

## UPDATED INFORMATIVE DIGEST

### ZERO EMISSION VEHICLE REGULATIONS

**Sections Affected:** Amendments to California Code of Regulations (CCR), title 13, sections 1900, 1962, and 1962.1 and the incorporated “California Exhaust Emission Standards and Test Procedures for 2005 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;” and the adoption of a new title 13, CCR, section 1962.1 and the incorporated “California Exhaust Emission Standards and Test Procedures for 2009 and Subsequent Model Zero-Emission Vehicles.” California Code of Regulations, title 13, section 1961 was initially noticed for amendment, but was not amended as no amendments were needed to correspond with the amendments to section 1962.

#### **Background**

In 1990, California Air Resources Board (ARB or the Board) adopted a far-reaching program to significantly reduce the environmental impact of light-duty vehicles through the introduction of zero emission vehicles (ZEV) into the California fleet. The original program required that at least two percent, five percent and ten percent of new vehicles have no direct emissions by 1998, 2001 and 2003, respectively. Although the ZEV program did not require a specific technology, the expectation in the early 1990's was that the requirements would be met through the introduction of battery electric vehicles (EV).

The ZEV program has been changed four times since its inception – in 1996, 1998, 2001, and most recently in 2003. While program requirements have been changed to reflect the status of technology, the original objective has not changed. California continues to maintain a strong commitment to the commercialization of zero emission passenger cars and light-duty trucks.

In response to program requirements, automakers have developed and demonstrated a limited number of ZEVs to evaluate their technological and commercial feasibility. In addition, automakers have commercialized near-zero emission advanced technology vehicles that support ZEV program goals and significantly reduce vehicle emissions.

The program was last modified in 2003 to address the state of technology and to focus research and development on fuel cell vehicle technology. Given the uncertainty in the pace of technology development, the Board directed that an independent panel of experts be convened in the 2006 to 2007 time frame to report on the status of ZEV technologies and their readiness for commercialization.

The panel's findings were presented to the Board in May 2007. Subsequent to presentations by the staff and panel, and after hearing public comment, the Board adopted Resolution 07-18 directing ARB staff to return to the Board with proposed changes that addressed the state of technologies needed to meet the regulation. The resolution affirmed the Board's support for the program and emphasized that any changes proposed must strengthen the overall objectives of the program.

The panel's report has been central to ARB's assessment of the state of technology. The report, in combination with data presented at an ARB ZEV Technology Symposium held in September 2006 and other information collected, provides the technical basis for the proposed amendments in this rulemaking.

### **Description of the Regulatory Action**

Staff proposed to amend the program to reflect the state of ZEV technologies and to create an opportunity for new ZEV enabling technologies to contribute to compliance. Staff presented their proposal to the Board on March 27, 2008. The Board approved parts of the staff proposal including the following:

- Combining the Base Path and Alternative Path requirements into a New Path in 2012 and subsequent model years where the ZEV obligation and options to use other vehicle types are expressed as annual percentage obligations and options;
- Establishing a new Type IV ZEV category to recognize longer range ZEVs and adjusting ZEV credits such that Type III ZEVs earn four credits and Type IV ZEVs earn five credits through 2017;
- Modifying the credit banking provisions under the proposed "New Path" to be consistent with the existing provisions contained in the Alternative Path which allow compliance over a three-year window;
- Eliminating the cap on the use of full-function and city battery EVs within the Alternative Compliance Path for the 2009 – 2011 timeframe, and within the New Path beginning in 2012; changing the ratio for substitution for each vehicle type to be consistent with the credits earned by the vehicle rather than a separate ratio established only for pure ZEV obligation compliance;
- Creating a new Type I.5 ZEV to recognize opportunity for a marketable longer range city EV;
- Modifying the AT PZEV requirements, primarily to address issues associated with plug-in hybrid-electric vehicles; including the deployment of "blended" hybrid electric vehicles through an equivalent all electric

range credit, adjusting the credits for advanced componentry and fuel-cycle emissions, and other conforming changes;

- Doubling the existing credit for neighborhood electric vehicles (NEV) to 0.3 credits per vehicle to reflect the vehicle's positive environmental benefits but limited functionality compared with full-function battery or fuel cell EVs;
- Extending the provision that allows Type III ZEVs and adding Type IV ZEVs placed in any state that has adopted California's ZEV program to count towards California's ZEV requirement through 2017; including Type II battery EVs within the provision but sunseting the application of this provision for these vehicles in 2014; and
- Requiring that all production data be made publicly available starting with the 2009 model year and bank balances to be made publicly available starting in 2010.

The Board modified and added to the staff proposal by:

- Creating a new option within the New Path gold requirement for ZEVs during the 2012-2014 model years, by requiring a minimum 30 percent of the gold requirement to be met with pure ZEVs, or approximately 7,500 vehicles, and allowing the rest of the gold requirement, the remaining 70 percent, or approximately 58,000 vehicles, to be met with enhanced AT PZEVs, which are AT PZEVs that utilize a ZEV fuel such as hydrogen or electricity, for example PHEVs or hydrogen internal combustion engine vehicles; this would increase the staff proposal of a 10 percent minimum floor option, or 2,500 pure ZEVs, with the rest of the gold requirement, 90 percent or 75,000, allowed to be met with enhanced AT PZEVs;
- Creating a new Type V ZEV earning 7 credits and defined as a ZEV with a 300 mile or greater range and fast refueling capabilities; and
- Adding traded credits to each manufacturer's ZEV credit balances to be made publicly available starting in 2010.

The Board also directed the Executive Officer to consider and make necessary modifications to grant additional credit for PHEVs that can drive the US06 cycle on electricity; to review the comments of the Union of Concerned Scientists and the Natural Resources Defense Council (submitted March 26, 2008) regarding potential changes to the regulations, and to propose revisions if appropriate; to apply a multiplier to ZEV credits earned in 2009-2011 that are used to meet non-gold obligations for intermediate volume manufacturers (IVM) in order to ensure there is no disincentive to produce gold vehicles; and to allow IVMs to

accrue gold credits for use up to three years after the transition to large vehicle manufacturer status. In light of these considerations, ARB modified the regulation by:

- Decreasing the value of the 3.0 multiplier to 1.25 for early introduction plug-in hybrid electric vehicles in the 2009 through 2011 model years, and requiring that to qualify for the multiplier, the PHEV must be sold or leased for three years, with a lease option for two additional years;
- Increasing the requirements for the hydrogen storage system on hydrogen internal combustion engine vehicles from 3,600 to 5,000 pounds per square inch;
- Placing a cap on the allowable number of advanced demonstration credits of 25 vehicles, per state, per model, per year;
- Modifying the Travel Provision to include proportionality beginning in model year 2010. The further modification also specifies that a credit earned in a section 177 state is earned at a proportional value in the section 177 state, while credit is earned in the full amount in California. Lastly, a manufacturer complying with the alternative path requirements in the 2010 and 2011 model years in a section 177 state will not be affected by proportionality if those credits are produced in California. The maximum number of credits allowed for compliance in the section 177 state for the 2010 and 2011 model years, however, is limited to the section 177 state's alternative path minimum ZEV percentage. Any credits earned in California and used in a section 177 state beyond the minimum Alternative Path ZEV percentage are subject to proportionality;
- Creating a new Type G advanced componentry allowance for those PZEVs able to meet the US06 drive cycle on all electric operation;
- Allowing Enhanced AT PZEVs placed into Transportation Systems to receive credit, but limiting the use of credits earned by ZEVs placed in Transportation Systems to a one-tenth portion of the credits that must be met with ZEVs;
- Allowing IVMs to earn and bank pure ZEV credits until subject to large volume manufacturers (LVM) ZEV requirements; and
- Placing limits on the use of credits earned by NEVs within the pure ZEV floor, and requiring 2010 and later model year NEVs to meet technical specifications in order to receive credit.

### **Comparable Federal Regulations**

Currently, there are no comparable federal regulations mandating auto manufacturers to produce PZEVs, AT PZEVs, and/or ZEVs.