

Tracking Vehicle Emission Trends With Remote Sensing Devices

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Issue

The California Air Resources Board (CARB) has ongoing efforts to measure and analyze air pollutants emitted by cars using remote sensing devices (RSD). Measurements from RSDs can help track fleet emission reductions and identify high-emitting vehicles over time. This helps CARB understand the effect of our control programs and provides a measure of the reductions in emissions they achieve. CARB's Community Air Protection Program (CAPP), established after the passage of Assembly Bill 617, is focused on reducing exposure in communities most impacted by

air pollution. Although air quality has improved over the past decades, more than half of Californians reside in nonattainment areas, or places that exceed the federal ozone or particulate matter standards. Over 99% of California's Disadvantaged Communities (DACs) are in these nonattainment areas.

Goal

This project aims to continue and expand CARB's long-term monitoring efforts to understand the progression of fleet emissions and help improve air quality across California.

Method

Eastern Research Group partnered with Denver University (DU) and Opus Inspection to launch RSD measurement campaigns in 9 cities. They wanted to:

- Evaluate the cars' emission rates and prevalence of electric vehicles registered in DACs;
- Extend the long-term emissions measurements at DU's West Los Angeles site;
- Evaluate the emission rates of vehicles crossing the U.S.-Mexico border in Southern California;
- Quantify the emission rates for heavy-duty vehicles;
- Compare emission trends of vehicles registered in different Smog Check Program areas: Change-of-Ownership vs. Enhanced.



Key Findings

- Emission rates of cars registered in DACs ranged up to 50% higher depending on pollutant and community type, as compared to non-DAC cars.
- Electric vehicles were around half as prevalent in DACs as they are in non-DACs.
- Fleet average emission rates at the West Los Angeles RSD site have decreased by more than 70% from the first measurement campaign in 1999, though they were at comparable levels to the previous measurement campaign in 2018.
- Vehicles registered in Mexico had higher emission rates than those registered in California.
- Vehicles registered in the Enhanced Smog Check program areas generally emit at lower rates than vehicles registered in the Change-of-Ownership areas.

More Information

This is a summary of contract [20RD001](#). This project was conducted independently and not in connection with any regulatory proposal or other action considered by CARB. For more information, visit [CARB Research](#) or contact the [Research Division](#).