The Zero Emission Vehicle (ZEV) Regulation

Introduction

The Zero Emission Vehicle (ZEV) Program is designed to achieve the state's long-term emission reduction goals by requiring manufacturers to offer for sale specific numbers of the very cleanest cars available. These ZEV program technologies, which include battery electric, fuel cell, and plug-in hybrid electric vehicles, are just beginning to enter the marketplace.

These advanced technology vehicles are expected to be ready for full commercial launch by the end of this decade. Most vehicle manufacturers agree that providing a selection of these technologies will be necessary to meet climate goals by 2050.

Background

The California Air Resources Board (ARB or the Board) first adopted the Zero Emission Vehicle (ZEV) requirement in 1990 as part of the Low Emission Vehicle regulation. The ZEV Program remains an important regulation for meeting California's air quality and greenhouse gas (GHG) reduction goals and has spurred many new technologies that are being driven on California's roads today. The goal of the regulation is to have zero emission technologies available on a commercial scale as quickly as possible so that future fleet average standards can count on ZEVs and the entire fleet can approach zero emission levels.

Manufacturers are required to produce a number of ZEV and ZEV-enabling technologies each year. Below are the types of technologies manufacturers will produce in compliance with the regulation.

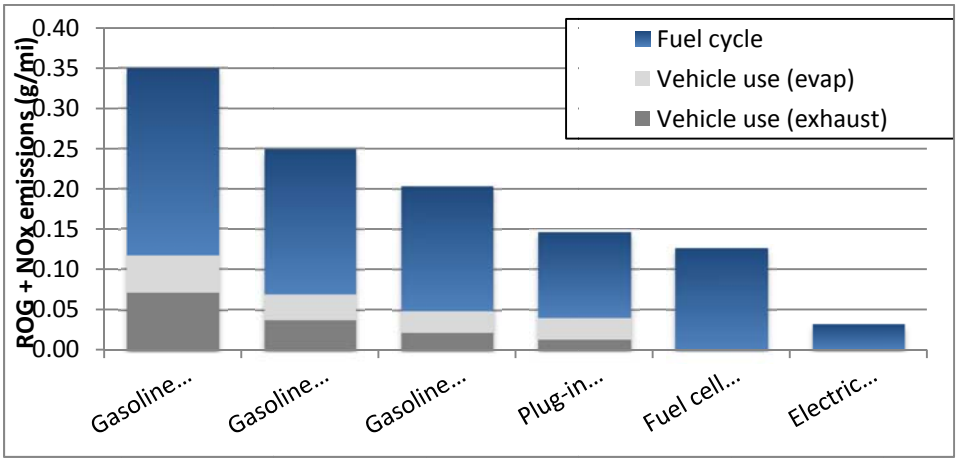
ZEV Category	***Vehicle Technologies***
Zero Emission Vehicle (ZEV)	These vehicles have zero tailpipe emissions. Examples include battery electric vehicle (BEV), BEVx, or hydrogen fuel cell vehicle (FCV).
Transitional Zero Emission Vehicle (TZEV)	These vehicles have ultra-low tailpipe emissions and are propelled by a zero emission fuel such as electricity or hydrogen. Examples include plug-in hybrid electric vehicles (PHEV) or hydrogen internal combustion engine vehicles (HICE).

ZEVs are Critical in California

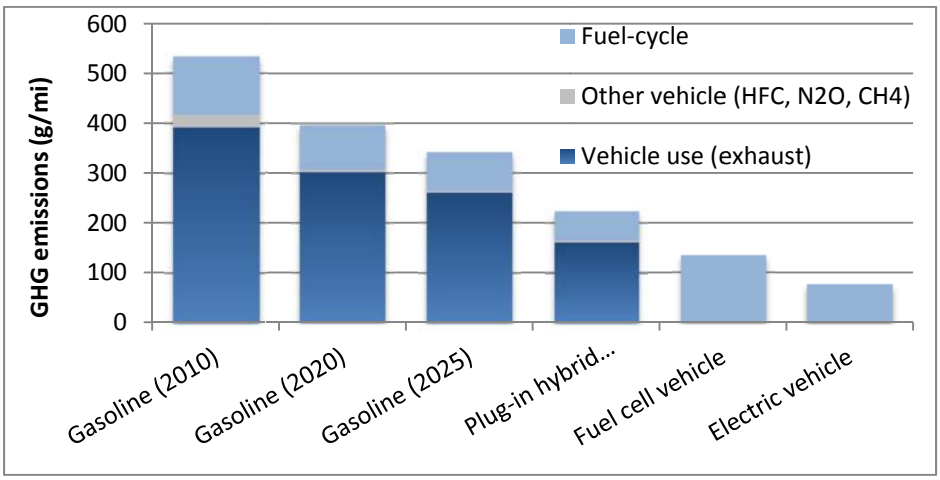
While California has made substantial improvements in air quality, both the greater Los Angeles region and the San Joaquin Valley are classified by the United States Environmental Protection Agency as "extreme" ozone non-attainment areas. Additionally, climate change poses a serious threat to the economic well-being, public health, natural resources, and environment of California. In order to achieve climate stabilization and meet future air quality improvement goals, zero emission technologies, like those required through this regulation are the only way to ensure the deep emission reductions needed in the passenger vehicle sector.

BEVs, FCVs, and PHEVs have ultra-low smog forming and GHG pollutants, even on a life-cycle basis, which includes the vehicle's fuel production emissions. Even compared to 2025 vehicles meeting the strictest smog and GHG fleet standards, PHEVs, BEVs, and FCVs are significantly lower emitting, and will be essential in order for the light-duty vehicle fleet to achieve long term emission reduction goals. See the charts below:

Well to Wheel Smog-Forming Pollution Emissions Comparison [NOx + ROG]



Well to Wheel Greenhouse Gas Emissions Comparison

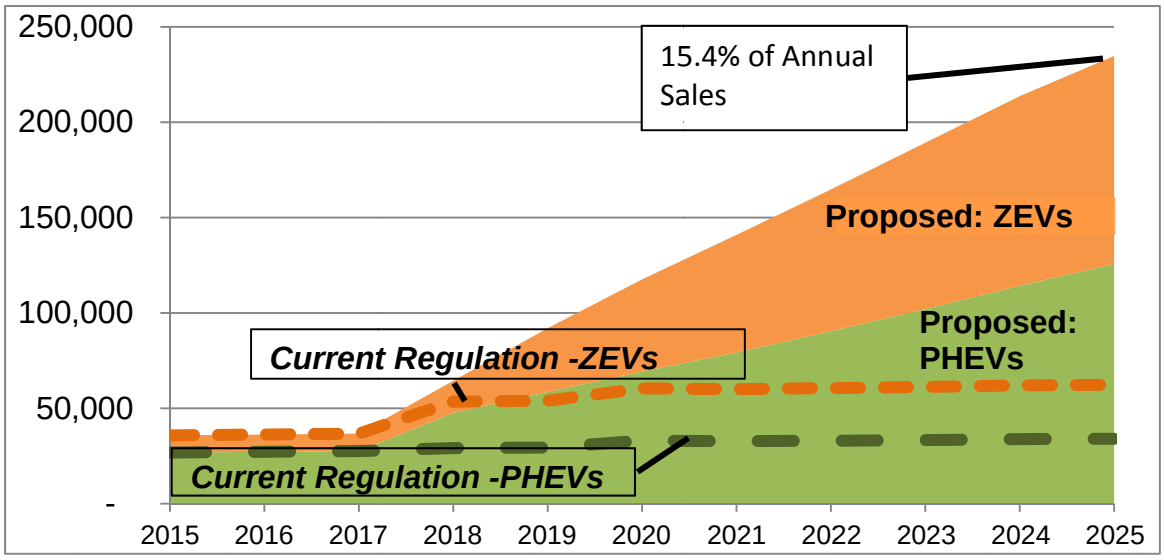


2012 Changes to the ZEV Program

In 2009, staff undertook an analysis of pathways to meet California's long term 2050 GHG reduction goals in the light-duty vehicle subsector. The analysis showed ZEVs would need to reach nearly 100 percent of new vehicle sales between 2040 and 2050, with commercial markets for ZEVs launching in the 2015 to 2020 timeframe. ARB's recently adopted amendments increase and strengthen the ZEV regulation requirements, giving the Board an opportunity to commit to the transformation of California's light-duty fleet.

Manufacturers Subject to the ZEV Requirements
BMW, Chrysler, Ford, General Motors, Honda, Hyundai, Kia, Mazda, Mercedes, Nissan, Toyota, and Volkswagen must comply with the new requirements. Four additional manufacturers would also be required to comply with the ZEV requirements, but would be allowed to meet their obligation with PHEVs.

New ZEV Requirements
The 2012 amendments increase requirements which push ZEVs and PHEVs to over 15-percent of new vehicle sales by 2025. This will ensure ZEV volumes are at a level sufficient to reduce incremental ZEV costs and reach commercialization.



ZEV Program Accomplishments
ZEV technology has come a long way since the regulation's adoption in 1990. Not only have partial zero emission vehicle (PZEVs) and advanced technology (ATPZEVs), become commercially viable, but as mentioned earlier we are seeing many ZEV and ZEV-enabling technologies coming to market. The following table represents the number of vehicles placed in California through 2010.

Vehicle	Type	Quantity
ZEV	Fuel Cell	330
	Battery Electric	5,200
	Neighborhood Electric	28,800
AT PZEV	Hybrid or Compressed Natural Gas	380,000
PZEV	Conventional Gas	1,750,000

For More Information

For more information regarding the ZEV regulation, please visit the Advanced Clean Cars web site at www.arb.ca.gov/msprog/clean_cars/clean_cars.htm. To learn more about clean, advanced technology cars and to compare scores between different makes and models, visit ARB's Drive Clean web site at www.DriveClean.ca.gov. To obtain this document in an alternative format or language, please contact the ARB's Helpline at (800) 242-4450 or at helpline@arb.ca.gov. TTY/TDD/ Speech to Speech users may dial 711 for the California Relay Service.