Sustainable
Miami Valley Tool Kit

A Resource Guide for Local Government

MIAMI VALLEY
Regional Planning Commission

October 2019

Sustainable
Miami Valley Tool Kit

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The Great Miami River in Dayton

Introduction

Your overview to the Sustainable Miami Valley Tool Kit.

The *Sustainable Miami Valley Tool Kit* is designed to serve local government officials tasked with making their communities more environmentally sustainable, while also conserving budget dollars. Additionally, it can be useful for businesses and residents of the Miami Valley inclined to work with their local governments to make lasting positive change in their communities.

Each chapter of the Tool Kit contains suggested policies, codes, ordinances, programs, and projects which local government can adopt or adapt to address nine separate environmental topic areas:

Air Quality	Green Building & Redevelopment	Food
Energy	Land Use & Development	Solid Waste
Trans-portation	Trees, Native Species & Land Management	Water Quality

Each topic has its own chapter, but naturally, there is a great deal of overlap between

these topics, and there are cross-references throughout the Tool Kit. The suggestions found in each chapter are categorized for even easier comprehension. "Community Education & Outreach" suggests ways to demonstrate leadership or educate community residents about the local government's sustainability efforts. "Internal Operations" are steps an administration can take with community staff, the publicly-owned buildings, properties, and vehicles. The "Ordinances and Policies" category highlights official actions elected officials can adopt to guide their community to a more sustainable path. Finally, "Broader Collaboration" refers to opportunities to partner with other local governments and other organizations to effect regional or state-wide change.

The Miami Valley Regional Planning Commission is pleased to partner with the Dayton Regional Green Initiative to promote this resource guide for our Region. For the 2019-2020 program year, the Sustainable Miami Valley Tool Kit is linked with the Bring Your Green Community Challenge. Throughout the chapters, look for the "**BYG**"

tag for policies, programs, and projects that directly link to the Bring Your Green government tracking platform. Use the Tool Kit as your community's catalog of efforts to

initiate and earn points in the Regional challenge.

At over 50 pages, this Tool Kit may seem overwhelming at first. It is true, there is a lot in here to consider, but communities should use the Tool Kit to find the right beginning or next steps, and not feel they need to take on too much at once. Use the Tool Kit's structure to navigate through the lists and select one or two topics or ideas. Keep your community's efforts manageable, and contact MVRPC staff for support or guidance. A good overarching starting point is to create an Environmental Advisory Committee of citizens, businesses, elected officials, and community staff **BYG**.

Perhaps this body could award an annual Sustainability Champion recognition for your resident volunteers. By getting many minds and many hands working together, you may be able to create a more effective sustainability effort in your community. And remember: communities should seek professional guidance before making changes to ordinances, codes, and policies.

Getting started is not difficult: sign up through the Bring Your Green portal site and use the challenge as an opportunity to showcase your community's sustainability work. Participating communities will be prompted throughout the challenge with opportunities to engage with your residents,

community staff, and local businesses about sustainability and the environment.

Acknowledgements

The contents of this document reflect the views of the Miami Valley Regional Planning Commission (MVRPC), which is responsible for the facts and accuracy of the data presented herein. MVRPC is not responsible for content from linked external resources. The contents do not necessarily reflect the views of the U.S. DOT or ODOT. This document does not constitute a standard, specification, or regulation.

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 (O_3) 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 (O_3) 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 NOx (nitrogen oxides), VOCs (volatile organic compounds), and sunlight, resulting in O_3. The NOx 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

76
131
82
35
42

2018

4   0   0
104
255

■ Good   ■ Moderate
■ USG   ■ Unhealthy
■ Very Unhealthy
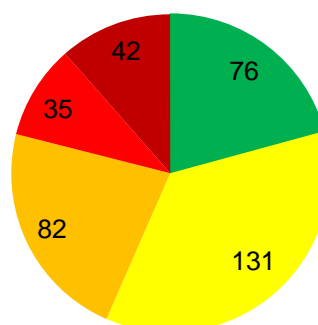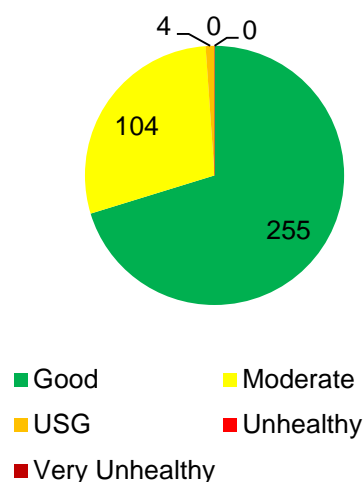
Fine particulate matter ($PM_{2.5}$) pollution consists of microscopic particles, small enough to lodge deep in the lungs through normal breathing. $PM_{2.5}$ can be directly emitted from utilities, industrial processing, tailpipe emissions, and even wood fires. A number of health issues arise from regular 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

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.

Solar Field at Curran Place, University of Dayton

Energy

Energy systems are in the midst of historic transitions and local governments can benefit from these advancements.

The Issues

Over the past decade, a historic transition has been underway in the energy market. As a fuel for electricity generation, coal is steadily losing market share, especially within the Miami Valley. In 2012, Dayton Power & Light (DP&L) shut down the six coal-fired generating units at Hutchings Station in Montgomery County, replacing them with natural gas generators.

The global transition from fossil fuels to renewable forms of energy production is evident throughout Ohio. The closure of coal-fired generation plants and the increasing share of production from renewable sources, particularly wind power, herald a coming future of clean (or cleaner) energy. Although fossil fuels continue to dominate the energy mix in the United States, the growth of renewable energy is a clear trend, having doubled since 2008. While nearly all baseload electricity generated in our Region is fueled by natural gas, the Public Utilities Commission of Ohio lists over 200 renewable energy facilities in Darke, Greene, Miami, Montgomery and Preble Counties. Together, these facilities have a capacity of over 20 megawatts. Generation from renewable sources varies based on time of day, time of year, and daily weather conditions. This amount of renewable generation is conservatively estimated to be sufficient to power about 2,200 homes.

Renewable energy sources are more sustainable and offer some definite advantages over carbon-based sources. The main drawback to carbon-based fossil fuels, like coal, is the pollutants generated from their use, including particulate matter (PM_{10} and $PM_{2.5}$), oxides of nitrogen (NO_x), sulfur dioxide, volatile organic compounds (VOCs), and greenhouse gases (GHGs). These pollutants pose real threats to human health, the natural environment, agriculture, and climate stability. The environmental costs of fossil fuel production and its waste by-products are concerns as well. The market is moving away from the "dirtiest," or highest polluting, of fossil fuels – coal – simply because it is better business to use cleaner fuels.

By demonstrating, educating, and facilitating energy efficiency, along with supporting local renewable energy development, communities can help their residents save energy, the environment, and money. Renewable energy, such as rooftop solar energy systems, can reduce our dependence on fossil fuels, while also reducing our need for out-of-region power generation. Locally produced energy can be cleaner, more reliable, and more resilient. Together, such efforts can build your community's sustainability "brand" that can attract new business and residents.

What Communities can do

There are many ways for local governments to participate in and encourage the transition to cleaner energy — either by providing incentives or removing unnecessary barriers. Educating your residents about energy efficiency, the many ways to buy clean

Energy

Local contacts

- Municipal and school energy procurement and efficiency programs – Ken Swink, SW Ohio EPC, 937.890.3725, Ken.Swink@epcschools.org
- Comprehensive energy audits – DP&L has a searchable list of auditors on their Channel Partners page.
- Energy finance - Jerry Brunswick, Dayton-Montgomery County Port Authority (PACE), 937.226.0457x120, jerry@daytonport.com
- LED street lighting — Robyn Livesay, Miami Valley Lighting, 937.259.7192
- Municipal climate action plans:
  - Mark Charles, Sustainability Manager, City of Dayton, 937.333.3600
- Oliver Kroner, Sustainability Coordinator, City of Cincinnati, 513.352.6992, oliver.kroner@cincinnati-oh.gov
- Solar permitting — Robert Beeler, Dayton Power & Light, 937.331.4094, Robert.Beeler@aes.com
- Home Weatherization – Craig Idle, MV Community Action Partnership, craig.idle@mvcap.com, 937.341.5000
- Local energy policy – Trish Demeter, The Ohio Environmental Council, tdemeter@theoec.org, 614.487.7506
- Ohio Energy Efficiency Program – Manny Anunike, manny.anunike@development.ohio.gov, 614.466.4092

Resources

- American Council for an Energy-Efficient Economy - Local Energy Efficiency Policy
- Database for State Incentives for Renewables and Efficiency (DSIRE)
- DP&L Energy Efficiency Programs
- EPA Local Government Climate and Energy Strategy Series
- Green Energy Ohio
- Grow Solar Resources and Training
- Community energy aggregation
- Miami Valley Data Commons

energy, and financing options is a great way to get started.

Community Education & Outreach

- Develop and communicate a climate action plan that reveals the major sources of carbon pollution in your community and the energy-saving ways to reduce emissions. The Green Cincinnati Plan and Cleveland's Climate Action Plan are good models.
- Offer residents the option of purchasing clean power through community aggregation. In Ohio, villages, cities, townships and counties may be aggregators. **BYG**
- Encourage residents and businesses to take advantage of low-cost energy audit services provided through Vectren, DP&L and the Dayton Regional Green program.
- Connect eligible residents with Miami Valley Community Action Partnership's Home Weatherization Assistance Program, which helps renters and low-income home owners improve their home's energy efficiency and in turn reduce their utility bills.
- Help educate residents about energy and water conservation, including opportunities to achieve deep energy reductions in existing housing. NOPEC has a great online tool for residents to use.
- Provide services to make it easy for residents to install solar power. Solarize Cincinnati program is an example.
- Inform households and businesses of financing opportunities for energy improvements, including loans, rebates and tax abatements and credits, net metering, energy conservation subsidy exclusions, clean energy financing, and PACE and RPACE.

- Conduct feasibility studies to inform residents about the cost-effectiveness of energy alternatives.
- Provide information about green leasing practices so the interests of building owners and tenants are aligned to save energy.
- Help educate the public about local clean energy installations via municipal publications and support of the annual Green Energy Ohio tour and the National Solar Tour.
- Encourage your residents to use the Public Utility Commission's Apples-to-Apples tool to compare utility providers and switch to renewable electricity and natural gas providers.

Internal operations

- Adopt goals and a strategic energy plan for renewable energy usage, energy use reductions, and/or carbon emissions reductions (e.g., derive a percentage of the city's electricity from solar or wind sources). Communities across the state are taking action. The U.S. Department of Energy has a step-by-step guide for community energy planning. **BYG**
- Measure, monitor, and publicly report your municipal greenhouse gas emissions. One approach is submitting all of your buildings at the *Bring Your Green* tracking platform. **BYG**
- Require the purchase of EnergyStar equipment for all municipal procurements.
- Conduct an energy audit of all city-owned buildings and then implement cost-effective improvements in building energy performance. The City of Beavercreek conducted an audit encompassing seven public facilities in 2012.

- Establish an energy manager position or dedicate a staff member to manage municipal energy usage. **BYG**
- Conduct a citywide survey of solar suitability for public buildings and vacant sites. Kansas City, MO, and Minneapolis, MN did this. **BYG**
- Establish a Reinvestment Fund (using previous utility cost savings) to create a revolving mechanism for funding energy improvements. **BYG**
- Educate building and electrical inspectors about permit and installation procedures for renewable energy systems. A good guide is here.
- Install energy-efficient and cost-effective LED street lighting. This can be part of a "Smart City" initiative which may link to different funding streams.
- Vehicle fleet efficiency — See Transportation chapter.
- Tree planting — See Trees, Native Species & Land Management chapter.

Ordinances and policies

- Update the zoning regulations and streamline the permitting process for small-scale solar and wind systems. The Solar America Board for Codes and Standards recommends an expedited permitting process. Vermont has a 10-day expedited permitting process. The American Planning Association has examples from multiple communities in Ohio and across the country. The solar ordinance from Orange Village is here, and a summary of planning and zoning issues for wind turbine permitting is here. **BYG**
- Consider benchmarking and disclosure ordinances for large commercial buildings.
- Green building incentives — See Green Building chapter.

Public Buildings Energy Case Studies

Kettering Middle School
Installation of 150kW solar photovoltaic rooftop system at existing Kettering Middle School

Cincinnati District 3 Police HQ
40,000 square foot new Net Zero Designed building, includes 330 KW solar system to produce 100% of the building's consumption.

Photos Courtesy of Energy Optimizers, LLC

- Zoning for mixed-use and transit-oriented districts — See Land Use & Development chapter.

Broader collaboration

- Work with financial institutions and other partners, such as Dayton Regional Green and Dayton Montgomery County Port Authority, to provide energy efficiency and renewable energy financing options, such as Property-Assessed Clean Energy (PACE). **BYG**

- Create community aggregation for clean power generation service options available in Ohio. Examples are Northeast Ohio Public Energy Council (NOPEC) and Southeast Ohio Public Energy Council (SOPEC).
- Work with Ohio General Assembly members to restore Ohio's energy efficiency and renewable energy mandates and programs. **BYG**
- Work with other cities to adopt the latest version of the energy conservation code and get renewable energy and geothermal energy incorporated into the Ohio Building Code.
- Join other local governments across the country for greater utilization of solar energy from on and off site solar projects that serve municipal operations. Leverage the experience of other municipalities who have gone before and shared their solar project development challenges and opportunities. U.S. EPA has a portal to get you started. **BYG**
- Work in regional planning forums, such as MVRPC, to promote land use patterns and methods of transportation that use less energy.

Food

How can Miami Valley communities increase the share of our diets that comes from our "foodshed?"

Paradoxically, great agricultural abundance and high rates of food insecurity exist side-by-side in Ohio and the Miami Valley. When measured by total commodity value by state, Ohio ranked 16th in the nation in agricultural production in 2018. At the same time, overall food insecurity rates in the Miami Valley range from about 12 percent to 17 percent.

The child food insecurity rates (FIR) are even higher (17 percent to 21 percent).

County	FIR	Child FIR
Darke	11.9%	18.9%
Greene	12.8%	18.3%
Miami	11.8%	17.4%
Montgomery	17.0%	21.6%
Preble	12.0%	18.8%

There is an emerging consensus that a stronger local food system can bridge the gap between agricultural abundance and food insecurity, while also fostering a more resilient local economy and social fabric. The more we buy locally grown produce and locally raised animal products, the more we can help local farmers stay in business. It also helps farmers transition from an increasingly-challenged commodity market

to more diversified farms that are healthier for the planet and help to mitigate climate and weather extremes. This chapter explores ways local governments can support local food systems and reduce hunger.

It is fair to ask, "What is local food?" Definitions of what area can be considered local vary. The term "local" means different things to a restauranteur, a grocer, or a local farmers market. Distances can range from as few as 30 miles to as many as 400 miles. Grocers sometimes define local as within a day's drive, or a half day's drive. The Dayton Regional Green Food Access Team has adopted a "foodshed" for our Region as matching the combined watersheds of the Great Miami River and Little Miami River. In all of these cases, the central concept is that food is "local" if is grown, harvested, and processed near enough for the consumer to have an opportunity to interact with (i.e. get to know) the farmer/producer or close enough to visit the farm.

There are many benefits from a healthy local food system. Locally-based transactions between farmer and consumer keep local incomes circulating in the regional economy. It supports efforts at farmland preservation by reducing local farmers' dependence on large commodity markets. Local food processing can be a source of local food system employment. Local foods are healthier and fresher – they often have less pesticide and herbicide residues than factory-farmed produce and livestock. Due to shorter shipping distances, they are not picked unripe and trucked from far away. The social benefits of local food systems include building personal connections between rural and urban communities, while

building neighborhood and community connections around local community gardens. Local foods are an opportunity for residents to learn about new foods, such as traditional foods from immigrant communities, and how to prepare them.

The local food economy in the Miami Valley is holding its own in the marketplace. There are community gardens and urban farms growing fresh produce. Farmers markets dot the Region and can be found in every county. Miami County even has a virtual Farmers Market, which enables year-round access to locally grown and produced foods. Community Supported Agriculture programs (CSAs) facilitate direct sales from producer to individual consumers.

Meanwhile, food insecurity is a serious concern in our Region. Food insecurity is defined as lacking access to enough nutritionally sufficient food for an active lifestyle for all members of a household. Closures of grocery stores have created or expanded food deserts, where access to healthy food is of greater difficulty. In this respect, the marketplace is not serving the needs of all residents in the Miami Valley.

In response to this issue, the Montgomery County Food Equity Coalition has launched a Food Equity Action Plan initiative. It is modeled after the "Whole Measures" approach to equitable community food system planning. Led by Public Health Dayton-Montgomery County, the initiative has formed working groups on the topics of Vibrant Farms, Healthy People, Thriving Local Economy, Food Insecurity, Strong Communities, and Sustainable Ecosystems. The initiative aims to release its report in 2020.

A state-level advocacy group, Ohio Smart Agriculture (OSA), issued a report and call to action in 2019 to support the goals of reduced hunger, increased food production, a more robust food economy, and improved environmental protection in Ohio. Many recommendations from the OSA report are suited for local or regional implementation.

Two programs in Ohio seek to connect people in food insecure households with local food producers. Produce Perks provides a dollar-for-dollar matching incentive for customers who use their SNAP benefits at local farmers markets. The Produce Prescription program, a project of Case Western Reserve University, builds on a network of farmers markets. It partners with health clinics to provide $40 monthly "prescriptions" for fruits and vegetables for pregnant women, new moms, and patients with hypertension.

What Communities can do

There are numerous ways communities can support the Miami Valley's local food economy. These efforts will keep money circulating in your community, build social cohesion, and improve your residents' health.

Community Education & Outreach

- Highlight the many benefits of local food in community newsletters and events.
- Distribute the B-W Greenway Local Foods Directory to residents and businesses in either print or electronic form to assist institutions in buying local food. Explore local food purchase agreements. **BYG**
- Encourage the development of farmers markets in your community. Allow schools

Food

Regional Contacts
- Farmers markets —B-W Greenway Community Land Trust, 937.867.5212, info@bwgreenway.org
- Local food economy — Lela Klein, Co-Op Dayton, 937.716.1717, lela.klein@gduci.org
- Local food legislation, Jenita McGowan, City of Cleveland Chief of Sustainability, 216.664.2405, jmcgowan@city.cleveland.oh.us
- OSU Agriculture Extension offices:
  Darke County – 937.548.5215
  Greene County – 937.372.9971
  Miami County – 937.440.3945
  Montgomery County – 937.224.9654
  Preble County - 937.456.8174
- Regional food planning — Haley Carretta, Public Health-Dayton & Montgomery County, 937.496.3308, HCarretta@phdmc.org
- Regional food policy — Mark Willis, Hall Hunger Initiative, 937.225.3056, MarkW.hhi@dayton-unitedway.org
- Sustainable food services for institutions — Stephanie Corbett, Case Western Reserve University, 216.368.6174, stephanie.corbett@case.edu
- Community Gardening – Kaitlyn Lawry, Five Rivers MetroParks, 937.275.7275, Kaitlyn.lowry@metroparks.org
- Urban garden zoning — Fred Collier, Cleveland Planning Commission, 216.664.3468, fcollier@city.cleveland.oh.us
- Soil Health – Susan Jennings, Arthur Morgan Institute for Community Solutions, 937.767.2826, sjennings@communitysolution.org
- Vacant land and urban agriculture — Mike Grauwelman, Montgomery County Land Bank, 937.531.7035, mikeg@mclandbank.com
- Green School Yards – Doug Horvath, Five Rivers MetroParks, 937.275.7275, doug.horvath@metroparks.org

to host farmers markets on weekends or after-school hours.

- Encourage partnerships between community neighborhoods and Homefull to establish a community garden or urban agriculture.
- The Marianist Environmental Education Center (MEEC) provides workshops for the public on vegetable gardening and pollinator gardens. Sponsor a workshop in your community.
- Partner with the extension service of either Ohio State University or Central State University to bring the Expanded Food and Nutrition Education Program (EFNEP) to your community. The program utilizes interactive discussions and activities to guide low- and moderate-income participants through a series of community-based workshops. These workshops are aimed at improving diet quality, food safety, and physical activity. Adult participants also gain skills in food preparation and managing their food budgets.
- East End Community Services offers gardening, food preparation, nutrition, and food preservation classes.
- Share Five Rivers MetroPark's Earth to Table resources and programming with your residents.
- Support campaigns that encourage community members and community institutions to purchase from local food producers, artisans, businesses, and farmers in your community and the Region.
- Encourage your school district to prioritize local food for school breakfast and lunch programs. Additionally, schools can participate in the OSU Extension's Farm to School program.
- Wright State University and Five Rivers MetroParks have helped numerous school districts start school gardens. **BYG**

- Food waste and hunger exist side-by-side on our communities. Facilitate connections between institutions that produce food waste and agencies that distribute food to people experiencing food insecurity. The Dayton Foodbank can assist in this effort.
- Educate citizens about how the growing practices of local farmers can impact water and air quality, as well as the nutritional content of food.

Internal operations

- Organize staff memberships in a local Community Supported Agriculture (CSA) program.
- For city food services, set a procurement goal for obtaining healthy food that is grown locally within the Great Miami and/or Little Miami Watersheds. Cleveland Heights has a policy requiring the city to consider purchasing local and Fair Trade food. **BYG**
- Offer a bid discount to local food providers when bidding contracts. Cleveland's policy is a model.
- Colleges and High Schools can work with the Food Recovery Network and K-12 Food Rescue, respectively, to ensure that leftover, prepared foods are donated to local agencies fighting hunger. The University of Dayton has a Food Recovery Network chapter.
- Have community staff and leadership participate in the Annual Food Summit organized through the Montgomery County Food Equity Coalition.
- Leverage economic development resources to provide technical assistance and financing to new and expanding food-based businesses in your community.

- Make it easy for community gardens to access water from fire hydrants or other sources. The City of Dayton, Department of Water has a model program.
- Help develop neighborhood centers and community kitchens at community gardens. **BYG**

Ordinances and policies

- Plan for food uses — Encourage the creation of food businesses through land use and economic development plans. The "Resettle Youngstown" initiative, part of the Youngstown 2010 Plan, has led to a city policy allowing urban homesteads (houses with an adjacent one- to two-acre area) for intensive urban food production.
- Permit urban farming uses — Allow urban gardening and small-scale agriculture on residential, commercial, and other properties. The National League of Cities has numerous example policies, codes, and ordinances.
- Ohio EPA has a model zoning code to encourage organic waste composting and urban agriculture.
- Protect urban gardens — Cleveland's urban garden district zoning classification provides legal protection to significant community garden sites.
- Permit animals - Local communities are revisiting restrictions on farm animals in residential areas in order to allow chickens, ducks, rabbits, bees, goats, and other livestock, under certain conditions. The City of Xenia has adopted an Accessory Use code for the Raising of Small Livestock (see chapter 1224.01)
- Front-yard gardens — Some communities allow homeowners to use front and side yards for edible plant gardens, while defining acceptable maintenance

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Food

Additional resources
- Montgomery County Food Policy Coalition
- B-W Greenway's Local Foods Directory
- Ohio Local Food Guides from OSU Extension
- Midwest Climate Adaptation Resources for Agriculture from the USDA
- Miami Valley Data Commons
- Developing a Sustainable Foods Business Roadmap for Cuyahoga County
- Hall Hunger Initiative
- Aullwood Audubon Center and Farm
- Agraria Center for Regenerative Practice
- Ohio Ecological Food and Farm Association (OEEFA)
- OEEFA Annual Conference 2020
- OSU Extension Service
- Ohio's Food Hubs
- Food Rescue / Ugly Food CSAs
- American Planning Association Urban Agriculture Knowledgebase

- Foodbanks serving Miami Valley counties:
  - The Foodbank Dayton, Inc. (Greene, Montgomery and Preble Counties)
  - Shared Harvest Foodbank (Butler, Darke, Miami, Preble, Warren Counties)

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standards. Cleveland Heights' vegetable/edible gardens zoning amendment is a model — see section 1121.12(I).
- Establish a Public Market to enhance food security/justice, connect consumers with local farmers/producers, and foster locally-based economic development.
- Establish Healthy Food Zones in coordination with efforts to increase access to healthy, fresh foods.
- Pesticide ban — See Trees, Native Species & Land Management chapter.

Broader collaboration

A major part of the sustainable food picture is the development of a regional food system that links cities and the surrounding countryside. Communities in the Miami Valley can all be thinking about how they fit into the bigger picture, and they can be engaged in a number of initiatives, such as:

- Work with county Land Banks and local food advocates to streamline the process of transferring vacant parcels to urban agriculture uses.
- Work with the OSU Extension to establish an urban agriculture model of practice with standards, site control guidelines for public access, and possible discounts on property tax and water use.
- Support small (15-50 acres) organic farms, which have a valuable and sustainable role to play in our local food economy. Communities of all kinds can support efforts of the Organic Farmers Association and the Ohio Ecological Food and Farm Association to foster organic farming.
- Work with Montgomery County's Food Equity Coalition to help convene sustainable food advocates and figure out ways to plug the gaps in the regional food system.
- Map "food deserts" with Public Health Dayton-Montgomery County and other partners. Then, develop programs to promote the sale of healthy foods in those areas.
- Develop kitchen incubators to help launch food processing businesses.
- Organize food-waste composting on a regional scale. Private sector composting companies operating at a community scale or regional scale exist in the Miami Valley.
- Build on the competitive advantage of food and beverage business clusters in the Miami Valley. Support the replacement of imported products with local products and expand regional exports to national markets.
- Work with local restaurants to reduce food waste. Encourage them to offer steep discounts during their final hour of operation for foods likely to be thrown out if not sold. These businesses can collaborate on a smartphone app that highlights such deals in real time. Food For All is an example from Boston, MA.

Downtown Piqua, Ohio

Green Building & Redevelopment

What approaches can communities take to balance redevelopment, green building, and historic preservation?

Communities develop over time. The building stock within each community serves as a testament to the ebbs and flows of development over the years. Even edge communities that are still developing outward have older, existing buildings, overwhelmingly in private ownership, that pose sustainability challenges. Structures built for a particular use, or in a particular style, may have design characteristics that limit the range of alternative uses.

Older homes and commercial buildings are more likely to have issues related to accessibility for people with disabilities, or health hazards such as lead pipes, lead paint, or asbestos. Older buildings may be less water and energy efficient. Also, the buildings may just be (or look) "dated." This mix of concerns may result in reduced investment in the parts of communities with older buildings, eventually lowering property values and tax revenues.

The pairing of green building and historic preservation may present a strategy for communities to revitalize neighborhoods, preserve character, and bring back investment. These buildings have the advantage of existing infrastructure, including utility lines, and the fact that they are already built. Demolition of existing

buildings or construction of new buildings is relatively expensive. Conversely, retrofitting a building is a fraction of the cost. Creative ideas for adaptive reuse of a building, or creative retrofit, can preserve character, enable new uses, and increase a building's energy efficiency. A community's codes and ordinances need to balance the goals of redevelopment, green building, and historic preservation, so that no single objective impedes the others.

Green building is also an essential sustainable approach for new development. Communities need to encourage the construction of new buildings that are healthy human environments (no off-gassing of VOCs in materials used), that use less energy and water, that incorporate natural light, that preserve natural resources and local habitats, and that use sustainable materials. These practices will result in future building stock that ages well and costs less to upkeep.

What Communities can do

This chapter recommends ways that communities in the Miami Valley can encourage sustainable building practices for both new and existing structures. Complementary topics and suggestions related to compact development, mixed-use, and walkable districts can be found in the Land Use and Development chapter. The Energy chapter has resources on facilitating renewable energy. Finally, the Water Quality chapter recommends ways to reduce development impacts on surface water and groundwater.

Community Education & Outreach

- As part of climate change planning, track and publicly report carbon emissions. Set a goal to reduce emissions from buildings in your community. **BYG**
- Integrate energy efficiency and healthy homes resources and programs to provide a one-stop approach for assistance.
- Include green building, historic preservation, and healthy house tips in civic publications (newsletters, websites, etc.). Preservation Dayton provides guidance on historic preservation. The Bay Village Green Team provides an example.
- Educate building occupants about how building materials impact their health from organizations such as Mindful Materials and the International Well Building Institute.
- Host educational seminars from U.S. Green Building Council, Ohio Community (USGBC Ohio) or Preservation Dayton on green building and/or historic preservation topics.
- Share information about energy saving opportunities from window replacements with community residents.
- Encourage your school district to adopt green building principles when building new schools or rehabilitating existing schools. The State of Ohio requires that new schools receiving state support achieve LEED-Silver status. However, districts can adopt their own standards for renovations or self-funded projects. (LEED stands for Leadership in Energy and Environmental Design, and is the leading green building standard.)
- Show support for green schools projects by participating in a Green Apple Day of Service.
- Where buildings are being demolished, encourage "deconstruction," which reclaims building materials and recycles

construction waste, reducing the amount of material sent to the landfill.

- Share solar-ready construction guidelines with the development community and residents.

Internal operations

- Adopt an energy efficiency program with targeted reductions in energy use in city buildings and operations. Cincinnati has a Climate Action Plan with an energy goal to be carbon neutral by 2035 and to reduce energy usage by two percent annually.
- Set a minimum green building standard (e.g. LEED Silver, Enterprise Green Communities) for all new construction and major renovations in municipal buildings. Many standards exist, including EnergyStar, LEED, and WELL. Cleveland's Sustainable Municipal Building Policy is an example.
- Train building and planning department staff to provide technical assistance about green building.
- Set healthy building and community goals using healthy building standards (e.g. WELL, Fitwel) for new construction and major renovations.
- Maintain municipal buildings and grounds using safe, non-toxic products.

Ordinances and policies

- Create a sustainable building committee to explore opportunities and recommend policies.
- Green building guidelines and certification — Encourage the development of green buildings with special guidelines and recognition. Orange Village's Orange Goes Green Certification Program is an example of a community recognition program for

Green Building & Redevelopment

Local Contacts
- Architectural resources for Green Building and Historic Preservation — Jane Treiber, AIA Dayton, 937.291.1913, info@aiadayton.org
- **Green Building/LEED/WELL**
  - Michael Berning, Heapy Engineering, mjberning@heapy.com, 937.271.1973
  - MaryEllen Etienne, Director, USGBC Ohio, metienne@usgbc.org, 917.238.6218
  - Yasha Ogg, Emersion Design, yasha.ogg@emersiondesign.com, 513.841.9100
  - Nadja Turek, Woolpert, nadja.turek@woolpert.com, 937.531.1287
- Green Building/Policy — Jenita McGowan, Cleveland Chief of Sustainability, 216-664-2405, JMcGowan@city.cleveland.oh.us
- Healthy Housing — Mandy Metcalf, Environmental Health Watch, 216-961-4646, Mandy.Metcalf@ehw.org
- Historic Preservation – Holly Hornbeak, Dayton Planning & Community Development, 937.333.3681, Holly.Hornbeak@daytonohio.gov
- Preservation Dayton – Monica Snow, 937.234.4704, preservation227@gmail.com
- Passive House design — Alex Melamed, Green Generation Building Co., Yellow Springs, OH, 937.361.9705
- Green Schools – Nadja Turek, Woolpert; nadja.turek@woolpert.com, 937.531.1287
- Tax Abatements—Paul Yankie, Green Building Consulting, pyankie@greenbldgconsulting.com

green residential construction and commercial site development. **BYG**

- Healthy building incentives – Make wellness-focused buildings a priority for publicly financed projects.
- Green building incentives — Make green building a requirement for public financial

incentives. For example, Cincinnati offers increasing tax abatements for higher levels of LEED certification. Cleveland's residential tax abatement for new construction and major remodeling projects requires developers to meet a green building standard (e.g. LEED Silver, the Enterprise Green Communities, Passive House, Living Building Challenge, or the National Association of Home Builders' Green Building Standard). **BYG**

- Historic preservation — Sustainability includes renovation and adaptive reuse of older buildings to extend the life of the valuable materials in those buildings while preserving the historic character of the community. Communities can promote historic preservation and gain access to state grants by becoming a Certified Local Government under the state's Historic Preservation Office and by adopting a local Historic Preservation Ordinance.

- Create a tax incentive program - Offer tax breaks for investments that maintain historic homes, and/or tax abatements to construct green buildings. Involve historic preservation advocates when developing strategies for vacant buildings and demolition. Cincinnati's tax abatement program is an example.

- Housing management — To protect the quality of existing housing stock and promote healthy indoor air quality, develop and enforce housing management codes for maintenance, point-of-sale inspections, and rental registrations. Requirements can be tied to proactive, healthy home inspections and lead paint maintenance requirements. Also, require vacancy and foreclosure registrations.

Broader collaboration

Green Building & Redevelopment

Resources
- Green Buildings for Cool Cities: A guide for advancing local green building policies
- Financial incentives and regulatory programs for green buildings in Ohio
- Historic preservation resources
- Life-cycle analysis and energy performance of public buildings
- U.S. Green Building Council of Ohio
- National League of Cities: Green Buildings
- WELL Building Standard

- Support the strengthening of state building codes to require better insulation, energy performance, water conservation, and other green building practices. Sustainable building codes would reduce the need for special green building certifications, which can be expensive to obtain.

- Integrate the recommendations of the MVRPC Going Places Regional Land Use Vision into community comprehensive planning and encourage neighboring communities to do the same.

- Be engaged with regional efforts to develop financing programs for energy efficiency and renewable energy projects — See Energy chapter.

- Work with USGBC Ohio to expand programs to assist with upgrades of commercial and residential buildings. Forming a 2030 District is one such public-private partnership opportunity.

- Support financing programs for healthy home interventions, such as medical insurer reimbursement for health-related home repairs.

- Advocate for continued historic preservation tax credits and other

preservation funding at the federal and state levels.

- Advocate for tax abatements for green buildings that adhere to LEED standards (e.g. Cincinnati's tax abatements has led to Ohio's ranking as the #7 State with Green Homes).

Land Use & Development

Vibrant, walkable, mixed-use districts are increasingly popular and sustainable. How can local governments foster developments that are both fiscally and environmentally sustainable?

The Issues

From the central city of Dayton to the most agricultural townships, the Miami Valley has the full spectrum of community sizes and types. Our Region's community diversity includes older first-ring suburbs, edge suburbs that continue to annex and grow, historic county seats, rural villages, townships, and unincorporated hamlets. These communities are of different ages, sizes, and character, with each exhibiting different development patterns. Such diversity makes the Miami Valley a place where all residents can find a community where they desire to live, and every business can find a suitable place to locate.

Even though our communities have unique characteristics, they share regional challenges, such as changes in population. Some communities continue to see population growth, but the region as a whole

has only grown by 0.03 percent since 1980. In addition, our Region's median age is increasing. Between the 2000 and 2010 Census, the median age in each county rose, and in three of the five counties (Darke, Miami, and Preble) the 2010 median age was above 40, which was higher than the national median age of 37.2. In order to serve our aging population, communities will need to alter the way they plan. For example, as people age, they drive less, especially at night. Our future land use plans must take this into consideration.

Our Region's present development pattern is characterized by urban and suburban sprawl. Sprawl is the expansion of auto-dependent development into rural or less populated areas, creating large distances between residential and commercial uses. To illustrate: our region has roughly the same population as it did in 1970, but 83 percent more developed, urbanized land cover. This trend is unsustainable; it requires a large amount of expensive infrastructure, and eliminates tree canopy.

Luckily, there is a growing demand for vibrant, mixed-use, walkable developments that intermingle commercial and residential land uses. This type of development pattern is highly sustainable, serves the aging population's needs, and creates a sense of community. People of all ages want to live in vibrant front porch style communities, where they can interact with neighbors while leaving their cars behind. They want destinations like cafes, corner markets, and neighborhood parks to be easily accessible by bicycle or on foot. All of the above increase quality of life, reduce sprawl, and minimize community expense in creating and repairing infrastructure.

Climate change is also becoming a land use planning issue. Communities are interested in keeping ecosystems intact, as that can help an area mitigate and adapt to climate change.

Many zoning codes and land use ordinances do not allow for compact, mixed-use developments. Additionally, they provide no guidance in planning for an aging population, climate change, weather extremes, or shifting economics. Communities will need to address these issues when updating their comprehensive plans and zoning codes. Fortunately, there are tools Miami Valley communities can use to inform the critical decisions to be made about how, and where, individual communities intend to develop in the future. Compiled by the Miami Valley Regional Planning Commission, the Planning Tools page provides planning officials with guides, resource links, and best practices for development of many different types of local plans.

What Communities can do

It may seem like a daunting task, but updating community plans, codes, and zoning is a highly effective way to guide development in a manner that reflects community priorities. Some communities have not updated their plans in a long time, and, as studies have documented, while zoning codes can be used to support sustainability goals, older codes tend to incorporate fewer sustainability principles.

The resource lists below present some practices being adopted by local governments. The overall theme is the promotion of more compact, resilient and cost-effective patterns of development.

Community Education & Outreach

- Convene a civic forum series or advisory committee concerning the desired placement of future land uses in your community. The [Going Places] framework offers [indicators and targets] for moving toward greater sustainability. It is a good resource to use when updating a comprehensive land use plan.
- Organize a "Better Block" project to demonstrate ideas for redeveloping a shopping district as a vibrant, walkable place, such as the projects that cities of [Akron] and [Youngstown] did in 2015.
- Create a [pop-up shop event] to establish the need for neighborhood corner commercial uses in residential areas.

Internal operations

- Locate government offices in a mixed-use district with foot traffic to leverage other community assets. For example, the new administration buildings in Xenia and Piqua were placed in those cities' historic downtowns.
- Provide municipal officials with opportunities to hear about the history and purpose of land-use planning. The Miami Valley Section of the American Planning Association offers an annual Planning and Zoning Workshop on the first Friday of every December, which covers the latest trends in planning.
- Adopt an infrastructure and land-use planning process that considers the long-term sustainability and life-cycle costs of development. The [Institute for Sustainable Infrastructure] offers [Envision], a project assessment tool. The [INVEST] tool from the Federal Highway Administration evaluates the sustainability of transportation infrastructure.

Land Use & Development

Contacts
- Regional planning and transportation — Brian O. Martin, Miami Valley Regional Planning Commission (MVRPC), 937.223.6323, [bmartin@mvrpc.org]
- Comprehensive plans — Martin Kim, Miami Valley Regional Planning Commission, 937.223.6323, [mkim@mvrpc.org]
- Better Block events — Jason Segedy, City of Akron, 330.375.2770, [JSegedy@akronohio.gov]
- Conservation development and cottage development — Kirby Date, Cleveland State University, 216.687.5477, [k.date@csuohio.edu]
- Greenspace planning — Matt Lindsay, Miami Valley Regional Planning Commission, 937.223.6323, [mlindsay@mvrpc.org]
- Mixed-use development — Joyce Braverman, Shaker Heights Planning, 216.491.1432, [joyce.braverman@shakeronline.com]
- Transit-oriented development — Brandon Policicchio, Greater Dayton RTA 937.425.8330, [bpolicicchio@greaterdaytonrta.org]
- Envision – Nadja Turek, Woolpert, [nadja.turek@woolpert.com], 937.531.1287
- Vacant land re-use — Mike Grauwelman, Montgomery County Land Bank, 937.531.6921, [mikeg@mclandbank.com]

Resources
- [Miami Valley Data Commons]
- American Planning Association, [Miami Valley Section]
- MVRPC [Going Places Initiative]
- [Miami Valley Regional Planning Commission]
- [Inclusionary zoning tool kit]
- [Ohio Balanced Growth Program]
- *Retrofitting Suburbia* by Ellen Dunham-Jones and June Williamson
- [Smart Growth America] – this includes National Complete Streets Coalition and Institute for Form-Based Codes.
- [Transit-supportive density] guidance paper

- Learn about projected weather impacts of climate change, and how green-scaping and protecting local ecosystems can help mitigate and adapt to them.

Ordinances and policies

- Review and update your community's zoning code to require, encourage, or at least allow practices related to sustainability.
- Transit-oriented development (TOD) - High quality transit supports development, and dense development supports transit. But this relationship does not happen by accident. It takes planning and the right policies. Greater Cleveland RTA offers guidelines for doing it right. Communities with TOD policies are in a better position to receive capital grants from federal, state and regional authorities for transit, air quality, or brownfields remediation.
- Mixed-use districts — Encouraging mixed-use rather than single-use zoning districts can help create vibrant places with higher property values and can help revitalize areas with outmoded real estate. Ohio-based models include:
  o Mayfield Heights' Mixed Use District in its zoning code is an overlay to encourage higher intensity mixed-use development (as an option to the underlying zoning that currently exists on the property).
  o Cleveland's code for Urban Form Overlay Districts (to preserve the pedestrian-oriented character of unique shopping districts) and Live-Work Overlay Districts.
  o Shaker Heights' Commercial Mixed Use District zoning (see Chapter 1234), which requires designs that "encourage a compact mix of retail, service, office, housing and public activities to coexist in a manner that reflects human scale and emphasizes pedestrian orientation, taking

advantage of the convenience provided by multi-modal transportation options and the vitality that mixed uses can bring to a community."

- Form-based codes — There is growing interest in form-based zoning codes, which regulate the form (site layout) and massing of buildings, parking areas, and landscape areas, rather than the uses of a building or a site. While a complete overhaul of a zoning code is a big project, local communities may want to consider a form-based code for business districts in order to promote the development of walkable districts. Dublin, Ohio and New Rochelle, New York provide case studies.
- Inclusionary zoning — The entire region is stronger and more equitable when all communities offer affordable housing. A model is Montgomery County, MD which has produced 13,000 units of affordable housing while still offering communities an opt-out.
- Density bonuses — Developers can be offered incentives to build developments that are transit-oriented, include mixed-uses, or have inclusionary housing, by offering density bonuses (increasing the allowable number of dwelling units per acre). Cleveland Heights has a special mixed-use zoning overlay district to encourage creative development projects with higher density (see Chapter 1145 of the city code). The American Planning Association has guidance on density bonuses to incentivize the development of affordable housing. Another way to encourage sustainable development practices is with expedited permitting.
- Cottage housing development — One way to encourage attractive housing that is affordable and relatively dense is to allow cottages in planned unit developments.

Cottage homes are relatively small with lots often 3,000 sf or less and they surround a large shared greenspace.

- Conservation subdivisions — This type of development, coined by author and planner Randall Arendt, "encourages the preservation of environmentally sensitive areas without reducing residential densities." At least 50%-70% of the environmentally sensitive land, undeveloped greenspace, or agricultural land must be placed in conservation easements in perpetuity. Homes are then clustered on the remaining portions of land, allowing for reduced infrastructure costs.
- Conservation Development – Similar to conservation subdivisions, this style of design requires 40% of the natural area to remain as open space. Conservation easements are not required and the developed area can be residential or non-residential. Local guidelines are here and here. The City of Fairborn's 2016 Comprehensive Plan includes conservation development as a future land use type. The Ohio Balanced Growth Program includes guidelines here.
- Environmental justice — Consider the impacts of development and infrastructure projects on minority and disadvantaged populations. Work to engage these populations in the decision-making process.
- Health impact assessments — Consider the health impacts of development and infrastructure projects. Columbus Public Health has completed numerous HIA in Franklin County.
- Development practices to protect water quality — See the Water Quality chapter and the Ohio Balanced Growth Program's Best Local Land Use Practices.
- Urban garden zoning — See Food chapter.
- An excellent checklist of recommended codes and policies related to land use has

been developed by the Ohio Balanced Growth Program. It provides guidance for a more thorough review of local codes.

Broader collaboration

While home rule allows local governments to make their own land-use plans, these plans are affected by regional market forces and public investments (especially transportation investments). Thus, as communities in the Miami Valley work to ensure their future stability, they should be engaged in regional initiatives, such as:

- The Institute for Livable and Equitable Communities, a joint initiative of the Dayton Foundation, the Del Mar Institute and the Miami Valley Regional Planning Commission.
- The Miami Valley Equity Initiative.
- The First Suburbs Consortium of Dayton, Ohio's efforts to raise awareness of the development and redevelopment needs of Montgomery County's mature and maturing suburban communities.
- The Montgomery County Land Bank's efforts to deal with blighted properties.
- Long term disaster recovery planning work in the wake of the 2019 tornadoes. This work is being led by the Miami Valley Regional Planning Commission.
- The Ohio Balanced Growth Program's efforts to promote land use practices that protect water quality.

Montgomery County Solid Waste Transfer Station, Moraine, Ohio

Solid Waste

Solid waste services are a major responsibility of local governments. Are there ways to reduce the amount of waste and reduce the cost of services?

"Garbage collection" is a central responsibility of local governments in the United States. Local regulation of Municipal Solid Waste (MSW), or the sum of residential and commercial waste streams in the U.S., dates back at least to the 1650's. It is a critical service for communities of any size. It protects public health, preserves community appearance, and supports a desirable quality of life. Municipal waste management and recycling services are likely among the most frequent and visible forms of interaction between local governments and their residents.

Ohioans, like all Americans, produce a considerable amount of solid waste. Approximately 4.7 pounds of waste was

generated per person per day in 2017 [according to the Ohio Environmental Protection Agency](). The amount of MSW disposed by Ohioans in 2017 totaled over 10 million tons.

As we know, simply disposing of solid waste is not considered an adequate or sustainable solid waste management strategy. Therefore, residents, businesses, and even construction sites must focus on reducing the amount of waste sent to the landfill by reusing or recycling as many materials as possible. Recycling programs, however, are becoming increasingly complicated. In a solid waste market with relatively low landfill tipping fees, there may be little incentive for a government to participate in a recycling program. Recycling rates for in Ohio seem to have [reached a plateau](). The market for these materials is also changing. International pressures for lower "contamination" rates have changed the economics of mixed recycling, which is forcing changes in how recycling programs are managed and how they are communicated to the public. While some communities are [moving back to source-separated recycling]() (dual stream) to combat contamination issues, others are [cancelling recycling programs]() altogether.

What Communities can do

Community Education & Outreach

- Provide educational information to residents and businesses about waste reduction and recycling. County Solid Waste Management Districts have comprehensive resources and some offer grants for community education programs.

Solid Waste

Miami Valley Solid Waste Districts
- [Darke County Solid Waste Management District](), Krista Fourman, [kfourman@co.darke.oh.us](), 937.547.0827
- [Greene County Solid Waste Management District](), Dana Storts, [dstorts@co.greene.oh.us](), 937.562.5929
- [Miami County Solid Waste Management District](), Lauren Karch, [lkarch@miamicountyohio.gov](), 937.440.3488 x8700
- [Montgomery County Solid Waste Management District](), Robert Downing [downingb@mcohio.org](), 937.496.3108
- [Preble County Solid Waste Management District](), Beth Wright, beth.wright@prebswmd.org, 937.456.6880

Resources
- [Miami Valley Data Commons]()
- [Association of Ohio Recyclers]() (AOR)
- [Institute for Local Self-Reliance]() (ISLR)
- [National Recycling Coalition]() (NRC)
- [Ohio Association of Litter Prevention and Recycling Professionals]() (OALPRP)
- [Organics Recycling Association]() of Ohio (ORAO)
- [Reuse International]()
- [Solid Waste Association of North America]() (SWANA)
- [Zero Waste International Alliance]() (ZWIA)
- [Ohio EPA Division of Materials and Waste Management]()
- [Ohio EPA Division of Environmental and Financial Assistance]()
- [Social marketing campaigns for recycling]()

- Host a Recycling or Zero Waste town hall meeting for residents and invite the local Solid Waste Management District to answer questions.
- Host a visit to the Montgomery County Solid Waste District's [Environmental Learning Center](), featuring hands-on exhibits and a green parking lot.

- Keep your community's website updated with the latest information about municipal recycling, community reuse opportunities, and waste disposal programs. Think about how to use the web and social media to change attitudes about waste and recycling, such as Cleveland's "One Simple Act" campaign concerning what can or cannot be recycled.
- Partner with your community's recycling hauler to conduct a Contamination Curbside Audit to determine if residents are recycling properly, Share the results with your residents.
- Help recruit volunteers for projects and programs sponsored by your county Solid Waste District. Many community efforts to combat litter and illegal dumping are dependent on community volunteers. A "Trash Bash" is an example of a roadside clean-up/recycling event that requires many volunteers and will also protect water quality.
- Participate in county level efforts to address scrap tire dumping. Contact your county Solid Waste District for more information.
- Encourage ideas that treat waste as an opportunity to create new business and employment. The Zero Waste NEO group is working toward that goal.
- Partner with your local school district on a Zero Waste class project.
- Plan a zero waste event using the Zero Waste Event Planning Guide. **BYG**

Internal operations

- Set specific goals for waste reduction, reuse, and recycling within the community's own buildings. Also make and implement a plan to reach those goals. **BYG**

- Benchmark residential recycling services against top performing communities in the Miami Valley and learn best practices for waste reduction, including automated collection using carts, seasonal yard waste collection, and consistent education programs.
- Review current waste collection contracts for cost-saving opportunities, such as automated collection and separate disposal pricing. Increase emphasis on recycling. Contact your Solid Waste District for a bid template. **BYG**
- Establish a program to donate edible but unwanted food (food rescue) and manage organic discards (wasted food), which is a large portion of the waste stream. Work with your county's foodbank to establish a pickup schedule. Set up a community compost site at a community garden or other demonstration site. Likewise, the Dayton Foodbank is setting up an anaerobic organic waste digester; this may be a model for your community.
- Offer year-round resident drop-off for household hazardous wastes, computers, pharmaceuticals, fats, oils and grease. Participate in your Solid Waste District's annual scrap tire event. **BYG**
- Follow best practices for managing hazardous wastes and training city staff.
- Cultivate city staff leaders by encouraging them to participate in the Master Recycler Program. Join a state or national solid waste organization (see resources section) for additional guidance and training.
- Implement a recycling program at city hall and other municipal buildings, and then conduct a waste audit to identify the remaining sources of waste, along with the best ways to reduce them.
- Apply for a grant for the development of a recycling program in public spaces.

- Provide access to recycling infrastructure and services at public places such as parks, community centers, schools, and libraries. **BYG**
- Apply for a [Recycling Incentive Grant](#) from the Montgomery County Solid Waste District, which helps district members enhance, increase, or promote recycling, waste reduction, litter prevention, composting, and end use markets for recycled materials.
- Establish Zero Waste guidelines for city events. Invite Master Recycling volunteers to community events to educate the public about better waste management practices. Five Rivers MetroParks has [a guide](#) to their zero-waste event practices.
- Purchase event recycling containers and make them available for events such as block parties.
- Host a Reuse Fair, a Repair Café or a "FreeCycle" style swap meet event, as South Euclid, OH has done. **BYG**
- Develop cooperative marketing with local thrift stores to encourage reuse of clothing and household goods from the waste stream. Or consider a contract with [Simple Recycling](#) for free collection of textiles and small household goods.

Ordinances and policies

- Set a waste reduction goal for the community as a whole. Make and implement a plan to reach that goal. **BYG**
- Zero waste — Set a zero-waste goal and create an implementation plan, as the [City of Oberlin has done](#).
- Reuse - Review existing ordinances and make sure they allow all opportunities for waste reduction, such as composting, garage sales, separate pick-up days, and even scavenging. **BYG**

- Deconstruction – Develop a [deconstruction and salvage policy](#) that keeps reusable building materials out of the landfill.
- Establish a construction & demolition recycling policy for municipal buildings. **BYG**
- Recycling - Provide curbside recycling for residents with rollout containers no smaller than 50 gallons. **BYG**
- Composting — Review ordinances to support home composting. Invite the Solid Waste District to do a composting workshop for residents.
- Establish a community-wide composting program to manage food and organic waste. **BYG** Private sector composting companies operating at a [community scale](#) or [regional scale](#) exist in the Miami Valley.
- Ohio EPA has a [model zoning code](#) to encourage organic waste composting and urban agriculture.
- Establish incentives to encourage waste reduction programs for businesses in your community. **BYG**
- Adopt the "[Pay-as-You-Throw](#)" approach for solid waste services. **BYG**
- Require commercial & multi-family recycling. **BYG**
- Buy Recycled – establish a policy to consider buying goods with recycled content. Use the [Sustainable Procurement Playbook for Cities](#) for reference to assist you in your planning efforts. The Montgomery County Solid Waste District has a [Buy Recycled Grant](#) program to help member jurisdictions get started. **BYG**
- Ban [use of plastic bags](#). **BYG**
- Review the enforcement practices for illegal dumping ordinances to ensure adequate deterrence.
- For other rules, policies, and programs that could be implemented at the local level to increase recycling and recovery rates while

reducing solid waste management costs, see the resources of [The Institute for Local Self Reliance](#).

Broader collaboration

- Explore cooperative contracting opportunities to save money and improve services for waste collection and recycling. The Cuyahoga County Solid Waste District offers guidance and a free consulting service.
- Work with the County Solid Waste District, other communities, and local businesses to develop the local market for recycling and materials reuse, thus strengthening the economy.
- Explore the sharing of, or joint bidding for, recycling equipment, such as carts and trucks.
- Join and support efforts to establish food waste composting on a regional scale.

Transportation

Demand is growing for a transportation system with more choices of modes and fuels. Local governments can do a lot to promote a transition that improves health, quality of life, and the environment.

The Issues

Between the 1980 and 2010 Census counts the combined population of Darke, Greene, Miami, Montgomery, and Preble counties increased by 0.03 percent. At the same time the Dayton urbanized area has grown by over 39 percent. A larger urbanized area means more roads, more utility infrastructure, more storm water infrastructure and the associated costs borne by communities to maintain them.

There is an emerging realization that this sprawling transportation system creates mobility for some and limits mobility for others. According to the 2006-2010 American Community Survey (ACS) 84 percent of the region's residents drive their automobile alone to work. At the same time, in our region six percent of households have no access to a private automobile. The system is increasingly costly for the public sector to maintain. And at 75 cents per mile of driving according to AAA in 2018, it's costly for people to use. ACS data from 2011-2015 indicates that Miami Valley residents spent an average of 26 percent of household income on personal transportation, which is above the national average.

Also, an auto-centric transportation system does not meet the mobility needs of large numbers of people — young, elderly, disabled, poor — who cannot drive. And it contributes to health problems by depriving people of opportunities to get exercise as part of their daily routines.

Increasingly, local governments are being pressured to provide better transportation options for their residents. People want more transit access and safe, connected bike facilities. Residents without use of a private car need transportation to life-essential services such as medical and grocery trips. Coordination among public, non-profit, and private providers of human service transportation providers is increasingly important. Walkable places – either historic downtowns or newly built "town centers" – are experiencing increased foot traffic and business. The market is responding with entirely new modes of transportation, such as ride hailing, bike and car sharing, and even scooters. Developers are designing mixed use spaces, and bringing housing back to the central parts of cities. Land use decisions by communities have a tremendous influence on the transportation choices of the people that live and/or work there. Please see the *Land Use and Development* chapter for avenues to develop in ways that encourage reduced dependence on automobiles.

A parallel issue is the growing transition to electric transportation. Electric vehicles (EV) are a small but rapidly growing segment of the automobile market. The number of plug-in vehicle models available in the U.S. quadrupled between 2012 and 2019. The legacy U.S. automakers (Fiat-Chrysler, Ford, GM) have committed to offer over 90 plug-in models by 2023. EV do not solve any of the problems discussed above with car-centric development, but they do promise cleaner, quieter, less expensive transportation for the future.

Communities looking to stay apace with this transition are requiring parking areas to be EV ready, including EV in their public fleets, and providing public charging at public buildings and activity centers. Regionally, MVRPC led a successful effort with Metropolitan Planning Organizations in Cincinnati and Columbus in 2017 to designate Interstates 70, 75, and 675 as Alternative Fuel Corridors. This designation for DC Fast Charging, Compressed Natural Gas, and Liquefied Natural Gas serves to raise public awareness of alternative fuels, and has already resulted in a new DC Fast Charging location along I-70 in Huber Heights.

What Communities can do

There are real opportunities for local governments to revitalize their community and improve quality of life by choosing a different transportation and land use path. The lists below offer a wide range of practical approaches to consider.

Community Education & Outreach

Raising awareness about alternative modes of transportation is a valuable service local governments can do for their residents, and the whole Region.

- Bike mode share (setting a goal to increase biking) — Start with a baseline assessment, with data available from the *American Community Survey Biking and Walking to Work* report and from the MVRPC Transportation Data Commons.

For local bike/pedestrian counts look at [MVRPC's Bicycle Counting Program](#) information. Then conduct your own bike counts; MVRPC loans bicycle counters to member jurisdictions for local short-duration counts. After bike lanes are installed, conduct follow-up counts to measure impact.

- Pedestrian and bicyclist fatalities/traffic fatalities — Download Ohio [crash data](#) by year. Encourage Police and Planning departments to put crash data on a map and to discuss local interventions.
- [Organize a walking "audit"](#) of your city to draw attention to gaps in the pedestrian infrastructure and raise awareness of the health, environmental and social benefits of walking.
- [Bicycle Friendly Community](#) — The application process is free and includes a plan to make bicycling safe, comfortable, and convenient for people of all ages and abilities. Current award winners in the Miami Valley are Dayton, Piqua, Springboro, Troy, and Yellow Springs.
- Host a [Bike to Work Day event](#) in May (National Bike Month) in an employment center of your community.
- [Walk Friendly Community](#) — This program recognizes communities supporting walking environments that are safer, more accessible, and more comfortable. Dayton received an Honorable Mention for their recent application to this program.
- [Safe Routes to School](#) — Work with your school district to develop a Safe Routes program to facilitate active transportation for students and the community in general. A school or district [travel plan](#) communicates the community's intentions around making active transportation safe and accessible, and it provides a blueprint and funding opportunities for

Transportation

Contacts
- Active transportation, Complete Streets — Matt Lindsay, 937.531.6548, mlindsay@mvrpc.org
- Bike facility design — Laura Estandia, Bike Miami Valley, 937.496.3825, lestandia@bikemiamivalley.org
- City bike planning, Protected bike lanes - Brian Forschner, City of Xenia, 937.376.7285 bforschner@ci.xenia.oh.us
- Health benefits of active transportation — Robert Harrison, CHC Coordinator, Public Health Dayton-Montgomery County, 937.224.3806, RHarrison@phdmc.org
- Safe Routes to School, Safe Kids Coalition – Abbey Pettiford, 937.641.5853, pettiforda@childrensdayton.org
- Public Transit – Brandon Policicchio, Greater Dayton RTA, 937.425.8330, bpolicicchio@greaterdaytonrta.org
- Trails and greenway planning — Matt Lindsay, MVRPC, 937.531.6548, mlindsay@mvrpc.org
- Miami Valley Rideshare – Laura Henry, 937.531.6542, lhenry@mvrpc.org

Mobility Managers
- Greene, Miami, Montgomery Counties - Shannon Webster, GreeneCATS Public Transit, 937.708.8316, swebster@greenecats.org
- Darke County – Michelle Caserta-Bixler, Catholic Social Services RideLink, 833.289.0227, mcaserta@cssmv-sidney.org
- Preble County – Tim Miller, Preble County Transit, 937.456.4947, tmiller@prebleseniorcenter.org

Ohio DOT Contacts
- **District 7** – Bike & Pedestrian Coordinator, Safe Routes to School, Safety Coordinator – Mary Hoy, 937.497.6838, mary.hoy@dot.ohio.gov
- **District 8** – Bike & Pedestrian Coordinator, Safety Coordinator – Brianne Hetzel, 513.933.6624, brianne.hetzel@dot.ohio.gov Safe Routes to School – Tom Arnold, 513.933.6588, tom.arnold@dot.ohio.gov
- **Central Office** – Safe Routes to School - Cait Harley, 614.466.3049; Safety – Jordan Whisler, 614.644.8181; Bike Routes – Caraline Griffith, 614.644.8336

implementation. If your school district already has a Travel Plan, work to implement its recommendations. An Active Transportation Plan can serve the same purpose for a community.

- Install publicly-accessible EV charging at public facilities in the community, such as government offices, libraries, and community centers. Work with downtown businesses to add EV charging in your business district. **BYG**

Internal operations

- Recognize employees who participate in active living programs, such as walking a certain number of steps per day or entering national challenges like Bike to Work Day or Bike Month.
- Incentivize public employees to carpool to work. Miami Valley Rideshare can help your employees find car pooling matches.
- Encourage employees to purchase transit passes with pre-tax dollars through WageWorks.
- Install bike racks, changing areas, and showers in government buildings for use by bike commuters.
- Install preferential parking spots in city lots for carpools and electrified vehicles. Make provisions for public employees to charge EV at the workplace.
- Transition the city vehicle fleet to more fuel-efficient vehicles, alternative fuel vehicles and EV. Clean Fuels Ohio can provide technical assistance and information about federal funding opportunities. **BYG**
- Train police about the proper enforcement of bicycle laws.
- Update your community's ADA Transition Plan to learn what areas in your community are in need of extra attention.

- Train service department and engineering staff on best practices for designing and installing bike and transit facilities.
- Develop a local bike infrastructure plan for bikeways to connect community facilities, amenities and the regional bikeways system.
- Miles of bike lanes/trails — Set a goal to paint a certain number of bike lanes per year. Classify them by type (protected bike lane; bike lane; sharrows). Bike Miami Valley and/or MVRPC can advise on the best practices for installing bike facilities.
- To stretch infrastructure dollars, align bikeway planning with capital improvement plans so bike facilities are installed when streets are fixed.
- Include funds in the capital budget for bike facilities.
- Adopt an infrastructure planning process that considers the long-term sustainability and life-cycle costs of roads and other infrastructure.

Ordinances and policies

- Adopt a Local Complete Streets Policy — Over 1,490 jurisdictions nationally, including Dayton, Piqua, Riverside, Troy, and Yellow Springs, have adopted complete streets. The National Complete Streets Coalition reports that 52% of complete streets policies are in small cities with populations under 30,000. To facilitate the adoption of local complete streets policies, MVRPC can conduct walking audits, facilitate complete streets policy development workshops, and provide GIS data.
- Alternative performance measures to Level of Service (LOS) — Communities are considering the street experience for other users, like pedestrians or bicyclists, in addition to motorists. A bicycle level of

traffic stress (LTS) analysis assesses bicycling in your city from the bicyclists' point of view. Ohio State University recently completed a study on conducting LTS analysis with existing data sets. MVRPC can assist communities looking to study their roadways through this lens. (If still using LOS for cars, explore the possibility of calculating peak flows based on four-hour averages rather than peak hours. This helps design roads for typical needs rather than for maximum congestion.)

- Encourage transit agencies to bring new routes or enhance current routes to your community. Enhance transit stop locations with bus turn outs, shade trees, shelter structures, benches and trash receptacles. Make sure bus stop locations are well served by well-maintained, ADA compliant sidewalks. Incentivize private developers to welcome transit service and provide good facilities for transit stops.

- Parking reform — Communities in Ohio, such as Euclid, are granting more flexibility in meeting parking requirements, including credits for shared parking, off-site parking, and credits for transit and bike access. Cleveland Heights has a policy for parking maximums (rather than the usual minimum number of spaces) and an innovative land-banked parking ordinance. Shaker Heights' Commercial Mixed Use District zoning (see Chapt. 1234) has parking maximum provisions. And the Chagrin River Watershed Partners have a model parking code for reducing pavement and protecting water quality.

- Require new parking development to have a minimum number of spaces that are EV-ready, including pre-installed conduit and pads for EV charging equipment.

- Transportation Coordination Planning – work with your county mobility manager to explore ways to support the local transportation coordination plan for the enhancement of transportation options (reimbursement policies).

- Identify locations in your community to site alternative fuels stations, particularly for compressed natural gas, liquefied natural gas, and DC Fast Charging for electric

vehicles along the designated [Alternative Fuels Corridors](#).

- Transit-oriented development — See Land Use & Development chapter.
- Vision Zero — Adopt a goal to reduce the loss of life from road collisions to zero.
- Anti-idling ordinance — See Air Quality chapter.
- Health impact assessments — Consider the health impacts of development and infrastructure projects. An example is the assessment completed for the East Side Greenway.
- Zoning for mixed-use and transit-oriented districts — See Land Use & Development chapter.

Broader collaboration

No community in the Miami Valley is a transportation island. Regional collaboration and planning are needed to develop a seamless transportation system that will strengthen all communities and will be sustainable in the future. So all communities should be engaged in regional initiatives, such as:

- MVRPC's [long range regional transportation planning process](#) and [human services transportation coordination planning process](#).
- The [Greater Region Mobility Initiative](#) seeking to expand human services transportation coordination across nine counties in west-central Ohio.
- Participate in the [Greater Regional Mobility Initiative Council](#) or the [Human Services Transportation Coordination Council](#).
- GDRTA and other transit agencies' [efforts to increase state funding for transit improvements](#).

- [Drive Ohio](#), Ohio DOT's program to advance research on emerging transportation technologies.
- Efforts related to the Miami Valley Trails, such as ongoing work to fill critical trail gaps, planning for east-west laterals such as the Great-Little Trail, and local planning to connect neighborhoods and downtowns to the trails. Participate in the [MVRPC Regional Bikeways Committee](#) to keep up on all these initiatives.
- The new Institute for Livable and Equitable Communities at MVRPC.

Trees, Native Species & Land Management

Trees and native species are a vital part of a community's green infrastructure. How can local governments do more to promote reforestation and sustainable land-use practices?

The Issues

The natural and societal benefits of trees, including urban trees, are numerous. Trees provide [vital ecosystem services](#) that result in cleaner air, storm water retention, transpiration, erosion prevention, carbon storage, and wildlife habitat. Trees form a natural shield from ultra-violet rays of the sun. The shade and natural cooling from urban trees have the secondary benefit of reducing heat island effects and saving energy. Trees also improve community aesthetics and raise property values. And of course, trees can provide food and the valuable raw material of wood.

Healthy green open spaces are critical to the overall health of the urban landscape. This includes the use of native plant species that thrive in our local soils, supporting native wildlife and insect species. Healthy soils are

the most overlooked resource and are the most critical element to support healthy ecosystem services. Healthy soils, especially in urban environments, provide support for plant life, store a vast amount of carbon, and clean storm water, allowing it to recharge our critical aquifer. Healthy soil is a complex living system that requires hundreds (and sometimes thousands) of years to form. Living soils include not only a mix of silt, sand, and clay, but also organic matter, along with a complex mix of fungal mycorrhiza, beneficial bacteria, and millions of other organisms. Living soil provides the food we eat, sustains plants that provide the oxygen we breathe, and ensures clean water that we drink. Unfortunately, urban development destroys this system by paving over soil with buildings, roads, and parking lots. This living system can be destroyed with just a single pass of a piece of earth moving equipment, through compaction of the soil. Healthy open spaces, including sustainable urban farms, are a critical part of our urban ecosystem and are rarely considered in zoning codes or development practices. In many cases, the introduction of healthy native landscapes is prohibited in many codes, such as weed ordinances.

Interconnected systems of green spaces are critical for a healthy urban environment. These green spaces and interconnecting natural corridors contain living soils and complex landscapes that provide cooling shade trees, refuge from the built environment, and a natural habitat for wildlife and insects to move around and through. A fragmented and non-planned network of open space does not provide the same benefit to a community or its wildlife. Without natural corridors connecting green spaces, wildlife is at risk of wandering onto roads and into residential areas, seeking food and

refuge. That is dangerous to both humans and wildlife. Planned, interconnected green space networks and corridors provide important benefits not just to the ecosystem but also to the economy. They entice economic development with places for recreation and garner higher land values along their boundaries.

The use of native vegetation in urban landscapes, including native tree and shrub species, helps to expand planned open space networks and the benefits they provide. Native vegetation is critical to wildlife and insect species, which help to keep our ecosystem in balance. Native insects, for example, require specific plant species to lay eggs and to use as food sources in order to develop into adults. These same insects are critical to pollinating the plants that provide us with fruits and vegetables. Landscapes containing a great diversity of species, including plants, animals, and insects, retain a balance where no individual species becomes dominant or out of control. The introduction of non-native plant species results in problems affecting our local ecosystems. Many introduced, or non-native, species provide no benefit to local wildlife or insect populations. In most cases, they are introduced species that our native insects cannot use for food, so they are not damaged or consumed by beneficial insects. This allows the non-native species to become invasive and take over landscapes, choking out or out-competing native species. The result is a less diverse ecosystem or, in a worst-case scenario, mono-culture landscapes. Our urban landscapes need to reflect - or at least contain - elements of our native landscapes to ensure overall environmental health.

Trees face a lot of threats these days, especially urban trees. Recall the Emerald Ash Borer – an invasive beetle species whose lifecycle was destructive to ash trees. A newer threat comes from the Asian Longhorned Beetle (ALB) – an invasive insect that threatens a wider variety of hardwood trees. The Asian Longhorned Beetle is already found in Ohio. Invasive tree species, particularly the Bradford pear, are at best a nuisance, but are also seen to be crowding out native trees in eastern forests. Additional stresses for urban trees include ongoing development and the resulting alterations in hydrologic patterns, soil compaction, and road salt. Many of the benefits that trees provide, as listed above, do not occur until a tree reaches approximately 20 years of age. Unfortunately, the average lifespan of an urban tree is only 8 years.

Over the last few years, many communities in the Miami Valley have faced a significant loss of tree cover due to insect infestations, natural disasters, and trees reaching the end of their lifecycle. This has resulted in a decrease of tree cover in our Region. Conditions vary from community to community, but in a forested state like Ohio, achieving a tree canopy cover of between 40 to 60 percent is attainable. Few, if any, Miami Valley communities meet such a target. Additionally, research has found that lower income neighborhoods are likely to have less tree canopy cover than wealthier neighborhoods. Developing a tree plan to achieve greater, equitable canopy cover from healthy and diverse tree populations (i.e. tree species of varying ages) can provide a benefit to your community for generations.

What Communities can do

Community Education & Outreach

- Educate residents about the benefits of trees, native plants, and biological diversity. Sources of information include the Cox Arboretum, the Ohio Native Plant Society – Miami Valley/Dayton Chapter, Tree City USA, and the Ohio Department of Natural Resources Urban Forestry Program. A good way to engage residents is to sponsor training programs such as those offered by Five Rivers MetroParks or the Ohio State University Extension, including Master Gardener training and the Ohio Certified Volunteer Naturalist program. In general, it is important to emphasize education of private property owners because there is a lot more private land than public land in the Miami Valley.
- Use the U.S. Department of Agriculture's Asian longhorned beetle Tree Check materials to educate your residents about the ALB and how to detect it. Protect the trees in your community.
- The Marianist Environmental Education Center (MEEC) also provides workshops for the public.
- Inform residents of annual native plant sales at MEEC and Aullwood Audubon.
- Educate residents about the importance of maintaining soil quality. County Soil and Water Conservation Districts have resources.

Internal operations

- The maintenance of urban trees requires knowledge and skill, so employ or develop a relationship with a qualified arborist and provide adequate training and budgets for existing staff. The Ohio Division of Forestry offers a [Tree Commission Academy](#) for training.
- Assess your community's tree canopy, since an accurate inventory is needed for good management. A field-based tree inventory can also be useful. More information about types of urban forest assessments can be [found here](#). **BYG**
- Develop a municipal tree planting program funded at a level to maintain and restore the tree canopy. The City of Hamilton has an excellent example of [online mapping of tree plantings](#). Make sure to follow best practices to plant the right trees in the right places in the right way so they survive. Also take projected climate changes into account when selecting tree species. **BYG**
- Become a [Tree City USA](#) — If your community has not already done so, become a Tree City USA by meeting the four standards of sound urban forestry management: maintaining a tree board or department, having a community tree ordinance, spending at least $2 per capita on urban forestry, and celebrating Arbor Day. While meeting these minimum standards does not guarantee a sustainable urban forest, it sends a message about the importance of trees, even in times of tight budgets.
- Include storm preparedness in municipal emergency response plans, so you can deal with tree damage and wood waste reutilization in a safe and sustainable manner.

Trees, Native Species & Land Management

Local contacts
- Regional Land Trusts:
  - [Tecumseh Land Trust](#), Krista Magaw, [Krista@tecumsehlandtrust.org](#), 937.767.9490
  - [Three Valley Conservation Trust](#), Randy Evans, [revans@3vct.org](#), 513.524.2150
  - [B-W Greenway Community Land Trust](#), Matthew Lawson, 937.867.5212, [ExecDirector@bwgreenway.org](#)
  - [Beaver Creek Wetlands Association](#), Blythe Hazellief, 937.320.9042, [director@beavercreekwetlands.org](#)

- Regional Park Districts
  - [Darke County Park District](#), 937.548.0165
  - [Five Rivers MetroParks](#), 937.275.7275
  - [Greene County Parks & Trails](#), 937.562.6440
  - [Miami County Park District](#), 937.335.6273
  - [Preble County Park District](#), 937.962.5561
- Ohio Department of Natural Resources, Urban Forestry Program, Wendi Van Buren, [Wendi.VanBuren@dnr.state.oh.us](#), 614.670.2653

- Make the commitment to public education and sustainable pollinator habitat and become a "[Bee City USA](#)" community. Vandalia and Wright-Patterson AFB are both certified Bee Cities.
- Use native plants on city, county, and township grounds to set a good example for sustainable landscaping. Many garden centers are offering more native species these days, and a list of Ohio native plant nurseries is [here](#). County Soil & Water Conservation Districts offer workshops on using native plants to create backyard habitats.
- Due to the mounting scientific evidence of the health risks of common pesticides, stop using lawn care pesticides on city-owned

land. Policies have been enacted in Yellow Springs, Cuyahoga County, and the City of Cleveland Heights. Staff training about healthy landscaping methods is offered by Beyond Pesticides Ohio.

Ordinances and policies

- Tree protection ordinance — Municipal tree ordinances can address trees on public land (such as street trees), trees on private land (tree preservation and landscape planting requirements), and the ways that trees impact views or impact solar access. A guide is here. Also note that there is an emerging trend to focus less on the protection of individual trees today and more on ensuring a healthy percent of tree cover in the future.
- Tree and woodland protection in developing areas — Communities with development occurring on wooded sites have different tree protection needs than urban communities. The Ohio Balanced Growth Program offers strategies for protecting blocks of trees in these areas and long-term strategies for ensuring adequate tree cover.
- Permitting native and edible plants - To remove legal barriers to residents growing food or beneficial native plants, ordinances should be modified to allow such uses. In Cleveland Heights, for example, the updated landscaping ordinance (see Chapt. 1166) is modeled on a typical nuisance ordinance, but distinguishes native plantings and other alternatives to turf grass, and defines edible landscaping as a substitute for lawns. The ordinance requires a plan, setbacks, and maintenance of native landscaping to address the nuisance concerns that typically accompany alternatives to turf. In addition, the Ohio Balanced Growth

Trees, Native Species & Land Management

Resources
- Miami Valley Data Commons
- Aullwood Audubon
- Trees and Storm Water Guide
- Cleveland Tree Plan
- Cuyahoga County Urban Tree Canopy Assessment
- Holden Arboretum Community Forestry Program
- International Society of Arboriculture
- iTree tools
- Ohio Urban Forestry Program
- Pesticide-free policy/ordinance
- Soil health
- Sustainable Sites Initiative
- Technical Guides to Urban/Community Forestry
- Tree City USA - The Arbor Day Foundation
- Urban forestry toolkit for local governments
- Bringing Nature Home
- White-tailed deer management
- Integrated Pest Management

Program offers guidance on natural areas establishment and management.
- Pesticide ban - More cities and institutions are stopping the use of pesticides for lawn care purposes, especially in locations where children play. Here are the ordinances of Cleveland Heights and Cuyahoga County.
- Complete and green streets — See Transportation chapter.
- Stream setbacks — See Water Quality chapter.
- Green infrastructure and storm water — See Water Quality chapter.
- Urban garden zoning — See Food chapter.

Broader collaboration

To improve the ecological functioning and beauty of the regional landscape, all communities in the Miami Valley can:

- Support regional reforestation efforts.
- Participate in multi-community greenspace planning and trail planning efforts.
- Work with land protection organizations — such as Tecumseh Land Trust, Three Valley Conservation Trust, B-W Greenway Community Land Trust, Trust for Public Land, and the region's many Park Districts — to protect parcels of high-quality greenspace.

Water Quality

Protection of our rivers, streams, and groundwater are priority concerns for Miami Valley residents and communities.

The Issues

Since the passage of the Clean Water Act in the 1970's, the Miami Valley Region has seen a visible and quantifiable improvement in its water quality. The return of fish, birds, and other wildlife to our streams and rivers is a welcome sign of improving habitat and water quality. The removal of low head dams and their replacement with paddling structures, or simply open flow streams, shows us that people are also returning to our rivers for recreation and an enhanced quality of life.

The Clean Water Act's regulatory approach requires use of the best (and advancing) technology to minimize pollution discharges into rivers and streams. Permits issued and enforced by the Ohio Environmental Protection Agency (Ohio EPA) ensure that we are aware of, and can plan for, pollution loads in our waterways. Over the decades, the amount and concentrations of pollutants discharged into our rivers from industry and wastewater treatment facilities has decreased.

There is increasing interest in reducing non-point sources of pollution. A "non-point source" of pollution occurs when rain washes various kinds of pollutants off the land and

into waterways. Lawn fertilizers, road salts, spilled chemicals, agricultural nutrients, and even just plain dirt are carried off streets, yards, parking lots, and farms, flowing directly into waterways. The Ohio EPA storm water management program addresses storm water runoff from urbanized areas. It requires local governments to take measures to reduce the concentrations of pollutants in storm water runoff. In order to reduce storm water pollutants while developing land in a more sustainable manner, local governments can approve ordinances allowing or requiring "green infrastructure." "Green infrastructure" includes features such as pervious pavement, rain gardens, and bioswales. These features mimic the natural hydrologic function of the land and help retain or restore ecosystem services that are often destroyed when land is developed.

Nearly 100 percent of our drinking water in the Miami Valley Region comes from the Buried Valley Aquifer. Therefore, it is vital that local communities make groundwater protection a priority. Our region developed the State of Ohio's model for drinking water protection. Our innovative approach to "Wellfield Protection," now known around the state as "Source Water Protection," brought careful planning, thoughtful zoning, and regional cooperation to the issue of drinking water protection. Dayton's Multi-Jurisdictional Source Water Protection Program, encompassing six separate jurisdictions, is one of many programs across the region to assure safe drinking water for all our residents.

Our region's past successes, however, need to be a prelude to continued effort to protect and enhance water quality. New issues and concerns have appeared in recent years.

According to data from the Miami Conservancy District (MCD), our region is averaging five more inches of precipitation per year than it did 30 years ago. Stronger storms, heavier rainfalls, urban flooding, and destructive erosion are becoming more common. Miami Valley residents want to know their homes will be safe and the roads passable. Businesses looking to expand or relocate to our Region want to know that polluted water and flooding will not be issues.
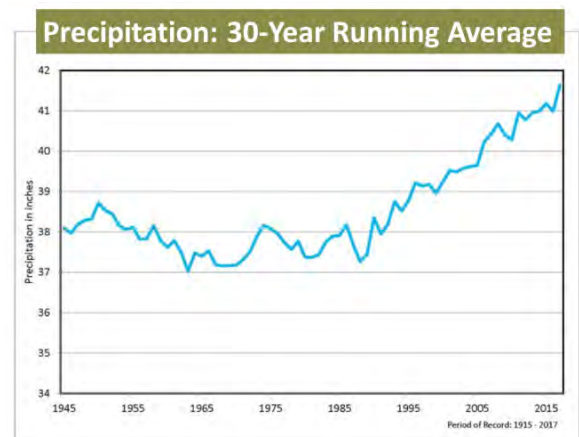
Resources already exist to help local governments in our Region plan for future development. The MVRPC Open Space Plan identifies the critical open spaces that should be protected in the Miami Valley Region. The MVRPC Going Places Regional Land Use Vision project developed a suite of planning and evaluation tools for communities to use when developing local comprehensive plans. MCD (Miami Conservancy District) staff can facilitate local site design roundtables. These roundtables bring together leaders from local government agencies, the development community, and natural resource departments. These roundtables enable collaboration for developing policies that balance water

protection and economic development, tailored to each community.

Surface water quality and the protection of the Buried Valley Aquifer are vital concerns for the people of the Miami Valley. The lists that follow provide a full range of policies, programs, and projects for communities to consider as each does their part to protect water quality now and for future generations.

What Communities can do

While considering approaches that fit the community and address local issues, it is important to remember that we all live downstream. Therefore, it is important to have an integrated, yet flexible, regional planning approach to watershed management.

Community Education & Outreach

- Distribute water quality tips to residents and businesses. Educational resources are available from a number of local organizations, including the county Soil & Water Conservation Districts, County Health Districts, and the Miami Conservancy District.
- Promote rain barrel workshops offered by county Soil and Water Conservation Districts.
- Educate the public on the value of clean and safe drinking water through media and events. **BYG**
- Collaborate to teach water conservation and stewardship in schools. **BYG**
- Promote tap water over bottled water to the community via events, newsletters, pay stubs, *etc*. **BYG**

Water Quality

Local Contacts
- Ohio EPA – Southwest District Office Surface Water Manager – Joby Jackson, joby.jackson@epa.ohio.gov, 937.285.6029
- Miami Conservancy District – Sarah Hippensteel Hall, Manager of Watershed Partnerships, shippensteel@mcdwater.org, 937.223.1278
- Miami Valley Regional Planning Commission – Matt Lindsay, Manager Environmental Planning, mlindsay@mvrpc.org, 937.531.6548
- City of Dayton, Department of Water – Michele Simmons, Environmental Manager, michele.simmons@daytonohio.gov, 937.333.3796

Soil & Water Conservation Districts
- Darke County SWCD, Jared Coppess - District Administrator jared.coppess@darkeswcd.com
- Greene County SWCD, Amanda McKay, District Administrator, amanda.mckay@oh.nacdnet.net
- Miami County SWCD, Kreig Smail, District Administrator, ksmail@miamiswcd.org
- Montgomery County SWCD, Ed Everman, District Director, EvermanE@mcohio.org
- Preble County SWCD, BJ Price, District Administrator, bjprice@prebleswcd.org

- Educate the public on proper prescription and drug disposal to reduce contamination of water sources. See Solid Waste chapter for more information. **BYG**
- Support your county Solid Waste District's litter prevention projects and programs through participation and volunteer recruitment – see Solid Waste chapter for more information.

Internal operations

- Comply with the Ohio EPA's Municipal Separate Storm Sewer System (MS4) permit requirements. Municipalities in the urbanized area must adopt a storm water management plan that details best management practices for six minimum control measures:
  o public education and outreach
  o public participation and involvement
  o illicit discharge detection and elimination (IDDE)
  o construction site runoff control
  o post-construction runoff control
  o pollution prevention/good housekeeping for municipal operations

Many local organizations can help communities comply with storm water requirements, including the county Soil and Water Conservation Districts, county Public Health Districts, and watershed groups.

- Set a good example by following these guidelines for municipal landscaping, used motor oil, street sweeping, salt storage and application, vehicle washing, spill clean-up, and catch basin maintenance.
- Eliminate irrigation with potable water to the greatest extent possible. Strategies include replacing water-intensive plantings (turf grass) with native plants, potentially creating pollinator habitat; xeriscaping; and/or using reclaimed or harvested water for irrigation.
- Implement a policy of using low- or no-flow plumbing fixtures in municipal buildings. Require the use of WaterSense labeled fixtures and equipment whenever applicable.
- Label storm drains to indicate the destination of the water being discharged, in order to discourage dumping of pollutants. **BYG**
- Install green infrastructure on municipal property (such as rain gardens, bioswales, bio-infiltration basins, or pervious pavement) to reduce storm water runoff. **BYG**
- Develop a Municipal Tree program — see Trees, Native Species & Land Management chapter. **BYG**
- Explore opportunities to add a Green Roof to community-owned buildings.

Ordinances and policies

- Model ordinances/regulations to protect streams and manage storm water — In recent years, local water quality experts have given a lot of thought to the essential regulatory tools a community needs to protect water quality, public health, and safety. A recommended suite of model ordinances/regulations has been developed with local and state agencies. There are models for:
  o Conservation development
  o Erosion and sediment control
  o Flood damage reduction
  o Illicit discharge detection and elimination
  o Off-street parking
  o Riparian setbacks
  o Storm water management
  o Wetland setback
  o Native plantings and landscaping
  o Rainwater harvesting **BYG**
- Perform a comprehensive review of ordinances and policies, as they relate to water resources. The Miami Conservancy District (MCD) can guide your community through the Better Site Design Roundtable planning process. **BYG**
- Green infrastructure incentives — Provide incentives for private property owners to install green infrastructure (such as rain

gardens, bioswales, bio-infiltration basins, or pervious pavement) to reduce storm water runoff. **BYG**

- Green streets — Require green infrastructure for storm water management to be included when maintaining city rights-of-way. U.S. EPA's complete and green streets program provides [guidance](#).
- Downspout disconnection — Allow homeowners to disconnect downspouts and/or install rain barrels. Chagrin River Watershed Partners can supply [guidance](#) about the requirements for doing this safely. The City of Parma has [model language](#) (see Chapter 2309).
- Inventory and inspect home septic systems in your community. Work with your Public Health District to educate septic system owners on proper maintenance. **BYG**
- Tree protection — See Trees, Native Species & Land Management chapter.
- Pesticide ban — More cities and institutions are stopping the use of chemical pesticides for lawn care purposes, especially in locations where children play. Here are the ordinances of [Cleveland Heights](#) and [Cuyahoga County](#).

- Ban [use of plastic bags](#). **BYG**
- Regulate or incentivize water efficiency for municipal water customers managing large landscaped areas. **BYG**
- An [excellent checklist](#) of recommended codes and policies related to watershed protection has been developed by the Ohio Balanced Growth Program.

Broader collaboration

Just as watersheds cross municipal boundaries, many of the actions to protect and restore water quality must occur at a regional scale. Communities can work collaboratively to support initiatives such as:

- The Great Miami Watershed Network **BYG**
- The Little Miami River Watershed Network **BYG**
- [The Little Miami Conservancy](#)
- Partners for the Environment
- Ohio's [Balanced Growth Program](#), which links land use to water quality.
- [Clean Sweep](#) of the Great Miami River
- [Little Miami River Kleeners](#) Clean Sweep.

Water Quality

Additional Resources

- Best land use practices for water quality — Kirby Date, Ohio Balanced Growth Program, 216.687.5477, k.date@csuohio.edu
- Citizen education about watersheds – Mike Schumacher, Little Miami Watershed Network, lmwatershednetwork@gmail.com
- Integrated planning for storm water management - David Brumbaugh, Ohio EPA Surface Water, 614.644.2138, david.brumbaugh@epa.ohio.gov
- Ordinances for water protection — Heather Elmer, Chagrin River Watershed Partners, 440.975.3870, helmer@crwp.org
- Rain garden design and rain barrels – Jeremy Huggler, Montgomery County Soil & Water Conservation District, 937.854.7645, HugglerJ@mcohio.org
- Regional storm water policies — Kyle Dreyfuss-Wells, NEORSD Watershed Program, 216-881-6600, Dreyfuss-WellsK@neorsd.org
- Storm water facility planning and design – Ed Everman, Montgomery County Soil & Water Conservation District, 937.854.7645, EvermanE@mcohio.org
- Trees and water quality – Wendi Van Buren, Ohio Department of Natural Resources, 614.670.2653, wendi.vanburen@dnr.state.oh.us
- Water and economic development – Mitch Heaton, Dayton Development Coalition, 937.229.9090, mheaton@daytonregion.com

Resource Links

- Miami Valley Data Commons
- Community riparian and wetland guidance
- ODNR Rainwater and Land Development Manual
- Ohio Balanced Growth Program
- Ohio EPA Storm Water Program
- Center for Watershed Protection
- Rain Garden Manual
- Stream maintenance guide for communities