



Technical Support Document

Amendments to COMAR 26.11.34.02 Low Emissions Vehicle Program

Primary Purpose of these Amendments

The purpose of these amendments is to update COMAR 26.11.34.02 Incorporation by Reference to reflect the changes made to the California regulations since their original adoption in Maryland in November 2007 and subsequent update in 2009 and 2011. These amendments only affect one regulation, COMAR 26.11.34.02 Incorporation by Reference. All other implementing regulations remain as originally adopted in 2007.

In order to retain the Clean Car Program, Maryland's implementing regulations must remain consistent with California's regulations, hence, when California updates its regulations, Maryland must reflect these changes by updating the applicable Maryland regulations.

These amendments will be submitted to the EPA as a revision to Maryland's State Implementation Plan (SIP).

Background

Vehicles sold in the United States must be certified under one of two emissions certification programs: the federal program (Tier 2 program) or the California program (Clean Car Program also known as the California Low Emissions Vehicle Program-LEV). Section 177 of the Clean Air Act Amendments of 1990 provides states the ability to adopt the California program in lieu of the federal program as long as the adopted state program is identical to the California program and the adopting state allows two model years lead time.

California has adopted a new set of amendments called the Cal LEV III amendments, also known as the Advanced Clean Cars Program. The Cal LEV III amendments include proposed changes to the LEV II, Greenhouse Gas (GHG), and Zero Emission Vehicle (ZEV) standards. These amendments to Maryland's implementing regulations require that all new 2015 and subsequent model year vehicles transferred (including titled and registered) in the State of Maryland be certified to meet the new California emission standards. The LEV III standards will be phased in from 2015-2025, and will significantly reduce criteria pollutants from motor vehicles. The new GHG emission standard will phase-in from 2017-2025, and develops a 'footprint' curve to establish GHG targets for vehicle models based on their size. Proposed changes to the ZEV regulation aim to simplify the program, as well as increase requirements for the deployment of ZEV vehicles starting in 2018.

The Advanced Clean Car Program has two air quality objectives. The first objective is to reduce emissions of the ozone precursor pollutants, NO_x and VOCs (or NMOG, non-methane organic gases) even more than the current Clean Car Program. An important component of this part of the program is the zero emission vehicle (ZEV) requirement, which requires the manufacturers



to produce zero (or near zero) emission vehicles. This technology forcing component of the program is viewed as being responsible for the development and introduction of advanced technology vehicles such as hybrid and fuel cell vehicles, as well as the recent introduction of plug-in hybrid and electric vehicles. The second objective of the program is to reduce greenhouse gas (GHG) emissions.

The Maryland Clean Cars Act of 2007 required the Department of the Environment (MDE) to adopt regulations implementing the Cal LEV Program in Maryland. MDE's implementing regulations adopted, through incorporation by reference, the applicable California regulations. The Cal LEV program is a dynamic, changing program in which many of the relevant California regulations are routinely reviewed and updated. To continue to implement California's standards, Maryland must remain consistent with their regulations; hence when California updates its regulations, MDE must reflect these changes by amending COMAR 26.11.34.02. This action incorporates changes made by California to the applicable regulations incorporated by reference into the Maryland program.

The proposed changes were approved by the California Air Resource Board in 2012. These amendments represent a significant update to the Clean Cars Program, but will have minimal, if any, impact on the cost or implementation of the program in Maryland.

Description of Amendments

These amendments update Maryland's program requirements to be consistent with California's program requirements. This action is necessary since many of the California regulations that are incorporated into the Maryland regulation have been updated. This action only affects Regulation .02, Incorporation by Reference. The individual regulatory changes to the California regulations can be grouped into 3 major areas:

- Low Emission Vehicle (LEV) III.
- Zero Emission Vehicle (ZEV) Program
- Greenhouse Gas (GHG) Emission Standards

The Cal LEV III amendments include proposed changes to the LEV II, Greenhouse Gas (GHG), and Zero Emission Vehicle (ZEV) standards. LEV III regulates criteria pollutants, and requires that all new 2015 and subsequent model year vehicles transferred (including titled and registered) in the State of Maryland be certified to meet the new California emission standards. The LEV III standards will be phased in from 2015-2025. The new GHG emission standard will phase-in from 2017-2025, and develops a 'footprint' curve to establish GHG targets for vehicle models based on their size. Proposed changes to the ZEV regulation aim to simplify the program, as well as increase requirements for the deployment of ZEV vehicles starting in 2018.

1) Low Emission Vehicle (LEV) III Standards

This amendment sets new, ever more stringent, standards for criteria pollutants, reducing fleet wide average emissions so that new vehicles will produce 75% less smog-forming pollution than the average new car sold today, by 2025. The new regulation removes the individual Non-Methane Organic Gas (NMOG) and Nitrogen Oxides (NOx) standards, and replaces them with



a combined NMOG and NO_x emission standard. The combined standard provides manufacturers with greater flexibility in developing their own internal compliance strategies. The combined NMOG + NO_x standard will decline from 0.100 grams per mile for passenger cars and light-duty truck 1s and 0.119 grams per mile for light-duty truck 2s and medium duty passenger vehicles in 2015 to 0.03 grams per mile for all vehicle categories by 2025. Also added are more stringent particulate matter (PM) standards for light- and medium-duty vehicles as well as zero fuel evaporative emission standards.

The amendment also increases the emission system durability warranty requirements to 150,000 miles, in order to ensure vehicles maintain their low emissions for the life of the vehicle, as well as provide more stringent evaporative emission standards for personal cars, light-duty, and medium-duty vehicles.

2) Zero Emission Vehicle (ZEV) Program

The ZEV program can be seen as the technology-forcing piece of the Cal LEV III Program, designed to spur commercialization of zero emission vehicles. The changes in this amendment provide compliance flexibility in the near term. CARB has removed credit expirations, lowered the requirements for intermediate volume manufacturers, and extended the ‘travel provision’ that allows eligible ZEVs placed in California or any 177 state to count towards the ZEV requirements in all states through 2017. The ‘travel provision’ was originally set to expire after 2014.

Beginning with model year 2018, the amendments are intended to reflect the growing role that plug-in hybrid and electric vehicles will have in achieving future air quality improvement goals. Commercialized technologies like clean conventional vehicles and traditional hybrids will no longer generate credits towards ZEV compliance, in order to focus on pure ZEVs, such as battery electrics and Transitional ZEVs, such as plug-in hybrids. The amendments also greatly increase the requirements for ZEV deployment starting in 2018 and beyond.

Included in the amendments is an Alternative Compliance Path that manufacturers can choose to ease their burden of compliance in 177 states, by increasing the ZEV requirements for model year 2016 and 2017, as well as requiring a small number of ZEVs actually be delivered for sale in the 177 states in these early years, while slightly reducing the ZEV requirements for MY 2018 and beyond. Compliance is eased as well by creating a West and East regional pool that manufacturer’s can use to meet the 177 state’s requirements. This compliance option will provide flexibility to manufacturers to place ZEVs in states where the market is better prepared, while still providing benefits to the region. Manufacturer’s will be able to trade credits from states in the same region, without a penalty, and will also be able to trade credits from the East or West pool to the other pool, but will incur a thirty-percent penalty, meaning a 100 credit deficit in the East pool could be offset by trading 130 credits from the West pool. The creation of regional pools will help ensure some ZEVs are placed in the northeast region, thereby providing some regional benefits from ZEVs to all of the 177 states.

3) Greenhouse Gas Emission Standards

The GHG standards expand on the current emission standards set for MY 2009-2016 vehicles. The new amendments phase-in from MY 2017-2025, and aims to reduce GHG emissions from



new vehicles by 34 percent. The new standard establishes a ‘footprint’ curve where GHG reduction targets are set based on the overall size of the vehicle. By basing the GHG reduction targets on vehicle size, the level of difficulty in meeting the standard is the same for smaller and larger vehicles. This will allow manufacturers to have the flexibility needed in determining how their fleet will meet the new requirements.

Affected Sources

These amendments apply to automobile manufacturers that produce new motor vehicles for sale in Maryland. All vehicle types that have a gross vehicle weight rating of less than 14,000 pounds are affected. For purposes of these regulations, transfer means to sell, import, deliver, purchase, lease, rent, acquire, or receive a motor vehicle for titling or registration in Maryland. A new vehicle, as defined in the regulations, is any motor vehicle with an odometer reading of less than 7,500 miles.

Summary of Economic Impact

There is an economic impact associated with these regulations. Due to the emissions control technology required to meet these emissions standards, California has estimated that the average new vehicle purchase costs will increase by about \$1,900 when the more stringent requirements take effect. However, these increased purchase costs are expected to be offset by reduced operating costs, ultimately resulting in a net savings of up to \$4,000 over the lifetime of the vehicles. While other cost estimates for the program may be higher, they do not alter the fundamental cost effectiveness of the program and consumers will see benefits within the expected average lifetime of the vehicle.

The implementation of this program will benefit the public by helping to improve Maryland's air quality and will result in fewer negative health effects on the general public from air pollution.

Economic Impact on Automobile Manufacturers and MDE

As of 2012, thirteen states, as well as the District of Columbia have adopted the Cal LEV II standards. These states are currently in the process of adopting the Cal LEV III amendments. Once every state adopts the new standards, Cal LEV III certified vehicles will be required for more than thirty percent of the new car market. Implementation of this program in Maryland is not expected to significantly impact manufacturers' production as necessary modifications will have to occur in order to comply with the amendments in California and the other 177 states. As in the past, manufacturer costs are expected to be distributed among all vehicles in all states.

These amendments will have no economic impact on the MDE. They also will have no impact on the Motor Vehicle Administration's registration, data management, and dealer oversight activities related to this program.

Economic Impact on Consumers and Dealers

Average new vehicle purchase costs are estimated to increase by \$1,900 by 2025, when the program is fully phased-in. However, these costs are expected to be offset by savings due to reduced operating and maintenance costs. The savings will vary by individual vehicle and



consumer. California estimates a net savings of about \$4,000 over the lifetime of vehicle ownership, with a payback period for a MY 2025 vehicle being under 3 years.

MDE does not believe that the program will have any significant affect on Maryland dealers' ability to sell cars to Maryland consumers or to consumers in adjacent states. Maryland dealers will be able to sell both California Clean Cars and federal Tier 2 cars, however they can only sell and title Clean Cars to Maryland residents. Dealers may potentially realize an increase in sales as environmentally and economically conscientious consumers seek to purchase these clean cars.

Implementation of the program should not impact dealer operations or result in any change from current operations from a consumer viewpoint. Vehicles will be delivered by manufacturers to dealers in Maryland that meet California emissions standards. A Maryland consumer will purchase a new vehicle. The selling dealer will transfer the certificate of origin to the State and issue tags to the consumer. The state will confirm emissions compliance (along with compliance to other non-emissions requirements) and issue a Maryland title to the consumer. There should be no changes from the way the current Clean Cars Program operates.

Economic Impact on Small Businesses

These amendments impact the vehicle production and certification processes that are only applicable to the manufacturers of new motor vehicles. To the extent that small businesses purchase new vehicles subject to these new emission standards, this program will have an economic impact on them. However, due to reduced fuel usage and operating costs, the businesses can anticipate eventual savings from the Advanced Clean Cars Program.

Emissions Benefits

The Advanced Clean Car Program will reduce emissions of GHG, NOx, VOCs, and air toxics (benzene, 1,3-butadiene and acetaldehyde). Greenhouse gases are the primary pollutants that cause global warming. Maryland, and the Chesapeake Bay, are particularly vulnerable to the affects of global warming. Major concerns include a rise in coastal waters, loss of aquatic life (impacts to oysters, crabs and the bay ecosystem) and the potential of extreme weather conditions. GHG emissions contribute significantly to global warming. In Maryland, about one third of the GHG emissions come from motor vehicles. The Clean Car Program will reduce GHG emissions from motor vehicles and is absolutely critical as part of our effort to address global warming.

Maryland's challenges to meeting the federal health standards for ozone and fine particles are amongst the toughest in the country. Much of Maryland still remains in ozone nonattainment, even after implementation of many federal and state programs that are reducing motor vehicle emissions. In addition to being a major contributor to the State's ozone and fine particulate pollution, NOx emissions also adversely impact the Chesapeake Bay. The VOC and NOx reductions from the Clean Cars Program will be very important to our efforts to attain and maintain these standards.

Mobile sources are the number one contributor to air toxics in major cities like Baltimore and Washington. Air toxics emissions can have a variety of negative effects on public health.



While existing programs are gradually reducing exposure to these pollutants, the deeper and quicker reductions under the Clean Car Program will bring healthier air to Maryland's citizens sooner.

California estimates that the full emissions benefits of the Advanced Clean Cars Program will be realized in the 2035-2040 timeframe, when nearly all vehicles operating in the fleet would be compliant with the new standards. By 2035, California estimates emissions for volatile organic compounds (VOCs) would be reduced by an additional 21% from the 2008 baseline, NOx emissions would be reduced by an additional 36%, and PM2.5 emissions by an additional 11%. Greenhouse gas emissions are estimated to be reduced by an additional 3% by 2020, increasing to 27% by 2035.

Federal Requirements that Apply to these Sources

The Federal Tier 2 Motor Vehicle Emissions Standards under 65 FR 6698 (February 10, 2000) apply to the same types of vehicles.

These regulations are more restrictive than the Federal Tier 2 Motor Vehicle Emissions Standards insofar as they require more stringent NMOG, NOx, and GHG emissions standards.

References

Maryland Department of the Environment, *Summary of Proposed or Adopted changes to the California Low Emissions Vehicle Program by the California Air Resources Board (CARB)*, 2012 Report to the Joint Administrative, Executive, and Legislative Review (AELR) Committee.

Maryland Department of the Environment, *Technical Support Document for the Low Emissions Vehicle Program*, 2007.

California Environmental Protection Agency, Air Resources Board, *Advanced Clean Cars Summary*, 2012.