonstrates that the manufacturer has met the fleet requirements of subsection 5-1106(a) in Vermont.

- (2) For 2000 and subsequent model-year passenger cars and light-duty trucks and for 2004 and subsequent model-year medium-duty vehicles, each manufacturer shall submit by March 1 of the model-year, a report, itemized by test group, emissions standard, and California Executive Order, projecting the manufacturer's compliance with the model-year fleet requirements of subsection 5-1106(a) in Vermont. Manufacturers shall supply copies of CARB certification of test groups and Executive Orders in advance of projected sales.
- (3) If a manufacturer wants to bank VECs or GHG, NMOG, ZEV or PZEV credits, the manufacturer shall submit annually, by March 1 following the end of the model-year, a report which demonstrates that such manufacturer has earned VECs or GHG, NMOG, ZEV or PZEV credits in Vermont. Credits are to be calculated to three (3) decimal places.

(c) Recall Reporting.

- (1) For information and not for approval by Vermont, for 2000 and subsequent model-year vehicles, each manufacturer shall submit, within 30 days of CARB approval, a copy of any CARB approved voluntary, influenced or ordered recall plan specified by Title 13, California Code of Regulations Sections 2114 and 2125, and 2166 through 2174, supplemented with the number of affected vehicles registered in Vermont.
- (2) For information and not for approval by Vermont, each manufacturer shall submit recall campaign progress reports for vehicles registered in Vermont, within the timelines of, and containing the information required by, Title 13, California Code of Regulations Sections 2119 and 2133, and 2166 through 2174. Reports need not be submitted to the Agency if the equivalent reports have been waived by CARB.

(e) Documentation.

A manufacturer, a dealer or a transporter of new vehicles shall, upon request, provide to the Agency of Natural Resources or the Agency of Transportation any documentation which either Agency determines to be necessary for the effective administration and enforcement of this subchapter.

- (f) Reports and other information required by this subsection must be sent to: Director, Air Pollution Control Division, Vermont Agency of Natural Resources, Department of Environmental Conservation, Building 3 South, 103 South Main Street, Waterbury, Vermont, 05671-0402.

**5-1108 INSPECTIONS**

- (a) The Secretary of the Agency of Natural Resources or the Secretary of the Agency of Transportation or their designees may conduct inspections of any new and used vehicles and any related documentation for the purpose of determining compliance with the requirements of this subchapter.
  - (1) Inspections may be conducted on any conveyance used to transport new vehicles or on any premises owned or controlled by any dealer or manufacturer.
  - (2) Inspections may extend to all emission-related parts and may require the on-premises operation and testing of an engine or vehicle.
  - (3) Inspections may include functional tests and other tests as necessary to verify compliance with this subchapter.
- (b) Upon request, during an inspection, such dealer or manufacturer must make available to either Agency any related records, including records documenting vehicle origin, certification, delivery, or sales and records of emission related part repairs performed under warranty.

**5-1109 SEVERABILITY**

Each provision of this Subchapter is severable, and in the event that any provision of this Subchapter is held to be invalid, the remainder of the Subchapter shall continue in full force and effect.

**Appendix F**

Title 13 CCR	Title	Section Amended Date
Chapter 1	Motor Vehicle Pollution Control Devices.	
Article 1	General Provisions.	
1900	Definitions.	TBD
1903	Plans Submitted	Date not listed
1904	Applicability to Vehicles Powered by Fuels Other Than Gasoline	09/30/91
Article 2	Approval of Motor Vehicle Pollution Control Devices (New Vehicles).	
1956.8(g) and (h)	Exhaust Emissions Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles.	01/04/08
1960.1	Exhaust Emissions Standards and Test Procedures – 1981 and through 2006 Model Passenger Cars, Light-Duty and Medium-Duty Vehicles.	10/16/02, 03/26/04
1960.5	Certification of 1983 and Subsequent Model-Year Federally-Certified Light-Duty Motor Vehicles for Sale in California	10/16/02
1961	Exhaust Emission Standards and Test	

	Procedures - 2004 and Subsequent Model <i>Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.</i>	TBD
1961.1	Greenhouse Gas Exhaust Emission Standards and Test Procedures - 2009 and Subsequent Model <i>Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.</i>	1/1/06
1962	Zero-Emission <i>Vehicle</i> Standards for 2005 and Subsequent Model <i>Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.</i>	TBD
1962.1	Zero-Emission Vehicle Standards for 2009 and Subsequent Model Year <i>Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles</i>	TBD
1964	Special Test Procedures for Certification and Compliance - New Modifier Certified Motor Vehicles	02/23/90
1965	Emission Control, Smog Index, and Environmental Performance Labels - 1979 and Subsequent <i>Model-Year Motor Vehicles.</i>	06/16/08
1968.1	Malfunction and Diagnostic System Requirements - 1994 and Subsequent <i>Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles and Engines.</i>	11/27/99
1968.2	Malfunction and Diagnostic System Requirements - 2004 and Subsequent <i>Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles and Engines</i>	11/09/07
1976	Standards and Test Procedures for Motor <i>Vehicle</i> Fuel Evaporative Emissions.	01/04/08
1978	Standards and Test Procedures for <i>Vehicle</i> Refueling Emissions.	01/04/08
Article 6	Emission Control System Warranty.	
2035	Purpose, Applicability, and Definitions.	11/09/07
2036	Defects Warranty Requirements for 1979 Through 1989 <i>Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles; 1979 and Subsequent Model Motorcycles and Heavy-Duty Vehicles; and Motor Vehicle Engines Used in Such Vehicles.</i>	5/15/99
2037	Defects Warranty Requirements for 1990 and Subsequent <i>Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles, and Motor Vehicle Engines Used in Such Vehicles.</i>	11/09/07

2038	Performance Warranty Requirements for 1990 and Subsequent Model <i>Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles</i> and Motor Vehicle Engines Used in Such <i>Vehicles</i> .	11/09/07
2039	Emissions Control System Warranty Statement.	12/26/90
2040	<i>Vehicle</i> Owner Obligations.	12/26/90
2041	Mediation; Finding of Warrantable Condition	12/26/90
2046	Defective Catalyst.	1/16/79 *
2047	Certification procedures for Used Modifier-certified Motor Vehicles	05/31/88

Chapter 2	Enforcement of <i>Vehicle</i> Emission Standards and Surveillance Testing.	
Article 1	Assembly-Line Testing.	
2062	Assembly-Line Test Procedures - 1998 and Subsequent <i>Model-years</i> .	11/27/99
Article 2	Enforcement of New and In-Use <i>Vehicle</i> Standards.	
2101	Compliance Testing and Inspection - <i>New Vehicle</i> Selection, Evaluation and Enforcement Action.	11/27/99
2109	<i>New Vehicle Recall</i> Provisions.	11/30/83 *
2110	Remedial Action for Assembly-Line Quality Audit Testing of Less Than a Full Calendar Quarter of Production Prior to the 2001 <i>Model-year</i> .	11/27/99
Article 2.1	Procedures for In-Use <i>Vehicle</i> Voluntary and Influenced <i>Recalls</i> .	
2111	Applicability.	01/04/08
2112	Definitions.	08/15/07
	Appendix A to Article 2.1.	08/15/07
2113	Initiation and Approval of Voluntary and Influenced Emission-Related <i>Recalls</i> .	1/26/95
2114	Voluntary and Influenced <i>Recall</i> Plans.	11/27/99
2115	Eligibility for Repair.	1/26/95
2116	Repair Label.	1/26/95
2117	Proof of Correction Certificate.	1/26/95
2118	Notification.	1/26/95
2119	Recordkeeping and Reporting Requirements.	11/27/99
2120	Other Requirements Not Waived.	1/26/95
Article 2.2	Procedures for In-Use <i>Vehicle</i> Ordered <i>Recalls</i> .	
2121	Penalties	01/26/95
2122	General Provisions.	01/04/08
2123	Initiation and Notification of Ordered Emission-Related <i>Recalls</i> .	1/26/95
2124	Availability of Public Hearing.	1/26/95
2125	Ordered <i>Recall</i> Plan.	1/26/95

2126	Approval and Implementation of <i>Recall</i> Plan.	1/26/95
2127	Notification of Owners.	1/26/95
2128	Repair Label.	1/26/95
2129	Proof of Correction Certificate.	1/26/95
2130	Capture Rates and Alternative Measures.	11/27/99
2131	Preliminary Tests.	1/26/95
2132	Communication with Repair Personnel.	1/26/95
2133	Recordkeeping and Reporting Requirements.	1/26/95
2134	Penalties	01/26/95
2135	Extension of Time.	1/26/95
Article 2.3. In-Use Vehicle Enforcement Test Procedures.		
2136	General Provisions.	01/04/08

2137	<i>Vehicle</i> Selection.	12/28/00
2138	Restorative Maintenance.	11/27/99
2139	Testing.	8/21/02
2140	Notification and Use of Test Results.	8/21/02
Article 2.4 Procedures for Reporting Failure of Emission-Related Components.		
2141	General Provisions.	01/04/08
2142	Alternative Procedures.	2/23/90
2143	Failure Levels Triggering <i>Recall</i> .	11/27/99
2144	Emission Warranty Information Report.	11/27/99
2145	Field Information Report.	11/27/99
2146	Emissions Information Report.	11/27/99
2147	Demonstration of Compliance with Emission Standards.	8/21/02
2148	Evaluation of Need for <i>Recall</i> .	11/27/99
2149	Notification of Subsequent Action.	2/23/90
Article 5 Procedures for Reporting Failures of Emission-Related Equipment and Required Corrective Action		
2166	General Provisions	01/04/08
2166.1	Definitions	01/04/08
2167	Emission Warranty Information Report	01/04/08
2168	Supplemental Emission Warranty Information Report	01/04/08
2169	Recall and Corrective Action for Other Emission-Related Component Failures (On-Board Diagnostic-Equipped Vehicles and Engines)	01/04/08
2170	Recall and Corrective Action for Other Emission-Related Component Failures (On-Board Diagnostic-Equipped Vehicles and Engines)	01/04/08
2171	Recall and Corrective Action for Vehicles Without On-Board Diagnostic Systems, Vehicles with Non-Compliant On-	01/04/08

	Board Diagnostic Systems, or Vehicles with On-Board Computer Malfunction	
2172	Notification of required Recall or Corrective Action by the Executive Officer	01/04/08
2172.1	Ordered or Voluntary Corrective Action Plan	01/04/08
2172.2	Approval and Implementation of Corrective Action Plan	01/04/08
2172.3	Notification of Owners	01/04/08
2172.4	Repair Label	01/04/08
2172.5	Proof of Correction Certificate	01/04/08
2172.6	Preliminary Tests	01/04/08
2172.7	Communication with Repair Personnel	01/04/08
2172.8	Recordkeeping and Reporting Requirements	01/04/08
2172.9	Extension of Time	01/04/08
2173	Penalties	01/04/08
2174	Availability of Public Hearing	01/04/08
Chapter 4	Criteria for the Evaluation of Motor Vehicle Pollution Control Devices and Fuel Additives	
Article 2	Aftermarket Parts	
2222	Add-On Parts and Modified Parts	07/10/08
Chapter 4.4	Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks	
2235	Requirements.	9/17/91

\* file date, effective 30 days later

## **Economic Impact Statement: Attachment A**

### **A. Introduction**

The proposed amendments reflect on-going changes to the California Low Emission Vehicle (LEV) Program, which Vermont adopted in 1996 and periodically needs to update to maintain consistency with California. The proposed amendments will incorporate by reference three substantive areas of change to California's LEV Program: (1) revisions to Zero Emission Vehicle (ZEV) requirements; (2) new Environmental Performance Labeling requirements; and (3) revisions to Emission Warranty Information Reporting and Recall requirements.

In addition, Vermont has reviewed its LEV regulations and those sections of the California Code incorporated by reference in Vermont's LEV regulations and is proposing to make some administrative changes, such as updating the effective dates of the incorporated sections and adding appropriate sections to clarify LEV policy and administration. These proposed changes, which can be viewed in the annotated text of the proposed amendments to Subchapter XI and Appendix F of the Air Pollution Control Regulations, are not expected to have any significant economic impacts.

### **B. Discussion**

#### **1) ZEV Amendments.**

Current ZEV requirements offer Large Volume Manufacturers a choice of following a Fuel Cell Alternative Path or a Base Path. In either instance, requirements are framed within time intervals identified as Phase I 2005-2008, Phase II 2008-2011, Phase III 2012-2014, and Phase IV 2014-2017. The overall numbers of either fuel cells or other zero emission vehicles ramp up during each successive phase, along with the percentage of a manufacturer's fleet which must qualify for ZEV credit. Intermediate Volume Manufacturers meet simplified, less stringent requirements, while Small Volume Manufacturers are exempted, but not precluded from earning credits by supplying vehicles.

The amendments adopted by the California Air Resources Board (CARB) maintain the existing time frames, merge the Alternative and Base Paths, identify new categories of zero emission vehicles – especially emerging plug-in hybrid electric vehicles (PHEVs) and smaller full function battery electric vehicles – and reduce the requirements for “pure” ZEV or “Gold” vehicles in the 2012-2014 Phase III.

The revised Gold requirements in Phase III are tied to manufacturer use of “Silver +” PHEVs to offset the reduction. PHEVs are efficient emerging vehicles which will provide bridge technology and promote market appetite for eventual volume production of Gold hydrogen and battery electric vehicles. Initially, they will offer a combination of enhanced fuel economy, an ability to return some measure of “all electric” range that

could bracket a significant percentage of commuter daily trips, and the ability to both recharge from the grid during off-peak hours and eventually provide Vehicle-to-Grid (V2G) load buffering and peak shaving abilities.

In the February 2008, CARB projected that the proposed ZEV amendments would reduce cost to manufacturers by \$1.3 billion in 2012-2014.<sup>1</sup> To the extent that market appetite for PHEVs reaches the robust dimensions predicted in the press, costs for manufacturers may be further reduced. The on-going provisions in the ZEV requirements for Partial Zero Emission Vehicles (PZEV) and the background LEV Program requirement for manufacturers to meet declining annual fleet average tailpipe standards, will further offset costs to industry through shared design and volume production of advanced components fostered through technology forcing requirements. Volume production reduces per-unit costs and leads to in-process production efficiencies and refinements.

A key intent of California's revisions to the ZEV requirements is to provide increased flexibility to those manufacturers obligated to supply ZEV vehicles. A CARB staff report explains: "The changes proposed by staff significantly reduce an automaker's cost of compliance, but still provide increased air quality benefits of commercially viable and increasingly available [Advanced Technology Partial Zero Emission Vehicles, e.g., hybrids]."<sup>2</sup>

Economic impacts on consumers are expected to be positive. While the emerging technology in hybrid and other ZEV-type vehicles is currently at a cost over that found in most comparable conventional vehicles, the potential savings in fuel expense is significant. Currently, the incremental cost of the most popular hybrid vehicles is recovered within the first several years of ownership, while various manufacturers have identified as their business plans the reduction of the cost differential between advanced technology and conventional vehicles. Toyota, Honda, and Nissan have announced their intentions to reduce the cost of their ZEV products to the same levels as conventional fossil fuel-powered vehicles.

The enhanced build quality implicit in the ZEV warranty requirement of 15 years/150,000 miles for any device that illuminates the vehicle "Check Engine" light reduces consumer maintenance expense and improves resale value. Maintenance costs with electric-powered vehicles are significantly less than petroleum-fueled counterparts. Batteries in all-electric, fuel cell, and hybrid vehicles will be warranted for 10 years/150,000 miles. Consumer savings on fuel costs reverberate through the economy in increased spending power for other goods and services.

Economic impacts on Vermont automobile dealers are projected to range from neutral to positive. Some dealers may incur expense in subsidizing technician training to the extent that subsidized manufacturer support is incomplete. Some such expense would be offset by consumer demand for the relevant product, and dealers' perceived need to

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<sup>1</sup> CARB, Staff Report: Initial Statement of Reasons – 2008 Proposed Amendments to the California Zero Emission Vehicle Program Regulations, at p. iv, February 8, 2008.

<sup>2</sup> Id., at p. iv.

position themselves as most prepared to deliver and support that product. As emerging vehicle technology is not limited to ZEV applications, dealers are routinely in the position of needing to train their technicians as a cost of doing business.

Economic impacts on the State of Vermont will generally be positive. Reductions in tailpipe and evaporative emissions, including greenhouse gases, will improve air quality and public exposure to toxic air pollutants. Reductions will contribute to State efforts to address climate change and maintain compliance with the National Ambient Air Quality Standards (NAAQS). Being out of attainment with NAAQS brings an expensive additional level of State planning and administration of transportation and development. To the extent that alternative fuel vehicles, including electric, represent reduced consumption of gasoline and diesel, state gas tax revenues will be reduced. However, as an Environmental News Service article on an initiative by Illinois to adopt the California LEV Program explains:

By reducing demand for gasoline, the Clean Car Standards [LEV] will help keep gas prices in check . . . The groups predict that by 2020, the Clean Car Standards would save Illinois drivers nearly \$1.9 billion in fuel costs compared to the new federal CAFE standards. "Between now and 2020, global warming pollution will be reduced by around 40 percent more in Illinois under the Clean Car Standards than the new CAFE program," said Ron Burke, director of the Midwest Office for the Union of Concerned Scientists, a national group. "Plus, the new CAFE program does nothing more to reduce smog-forming pollutants, which will be cut under the Clean Car Standards," he said.<sup>3</sup>

To the extent that emerging technology vehicles are likely to be more compact and representative of a trend away from heavy truck-based SUVs, wear and tear and the consequent expenses on State highways will decrease. The Vermont State Energy Plan addresses many of these elements, and reaches a supportive position for PHEVs and alternative fueled vehicles in general.<sup>4</sup> The October, 2007 Final Report of the Governor's Commission on Climate Change [Vermont] embraced the Clean Car (LEV) Program as one of its six overarching goals. The Transportation and Land Use Technical Work Group of the Commission reached unanimous consent in endorsing both the Clean Car Program and deployment of PHEVs.<sup>5</sup>

Economic impacts on the Vermont Agency of Natural Resources will be neutral. Workforce requirements are not anticipated to increase, and the proposed amendments are properly viewed as on-going revisions to existing elements in an evolving motor vehicle emissions regulation.

Economic impacts on public utilities in Vermont will be neutral to positive. Central Vermont Public Service (CVPS), Green Mountain Power (GMP), and the Burlington

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<sup>3</sup> Environment News Service, "Illinois Bill Finds Clean Cars Best Antidote to \$4 Gas", June 3, 2008.

<sup>4</sup> available at <http://publicservice.vermont.gov/pub/state-plans-compenergy.html>

<sup>5</sup> available at <http://www.anr.state.vt.us/air/Planning/htm/ClimateChange.htm>

Electric Department (BED) are Vermont utilities that have been supportive of reduced emissions from mobile sources, and have been proactively planning for a PHEV future, both before and after Smart metering and vehicle-to-grid (V2G) capabilities and infrastructure are established. Studies in part supported by utilities include those of Professor Steven Letendre at Green Mountain College, including his collaborative studies with the University of Vermont Transportation Center<sup>6</sup>. While the current structure of the Regional Greenhouse Gas Initiative (RGGI) does not include a mechanism for utilities to use transportation CO2 emissions offset projects in calculation of their allowances, this concept is under discussion and possible in future programs. As the Electric Power Research Institute (EPRI) notes<sup>7</sup>:

Benefits to utilities from transportation electrification include: nighttime load growth; load management resulting from the controlled charging or discharging of vehicle batteries (and other corollary applications) that result in improved supply energy efficiency and asset utilization; potential CO2 and pollution credits; and the goodwill and image enhancements that result from being pro-environment and pro-customer. The technology also appears to be a symbiotic partner for wind and solar storage. Benefits for consumers include: lower operating costs, especially fuel costs; flexible energy storage that can be used for back-up or emergency power or, in the long term, potentially sell back to the grid; an environmentally friendly, green solution to transportation requirements; and the convenience of charging at home, work, or other remote locations due to electricity availability.

In overall context, the proposed amendments to the ZEV requirements are expected to reduce costs for manufacturers while maintaining environmental benefits. The heart of the ZEV requirements is the phase-in of alternatively-fueled vehicles which will be less costly to operate, and less costly to public health and the environment than their conventional fossil fuel-powered equivalents.

## 2) Environmental Performance Labeling Amendments.

California recently adopted Environmental Performance Labeling requirements in Title 13 of the California Code of Regulations (CCR) Section 1965. As amended, Section 1965 replaces the Smog Index Label with an Environmental Performance Label in which graphical representations of a vehicle's Smog Score and Global Warming Score will be displayed side by side. California's new labeling requirements are effective January 1, 2009.

Act No. 55, enacted on May 29, 2007 by the Vermont State Legislature and now codified at 10 V.S.A. §579 requires the Agency of Natural Resources to “establish, by rule, a vehicle emissions labeling program for new motor vehicles sold or leased in the state

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<sup>6</sup> University of Vermont Transportation Center, Plug-In Hybrid Vehicles and the Vermont Grid: A Scoping Analysis, February 15, 2008, available at [http://www.uvm.edu/~transctr/?Page=utc\\_publications.html](http://www.uvm.edu/~transctr/?Page=utc_publications.html)

<sup>7</sup> see <http://et.epri.com/projectopportunities.html>

with a model year of 2010 or later.” 10 V.S.A. §579(a). The statute further provides: “A label that complies with the requirements of the California vehicle labeling program shall be deemed to meet the requirements of this section and the rules adopted thereunder for the content of labels.” 10 V.S.A. §579(b).

The new California Environmental Performance Label is based on the premise that: “Consumer awareness of a vehicle’s environmental footprint would help consumers make the cleanest purchasing choice possible when selecting a new vehicle. Ultimately, consumer decisions to buy cleaner cars could result in lower emissions than would be achieved from regulating vehicles alone.”<sup>8</sup>

By adopting California’s Environmental Performance Label requirements, Vermont will share the goal of providing consumers with expanded information on the efficiency, cleanliness, and general impact of vehicle choices.

The new labeling provisions may provide an opportunity for the State of Vermont to more generally engage the public in issues surrounding personal and business transportation choices. Labels may provide an initial key to expanded awareness of both the impacts of vehicle choices but also potential alternatives, warranty implications, and incentive options.

CARB staff summarized their estimate of the economic impacts of an Environmental Performance Label.<sup>9</sup> For the some thirty manufacturers supplying approximately two million new vehicles annually to California, the CARB estimated the total annual cost to industry as \$245,000. It further estimated annual cost to a typical manufacturer at \$8,167, a figure including annualized cost for upgrading from black and white to color label printers with an average 3-5 year life. These estimated costs were based on manufacturer production of required labels at either their final assembly plants within the U.S. (76 plants operational as of May, 2007; currently less), or Ports of Entry to California.

Those manufacturers with U.S. final assembly points, or Ports of Entry serving not only California but other LEV states, would presumably not incur additional costs beyond label material and ink for additional labeling for the small Vermont market. Manufacturers without U.S. final assembly points, and using other than California – distribution Ports of Entry might incur expense to acquire label printers and supplies. This potential expense would be amortized over several years of printer service life, and be proportional to labeling requirements in other LEV states. It should also be noted that Vermont already requires the Smog Index Label, which would be replaced with the Environmental Performance Label.

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<sup>8</sup> CARB, Staff Report: Initial Statement of Reasons – Proposed Amendments to the Smog Index Vehicle Emissions Label, at p.1, May 4, 2007.

<sup>9</sup> Id., at pp.21-24.

Economic costs to Vermont vehicle dealers are expected to be negligible. An Environmental Performance Label will provide an opportunity for dealers to engage potential customers in a discussion of their needs and the merits of a dealer's products.

Impacts on State revenues may include eventual reductions in tax collected on the sale of gasoline but, as earlier illustrated in the discussion of ZEV amendments, will also potentially lead to reduction of dependency on ever more costly oil supplies, reduce wear and tear on highways, and increase that portion of consumers' resources available for home heating and general efficiency improvements, along with new vehicle purchases, and general goods and services – all representing offsetting sales tax revenue. The Governor's Commission on Climate Change<sup>10</sup> and the State Energy Plan<sup>11</sup> address the general trend toward reduced State revenues from fuel taxes, and the various alternative funding mechanisms that can and will need to be developed, and which are independent of any specific provision such as vehicle Environmental Performance Labeling.

Economic impacts to Vermont consumers will be beneficial. The higher a vehicle's Global Warming Score, the more fuel efficient that vehicle is compared to a vehicle with a lesser score. The higher a vehicle's Smog Score, the more integrated and better built its power train compared to a vehicle with a lesser score. The higher rated vehicles will largely carry superior 15 years/150,000 warranties for anything that illuminates the Check Engine lamp, significantly reducing consumer expense and enhancing residual value.

Overall, the proposed amendments relating to Environmental Performance Labeling are expected to reduce the cost of operating a vehicle for consumers and to reduce the health and environmental impacts and attendant costs on society.

### 3) Emission Warranty Information Reporting and Recall Amendments.

California completed a substantive amendment to the Emission Warranty Information Reporting (EWIR) and Recall requirements earlier in 2008, effective for the 2010 Model Year which begins in January of 2009. The final amendment revised sections 1958, 1956.8, 1961, 1976, 1978, 2112, 2122, 2136, and 2141, while adding new sections 2166-2174 to Title 13, CCR, with consequent changes to the incorporated Test Procedures<sup>12</sup>.

The heart of the amendment is to shift the burden of proof in initiating emission warranty recalls from the Executive Officer of the California Air Resources Board to the manufacturer by adding the following requirement:

Beginning with 2010 model-year vehicles or engines, at the time of certification manufacturers shall state, based on good engineering

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<sup>10</sup> available at <http://www.anr.state.vt.us/air/Planning/htm/ClimateChange.htm>

<sup>11</sup> available at <http://publicservice.vermont.gov/pub/state-plans-compenergy.html>

<sup>12</sup> Vermont currently incorporates by reference Sections 1956.8, 1961, 1976, 1978, 2112, 2122, 2136, and 2141, and proposes to add Sections 2166-2174.

judgment and information available at that time, that the emission control devices on their vehicles or engines are designed and will be manufactured to operate properly and in compliance with all applicable requirements for the full useful life (or allowable maintenance interval) of the vehicles or engines. Also, vehicles and engines tested for certification shall be, in all material respects, substantially the same as production vehicles and engines. If it is determined pursuant to title 13 CCR, Division 3, Chapter 2, Article 5, sections 2166 through 2174 that any emission control component or device experiences a systemic failure because valid failure for that component or device meet or exceed four percent or 50 vehicles (whichever is greater) in a California-certified engine family or test group, it constitutes a violation of the foregoing test procedures and the Executive Officer of the Air Resources Board may require that the vehicles or engines be recalled or subjected to corrective action as set forth in title 13 CCR, Division 3, Chapter 2, Article 5, sections 2166 through 2174. Certification applications may not be denied based on the foregoing information, provided that the manufacturer commits to correct the violation.<sup>13</sup>

The proposed amendments will more clearly hold manufacturers accountable for representations made during the certification process that their vehicles can meet applicable emissions limits for their Useful Life, which will protect both the purchasers of their products and those air quality benefits traditionally modeled on those manufacturer statements. While the existing Emissions Warranty Information Reporting (EWIR) and Recall provisions are not thematically different, the current procedures to initiate warranty recalls have in some instances had the unfortunate result of preventing the repair of defective components, to the detriment of consumers' pocketbooks, public health, and air quality. CARB will now be able to initiate recalls on the basis of failing components alone, instead of the prior system which had required unwieldy and expensive demonstrations by CARB of average emissions exceedances for specific vehicle models.

The amended EWIR and Recall provisions will provide CARB with the option to specify an extended warranty for defective emissions parts equal to the certification useful life of the vehicle. As part of the certification process, manufacturers choose a Useful Life interval of either 120,000 or 150,000 miles for LEV vehicles.

The structure of the LEV Program provides credits for vehicles certified to a 150,000 mile life, which is also a prerequisite for earning credits to meet the Zero Emission Vehicle (ZEV) requirements which are part of the LEV Program. By the 2010 Model Year, some 43% of new vehicle sales are expected to be Partial Zero Emission Vehicles (PZEV) with 150,000 mile Useful Life certification. PZEVs are the most common,

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<sup>13</sup> Durability provisions of ARB Test Procedures [5], e.g., California Exhaust Emission Standards and Test Procedures for 2001 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, as set forth in 40 CFR 86.1823-01.

though not only type of ZEV credit vehicle, but do illustrate that the proposed amendments are not likely to affect a major portion of new vehicles.

CARB points out in the Final Statement of Reasons<sup>14</sup> for the amendment that impacts on manufacturers are projected to be minimal to modest. Costs that manufacturers bear for reporting potential defective emissions components should be reduced as the trigger level changes from one percent to four percent, while streamlined annual versus quarterly reporting requirements for initiated recall progress reports will lead to cost reductions in that area. Since manufacturers are not being held to a higher standard of construction quality than previously, and have already developed components and assembly techniques for 120,000 and 150,000 mile Useful Life intervals across their product lines, production costs are not expected to increase. CARB estimates that manufacturer experience over the past several years in building large quantities of vehicles with 150,000 mile warranties may actually reduce defect rates across all model lines by at least ten percent. CARB further points out that a manufacturer concerned about an emissions component liable to fail within the certified useful life would find the cost of improving the component substantially less than the expense to warrant the part during a recall. Industry wide, CARB estimates that costs will be equivalent to current costs.

Impacts on vehicle dealers are projected to be neutral to modestly beneficial. The mechanisms to provide warranty repairs on behalf of the manufacturer are pre-existing. Warranty visits by consumers offer dealers an opportunity to maintain contact, highlight new model availability, and potentially provide non-warranty related services.

Impacts on the aftermarket vehicle repair industry are expected to be minimal. The warranty and recall amendments will not have significantly different effects on the aftermarket than the current options available to CARB (and as pass-through decisions in Vermont). The current provisions and proposed amendments apply to those relatively new vehicles which are not frequently serviced by the aftermarket. Any proposed recall or warranty extension will apply only to specific defective components. Any warranty extension will be only for the useful life of the vehicle certified to by the manufacturers, i.e., 120,000 miles for Low Emission (LEV) and Ultra Low Emission (ULEV) vehicles, and 150,000 miles for Partial Zero Emission Vehicles (PZEV). As an estimated 43% of new vehicles in the 2010 Model Year will be PZEVs, the effective changes to aftermarket service volumes will be low.

Impacts on consumers are projected to be beneficial. Recalls will be more clearly tied to consumer expectations, and mechanisms will now exist to protect consumers in some instances against defective parts and expensive replacements for longer intervals. These potential benefits will be especially important for less affluent consumers.

Impacts on the State will be minimal. CARB initiates the recalls, and manufacturers already report their Vermont-specific numbers and recall progress reports to the Vermont

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<sup>14</sup> CARB, Final Statement of Reasons, Amendments to California's Emission Warranty Information Reporting and Recall Regulations and Emission Test Procedures, October 2007.

LEV Program. The new annual versus quarterly recall campaign progress reports will represent a slight reduction in administrative time.

The overall economic impact of the proposed amendments relating to Emission Warranty Information Reporting and Recall requirements is expected to be positive.

## **Scientific Information Statement: Attachment A**

### **OVERVIEW**

Vermont first exercised its authority under section 177 of the Clean Air Act (CAA) to adopt California's Low Emission Vehicle (LEV) program in 1996. Since then, Vermont has amended its LEV regulations periodically to stay consistent with California's regulations. The proposed amendments, also discussed in Attachment A to the Economic Impact Statement, represent evolutionary changes within the California LEV Program and are focused on lessening burdens or enhancing choices for various stakeholders. The proposed amendments will incorporate by reference: (1) California's revisions to the Zero Emission Vehicle (ZEV) program; (2) California's Environmental Performance Labeling requirements; and (3) California's amendments to Emission Warranty and Recall requirements. These proposed amendments are substantive in terms of their policy effects rather than their expression of new scientific understanding. Thus, the background science pre-dating the proposed changes remains unchanged or tangential rather than central to the amendments.

### **DISCUSSION**

#### **1) Zero Emission Vehicle (ZEV) Amendments.**

California's revisions to the ZEV program requirements are being made in response to the Independent Expert Technology Review process periodically required by the California Air Resources Board (CARB) for the ZEV provisions. The adjustments to the ZEV requirements focus not on new areas of physical science but rather on the evolving alternative vehicle market, reducing compliance burdens on manufacturers, and incorporating cost-effective mechanisms to advance clean transportation choices, while synchronizing the LEV Program with larger climate change initiatives.

As noted in Attachment A to the Economic Impact Statement, a key intent of the ZEV amendments is to provide increased flexibility to those manufacturers obligated to supply ZEV vehicles. A CARB staff report explains: "The changes proposed by staff significantly reduce an automaker's cost of compliance, but still provide increased air quality benefits of commercially viable and increasingly available [Advanced Technology Partial Zero Emission Vehicles, e.g., hybrids]. In making these changes, the program will reduce criteria pollutant emissions by 7,000 tons over the life of the affected vehicles."<sup>1</sup>

While the proposed amendment revises the numbers of zero emission vehicles required during the various time intervals or phases identified within the requirements, the major focus is on reducing cost for the obligated manufacturers by encouraging development of

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<sup>1</sup> CARB, Staff Report: Initial Statement of Reasons – 2008 Proposed Amendments to the California Zero Emission Vehicle Program Regulations, at p. iv, Executive Summary, February 8, 2008.

plug-in hybrid and battery electric vehicles. These are vehicles widely anticipated by consumers, industry, public utilities, air quality and transportation planners, and environmental organizations, and are referenced in state Climate Action plans.

For instance, California has incorporated the LEV Program requirements for zero emission vehicles in its overarching climate action plan, AB 32 Global Warming Solutions Act of 2006.

In similar fashion, the State of Vermont has identified LEV, or the “Clean Cars Program”, with its ZEV provisions as a key strategy in climate change mitigation. Vermont has also identified LEV as important to its efforts to remain in attainment of the National Ambient Air Quality Standards (NAAQS). As a small rural state without significant public transportation, Vermont is heavily dependent on light-duty motor vehicles for transportation. Transportation sources represent approximately 46% of all Vermont greenhouse gas emissions.

Because of the flexibility built in to the ZEV requirements, those “Large Volume Manufacturers” supplying some portion of their fleet as zero emission vehicles will be able to provide pure ZEV or gold vehicles within a range of approximately 0.9% to 3% of that portion of their sales used to calculate obligation. The proposed amendments will permit them to offset or “backfill” Gold vehicles by supplying correspondingly greater percentages of Enhanced Advanced Technology Partial Zero Emission Vehicles or “Silver +” vehicles within a 0 to 2.1% range.

The range of vehicle types earning credits to meet a ZEV obligation, along with additional variables ranging from banked credits, to program provisions providing flexibility in true-up debits, to options in how annual obligations are calculated, make definitive modeling of benefits a moving target. Nevertheless, CARB staff noted two key points on the environmental impact of the ZEV program amendments. First, the revised ZEV program requirements versus no ZEV requirements within the LEV program would reduce tons per day (TPD) of ozone-forming reactive organic gases (ROG) and oxides of nitrogen (NOx) in the critically-challenged South Coast Air Basin of California by 8% in 2020 and 14% in 2030.<sup>2</sup> Second, the revised ZEV program requirements would reduce total lifetime climate change emissions, based on a 150,000 mile vehicle life, by 26% during the 2012-2014 Phase III and 27% during the Phase IV 2015-2017 period of the ZEV Program.<sup>3</sup>

Impacts on Vermont will proportionally mirror those in California. ZEV vehicles will serve to reinforce an evolving advanced technology market, while displacing some measure of imported fossil fuels, and improving air quality. The warranties attached to ZEV vehicles are substantially greater than conventional vehicles, and the potential savings to consumers in operating expenses ranging from fuel costs to maintenance needs to enhanced resale value can be considerable.

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<sup>2</sup> Id. at p.37.

<sup>3</sup> Id. at p.38.

A collaborative study by Green Mountain College and the Transportation Center at the University of Vermont, assisted by public utilities and the Vermont Department of Public Service, examined the potential impact on the Vermont electric grid, carbon and NOx emissions, gasoline consumption, and gasoline gallon equivalent costs of significant PHEV deployment.<sup>4</sup> Major findings of the study included:

- Replacing 50,000 conventional gasoline vehicles with Plug-in Hybrid Electric Vehicles (PHEVs) would lessen carbon emissions by 31 percent assuming a baseline fuel consumption of 27.7 mpg for a conventional vehicle and a PHEV with a 20 mile electric range.
- These 50,000 PHEVs could reduce NOx emissions by 30 percent.
- The electric grid could charge 100,000 PHEVs without increasing peak demand or required generation if the PHEVs were recharged during nighttime low demand times.
- Charging vehicles at night when demand is low could improve the overall efficiency of the grid.
- 50,000 PHEVs could reduce annual gasoline consumption between 11.4 and 12.9 million gallons depending on the mpg efficiency of the vehicle.
- The gasoline gallon equivalent cost for a PHEV in electric mode would be \$1.05 a gallon, or roughly 25 percent of a gallon of gasoline at \$4.20.

Since the ZEV amendments only require Large Volume Manufacturers to supply Gold or combinations of Gold and Silver+ (PHEV) vehicles, the interval in which the Vermont fleet would increase to 50,000 PHEVs without a concurrent unregulated market demand could be lengthy. In Model Year 2007, Large Volume Manufacturer light-duty vehicle sales in Vermont were approximately 26,000 vehicles. In Phase III of the ZEV Program, 2012-2014, the ZEV requirement will be 12 percent of this approximate 26,000 vehicle basis, of which 2.7 percent or 703 vehicles may be Silver+ or PHEVs. During Phase III, a PHEV is likely to earn an approximate 1.0 ZEV credit per vehicle, making total PHEV placements approximately 700 annually, in the absence of additional consumer appetite.

It is thus reasonable to assume that PHEV impacts on the Vermont grid will be insignificant and benign in a scenario involving manufacturers meeting requirements, or in a scenario in which market appetite elevates sales substantially above actual ZEV Program requirements. In any event, Vermont's existing ZEV program requirements and the proposed ZEV amendments will play a paramount role in bringing these vehicles to Vermont.

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<sup>4</sup> Plug-In Hybrid Vehicles and the Vermont Grid: A Scoping Analysis, available at [http://www.uvm.edu/~transctr/pdf/Final\\_PHEV.pdf](http://www.uvm.edu/~transctr/pdf/Final_PHEV.pdf)

**Table 1: Summary of Key ZEV Amendment Points<sup>5</sup>**

<b>Goal</b>	<b>Solution</b>
Address technology challenges of fuel cell vehicles	Lower required numbers of fuel cells during Phase III and IV (2012 – 2014 & 2015 – 2017) and create Type IV ZEV.
Incentivize PHEVs with zero emission mile capability	Allow Enhanced AT PZEVs in Phase III to count for 90% of gold requirement. Establish new calculations for AT PZEV credits to account for new plug in hybrid configurations.
Simplify regulation	Create “New Path” to replace two path system.
Remove barriers to using Battery EVs for compliance	Remove caps on Type I and II battery EVs; change ratio for use and create Type I.5 ZEV, however maintain higher credits for fuel cell vehicles compared to battery EVs to reflect relative state of development.
Fulfill commitment to revisit role of NEVs	Up credit to 0.3 to recognize environmental benefits.
Smooth transition for IVMs going to LVM	Create transition period emphasizing AT PZEVs.
Program compliance transparency	Release of ZEV production data beginning in 2009 and ZEV credit balances in 2010.
Conforming changes	Extend travel provision.

2) Environmental Performance Labeling Amendments.

California’s Environmental Performance Labeling requirements, which Vermont is proposing to adopt, focus on providing information to consumers on the environmental impacts of vehicle choices. The methodology to rank vehicles relative to each other and provide consumer labeling was developed at the instruction of California Assembly Bill 1229 of 2005.

The Vermont Agency of Natural Resources has a similar interest in providing consumer labeling, and has also been instructed to do so by the Vermont Legislature in Act No. 55 of 2007, now codified at 10 V.S.A. §579. By statute, the Agency is required to “establish, by rule, a vehicle emissions labeling program for new motor vehicles sold or leased in the state with a model year of 2010 or later.” 10 V.S.A. §579(a). The statute further provides: “A label that complies with the requirements of the California vehicle labeling program shall be deemed to meet the requirements of this section and the rules adopted thereunder for the content of labels.” 10 V.S.A. §579(b).

<sup>5</sup> CARB, Staff Report: Initial Statement of Reasons – 2008 Proposed Amendments to the California Zero Emission Vehicle Program Regulations, at p.41, February 8, 2008.

CARB staff estimated the environmental impacts of the Environmental Performance Labeling requirements as follows:

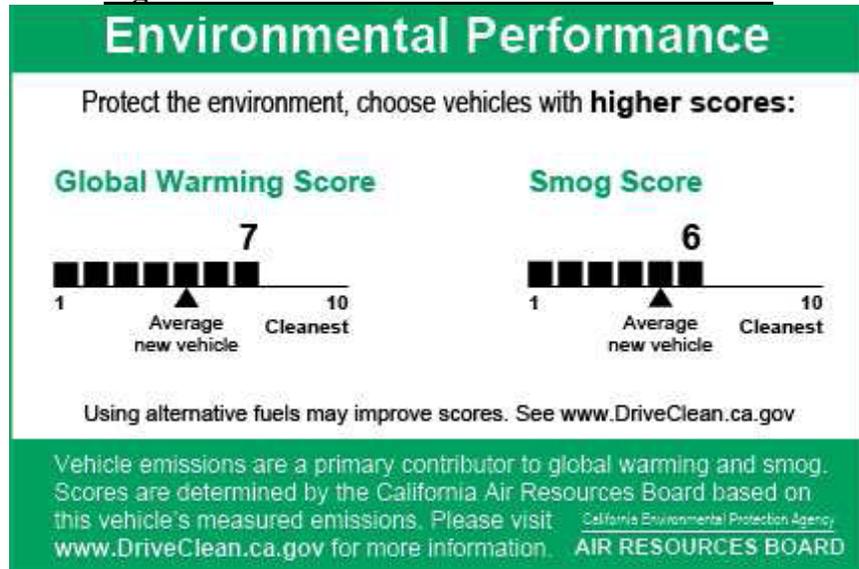
Staff expects that the proposed label will affect the purchasing choices of some vehicle buyers, however the degree to which this occurs is not known. If consumers buy vehicles with lower smog indices, smog emissions will be lower. If they buy vehicles with lower global warming indices, these emissions may also decrease. However, compliance with the current greenhouse gas emissions standards are based on a fleet average CO<sub>2</sub>Equivalent value by each manufacturer. Thus it may be possible that purchase of a cleaner vehicle will allow a manufacturer to produce additional vehicles with higher emissions (at presumably a lower cost). This would negate the effect of the label resulting in no change in greenhouse gas emissions. Over time however, staff expects that increased awareness of the benefits of purchasing a vehicle with low greenhouse gas emissions will result in market pressure to increase the number of models available with low emissions, with the result being manufacturer fleet wide emissions will be lower than required by regulation. The increased consumer awareness of vehicle greenhouse gas emissions may also encourage purchasers of other products to buy green.<sup>6</sup>

California's Environmental Performance Label requirements, which are set forth in Title 13 of the California Code of Regulations (CCR) Section 1965, will replace the existing Smog Index Label requirement. The Smog Index label ranks vehicles on their relative tailpipe emissions of ozone precursor pollutants. The new Environmental Performance label adds a greenhouse gas index, combining the Smog Score and the Global Warming Score in a single format. The new label will be displayed on a window or as an addition to the Monroney Label, the large federally-required label which describes the vehicle configuration, the Manufacturer's Suggested Retail Price, the warranty, and fuel economy.

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<sup>6</sup> CARB, Staff Report: Initial Statement of Reasons – Proposed Amendments to the Smog Index Vehicle Emissions Label, at p.25, May 4, 2007.

**Figure 1: The Environmental Performance Label**



The design of the new Environmental Performance Label followed market research conducted for CARB staff by outside specialists, prior research by the U.S. EPA, along with input from consumer focus groups.

The label combines a 1-10 Global Warming Score and a similar 1-10 Smog Score, with an average new vehicle weighted at 5 in each scale. The Global Warming Score reflects not only vehicle tailpipe emissions of greenhouse gases, but also the upstream emissions from the production and distribution of the fuel. Vehicle scores from operations also weight the operation of their air conditioning systems through the choice of refrigerant and its global warming potential, and the robustness of air conditioner design in minimizing refrigerant loss. The Global Warming Potentials (GWP) of the major greenhouse gases addressed in the Global Warming Score are illustrated below:

**Table 2: Numerical Estimates Of Global Warming Potentials Compared With CO2 (Kilograms Of Gas Per Kilogram Of CO2 -- Adapted From IPCC 2001).<sup>7</sup>**

Climate Pollutants	Lifetime (years)	Global Warming Potential		
		20 years	100 years*	500 years
CO <sub>2</sub>	~150	1	1	1
CH <sub>4</sub>	12	62	23	7
N <sub>2</sub> O	114	275	296	156
HFC-134a	14	3,300	1,300	400

<sup>7</sup> CARB, Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles, at p.16, August 6, 2004.

While carbon dioxide (CO<sub>2</sub>) is the largest greenhouse gas in mass associated with vehicle operation, fuel production and distribution, the global warming potentials of other greenhouse gases highlight the significance in identifying their contribution to individual model vehicle emissions and fuel impacts. While a mathematical relationship between gasoline fuel consumption and the production of CO<sub>2</sub> can be demonstrated, that relationship is not constant for alternative fuels, nor does it reflect the impacts of air condition systems, a key distinction between the California label and an effort by the U.S. EPA to rank vehicles in their SmartWay program based on CO<sub>2</sub> production alone.

Adopting California's Environmental Performance Label requirements will serve to educate the public, reduce emissions through environmental awareness, assist in quantifying State emissions inventories from transportation, and meet the requirements of 10 V.S.A. §579.

### 3) Emission Warranty Information and Recall Reporting Amendments.

When amending California's Emission Warranty Information and Recall Reporting requirements, CARB staff explained: "[W]hile it is inherently speculative to forecast the future emissions consequences of failed emissions components that fail over time it is beyond dispute that as motor vehicles age and accumulate high mileage, their emission control systems deteriorate and increasingly malfunction, causing emissions from motor vehicles to increase, and for these reasons, the ARB needs to be able to order recalls on the basis of failing emissions-related components, not just on the basis of average emissions exceedances in an affected vehicle group"<sup>8</sup>

Further, as the Vermont Agency of Natural Resources noted in Attachment A to the Economic Impact Statement: "The proposed amendments will more clearly hold manufacturers accountable for their representations made during the certification process that their vehicles can meet applicable emissions limits for their Useful Life, which will protect both the purchasers of their products and those air quality benefits traditionally modeled on those manufacturer statements. While the existing Emissions Warranty Information Reporting (EWIR) and Recall provisions are not thematically different, the current procedures to initiate warranty recalls have in some instances had the unfortunate result of preventing the repair of defective components, to the detriment of consumers' pocketbooks, public health, and air quality."

The proposed amendments will help avoid repeat situations attributable to the earlier recall provisions in which known failures of emission devices at a high rate did not result in recalls, with unfortunate impacts. CARB illustrated one such instance in which some 100,000 trucks with faulty catalytic converters were not recalled due to procedural difficulties raised by the existing requirements. The impacts were analyzed from both a

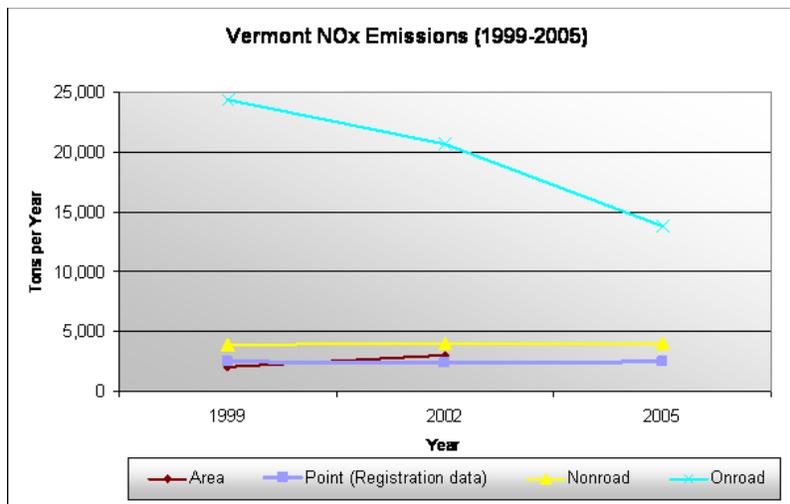
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<sup>8</sup> CARB, Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Public Hearing to Consider Amendments to California's Emission Warranty Information Reporting and Recall Regulations and Emission Test Procedures, at p.15, October 20, 2006.

“best case” and a “worst case” scenario in terms of air quality.<sup>9</sup> In the best case scenario, 20 percent of the affected vehicles were assumed to have cracked catalyts, resulting in annual increases of Non-Methane Hydrocarbons (NMHC) of approximately 0.6 ton per year, and annual Oxides of Nitrogen (NOx) increases of approximately 54 tons a year. In the worst case scenario, 72 percent of the affected vehicles exhibited deteriorated catalyts, producing annual NMHC increases of 837 tons a year, and annual NOx increases of 1783 tons a year.

In context, while the emissions increases were modeled for California where annual new light-duty vehicle sales total approximately 2 million versus approximately 35,000 in Vermont, the 2009 Vermont inventory projections for light-duty gasoline vehicles contribution of volatile organic compounds (VOC) – analogous to NMHC<sup>10</sup> - is forecast to be 6,445 tons per year. Light-duty vehicle NOx for 2009 is forecast to be 9,595 tons per year, on a downward trend from earlier years as illustrated in Figure 2 below.<sup>11</sup> This trend is the result of declining emissions standards for light-duty vehicles, and highlights the significance of maintaining certification levels of pollutants over the useful life of the vehicle.

**Figure 2: 2009 Vermont Inventory Projections for Light-Duty Vehicle NOx**



Defective emissions control devices can impact inventories to a profound degree. A subset of a vehicle population with a defective emissions control device for which a warranty or recall does not apply can have unfortunate impacts on air quality and consumers’ wallets. The proposed amendments incorporating changes to California’s Emissions Warranty Information Reporting and Recall requirements will help to ensure emissions performance over the useful life of a vehicle and reduce emissions impacts on the environment, while lessening the financial burden to consumers.

<sup>9</sup> Id., at p.7.

<sup>10</sup> See Conversion Factors for Hydrocarbon Emission Components, EPA420-R-05-015, December 2005

<sup>11</sup> Data prepared by Vermont Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division, Planning Section for NEG / ECP Acid Rain Steering Committee, 2008.

# GREENHOUSE GAS IMPACT STATEMENT

## STATUTORY REQUIREMENT

The Administrative Procedure Act at 3 V.S.A. § 838(c) was amended, effective July 1, 2008, to require a greenhouse gas impact statement to be included with each proposed rule filing. As amended, 3 V.S.A. § 838(c)(4) states:

The greenhouse gas impact statement shall explain how the rule has been crafted to reduce the extent to which greenhouse gases are emitted. The secretary of administration, in conjunction with the secretaries of agriculture, food and markets, of natural resources, and of transportation, and the commissioner of public service shall provide a checklist which shall be used in the adoption of rules to assure the full consideration of greenhouse gas impacts, direct and indirect.

To date, no checklist has been developed and the Secretary of State's rulemaking forms have not been revised to reflect this new requirement. Nevertheless, the Agency of Natural Resources is submitting this Greenhouse Gas Impact Statement to comply with the new requirement set forth in 3 V.S.A. § 838(c)(4).

## OVERVIEW

Under the federal Clean Air Act (CAA), new motor vehicles must either meet default emission standards set by the U.S. Environmental Protection Agency (EPA) or motor vehicle emission standards adopted by California pursuant to CAA §209(b). Although all other states are preempted from adopting their own emission standards by CAA §209(a), CAA §177 allows states to adopt standards that are identical to California's emission standards.

Vermont first exercised its authority under CAA §177 to adopt California's Low Emission Vehicle (LEV) program in 1996 to reduce health related air toxins and photochemical smog precursors. Since then, Vermont has amended its LEV regulations periodically to stay consistent with California's regulations. The State of Vermont has identified the LEV Program, sometimes referred to as the "Clean Cars Program," as a key strategy in climate change mitigation.<sup>1</sup> The LEV Program is particularly important because the transportation sector is the largest source of greenhouse gas emissions in Vermont.<sup>2</sup> As discussed below, the proposed amendments to the LEV regulations will further the purpose of reducing greenhouse gas emissions from motor vehicles.

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<sup>1</sup> See Section VI "Transportation and Land Use", pp. 132-143, Vermont Comprehensive Energy Plan, Department of Public Service, May 2008.

<sup>2</sup> See document entitled *Final Vermont Greenhouse Gas Inventory & Projections 1990-2030* available at <http://www.anr.state.vt.us/air/Planning/htm/ccvtactions.htm>

The proposed amendments, also discussed in Attachment A to the Economic Impact Statement, and Attachment A to the Scientific Information Statement, will incorporate by reference: (1) California’s revisions to the Zero Emission Vehicle (ZEV) program; (2) California’s Environmental Performance Labeling requirements; and (3) California’s amendments to Emission Warranty and Recall requirements.

## **DISCUSSION**

### 1) Zero Emission Vehicle (ZEV) Amendments.

The LEV Program is the overarching framework encompassing requirements for automobile manufacturers to meet emission standards for carbon monoxide, non-methane organic gases, nitrogen oxides, and greenhouse gases.<sup>3</sup> Manufacturers must also meet requirements to supply a portion of their fleet as zero emission vehicles (ZEVs), which are inherently lower in greenhouse gas production than conventional vehicles.

The proposed amendments to the ZEV requirements are expected to reduce emissions from motor vehicles. With respect to greenhouse gases, the California Air Resources Board (CARB) estimates that the revised ZEV program requirements, versus the existing regulation, would reduce total lifetime climate change emissions, based on a 150,000 mile vehicle life, by 26% during the 2012-2014 Phase III and 27% during the Phase IV 2015-2017 period of the ZEV Program.<sup>4</sup> The Agency of Natural Resources expects similar reductions in Vermont, following adoption of the proposed ZEV amendments.

### 2) Environmental Performance Labeling Amendments.

The proposed Environmental Performance Labeling amendments will require Global Warming scores, based on greenhouse gas emissions, and Smog scores to be displayed on a single label on new vehicles.<sup>5</sup> Currently, only Smog scores are displayed on new vehicles.

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<sup>3</sup> In order for California and other states to enforce the greenhouse gas emissions standards, EPA must first grant a waiver of federal preemption. EPA’s waiver denial for these standards is currently being challenged in federal court.

<sup>4</sup> CARB, Staff Report: Initial Statement of Reasons – 2008 Proposed Amendments to the California Zero Emission Vehicle Program Regulations, at p.38, Executive Summary, February 8, 2008.

<sup>5</sup> By statute, the Agency of Natural Resources is required to “establish, by rule, a vehicle emissions labeling program for new motor vehicles sold or leased in the state with a model year of 2010 or later.” 10 V.S.A. §579(a). The statute further provides: “A label that complies with the requirements of the California vehicle labeling program shall be deemed to meet the requirements of this section and the rules adopted thereunder for the content of labels.” 10 V.S.A. §579(b).

As described by CARB, the new Environmental Performance Labeling requirements are expected to reduce the extent to which greenhouse gases are emitted from motor vehicles as follows:

[T]he proposed label will affect the purchasing choices of some vehicle buyers, however the degree to which this occurs is not known. If consumers buy vehicles with lower smog indices, smog emissions will be lower. If they buy vehicles with lower global warming indices, these emissions may also decrease. However, compliance with the current greenhouse gas emissions standards are based on a fleet average CO<sub>2</sub>Equivalent value by each manufacturer. Thus it may be possible that purchase of a cleaner vehicle will allow a manufacturer to produce additional vehicles with higher emissions (at presumably a lower cost). This would negate the effect of the label resulting in no change in greenhouse gas emissions. Over time however, . . . increased awareness of the benefits of purchasing a vehicle with low greenhouse gas emissions will result in market pressure to increase the number of models available with low emissions, with the result being manufacturer fleet wide emissions will be lower than required by regulation. The increased consumer awareness of vehicle greenhouse gas emissions may also encourage purchasers of other products to buy green.<sup>6</sup>

Thus, the Agency believes that the proposed Environmental Performance Labeling requirements will create market pressure to increase production of vehicles with lower GHG emissions and will encourage the purchase of cleaner vehicles.

### 3) Emission Warranty Information and Recall Reporting Amendments.

The proposed Emission Warranty Information and Recall amendments are also expected to reduce greenhouse gas emissions from motor vehicles. These proposed amendments were crafted to ensure emissions performance over the useful life of a vehicle and reduce emissions impacts on the environment, including those of greenhouse gases. CARB illustrated the environmental impact of the proposed amendments by noting:

[W]hile it is inherently speculative to forecast the future emissions consequences of failed emissions components that fail over time it is beyond dispute that as motor vehicles age and accumulate high mileage, their emission control systems deteriorate and increasingly malfunction, causing emissions from motor vehicles to increase, and for these reasons, [CARB] needs to be able to order recalls on the basis of failing emissions-

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<sup>6</sup> CARB, Staff Report: Initial Statement of Reasons – Proposed Amendments to the Smog Index Vehicle Emissions Label, at p.25, May 4, 2007.

related components, not just on the basis of average emissions exceedances in an affected vehicle group.<sup>7</sup>

The failure of emissions control devices frequently result in increases of reactive organic gases (ROG) and oxides of nitrogen (NOx), along with carbon monoxide. Failed devices are also prone to elevating fuel consumption, impacting greenhouse gas emissions. Further, as the California Economic and Technology Advancement Advisory Committee (ETAAC) formed by AB 32, the California Global Warming Solutions Act of 2006, has recognized: “Because many criteria air pollutants such as the black carbon component of particulate matter and ozone also accelerate global climate change, air quality policies yield valuable contributions to AB 32’s GHG emission reduction goals.”<sup>8</sup>

The Agency of Natural Resources expects similar valuable contributions to controlling greenhouse gas emissions from the Vermont fleet by adoption of the proposed Emission Warranty Information and Recall amendments.

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<sup>7</sup> CARB, Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Public Hearing to Consider Amendments to California’s Emission Warranty Information Reporting and Recall Regulations and Emission Test Procedures, at p.15, October 20, 2006.

<sup>8</sup> ETAAC Final Report, Technologies and Policies to Consider for Reducing Greenhouse Gas Emissions in California, at p.3-9, delivered to CARB February 11, 2008.