

REPORT HIGHLIGHTS

Automobile Inspection and Readjustment Program
Performance Evaluation, November 2017

Department of Public Health and Environment

KEY CONCLUSIONS

- The Automobile Inspection and Readjustment Program (AIR Program) decreases ozone precursor emissions by about 14% or 25 tons per day, thereby providing a significant portion of the controllable ozone precursor emission reductions needed to attain compliance with the National Ambient Air Quality Standards for ozone.
- The AIR Program reduces the emission of ozone precursors at a cost of about \$7,500 per ton, indicating that the Program is a cost-effective pollution control measure.
- The AIR Program's emissions reduction benefits are primarily derived from the approximately 9% of vehicles that fail the emissions test and are subsequently repaired and pass a retest or are removed from the vehicle fleet.

AIR QUALITY BACKGROUND

- Ozone is a common pollutant that, in high concentrations, can cause health problems, especially in sensitive populations. Ozone is formed in the atmosphere through photochemical reactions involving ozone precursors (nitrogen oxides, hydrocarbons, and carbon monoxide). The largest source of ground-level ozone precursors comes from human activities, including fossil fuel combustion (e.g., motor vehicle emissions) and solvent usage. Naturally occurring sources of ozone precursor emissions include plants, soil, wildfires, and lightning.
- The 2008 federal ozone standards set the maximum 8-hour ozone concentration limit over a 3-year period at 75 parts per billion (ppb). In 2012, the U.S. Environmental Protection Agency (EPA) classified the Denver Metro/Northern Front Range (DM/NFR) area as being in "marginal" attainment of the 2008 ozone standards with a deadline to come into compliance by July 2015. In May 2016, the EPA redesignated the DM/NFR area from "marginal" to "moderate" nonattainment due to the failure to attain the 2008 ozone standards by the 2015 deadline.
- The 2015 federal ozone standards, which are not yet fully in effect, reduced the legal ambient ozone limit from 75 ppb to 70 ppb. Given the DM/NFR area's current nonattainment designation under the 2008 ozone standards, this additional 5 ppb reduction in allowable ozone concentrations under the 2015 ozone standards will be a challenge for the DM/NFR area to meet.

AIR PROGRAM BACKGROUND

- The AIR Program is part of the State's overall strategy for ensuring compliance with federal air quality standards.
- The AIR Program covers all of Broomfield, Boulder, Denver, Douglas, and Jefferson counties and parts of Adams, Arapahoe, Larimer, and Weld counties.
- Vehicles in the Program Area must pass an emissions test before they can be registered. The frequency and type of emissions test performed depends on the age of the vehicle.
- RapidScreen, which was implemented in 2004, allows qualifying vehicles to be registered based on readings from roadside monitors, thereby skipping the need for the traditional emissions test at a brick-and-mortar facility.
- In Calendar Year 2016, approximately 882,000 vehicles received an emissions test through the AIR Program. Approximately 184,000 vehicles were registered based on the results of RapidScreen readings.
- The total net cost of the AIR Program in Calendar Year 2016 was about \$68.4 million. Costs borne by vehicle owners include the emissions test fee, an additional registration fee that funds the AIR Program, repair costs on vehicles that fail the emissions test, and inconvenience costs. These costs are netted against cost savings to vehicle owners from improved fuel economy as a result of vehicle repairs.
- The Colorado Department of Public Health and Environment (Department) is responsible for overseeing and administering the technical aspects of the AIR Program.

RECOMMENDATION

The Department should consider (a) using on-board diagnostic information for specific diagnostic trouble codes in conjunction with IM240 test results when setting emissions pass/fail standards for certain vehicles, (b) identifying ways to reduce the number of vehicles that qualify for RapidScreen when the vehicle's malfunction indicator light is illuminated, and (c) including an estimate of inconvenience costs in its calculations when reporting on the Program's cost-effectiveness.

The Department agreed with this recommendation.