

7. AIR QUALITY

Board of Supervisors Environmental Vision:

“The county also will continue to support attainment of air quality through regional planning and action.”¹

INTRODUCTION

Fairfax County is part of a federal-state-regional-local partnership, which has worked for the last several decades to improve air quality. While air quality is a regional issue that is beyond the control of any one state or local government, governments at all levels play important roles in identifying measures that are needed to improve air quality and in implementing related strategies.

In the metropolitan Washington, D.C. region, air quality planning efforts have been focused on regional strategies to bring the area into attainment with federal air quality standards (i.e., the National Ambient Air Quality Standards, or NAAQS). The Metropolitan Washington Council of Governments (MWCOC), through the Metropolitan Washington Air Quality Committee (MWAQC), has coordinated, and continues to coordinate, these efforts.

The county’s major responsibilities in the partnership involve participation and coordination with regional and state organizations on plans intended to reduce air pollution and improve air quality as well as the implementation of local programs that help to minimize or eliminate air pollution.

Over the past three decades, the region has made significant progress in improving air quality. All six pollutants (Ground-level Ozone, Fine Particulate Matter, Nitrogen Dioxide, Sulfur Dioxide, Carbon Monoxide, and Lead) regulated by the federal Clean Air Act have shown a downward trend in the region, and all are at or below federal air quality standards. Overall, the number of unhealthy air days has significantly decreased over the past 25 years, but the number of unhealthy air days in 2023 was a cause for concern.

The region has made tremendous progress in its air quality thanks to actions at the federal, state, and local government levels, including new regulations to reduce emissions from power plants, passenger vehicles, and heavy-duty diesel engines as well as programs to improve energy efficiency and renewable energy use.

Fairfax County does not have an air quality monitoring program; it works with MWCOC to assess air quality in the region. The Virginia Department of Environmental Quality (DEQ) is responsible for air quality monitoring in Fairfax County in addition to air quality facility inspections. It provides current air quality and forecast data for Northern Virginia and other regions at [VA DEQ Current Air Quality and Forecast](#).

¹ 2017 Fairfax County Environmental Vision, Section 2 F, pg. 28, [Environmental Vision Document](#)

CURRENT STATUS AND CONCERNS

Air quality, as measured by unhealthy air days, has fluctuated significantly in the past several years. The COVID-19 pandemic had an impact on air quality in 2020, with a number of the actions taken to limit virus transmission contributing to lower emissions. This resulted in fewer unhealthy air days, with just two such days being recorded in 2020. However, that decrease was temporary. As the region reopened, data from MWCOG registered eight unhealthy air days in 2021. While data from 2022 showed a decrease in unhealthy air days compared to 2021, that reduction was again short-lived. The region recorded 15 unhealthy air days in 2023.

Fine Particulate Matter

The major source of air quality concern in 2023 was wildfire smoke. Canadian wildfire smoke descended across the Midwestern and eastern regions of the United States, including the Washington, D.C. metropolitan region beginning in late spring 2023. This wildfire smoke brought the worst air quality seen in the region in more than a decade. Components of this wildfire smoke are small air particles, known as fine particulate matter.

Fine particulate matter (PM_{2.5}) is particulate matter that is 2.5 microns in diameter and less. Fine particulate matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems, especially for people with respiratory conditions. Fine particles are also the main cause of reduced visibility (haze) in parts of the United States. This haze from the wildfire smoke was readily apparent in the Washington, D.C. metropolitan region on the unhealthy air days in 2023.

On February 7, 2024, the U.S. Environmental Protection Agency (EPA) strengthened the federal air quality standard for fine particulate matter by setting the level of the primary (health-based) annual PM_{2.5} standard at 9 micrograms per cubic meter. The previous standard was 12 micrograms per cubic meter. The Washington, D.C. metropolitan region already meets this new standard, having recorded PM_{2.5} levels below 9 micrograms per cubic meter since 2019.

Emissions from Motor Vehicles

There is extensive use of motor vehicles in Fairfax County and vehicle emissions are the largest single source of toxic and smog forming air pollution in Northern Virginia. Vehicle emissions are a major contributor to ground-level ozone formation and greenhouse gas emissions in Fairfax County and those impacts, combined with climate change, presents a threat to the county's future air quality because rising temperatures speed up the formation of ground-level ozone.

Ground-level ozone, colloquially called "smog" can cause breathing problems for sensitive persons, especially those with asthma. It is formed by chemical reactions

between oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) as they combine in sunlight and heat. Ground-level ozone is considered a summertime pollutant.

Nitrogen dioxide (NO₂) is a gaseous pollutant formed during the high-temperature combustion of fuels in vehicle engines and industrial facilities (primarily electric generating power plants). NO₂ is also a factor in the production of ground-level ozone. It can irritate the lungs and lead to respiratory problems.

Vehicle exhaust also contains sulfur dioxide (SO₂), which is a gas that forms when sulfur-bearing fuels, mainly oil and coal, are burned. High concentrations of SO₂ can result in difficult breathing and respiratory illness. SO₂ can also have damaging effects on the foliage of trees and agricultural crops.

The Fairfax County Community-wide Energy and Climate Action Plan (CECAP) contains several climate action goals involving vehicle use in the county. These include increasing the use of electric vehicles in the county; reducing vehicle miles traveled; and increasing fuel economy and access to low-carbon fuels.

In addition, as an alternative to the use of motor vehicles, the Fairfax County Board of Supervisors has directed the Fairfax County Department of Transportation to lead the effort to improve bicycle and pedestrian safety and mobility, including constructing bicycle and pedestrian improvements in high-priority areas of Fairfax County.

RECOMMENDATION

The Scorecard for this ARE contains the following recommendation pertaining to this chapter. Please see the Scorecard for details.

- 1. County officials should continue efforts to strongly encourage people to telework where possible, take public transit, and use alternative forms of transit.**

Recommendation: 7AQ-2021.1 | AGE: 4 years | Status: Making progress