Department of the Environment

Facts About...

COMAR 26.11.13 and the Clean Cars Program

Background

The federal Clean Air Act generally reserves the ability to set and enforce emissions standards for new vehicles with the federal government. The Act allows California to set new vehicle standards for cars sold in that state and also allows other states to adopt new vehicle standards as long as they are identical to California's. California has adopted the second generation of its low emission vehicle program, CA LEV II (also known as the Clean Car Program), effective in model year 2004.

The two most important sources of air pollution in Maryland are power plants and cars. In 2006, Maryland adopted the Healthy Air Act, one of the country's toughest programs to reduce air pollution from power plants. The Clean Cars Program compliments the Healthy Air Act by requiring significant reductions of multiple pollutants from cars. It is a significant step in the State's effort to protect public health and restore the Chesapeake Bay.

What is the purpose of these regulations and amendments?

The primary purpose of this regulation/amendment is to reduce vehicle emissions from new vehicles in Maryland as of model year 2011. This will be accomplished by adopting California's emissions standards, which are more stringent than the current federal standards. The Clean Car Program significantly reduces greenhouse gas (GHG) emissions and also provides additional reductions in air toxics and ozone forming emissions. The federal Tier 2 Program does not address GHG emissions. Based on current GHG emission reporting guidelines, the federal EPA estimates that the transportation sector accounted for approximately 27% of the total U.S. GHG emissions in 2003. Transportation is the fastest-growing source of CO_2 in the U.S. and CO_2 is the most prevalent GHG. In Maryland, approximately one third of CO_2 emissions are emitted from cars.

What sources are affected?

The California standards only apply to new vehicles (less than 7,500 miles) purchased in Maryland or imported into the state beginning with the 2011 model year. The rules affect new gasoline and diesel light and medium-duty cars, pick-up trucks, and sport-utility vehicles (up to 8,500 pounds).

What do the amendments require?

The adopted regulations require the Maryland Department of the Environment (MDE) and the Maryland Motor Vehicle Administration (MVA) to establish a low emissions vehicle program applicable to model year 2011 and later vehicles. New light-duty (up to 8,500 pounds) gasoline and diesel vehicles sold in Maryland will have to comply with the Clean Car Program standards. The GHG standards will be phased-in between 2009 through 2016. The Clean Cars Program requires that a percentage of new vehicles sold each year meet zero emission vehicle (ZEV) standards. Auto manufacturers are encouraged to meet this ZEV component by using a variety of advanced technologies including battery electric vehicles, hybrid electric vehicles, super low-emitting gasoline vehicles, and hydrogen fuel cell vehicles.

What is the economic impact on affected sources and the Department?

1. Consumers

The Clean Cars Program is expected to increase the cost of new vehicles in the long-term. Currently, there is no price difference for the consumer. For the ozone-reducing standards, the incremental cost of a California car over a federal Tier 2 car is $100, and this minimal cost is not being passed on to the consumer. The GHG standards, which begin in 2009 in California and are fully phased-in by 2016, are expected to increase the cost of a vehicle by $1,000 in 2016. However, complying vehicles will be much more fuel-efficient than those meeting the federal Tier 2 standards. Those fuel savings will more than offset the increased vehicle cost.

MDE had an independent consultant perform a cost benefit analysis. The analysis indicates that increased vehicle costs will be completely offset by reduced operating costs, resulting in a net savings to consumers of $1,000 for trucks and $2,000 for cars over an average 150,000 miles. This analysis also showed that the incremental cost of the vehicle will be paid back to the consumer within the first 2 to 3 years. While the industry cost estimates for the program are substantially higher, they do not alter the fundamental cost effectiveness of the program and consumers will see benefits within the expected the average lifetime of the vehicle.

California has estimated the 2009-2012 incremental costs to be $382 for passenger cars and $358 for heavier trucks. The incremental cost increases to $1204 for passenger cars and $1356 for heavier trucks in 2013-2016. Using the 2005 Maryland registration data (and assuming a 2% annual growth in the number of new vehicles between 2005 and 2011), approximately 277,600 vehicles in 2011 would be subject to this incremental cost. (Source: California Air Resources Board Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles (August 6, 2004).

Adoption of the Clean Cars Program will have an economic impact in Maryland due primarily to the ZEV component. The GHG provisions will add an incremental cost to vehicles in addition to the cost of the ZEV mandate. However, CARB states that complying vehicles will be much more fuel efficient than those meeting the federal Tier 2 standards and that these fuel savings will more than offset the increased cost of the vehicles.

In 2011, the incremental cost of a partial zero emissions vehicle (PZEV) is estimated to be $100 (low end estimate) and the incremental cost of an alternative technology zero emissions vehicle (AT-PZEV) is estimated at $700. Using 2005 Maryland registration data (and assuming a 2% annual growth in the number of new vehicles between 2005 and 2011), the ZEV mandate would require Maryland dealers to sell 27,763 ZEV vehicles in 2011. (Source: California Air Resources Board, Staff Report: Initial Statement of Reasons: 2003 Proposed Amendments to the California ZEV Program Regulations, January 10, 2003.)

2. State of Maryland

The State of Maryland purchases approximately 800 new vehicles per year that would be subject to the GHG provisions of the Clean Car Program. Using the incremental cost estimates provided above, the cost to the State of Maryland for the purchase of new, complying vehicles would be $303,200 in 2011 and increase to $978,000 in 2016.

3. Maryland Department of the Environment (MDE)

One Public Health Engineer (PHE) would be required to meet MDE's obligations under this proposed legislation. The engineer would be responsible for all technical aspects of the regulatory action necessitated by this legislation as well as the technical issues associated with implementing and continuing a Clean Cars Program in Maryland. MDE will also use existing staff to carry out a public education/outreach program for dealers and consumers to educate them about the new cars and other features of the California Low Emissions Vehicle Program.

4. Maryland Motor Vehicle Administration (MVA)

MVA is in the process of designing a new vehicle registration system. The vehicle registration process should not be greatly impacted because the new registration system will include the necessary changes to go from Tier 2 to the Clean Cars Program.

Does the action have an economic impact on small businesses ?

To the extent that small businesses purchase new vehicles subject to these new emissions standards, they will be impacted by this legislation. The small business would incur incremental costs associated with the purchase of any new vehicles subject to these standards.

Since some small businesses may purchase diesel vehicles, they may be concerned that the adoption of these new standards will prohibit the sale/purchase of diesel vehicles. Concern over the availability of diesel vehicles is not unique to the Clean Cars Program. The availability of diesel vehicles is also an issue with the federal Tier 2 program. The manufacturers are making the necessary technological adjustments and state that they expect the issue to be resolved and more diesel vehicles to be available beginning with the 2009 model year. The impact should be minimal in Maryland with the 2011 implementation of the program.

Are there other State or federal requirements that apply to these sources ?

The Clean Car Program vehicle emissions standards are divided into two main sections. One section reduces emissions of traditional pollutants such as precursors to ground-level ozone, including volatile organic compounds (VOCs) and nitrogen oxides (NOx) and includes requirements for ZEVs that will reach full effect in California in 2018. Standards for most vehicles in this program are similar to the federal Tier 2 standards that are currently in effect in Maryland for regulation of NOx and VOCs. There is flexibility allowed in how the ZEV component is implemented. A decision on how much flexibility to capture will be made as part of the development of the implementing regulations. If the ZEV mandate is part of the implementation strategy it may require special provisions such as banking and trading and/or other types of incentives since the state would be adopting the program “midstream”. These provisions would enable the manufacturers to earn/accumulate credits instrumental in demonstrating compliance. Incentives have been needed in other states that have adopted the ZEV mandate of the Clean Cars Program. The ZEV component mandates that 10% of new car purchases (of certain types of vehicles) be zero emission vehicles. This requirement can be met through a combination of sales strategies. The most popular appears to be through the sale of 6% PZEVs (very clean gasoline vehicles) and 4% AT-PZEVs (hybrids).

The second section contains requirements for reducing GHG emissions from motor vehicles and sets progressively restrictive limits from 2009 through 2016. The GHG provisions will be implemented in two phases, near term being 2009-2012 and mid-term being 2013-2016. Each phase calls for a further reduction in GHG emissions. When California has fully phased in the GHG requirements by 2016, new vehicles must

emit an average of 30% less carbon dioxide (CO2). The targeted results are expected to be achieved using existing technologies or alternative fuels. The technologies include turbo charging, cylinder deactivation, variable valve lift and timing, low-leak air conditioning, continuously variable transmissions, direct fuel injection, and electric power steering. These new standards will not require the automobile manufacturers to produce smaller, lighter vehicles. Additionally, adoption of the Clean Cars Program will not require the sale or use of California fuels. The courts have ruled that a state's failure to adopt California fuel requirements does not violate the requirement in §177 of the Clean Air Act that state emission standards be identical to the California standards.

What are the expected VOC/NOx reductions ?

The Clean Cars Program reduces emissions of CO_2, the smog related pollutants (NOx and VOCs), and air toxics (benzene, 1,3-butadiene and acetaldehyde). CO_2 is the primary pollutant that causes global warming. NOx is a problem pollutant for the Chesapeake Bay and also a major contributor to the State's ozone and fine particulate problems. VOCs are also linked to Maryland's ozone problem. Air toxics can have a variety of negative effects on public health. The Clean Cars program will:

- Cut GHG from mobile sources in Maryland by approximately 30% when fully implemented, which results in emission reductions of 7.8 million tons/year by 2025. This is equivalent to the removal of one 1,200-mega watt coal burning power plant.
- Lower smog-forming emissions from mobile sources by nearly 1 ton/day in 2012, increasing to nearly 9 tons/day in 2025.
- Reduce hazardous air pollutants (including benzene) by 80 tons/year by 2025, a nearly 9% reduction from the 2012 baseline.
- Additional emissions benefits and percent reductions are detailed in the table below.

Emission Benefits of Clean Car Program Compared to Tier 2 Baseline

	Tier 2 Baseline	Clean Car Program Reduction beyond Baseline			
Pollutant/Year	**2012**	**2012**	**2015**	**2018**	**2025**
CO2 (million tons/year)	28.4	1.1 (3.9%)	2.8 (9.9%)	4.9 (17.3%)	7.8 (27.5%)
NOx (tons/day)	137.7	0.49 (0.4%)	1.77 (1.3%)	3.14 (2.3%)	5.18 (3.8%)
VOCs (tons/day)	80.2	0.36 (0.5%)	1.17 (1.5%)	2.07 (2.6%)	3.55 (4.4%)
Benzene (tons/year)	672.2	14.8 (2.2%)	26.4 (3.9%)	39.4 (5.9%)	59.9 (8.9%)
1-3 Butadyne (tons/year)	91.2	0.7 (0.8%)	2.3 (2.5%)	4.1 (4.5%)	7.4 (8.1%)
Acetaldehyde (tons/year)	178.5	1.4 (0.8%)	5.2 (2.9%)	8.4 (4.7%)	12.9 (7.2%)