

## Air Quality Trends in Urban Low-Income Areas

Summary of Analysis by  
Alpine Geophysics, LLC  
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### Overview

Alpine Geophysics, LLC, examined air quality trends from 1999 to 2012 in a geographically diverse group of low-income urban areas. Their report assesses the extent of air quality improvements for two key health-related pollutants regulated by the Clean Air Act: ozone (urban smog) and fine particulate matter (PM<sub>2.5</sub>). The air quality monitor data for the study were obtained from U.S. EPA. The study also analyzes the emission sources contributing to ozone concentrations in these areas in 2010.

The air quality measurement data reported in the Alpine study are 8-hour ozone design values (average of the 4<sup>th</sup> highest ozone concentration over a three-year period) and three-year rolling PM<sub>2.5</sub> design values based on data from U.S. EPA. Alpine analyzed these trends for the 1999-2012 period with “least squares” regression techniques. The report presents results of 2010 ozone source-apportionment modeling using CAMx, an EPA-approved air quality model that measures ozone concentrations contributed by various source categories (e.g., power plants, motor vehicles, other industrial sources, etc.)

### Summary of Findings

Air quality trend data were analyzed for 13 monitors in eight eastern states, located in urban areas. The median household incomes of the areas surrounding the monitors averaged \$32,000 in 2012, one-third below the national median income of \$51,000. Monitors in low-income urban areas were selected due to claims that economically-disadvantaged populations are subject to disproportionately high levels of air pollution. The monitors included in the study were not pre-screened for characteristics other than median household income.

The least-squares trend analyses of 8-hour ozone and PM<sub>2.5</sub> design values at these 13 monitors reveal a consistent pattern of air quality improvement for both pollutants over the 1999-2012 period.

Alpine’s CAMx modeling of the sources of urban smog indicate that mobile source emissions (onroad and offroad) are the largest cause of manmade pollution at all monitors analyzed based on 2010 data (33% to 50%). Among source categories, emissions from all electric generation (coal, oil and natural gas) contributed 5% to 13% of urban smog at the monitors analyzed.

Copies of the complete Alpine Geophysics report are available at:

<http://midwestozonegroup.com/AirTrendsJuly2013Public.html>