

Alert

dvrpc | July 2018

Alert is a monthly update on transportation and air quality planning activities in the Delaware Valley.



Health and Air Quality

DVRPC Region Listed in Top 25 Most Polluted Regions in the Country

The Philadelphia-Reading-Camden PA-NJ-DE-MD metropolitan region¹ has been ranked in the top 25 most polluted regions for ground-level ozone and annual fine particles (PM_{2.5}) by the American Lung Association (ALA) in their State of the Air report released in April 2018. The region was ranked as the 12th worst region for long-term (annual average) fine particle pollution (PM_{2.5}) and tied for 24th for ozone pollution. The ALA used quality-assured data for the period 2014 to 2016 to develop the 2018 report card on ozone and particle pollution for the nation's cities and counties.

The report also ranks individual counties based on the number of days that air quality reaches unhealthy levels (code orange and above) on the Air Quality Index. All eight counties in the DVRPC region that were graded, received a grade of "F" for ozone pollution. Burlington County does not have an air quality monitor and was not graded in this report. Despite being ranked the 12th worst metro region in the nation for annual particle pollution, all of the counties in the DVRPC region that were graded, received passing grades for PM_{2.5} pollution. This is a significant improvement for particle pollution from previous State of the Air reports.

The ALA used the PM_{2.5} daily standard of 35mg/m³, adopted in September 2006; the PM_{2.5} annual standard of 12mg/m³, adopted in September 2012; and the ozone standard of 70 parts per billion, adopted in October 2015, to determine the unhealthy ranges for particle pollution and ozone.

The 2018 State of the Air report shows positive trends in the nation's air quality with regards to fine particle pollution but notes that 2016 had a spike in the number of high ozone days across the nation. The ALA attributes this spike to rising temperatures, as 2016 was the second hottest year on record. Sunlight and elevated temperatures provide energy that drives the chemical reaction that forms ground-level ozone from pollutants.

According to the US Environmental Protection Agency (EPA), national concentrations of ozone and fine particle pollution dropped by 5% and 22% respectively, between 2010 and 2016, even while Gross Domestic Product, vehicle miles travelled, and population grew by approximately 19%, 13%, and 14% respectively, over the same time period.

The ALA report notes that ozone levels in the eastern US continue to improve while cities in California continue to dominate the list of metro areas with the poorest air quality. The report attributes improved air quality in the east to emissions reductions at power plants east of the Mississippi River and notes that a considerable amount of air pollution in the northeast US is transported from upwind states.



Save the Date

**Tuesday-Wednesday
August 7-8, 2018**

Northeastern Transportation and Air Quality Summit

*Location of Meeting:
North Jersey Transportation
Planning Authority
Newark, NJ*

*For more information, please
visit:
www.njtpa.org/NTAQS2018*

**Thursday
August 9, 2018**

DVRPC Public Participation Task Force 5:00 pm

*Location of Meeting:
DVRPC Conference Center
8th Floor
6th and Race Streets
Philadelphia, PA*

The DVRPC region has recently been designated as a nonattainment area for the 2015 Ozone Standard and continues to show attainment of the PM_{2.5} standard, echoing the findings of the ALA report. The report identifies rising temperatures and the rolling back of fuel efficiency and power plant regulations as challenges to meeting the ozone standards, especially as air pollution from upwind states is largely out of the control of state and local air quality agencies.

To view the entire 2018 State of the Air report, including grading methodology and statistical analysis, please visit the American Lung Association at: www.stateoftheair.org

¹ The Philadelphia-Reading-Camden PA-NJ-DE-MD metropolitan region includes Philadelphia, Bucks, Chester, Delaware, Montgomery, and Berks Counties in PA; Camden, Burlington, Gloucester, Cape May, Cumberland, and Salem Counties in NJ; New Castle and Kent Counties in Delaware; and Cecil County in Maryland.



Air Quality Information

Salt Lake City Uses Light Rail to Collect Air Quality Data

Researchers at the University of Utah developed a unique platform for measuring air quality across the Salt Lake Valley. Scientists attached air quality monitors on the Utah Transit Authority's three light rail lines that serve more than 67,000 people per day in the Salt Lake City Metropolitan Area. The mobile sensors allowed for temporal and spatial monitoring of air quality in the region at a finer scale than is usually available to researchers. Mounting the sensors on electrified light rail had the benefits of covering a large portion of the metro area at a low cost and has the added benefit of avoiding self-contamination from the monitoring vehicle's exhaust.

The four year study, termed the TRAX project, provided real time data on a variety of air pollutants including ozone, carbon dioxide (CO₂), fine particulate matter (PM_{2.5}), nitrogen dioxide (NO₂), and methane (CH₄), giving the researchers a picture of both the health implications and greenhouse gas emissions across the valley. The monitoring protocol allowed the scientists to investigate the spatial relationships between air pollution and its sources as well as the impacts of local meteorological conditions and atmospheric chemistry on pollutant concentrations.

The scientists published the results of the study in the August 2018 edition of *Atmospheric Environment*. Some of the findings were not surprising, such as spikes of CO₂ and NO₂, byproducts of gasoline combustion, at street intersections. But the sensors also found methane emissions patterns that didn't correlate to daytime working hours, suggesting possible fugitive methane leaks.

There has been a proliferation of citizen-based local air quality monitoring over the past decade. Calibrating these low-cost sensors with research grade instruments has proven a challenge and raises questions about data quality. Using manually operated, mobile research grade sensors poses a considerable cost. The TRAX project addresses some of these concerns by utilizing research grade instrumentation on a mobile platform but removes much of the person costs for operating and transporting the instruments.

The TRAX project is the only known transit-based mobile air quality network in North America. The study shows the great potential for characterizing localized air quality conditions across an urbanized area where regulatory air quality monitors don't provide such a fine scale picture of local exposures to air pollutants. According to the study's authors; "Our results suggest that air pollution and greenhouse gas emission monitoring and exposure assessment could be greatly enhanced by deploying instruments on public transit systems in urban centers worldwide."

The full article, "Monitoring of Greenhouse Gases and Pollutants Across an Urban Area Using a Light-rail Public Transit Platform", can be downloaded online by typing the following into your search bar:

[10.1016/j.atmosenv.2018.05.044](https://doi.org/10.1016/j.atmosenv.2018.05.044)



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