



Air Quality

The Miami Valley's air quality is the best it has been in 50 years. Transportation sources continue to be a significant contributor to our pollution and GHG inventory.

The Issues

The Dayton Region is working to maintain and improve healthy air quality on a continuing basis. Over the years, industries have updated processes and increased efficiencies in order to reduce air pollution emissions. Governments have improved transportation infrastructure and built energy efficient buildings to reduce their emissions. Residents of the Miami Valley have taken

common sense steps to reduce air pollution, like keeping their cars tuned up. These efforts have helped reduce air pollution in the Miami Valley Region.

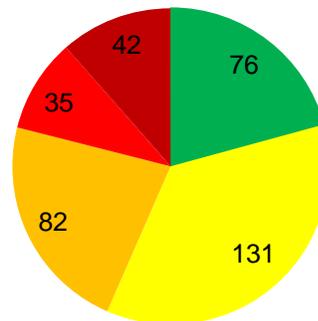
The [Regional Air Pollution Control Agency](#) (RAPCA) has been monitoring ambient air pollution in the Miami Valley since the 1970's. The primary pollutants RAPCA monitors include ground-level ozone (O₃) and fine particulate matter (PM_{2.5}), as these pollutants affect human health within a few hours to a few days. RAPCA provides a daily Air Quality Index (AQI) report to indicate how clean (healthy) or polluted (unhealthy) our air quality is, using the [Air Quality Index scale](#). However, when the air quality is unhealthy, RAPCA, in conjunction with MVRPC, issues an Air Pollution Advisory. This means that residents of the area may be experiencing breathing

difficulties especially vulnerable groups like children, the elderly and people with respiratory diseases and should reduce their time spent outdoors. Residents are also encouraged to take additional actions to reduce air pollution during this time.

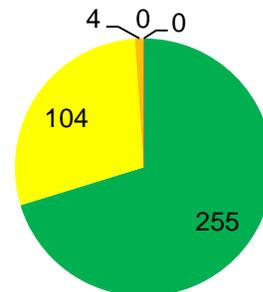
U.S. EPA and RAPCA data demonstrate that over the last three decades, air quality in the Miami Valley has dramatically improved. The number of days with an AQI of 101 or above (unhealthy) has continuously decreased, as there were 159 days of unhealthy air quality in 1976, compared with only four days of unhealthy air quality in 2018 (Source: RAPCA).

Understanding ground-level ozone (O₃) formation and particulate matter (PM_{2.5}) pollution is key to making decisions that improve air quality. Stratospheric ozone occurs naturally and protects the earth from ultraviolet rays. Tropospheric, or ground-level, ozone does not occur naturally. It is a pollutant formed by a chemical reaction between NO_x (nitrogen oxides), VOCs (volatile organic compounds), and sunlight, resulting in O₃. The NO_x is created by fossil fuel combustion, including tailpipe emissions, oil refineries, and similar process. VOCs are formed by the off-gassing of paints, adhesives, solvents, and petroleum products.

1976



2018



- Good
- Moderate
- USG
- Unhealthy
- Very Unhealthy

Fine particulate matter (PM_{2.5}) pollution consists of microscopic particles, small enough to lodge deep in the lungs through normal breathing. PM_{2.5} can be directly emitted from utilities, industrial processing, tailpipe emissions, and even wood fires. A number of health issues arise from regular exposure to PM_{2.5}, including coughing, wheezing, reduced lung function, asthma attacks, heart attacks, strokes, and early death.

Although RAPCA does not regulate or monitor greenhouse gases (GHGs), they are an air quality issue and contribute to climate change. The [U.S. EPA lists](#) the following as GHGs:

1. Carbon Dioxide
2. Methane
3. Nitrous Oxide
4. Fluorinated Gases

The primary sources of GHG emissions are from fossil fuel combustion for energy production and transportation. GHGs are heat-trapping gases that, with increasing concentrations in the atmosphere, are forcing climate changes. This includes global warming, an increase in catastrophic weather events, and changes to precipitation and vegetation patterns. Prolonged, significant warming to our Midwest climate will have detrimental impacts on our [infrastructure](#), [agriculture](#), and [health](#). Therefore, decreasing the concentration of GHGs in our atmosphere is vital to air quality and our quality of life.

What Communities can do

The common thread among these air quality issues is that reducing energy consumption by transportation and the built environment will reduce the emission or formation of ozone, PM_{2.5} and GHGs. All communities in the Miami Valley can contribute to cleaner air by encouraging their residents to choose to drive less and use less fossil fuel energy, and developing ways that facilitate those choices. That means making sure that walking, bicycling, and transit use are safe, comfortable and convenient alternatives to

Air quality

Local contacts

- Air pollution regulations and monitoring — Eileen Moran, RAPCA, 937-225-4435 emoran@rapca.org
- Climate action planning — Mark Charles, Dayton Manager of Sustainability, 937-333-3600, mark.charles@daytonohio.gov
- Health impacts of air pollution — Brian Huxtable, RAPCA, 937-225-4435, bhuxtable@rapca.org
- Health impacts on children — Jessica Saunders, Dayton Children's Hospital, 937-641-3385, saundersj@childrensdayton.org
- Regional air quality planning — Matt Lindsay, MVRPC, 937-531-6548, mlindsay@mvrpc.org
- RAPCA AirLine for updated Air Quality Index and pollen and mold counts – 937.223.3222

Resources

- [AirNow air quality forecast](#)
- [American Lung Association - Ohio](#)
- Clean Diesel Grant Programs:
 - [Ohio EPA](#)
 - [U.S. EPA](#)
- [MVRPC Air Quality Awareness Program – MiamiValleyAir.org](#)
- [Dayton Asthma Alliance](#)
- [Oak Ridge National Laboratory Operations Best Practices Guide: Idle Reduction](#)
- [Ohio EPA Division of Air Pollution Control](#)
- [U.S. Department of Energy publications about idle reduction](#)
- [U.S. EPA ozone web pages](#)
- [U.S. EPA particle pollution pages](#)
- [Fourth National Climate Assessment \(2018\)](#)
- [City of Cincinnati GHG Emissions data page](#)
- [Miami Valley Data Commons](#)

driving alone. It also means making sure the community's codes and ordinances allow for the kinds of compact land use that make active transportation a good option, and

facilitate renewable energy use. The suggested programs, policies and projects that follow serve as a menu of options for your community to continue on the path to sustainability.

Community Education & Outreach

- Work with RAPCA and MVRPC's Air Quality Awareness Program to provide information about the ways residents and businesses can reduce air pollution (both outdoors and indoors).
- Notify community residents when RAPCA and MVRPC's issue Air Pollution Advisories. [BYG](#)
- Distribute Air Quality Awareness Program materials to residents to promote actions to take to reduce air pollution. MVRPC staff is available to provide materials for distribution at your community events, information for your newsletters and other educational opportunities.
- Host a RAPCA air permitting workshop in your community for your local businesses.
- Set a goal for carbon emissions reduction and work with partners throughout the city to plan implementation strategies. The City of Cincinnati's [Green Cincinnati Plan](#) is a good model.
- Partner with your Public Health district to host [tobacco cessation](#) classes for your employees and/or residents.

Internal operations

- Improve the energy efficiency of city buildings through energy audits, lighting and HVAC improvements. [BYG](#)
- Improve the efficiency of the municipal vehicle fleet. Explore opportunities to add hybrid, plug-in hybrid, and/or electric

vehicles to the [community fleet](#). Both the Ohio EPA and U.S. EPA offer diesel emission reduction programs to assist in vehicle conversion or replacement.

- Encourage staff to explore sustainable transportation options like carpooling, vanpooling, biking, taking transit or walking to work by promoting benefits like saving money, time and its impact on the environment. MVRPC's Rideshare Program is available to assist with matching staff to others to form carpools or vanpools.
- Encourage employees to use electric vehicles by allowing workplace charging.
- Prohibit unnecessary idling of city vehicles and encourage staff to be idle-free at home, too. [Idle-Free Campaign support materials](#) from RAPCA and MVRPC are available at no cost to schools, libraries, day care centers, municipalities and businesses in Clark, Darke, Greene, Miami, Montgomery and Preble Counties. The Centerville-Washington Park District has a good anti-idling policy. [BYG](#)
- Adjust city operations on [Air Pollution Advisory Days](#) to avoid unnecessary driving, refueling, or other activities that emit VOCs (volatile organic compounds), such as street paving or painting. Also, avoid activities that emit fine particulate matter (PM_{2.5}), such as using diesel engines or lawn mowing with a gas-powered mower. [BYG](#)

Ordinances and policies

- Anti-idling ordinance — Vehicle engines should not idle any more than is absolutely necessary. Excessive idling wastes fuel, causes air pollution, and shortens engine life. A simple way to communicate this
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message is to enact an anti-idling ordinance, which makes it illegal to idle for more than a few minutes. An effective anti-idling ordinance makes it illegal to idle more than 5 minutes in warm weather or 10 minutes in cold weather. Common-sense exceptions are provided for safety and emergency vehicles and other vehicles that need to idle for various reasons. An [example of a good policy](#) comes from Cleveland. Locally, Five Rivers MetroParks and Centerville Washington Park District have anti-idling policies. **BYG**

- [Support the transition to electric transportation](#) by installing free public Level 1 or Level 2 electric vehicle (EV) charging stations at key public destinations, such as core parking areas within a downtown, libraries, and community centers. **BYG**
- Alternate Fuel Corridors – see Transportation chapter.
- Complete streets — see Transportation chapter.
- Mixed-use zoning — see Land Use and Development chapter.
- Transit-oriented development — see Land Use and Development chapter.
- Density bonuses — see Land Use and Development chapter.
- Tree protection — see Trees, Native Species & Land Management chapter.
- City aggregation programs for green power — see Energy chapter.

Broader collaboration

Since air pollution is not constrained by community boundaries, some of the most important actions to improve air quality will require collaboration at the regional scale. All

communities in the Miami Valley Region can help by:

- Supporting effective state air quality [implementation planning](#) (such plans outline the emissions budgets and control measures the areas will take to attain and maintain clean air standards).
- Supporting [land use planning](#) to develop vibrant, walkable communities that provide convenient transportation options and reduce the need to drive to a destination.
- Supporting the funding of [public transit](#) services and increased bicycle facilities.