

Pennsylvania Clean Vehicles (PCV) Program

Summary:

Continued adoption of the California Air Resources Board (CARB) certification standards for all vehicles titled in PA.

Background Discussion:

This document analyzes the continued implementation of the existing Pennsylvania Clean Vehicles (PCV) Program, which started with model year (MY) 2008. Under this program, passenger cars and light-duty trucks (8,500 pounds gross vehicle weight or less) sold or leased and titled in Pennsylvania must be certified by the California Air Resources Board (CARB) for use either in California or for all 50 states. Any changes to California's low-emission vehicle (LEV) program are automatically incorporated by reference into the PCV Program.

In 2005, CARB applied to the U.S. Environmental Protection Agency (EPA) for a waiver of federal preemption to implement greenhouse gas standards (GHG) for motor vehicles, beginning with MY 2009. On June 30, 2009, EPA granted California's request for a waiver of Clean Air Act preemption for California's GHG emission standards for MYs 2009-2012 and later model years, adopted by CARB) on September 24, 2004. CARB adopted revisions to its low emission vehicle standards (LEV III) on March 22, 2012, covering MYs 2017-2025 for criteria pollutants, evaporative emissions, and greenhouse gas emissions. The provisions affecting the LEV program were incorporated by reference into the PCV Program. The waiver granted in 2009 also applies to the GHG emission standards for MYs 2017-2025.

In May 2009, President Obama announced that EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) would establish national vehicle greenhouse gas and fuel economy standards for MYs 2012-2016 passenger vehicles, referred to as the National Program. In an effort to encourage 'harmonization' between federal and CARB standards, the federal government worked with CARB and auto manufacturers to establish consistency, to the extent possible, with existing CARB standards which apply to MYs 2009-2016. While CARB's regulations are more stringent in the early years, they are practically identical to the National Program in MY2016. To aid the harmonization effort, CARB revised its regulations to explicitly accept demonstration of compliance with the National Program for MYs 2012-2016 as compliance with CARB GHG requirements for MYs 2012-2016. Pennsylvania receives additional GHG reduction benefits from the implementation of the National Program, as opposed to the CARB GHG regulations alone. In addition to the GHG reductions from new CARB-certified vehicles belonging to Pennsylvania residents, there will also be a reduction in GHG emissions from new vehicles traveling in the state that may have originated in states that do not require CARB certification.

New light-duty vehicles titled in Pennsylvania would produce fewer GHG emissions for MYs 2009, 2010 and 2011 than federally certified vehicles, because there is no National Program for those years, but the benefits diminish in future model years due to the efforts made to harmonize the CARB standards and the Federal Program for MYs 2012 and beyond. By the target year 2020, the vehicles for model years 2009, 2010, and 2011 would comprise only about 17 percent of the Pennsylvania fleet. Also, these three model years would contribute the least amount of

GHG emission reductions of all the years of the PCV Program. Starting in 2012, new vehicles will demonstrate a significant increase in fuel economy and, consequently, lower emissions of GHGs.

On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007. This Act included a provision to raise the Corporate Average Fuel Economy (CAFE) standard to 35 miles per gallon (mpg) by 2020. On May 7, 2010, EPA and NHTSA issued a joint Final Rulemaking, establishing GHG emission standards and CAFE standards for MYs 2012-2016 passenger vehicles. The combined GHG and fuel economy standards are referred to as the National Program. The 2012-2016 National Program overall is expected to result in fuel economy improvement levels equivalent to 35.5 mpg. On August 28, 2012, EPA and NHTSA issued a joint Final Rulemaking to extend the National Program of harmonized greenhouse gas and fuel economy standards to MY 2017-2025 passenger vehicles. The 2017-2025 National Program overall is expected to result in fuel economy improvement levels equivalent to 54.5 mpg. CARB is currently undergoing the approval process to amend its regulations to explicitly accept demonstration of compliance with the National Program for MYs 2017-2025 as compliance with CARB GHG requirements for MYs 2017-2025. While the CARB standards and National Program standards are not identical for these model years, they are similar enough to produce comparable emission reductions.

Potential GHG Reductions and Economic Costs:

Table 1: Estimated GHG Reductions and Cost-effectiveness

GHG emission savings (2020)	6.30	MMtCO ₂ e
Net present value (2009–2020)	NQ	\$million
Cumulative emission reductions (2008–2020)	30.10	MMtCO ₂ e
Cost-effectiveness (2009–2020)	NQ	\$/tCO ₂ e

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalent; \$/tCO₂e = dollars per metric ton of carbon dioxide equivalent.

GHG Emission Reductions:

Using Pennsylvania-specific GHG Inventory data, highway vehicle registration and traffic data, a potential baseline (i.e., without the PCV Program 2013) CO₂ emissions in 2020 can be estimated. Assuming reductions similar to CARB’s predictions and adjusted to account for (1) Pennsylvania fleet composition, (2) a lack of a zero-emissions vehicle sales percentage mandate, and (3) a small “rebound effect,”¹ Pennsylvania can experience an overall GHG emissions reduction in 2020.

¹ The “rebound effect” can be described as the cumulative effect of drivers potentially increasing their individual vehicle miles traveled (VMT) as the fuel efficiency of their vehicles improves. This effect is difficult to model using conventional models, and the magnitude of the effect (estimated from 0% to 17%) is currently being debated. Many other variables, besides vehicle fuel efficiency, also influence VMT.

This estimate assumes that the vehicle miles traveled (VMT) by subject vehicles would be 99.2 billion miles annually in 2020, based on a PennDOT-approved highway vehicle growth methodology.²

Economic Analysis:

CARB has stated that incremental costs for new vehicles complying with its GHG regulations range from a positive return to up to \$6,000 increase in price, depending on the technology adopted. Most technology options are estimated to have an incremental cost increase between \$100 and \$1,000. CARB indicated that these estimated incremental costs will most likely be fully offset by savings from improvements to fuel economy and other equipment improvements over the life of the vehicle. The EPA has provided estimates of incremental costs for its GHG regulations will add, on average, \$1,800 to vehicle costs in 2025. The EPA also indicated that the estimated incremental cost will most likely be fully offset by savings from improvements to fuel economy and other equipment improvements over the life of the vehicle. In addition, as the existing GHG-reducing vehicle technologies are used more by automakers, there is an increased likelihood these potential additional costs will not be passed on to the consumer, but will be absorbed into the overall price of the vehicle, as appears to happen now.

Because non-CARB certified for MY2008 and beyond cannot be titled and registered in PA, there is no incremental cost added to the price of a new vehicle.

No additional significant costs to DEP or PennDOT will occur for the implementation and operation of this program, since the program is already in effect for the purpose of reducing emissions that relate to criteria pollutants.

Implementation Steps:

The PCV Program is currently being implemented for MYs 2009-2011, MYs 2012-2016 and MYs 2017-2025. The National Program is also being implemented for MYs 2012-2016 and MYs 2017-2025. The GHG benefits of both programs are currently being realized.

Key Assumptions:

The agreement between the federal government, automobile manufacturers and CARB to harmonize GHG standards will continue in place into future years. CARB will continue to accept compliance with the National Program as compliance with CARB's GHG standards.

Additional Benefits:

The PCV Program was adopted to reduce emissions from light-duty vehicles—particularly concentrations of criteria pollutants in the ambient air—which would allow areas of Pennsylvania to meet the National Ambient Air Quality Standards (NAAQS). The PCV Program lowers emissions of oxides of nitrogen (NO_x) and volatile organic compounds (VOCs), which are both precursors of the formation of ground-level ozone.

² This methodology employs a regression-based forecasting model that uses PA county-level socioeconomic factors (e.g., population, household data, employment, land use, education, retail sales, etc.) to estimate future VMT on the PA highway network.

Potential Overlap:

There is a potential overlap between the PCV Program, the Biofuel Incentive and In-State Production Act, and other VMT-reducing or highway vehicle fuel programs. The estimated 2020 reductions for the PCV Program assume no changes in fuel or the implementation of any additional VMT-reduction strategy.

References:

EPA, 2009: California State Motor Vehicle Pollution Control Standards; Notice of Decision Granting a Waiver of Clean Air Act Preemption for California's 2009 and Subsequent Model Year Greenhouse Gas Emissions Standards for New Motor Vehicles, June 30, 2009.

EPA and DOT, 2009: Notice of Upcoming Joint Rulemaking to Establish Vehicle GHG Emissions and CAFE Standards, May 19, 2009.

ARB, 2008: California Air Resources Board, Comparison of Greenhouse Gas Emission Reductions for the United States and Canada under U.S. CAFE Standards and California Air Resources Board Greenhouse Gas Regulations, February 25, 2008.