2040
LONG RANGE
TRANSPORTATION
PLAN

MAY 2016

MIAMI VALLEY
Regional Planning Commission

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2040 LONG RANGE TRANSPORTATION PLAN

Adopted: May 5, 2016

Miami Valley Regional Planning Commission
10 North Ludlow Street
Suite 700
Dayton, Ohio 45402

This document is the product of a study financed by the U.S. Department of Transportation (U.S. DOT), the Ohio Department of Transportation (ODOT), and the Miami Valley Regional Planning Commission.

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RESOLUTION
ADOPTING THE 2040
LONG RANGE TRANSPORTATION PLAN

WHEREAS, the Miami Valley Regional Planning Commission is designated as the Metropolitan Planning Organization (MPO) by the Governor acting through the Ohio Department of Transportation in cooperation with locally elected officials for Greene, Miami, and Montgomery Counties including the jurisdictions of Franklin, Carlisle, and Springboro in Warren County; and

WHEREAS, the MVRPC's Board of Directors serves as the policy and decision making body through which local governments guide the MPO's transportation planning for the Dayton Metropolitan Area; and

WHEREAS, the MVRPC currently conforming 2040 Long Range Transportation Plan (Plan) was adopted in May 2012; and

WHEREAS, the Fixing America's Surface Transportation Act (FAST Act) requires that the Plan be comprehensively updated every four years; and

WHEREAS, the updated 2040 Long Range Transportation Plan is the result of a coordinated effort that reflects federal requirements and regional priorities; and

WHEREAS, the updated 2040 Long Range Transportation Plan is fiscally constrained; and

WHEREAS, the MVRPC current SFY2016-2019 Transportation Improvement Program (TIP) is consistent with the updated 2040 Long Range Transportation Plan; and

WHEREAS, MVRPC has updated the regional air quality emissions analysis to conform to the PM 2.5 standards in the Dayton/Springfield Air Quality Region for the Greene, Miami, and Montgomery Counties components of the MVRPC 2040 Plan and TIP; and

WHEREAS, significant 2040 Plan and TIP projects in Franklin, Carlisle, and Springboro have been included in the regional emissions analysis for the Cincinnati Air Quality Region and found to conform to the 8-hour ozone and PM 2.5 standards; and

WHEREAS, the MVRPC's 2040 Plan conformity determination is made consistent with the April 2012, U.S. EPA Transportation Conformity Regulations.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Miami Valley Regional Planning Commission hereby adopts the 2040 Long Range Transportation Plan.

BY ACTION OF THE Miami Valley Regional Planning Commission's Board of Directors.

Brian O. Martin, AICP
Executive Director

Carol Graff, Chairperson
Board of Directors of the
Miami Valley Regional Planning Commission

Date

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CHAPTER 1
INTRODUCTION

1.1 Transportation Program Structure

The Miami Valley Regional Planning Commission (MVRPC) is the Regional Planning Commission for Darke, Greene, Miami, Montgomery, Preble, and northern Warren counties in west-central Ohio. MVRPC is also the Metropolitan Planning Organization (MPO) for Greene, Miami, and Montgomery counties and the cities of Carlisle, Franklin, and Springboro in Warren County (hereafter referred to as northern Warren County) (see Figure 1.1). As such, MVRPC is responsible for developing, implementing, monitoring, and updating a variety of transportation plans that are designed to enhance the Region's competitive position, promote regional growth, improve personal mobility, and preserve the environment.

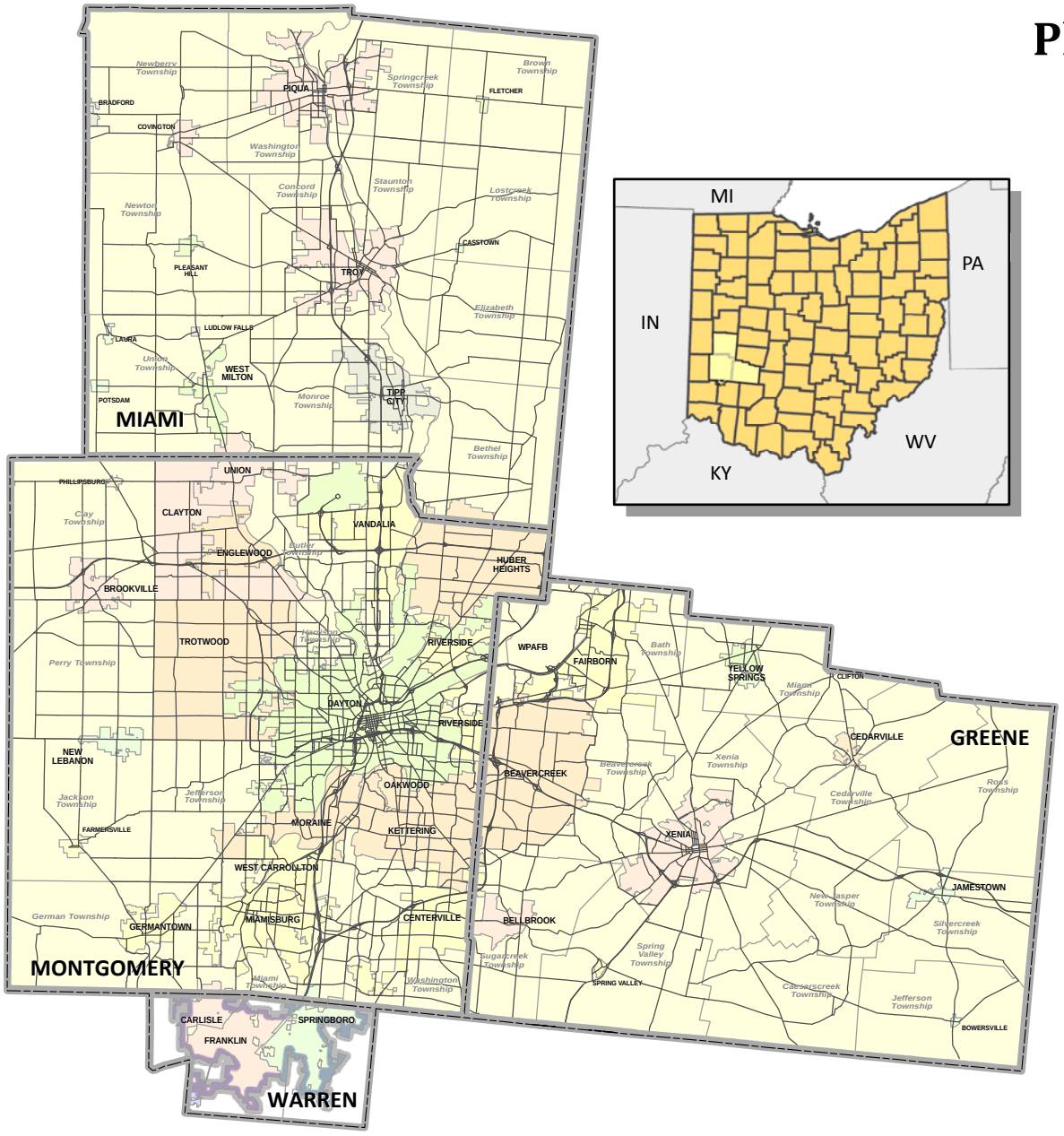
Figure 1.2 gives a brief overview of the transportation program structure at MVRPC. The MVRPC Board of Directors is the policy-making body and consists of local elected officials from the member jurisdictions throughout the Region. The Board also includes representation from corporate and civic leaders, the Ohio Department of Transportation (ODOT), and the regional transit systems. The Board of Directors meets regularly and receives input from the Technical Advisory Committee (TAC) and/or other special committees to make decisions regarding the Regional Planning Commission and the MPO. Only those members of the Board of Directors that are members of the MPO can act on MPO-related issues, such as the adoption of the Long Range Transportation Plan.

The TAC is a permanent committee composed primarily of transportation professionals from local jurisdictions and counties, ODOT, transit systems, and other government districts. Together they review and provide technical assistance and make recommendations to the Board on transportation-related projects and programs planned for the Miami Valley Region. Special task forces serve a specific purpose by examining requests for modifications to previously adopted access control plans, thoroughfare plans, and other plans. Technical representatives from the jurisdictions that are likely to be affected by the modification(s) use input from these groups to make well-informed decisions on transportation plans that will affect the Region for years to come.

MVRPC technical staff (planning, engineering, and GIS) generate forecasts, system alternatives, recommendations, and reports for subsequent review and action by the Board of Directors.

MVRPC

Figure 1.1
MVRPC Transportation Planning Area Map



Metropolitan Planning Organization Boundary

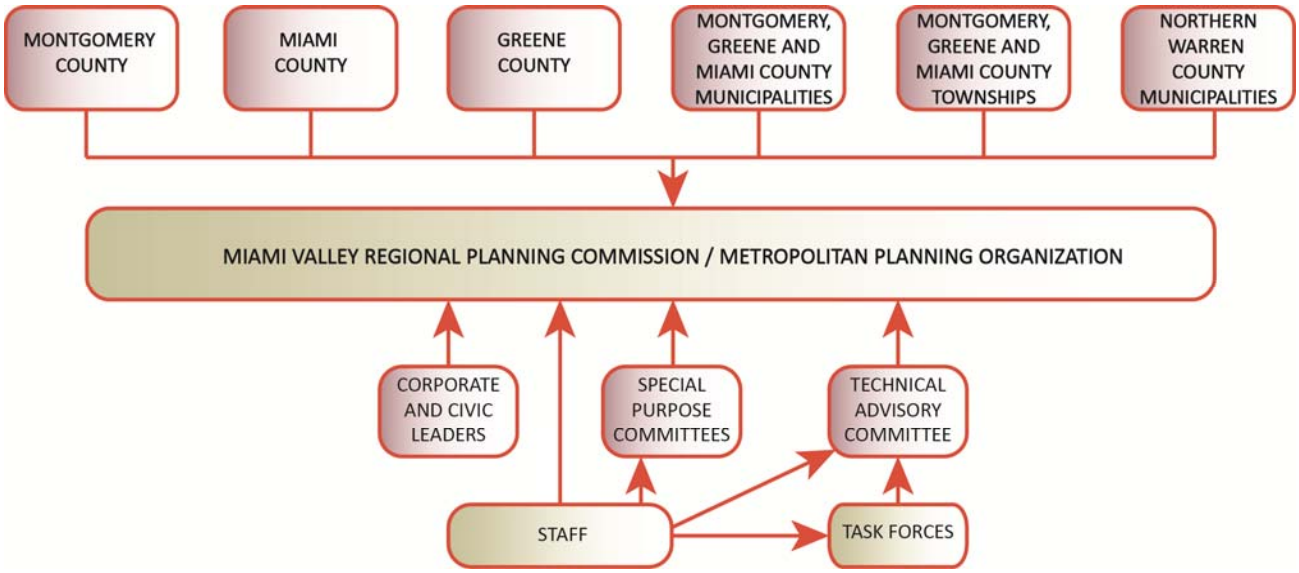
Source: MVRPC

May 2016

N

0 2 4 6 8 Miles

Figure 1.2 — MVRPC Transportation Program Structure



1.2 Long Range Transportation Plan Overview

The Long Range Transportation Plan (LRTP) is a long range (20+ year), multimodal strategy and capital improvement program developed to guide the effective investment of public funds in transportation facilities. The LRTP is updated every four years, and may be amended as a result of changes in projected Federal, State, and local funding; major investment studies; the congestion management process; interstate interchange justification/modification studies; environmental impact studies; and federal or state legislation. The LRTP provides the context from which the Region's Transportation Improvement Program (TIP), a capital improvement program for implementing highway, transit, and other multimodal projects, is drawn.

MVRPC last conducted a comprehensive update of its LRTP in 2012, focusing on highway, transit, and bicycle/pedestrian transportation improvements desired between 2012 and 2040. Since the adoption of the LRTP in May 2012, MVRPC staff has worked on the data collection, analysis, and program development necessary to update it. The new plan, titled the 2016 Update to the 2040 Long Range Transportation Plan (hereafter 2040 LRTP or the Plan), adopted on May 5, 2016, is a 25-year multimodal transportation plan with a base year of 2010 and a planning horizon year of 2040. The 2040 LRTP reflects active involvement by the elected officials, engineers and planners of the MPO's jurisdictions and member agencies, as well as extensive input from the business community, general public, and special interest groups. This update also reflects current and projected land uses, demographics, economic conditions, traffic conditions, environmental analyses, and local/State/Federal priorities, so that the Plan can be actively used and referred to by local decision makers.

There have been numerous new initiatives incorporated into the 2040 LRTP update. MVRPC developed a regional report card and incorporated a corridor-level analysis into the Congestion Management Process (CMP) based on safety, congestion, mobility, and land use data. The analysis

is incorporated into the CMP and the Plan. The Plan includes a discussion on the latest Federal Transportation law – the FAST Act and its compliance requirements. Finally, the Plan also includes the recently updated roadway functional class, and a discussion on climate change in the environmental planning section.

The process for preparing the 2040 LRTP included several steps as shown in Figure 1.3. MVRPC started the update process by collecting data for the base year transportation and land use conditions to be used for transportation modeling and analysis purposes. Data collection was an on-going process throughout the update and included gathering several types of data – highway and transit transportation networks, socioeconomic data, traffic counts, and major studies conducted in the Region.

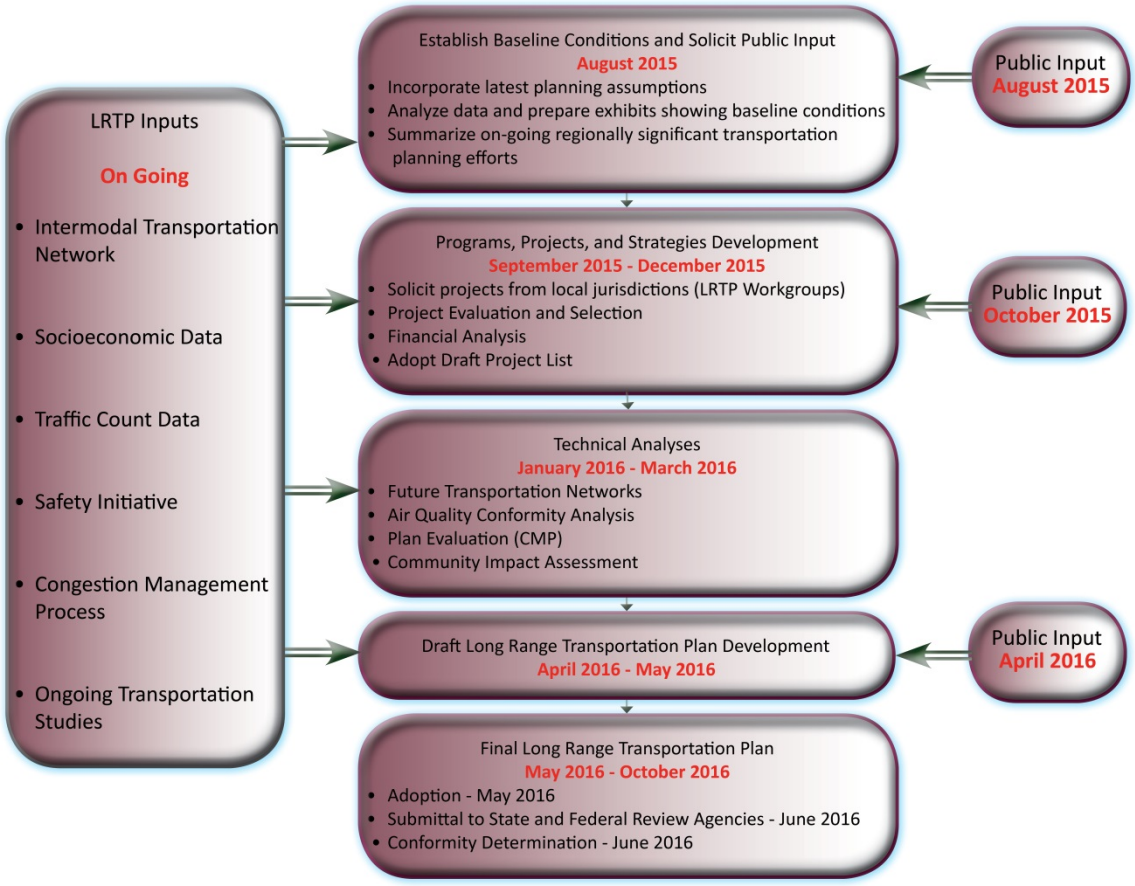
Following the data collection effort, MVRPC prepared exhibits displaying background transportation, socioeconomic and land use information for the 2040 LRTP Update. The socioeconomic and land use data analysis is presented in Chapter 3 of this report. A public participation meeting was held in August 2015 to present the background information pertaining to the Plan.

Between September and December of 2015, MVRPC carried out the projects, programs, and strategies development process whereby MVRPC conducted 2040 LRTP Update Work Group meetings and solicited projects from local jurisdictions. The draft (not-fiscally-constrained) project list that resulted from the solicitation process was presented to the public in a series of open house meetings in October of 2015. After taking note of public input and working with project sponsors, MVRPC staff completed the project evaluation process to develop a fiscally-constrained proposed project list. The proposed project list was adopted by the Board in December 2015. Chapters 4 to 7 of this report provide detailed information on projects, programs, and strategies.

Based on the proposed project list and the previously gathered transportation, socioeconomic, and land use data, MVRPC completed the required plan analyses between January 2016 and March 2016. Travel demand forecasts and/or air quality conformity analyses were produced for various scenarios, including: the base year (2010); the horizon year assuming implementation of existing and committed projects only (2040 E+C); and the horizon year assuming the implementation of all congestion management projects in the Plan (2040 Plan). All regionally significant congestion management projects were analyzed for potential environmental impacts and possible mitigation measures were suggested. Community impact analysis was also conducted to identify and address environmental justice issues. Analyses conducted as part of the 2040 LRTP update are explained in further detail in Chapters 4, 8 and 9.

MVRPC held a final public participation meeting in April 2016 to present the draft 2040 LRTP update to the public for their input and comments. The draft Plan was also presented to the TAC for their recommendations and comments. The 2016 Update to the Long Range Transportation Plan was adopted on May 5, 2016 by the MVRPC Board of Directors. Following the adoption of the Plan by the Board, the draft report was submitted to ODOT, U.S. Environmental Protection Agency (U.S. EPA), Federal Highway Administration (FHWA), and Federal Transit Agency (FTA) for their review and approval in June 2016.

Figure 1.3 — 2040 Long Range Transportation Plan Update Process Overview



As described above, MVRPC made extensive public outreach efforts in every step of the 2040 LRTP update process to increase the likelihood of public participation. Public participation efforts are summarized in Chapter 10 of this report.

1.3 Transportation Goals and Objectives

MVRPC's transportation goals and objectives were redefined in 2003 as a result of a community-based visioning process known as TransAction 2030. The objective was to identify the collective transportation values of the communities in the Region and develop a shared transportation vision, along with measurable criteria that could be applied to potential projects to gauge their consistency with the vision. TransAction 2030 involved soliciting input from stakeholders in the Region by applying various tools and methods. Based on this input, transportation goals were identified and incorporated into the MVRPC Strategic Plan. In May of 2007, MVRPC revised the Plan's goals and objectives to incorporate "security" into its transportation system management objective as per SAFETEA-LU requirements.

The Board of Directors reaffirmed the goals and objectives for use in the 2016 LRTP update in September 2015. The transportation goals are included in MVRPC's Strategic Plan under the larger umbrella of Regional Stewardship, Vibrant Communities, Partnerships (Vigorous Economy), and Sustainable Solutions.

Regional Stewardship

- Develop Regional Priorities — Continue to address regional transportation needs that further the shared social, economic, transportation, and environmental goals of the Region.

Vibrant Communities

- Transportation Choices — Encourage a stronger multi-modal network in the Region to ensure that people and goods reach their destination safely, efficiently, and conveniently.
- Transportation System Management — Continue to maintain and upgrade the regional transportation system by providing safety, security, aesthetic, and capacity improvements as needed.
- Transportation and Land Use — Incorporate regional land use strategies into the transportation policy and the investment decision making process.

Vigorous Economy

- Transportation — Continue to address regional transportation needs to enhance economic development in order to attract and retain businesses in the Region while improving the quality of life of its residents.

Sustainable Solutions

- Clean Air — Encourage the pursuit of alternative fuels and transportation to reduce emissions and our reliance on petroleum-based products.

1.4 Federal, State, and Local Requirements for the Long Range Transportation Plan

MVRPC complies with Federally-mandated planning requirements that the Long Range Transportation Plan is meant to satisfy. An explanation of the requirements is provided in Chapter 2.

1.5 Fiscal Constraints

Fiscally constrained lists for highways, transit, and sustainable growth strategies for the 2040 LRTP were developed based on:

- LRTP Work Groups;
- Public comments on transportation system needs and opportunities;
- Review by the local jurisdiction's engineers and planners, ODOT Districts, and Transit Agencies; and
- Review by MVRPC staff.

For each mode, the costs of the 2016 through 2040 plan projects are balanced against projected revenues and, following the FAST Act requirements, are expressed in year of expenditure dollars. The fiscal constraints for each transportation mode are summarized in Table 1.1. Extensive documentation of project costs, revenues, and fiscal constraints for highway, transit, and Bikeway/Pedestrian strategies is provided in Chapters 5, 6, and 7, respectively.

Table 1.1 — Fiscal Constraints of the 2040 LRTP Projects
(in millions of Year of Expenditure dollars)

Project Type	Total Revenues	Total Cost	Total Revenues – Total Cost
Highway	2,783.37	1,971.15	812.22 (Fiscally Constrained)
Transit	2,954.88	2,954.88	0.00 (Fiscally Constrained)
Ridesharing / Air Quality	33.02	33.02	0.00 (Fiscally Constrained)
Bikeway / Pedestrian	4.89	4.89	0.00 (Fiscally Constrained)

Source: MVRPC

1.6 Air Quality Conformity

The projects in the 2040 LRTP were modeled for air quality conformity in accordance with the U.S. EPA Transportation Conformity Regulations, issued in April 2012 and in accordance with the Ohio Transportation Air Quality Conformity Procedures, see Memoranda of Understanding Among The Miami Valley Regional Planning Commission, et al.[1]

The conformity analysis demonstrates that the transportation programs in the Dayton/Springfield and northern Warren County areas conform to applicable air quality standards. The current air quality status and the associated requirement and procedures by which MVRPC performed the 2040 LRTP update transportation conformity analysis are discussed in detail in Chapter 8.

[1] Technical Memorandum: MVRPC/Clark County-Springfield TCC Long Range Transportation Plan Update Mobile Emissions Estimate, March 2016

1.7 Project Implementation

All federally and non-federally funded surface transportation projects (that are regionally significant and that increase capacity, extend roadways, or add new roadways) are implemented via the following steps:

- The project must be in the Long Range Transportation Plan;
- The Long Range Transportation Plan must continue to meet financial constraints and air quality conformity;
- The project must be placed on MVRPC's TIP (for air quality conformity determination);
- The project is implemented.

It is important to note that non-federally funded projects (that are regionally significant and that increase capacity, extend roadways, or add new roadways) are treated the same as federally funded projects because of their potential air quality impacts. Further, ODOT, local jurisdictions, and modal agencies might need to work to break up large projects into smaller, more manageable components (i.e., preliminary engineering, environmental, right-of-way, construction, as well as smaller segments) in order to improve project funding capability and facilitate project development and implementation.

1.8 Process for Amending and Updating the Long Range Transportation Plan

Amendments to the Plan may occur either as part of the comprehensive update (every four years), annual TIP-related update, or at other times as needed. The comprehensive update is a federal mandate and consists of re-examining the basic assumptions behind the Plan and the resulting projects and strategies. Amendments to the Plan requiring a comprehensive update consist of reassessing:

- Land use, demographic, and economic forecasts;
- Projected traffic and travel deficiencies;
- Financial Analyses (Cost/Revenues);
- Regional (Air Quality) Emissions Analyses; and
- Other aspects of the vision and plan.

Amendments to the Plan requiring a comprehensive update would need to be adopted by MVRPC's Board of Directors, after the opportunity for general public review and comment.

A comprehensive update is normally initiated by staff on a timetable that ensures the continuation of a 20 year horizon for the Plan and that meets the federal update timeframe requirements. On those other rare occasions when a comprehensive or major update might be requested by a jurisdiction due to unforeseen changes to a major project or due to drastic and immediate changes in land uses/demographics/economics, staff would develop a timeline to conduct the update in a timely manner.

The following outlines the anticipated process for Plan amendments:

- Receive a formal jurisdictional request for a Plan amendment;
- Complete the Project Profile and Evaluation Forms;
- Determine if additional revenues are available to cover the project or modified project;
- If sufficient additional revenues cannot be projected, submit recommendations to redesignate Long Range Transportation Plan projects as non-plan projects; any agreements with other jurisdictions or agencies to redesignate projects should be so noted;
- Submit justification for the amendment.

MVRPC staff would then finalize the project evaluation, review the appropriateness of the proposed amendment, review the financial constraints, conduct the air quality conformity analysis, and make a recommendation for the Board's action.

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CHAPTER 2
FEDERAL, STATE, AND LOCAL PLANNING REQUIREMENTS

2.1 Overview

The 2040 Long Range Transportation Plan (LRTP) update, developed in cooperation with local jurisdictions, the general public, and special interest groups, meets federal, state, and local planning requirements. The Plan is fiscally constrained, meets air quality requirements, and is in conformance with applicable State Implementation Plans (SIPs). The following sections of this Chapter address how the 2040 LRTP satisfies these planning requirements.

2.2 The Fixing America's Surface Transportation Act (FAST Act)

On December 4, 2015, the new federal surface transportation bill, the FAST Act, was signed into law. The new bill follows its predecessors, the Safe, Accountable, Flexible, Efficient, Transportation, Equity Act, a Legacy for Users (SAFETEA-LU), and the Moving Ahead for Progress in the 21st Century Act (MAP-21). Both Acts made important contributions to the metropolitan planning process. SAFETEA-LU is the last act with current approved metropolitan planning rules as described in 23 CFR part 450 and MAP-21 set the stage for performance based planning.

The metropolitan planning rules state that the planning process shall be continuous, cooperative, and comprehensive, and provide for consideration and implementation of projects, strategies, and services that will address the following planning factors:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and non-motorized users;
3. Increase the security of the transportation system for motorized and non-motorized users;
4. Increase the accessibility and mobility of people and for freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation;
8. Emphasize the preservation of the existing transportation system;
9. Improve the resilience and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
10. Enhance travel and tourism.

The last two factors are additions of the FAST Act, though they have not yet been codified in the metropolitan planning rules. The planning factors are addressed by MVRPC in our numerous planning programs and are summarized throughout the report.

2.2.1 Performance Based Planning

The cornerstone of MAP-21, continued in the FAST Act, was the transition to a performance and outcome-based program. As part of this program, recipients of Federal-aid highway funds would invest resources in projects to achieve individual targets that collectively would make progress toward national goals. The FHWA organized the many performance-related provisions within MAP-21 into six elements as defined in Figure 2.1. Performance measures and standards outlined in MAP-21 are as follows:

- Minimum standards for bridge and pavement management systems to be used by states;
- Performance measures for pavement condition on the Interstate system;
- Performance measures for pavement condition on the non-Interstate system;
- Performance measures for bridge conditions on the NHS;
- Performance measures for the performance of the Interstate System;
- Performance measures for performance of the non-Interstate NHS system;
- Performance measures to assess serious injuries and fatalities per VMT;
- Performance measures to assess the number for serious injuries and fatalities;
- Performance measures for traffic congestion;
- Performance measures for on-road mobile source emissions; and
- Performance measures to assess freight movement on the Interstate System.

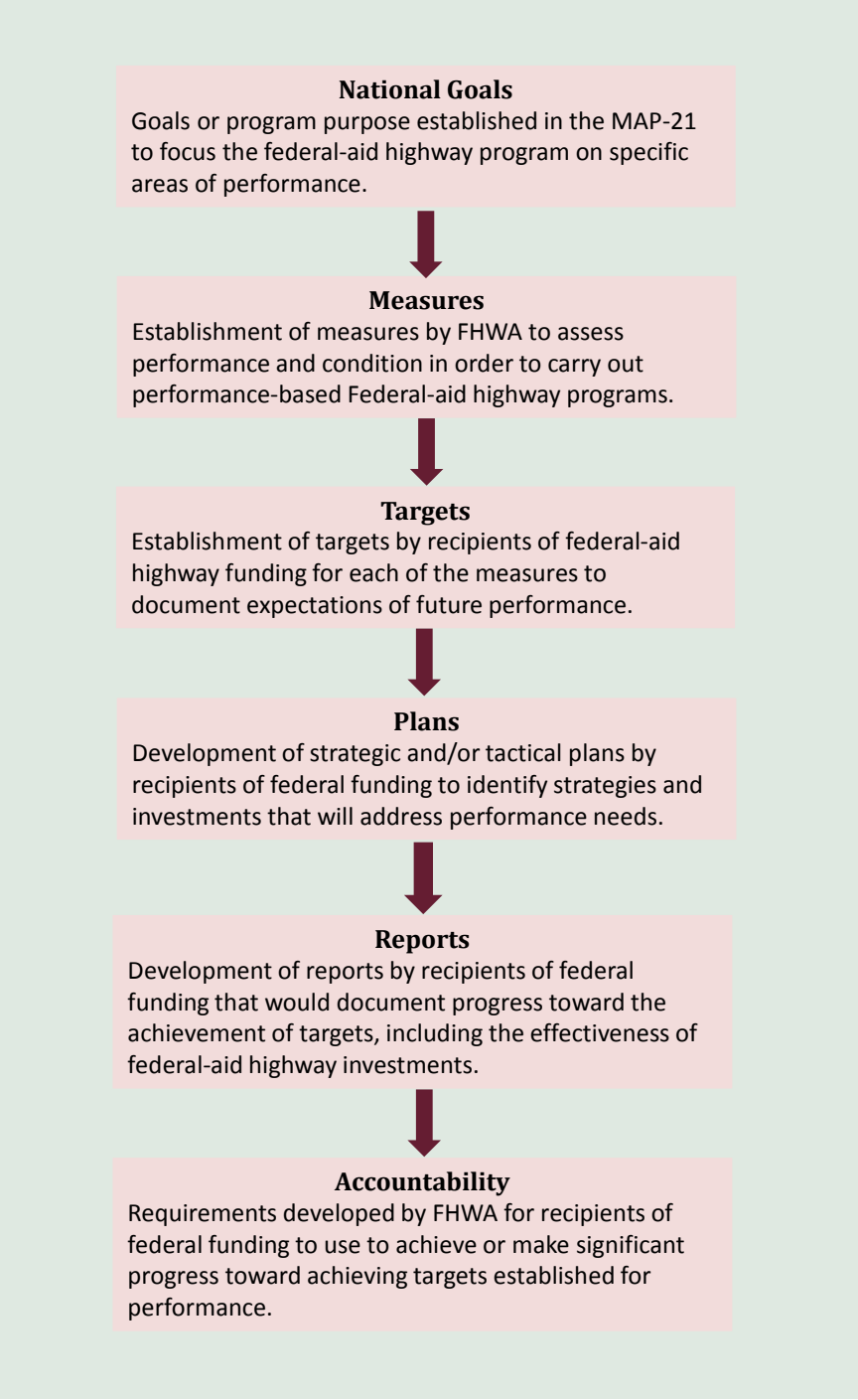
Following rule-making, MPOs are required to establish performance targets that address national performance measures established by the Secretary. These targets must be set in coordination with the state and public transportation providers, within 180 days after the relevant state or public transportation provider sets performance targets.

The performance measures and standards are based on national goals and aligned to various program and policy areas including the National Highway Performance Program (NHPP), Highway Safety Improvement Program (HSIP), the Congestion Mitigation and Air Quality Improvement Program (CMAQ), and the National Freight Policy.

The MAP-21 provisions that focus on the achievement of performance outcomes are contained in a number of sections of the law that are administered by different DOT agencies. Section 1203 of MAP–21 requires the Secretary to promulgate a rule to establish performance measures in specified Federal-aid highway program areas, including:

- Propose and define national measures for the Highway Safety Improvement Program (HSIP);
- Propose and define national measures for the condition of NHS pavements and bridges; and,
- Propose and define national measures for the remaining areas under 23 U.S.C. 150(c) that require measures and are not discussed under the first and second measure rules, which includes the following: National Performance Measures for Performance of the Interstate System and non-Interstate National Highway System; CMAQ—Traffic Congestion; CMAQ—On-Road Mobile Source Emissions; and Freight Movement on the Interstate System.

Figure 2.1 — Organization of MAP-21 Performance-Related Provisions



Source: FHWA

The FHWA has currently issued first two of the three proposed separate Notice of Proposed Rule Makings (NPRMs) to meet this requirement.

MAP-21 also furthers several important goals with respect to public transportation, including safety, state of good repair, performance, and program efficiency. MAP-21 gives the Federal Transit Administration (FTA) significant new authority to strengthen the safety of public transportation systems throughout the United States. MAP-21 also puts new emphasis on restoring and replacing aging public transportation infrastructure by establishing a new needs-based formula program and new asset management requirements. In addition, it establishes performance based planning requirements that align federal funding with key goals and tracks progress towards these goals. Finally, MAP-21 improves the efficiency of administering grant programs and streamlining the major capital investment grant program known as "New Starts." MAP-21 also requires that MPOs in urbanized areas designated as transportation management areas must include transit officials on their policy boards.

The 2015 Congestion Management Process update was MVRPC's first foray into performance based planning, a subset of the measures included in the report are summarized in Chapter 4.

2.3 Development and Content of the Regional Transportation Plan

The 2040 LRTP was developed in accordance with 23 CFR 450.322, the required elements are detailed in Table 2.1.

Table 2.1 — Required Transportation Plan Elements

Content and Development Requirements:	How the 2040 LRTP Addresses…
(a) The metropolitan transportation planning process shall include the development of a transportation plan addressing no less than a 20-year planning horizon as of the effective date.	The Plan has a 25-year planning horizon, to the year 2040.
(b) The transportation plan shall include both long-range and short-range strategies/actions that lead to the development of an integrated multimodal transportation system to facilitate the safe and efficient movement of people and goods in addressing current and future transportation demand.	The first four years of Plan projects are referred to as the Transportation Improvement Program (TIP). Both the TIP and the remainder of the LRTP projects include highway, transit, and bikeway/pedestrian projects, as well as travel demand management strategies. The needs of freight transportation are also considered during the project development process as freight dependent industries are heavily represented in the economy of the Miami Valley and Ohio.
(c) The MPO shall review and update the transportation plan at least every four years in air quality nonattainment and maintenance areas.	The Plan will be reviewed and updated at least every four years.
(d) In metropolitan areas that are in nonattainment for ozone or carbon monoxide, the MPO shall coordinate the development of the metropolitan transportation plan with the process for developing transportation control measures (TCMs) in a State Implementation Plan (SIP).	While many Transportation Control Measures (TCMs) such as signalization improvements and rideshare programs have been implemented in the Region, there are no TCMs included for credit in the applicable SIPs.

Content and Development Requirements:	How the 2040 LRTP Addresses…
(e) The MPO, the State(s), and the public transportation operator(s) shall validate data utilized in preparing other existing modal plans for providing input to the transportation plan.	The latest planning assumptions as agreed through the interagency consultation process are used in the development of the 2040 LRTP. Those same assumptions were presented to the public and the Board of Directors in the early stages of the Plan development process. Additional details are provided in Chapter 3.
(f) The metropolitan transportation plan shall, at a minimum, include:	
(1) The projected transportation demand of persons and goods in the metropolitan planning area over the period of the transportation plan;	MVRPC has coordinated its forecasting methodology and process closely with ODOT's Modeling and Forecasting Section. Based on the latest planning assumptions, the travel demand model forecasts passenger vehicles, commercial vehicles, and transit demand. Additional details are provided in Chapter 3.
(2) Existing and proposed transportation facilities (including major roadways, transit, multimodal and intermodal facilities, pedestrian walkways and bicycle facilities, and intermodal connectors) that should function as an integrated metropolitan transportation system, giving emphasis to those facilities that serve important national and regional transportation functions over the period of the transportation plan;	A discussion of existing transportation facilities is included in Chapter 3 of the Plan. Specific strategies and projects are presented in Chapters 4 to 7.
(3) Operational and management strategies to improve the performance of existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods;	The Congestion Management Process (CMP), which identifies operational and management strategies to reduce congestion, has been incorporated into the Plan. The CMP also assesses strategies not currently implemented in the Region according to their suitability for future use.
(4) Consideration of the results of the congestion management process in TMAs including the identification of SOV projects that result from a congestion management process in TMAs that are nonattainment for ozone or carbon monoxide;	The results of the regional CMP and other management systems implemented by the State have been incorporated into the Plan.
(5) Assessment of capital investment and other strategies to preserve the existing and projected future metropolitan transportation infrastructure and provide for multimodal capacity increases based on regional priorities and needs;	Maintenance and operations of the existing system (plus additions to the system) have been identified as crucial to the Plan. It is assumed in the Plan that the current real value of expenditures for roadway maintenance and operations will continue into the future. The fiscally constrained revenue forecasts for the roadways system outline operations/maintenance and capacity enhancing projects. The transit project lists include operations/maintenance and capacity enhancements.
(6) Design concept and design scope descriptions of all existing and proposed transportation facilities in sufficient detail, regardless of funding source, in nonattainment and maintenance areas for conformity determinations under the EPA's transportation conformity rule;	The 2040 LRTP project lists provide sufficient detail for the modeling of travel demand, air quality conformity, and fiscal constraints; one exception is projects identified as studies since the outcome and particular scope is dependent on the study recommendations.
(7) A discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan transportation plan;	Chapter 8 in the Plan includes a discussion of the environmental analysis and potential environmental mitigation activities, including stormwater impacts of surface transportation.

Content and Development Requirements:	How the 2040 LRTP Addresses…
(8) Pedestrian walkway and bicycle transportation facilities;	Specific regional bicycle and pedestrian projects are listed in Chapter 7 but since the passing of the Regional Complete Streets Policy in 2011, many roadway projects now include bike and pedestrian elements.
(9) Transportation and transit enhancement activities, including transportation alternatives, and	The TIP includes all funded transportation alternative projects in the MPO.
(10) A financial plan that demonstrates how the adopted transportation plan can be implemented.	A conservative financial plan has been developed for each of the 2040 LRTP modal strategies. Only historical and clearly dependable funding source assumptions have been made. The Plan was developed cooperatively with ODOT and the regional transit agencies. As discussed in Chapters 1, 5, 6, and 7, and in detail in the Financial Summary document, the Plan meets the FAST Act mandated fiscal constraint requirement with costs and revenues in year of expenditure dollars.
(g) The MPO shall consult, as appropriate, with State and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation concerning the development of the transportation plan.	MVRPC's public participation list has been expanded to include agencies with an interest in the areas of land use management, environmental resources, environmental protection, conservation, and historic preservation. As a result, the list now includes nearly 600 agencies and individuals. Contacts are notified and given the opportunity to comment on any transportation program that requires action by the MVRPC Board of Directors, such as the LRTP and the TIP. A representative sub-group of these agencies was invited to participate in the LRTP work groups, see Chapter 5. Chapter 8 in the Plan includes a discussion of the environmental analysis comparing LRTP projects to known inventories of natural and historic resources.
(h) The metropolitan transportation plan should include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects for the MPA contained in the Strategic Highway Safety Plan.	Safety is a big component of the transportation planning program at MVRPC. In addition to coordinating with ODOT to ensure consistency with the Ohio Strategic Highway Safety Plan and participating in the annual ODOT District priority safety locations, MVRPC maintains a regional priority list (updated every 3 years) which is used to prioritize funding requests. Safety data and/or safety study assistance is also provided to local jurisdictions upon request. Chapter 4 of this report includes a summary of MVRPC's Safety Initiative.
(i) The MPO shall provide citizens, affected public agencies, representatives of public transportation employees, freight shippers, providers of freight transportation services, private providers of transportation, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties with a reasonable opportunity to comment on the transportation plan using the MPO's participation plan.	MVRPC's public participation list has been expanded to include nearly 600 agencies and individuals including all stakeholders, such as affected public agencies, representatives of public transportation employees, freight shippers, providers of freight transportation, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties. Contacts are notified well in advance and given the opportunity to comment on the LRTP both electronically as well as through mail-in comment cards over a one month period. Representatives with freight, public transportation, human services, and pedestrian transportation interests were invited to the LRTP Workgroups.

Content and Development Requirements:	How the 2040 LRTP Addresses…
(j) The metropolitan transportation plan shall be published or otherwise made readily available by the MPO for public review, including (to the maximum extent practicable) in electronically accessible formats and means, such as the World Wide Web.	A user friendly website, plan2040.mvrpc.org, focusing entirely on the Plan update, was available throughout the update process to focus attention on the information most relevant at each stage of the process including all exhibits that were presented at each public participation meeting as well as the ability to comment on the information. In continuation of past trends, the entire Long Range Transportation Plan will be published electronically on MVRPC's website in pdf format and the final congestion management project list will be made available in an interactive map format.
(k) A State or MPO shall not be required to select any project from the illustrative list of additional projects included in the financial plan.	Two projects are identified in the Plan as potential needs beyond the 2040 timeframe or in case additional funds become available; neither project is included in the fiscal constraint analysis for the 2016 Update.
(l) In nonattainment and maintenance areas for transportation-related pollutants, the MPO, as well as the FHWA and the FTA, must make a conformity determination on any updated or amended transportation plan in accordance with the Clean Air Act and the EPA transportation conformity regulations.	The adopting resolution of the 2040 Plan update includes a conformity determination by the MVRPC Board of Directors.

Source: MVRPC

2.3.1 State and Local Coordination

MVRPC worked very closely with ODOT's Modeling and Forecasting section regarding modeling and related activities, including transportation conformity. MVRPC also coordinated closely with ODOT District offices regarding projects under development. Overall, the Plan was developed consistent with ODOT's planning requirements.

The Plan was developed with extensive coordination with the general public, ODOT, and local jurisdictions, including elected officials, agency directors, planners, and engineers.

MVRPC's Long Range Transportation Plan is important to the Region because:

- All federally-funded surface transportation projects need to be drawn or be consistent with the LRTP via MVRPC's Transportation Improvement Program (TIP); and
- The updated Long Range Transportation Plan should be used by local jurisdictions, agencies, and groups to help provide a regional context within which to conduct their long range transportation planning.

It should be understood that local jurisdictions, agencies, and groups developed the 2040 LRTP cooperatively and in a regional fashion. It is hoped that this regional initiative will be incorporated into the planning efforts of the local entities, and that there will be a continuing, cooperative, and comprehensive strategic effort to use the Plan as a guide to other local planning endeavors.

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CHAPTER 3
STATE OF THE REGION

3.1 Overview

The Miami Valley Region (hereafter the Region), located in southwest Ohio, is defined as Greene, Miami, and Montgomery counties and the cities of Franklin, Carlisle, and Springboro in northern Warren County. The Region is situated approximately 50 miles north of Cincinnati, 70 miles west of Columbus, and 90 miles east of Indianapolis.

As of 2010, the Region is home to approximately 839,000 people in 1,300 square miles with 81 units of county, city, village, and township governments. Montgomery County is the largest county, with 67% of the Region's total population, and the City of Dayton is the largest city with approximately 141,500 residents. The Region is also home to Wright Patterson Air Force Base (WPAFB), the largest single-site employer in Ohio.

The Region is served by a variety of transportation modal choices. The Dayton International Airport is located in the northern part of Montgomery County and a Greyhound bus terminal is located in Trotwood. Further, an extensive network of roads, transit services, bikeways, and pedestrian facilities provide mobility, accessibility, and connectivity within and outside the Region. Freight infrastructure and facilities support the efficient movement of freight passing through and moving within the Miami Valley.

According to the 2010 Census, the majority of residents in the Region live and work within the same county, although Montgomery County attracts a significant number of its workers from the surrounding counties. The Region is also heavily dependent on personal vehicles, with approximately 93% of work trips made by automobiles averaging a 20.6 minute commute to work.

Under the assumption that the development patterns of the past will remain predominant in the future, it is anticipated that the Region will continue to develop along freeway corridors and their fringes. Overall, the Region is expected to increase in population by approximately 2.6%, with the eventual stabilization of population loss in the older urban areas, continued growth in the suburbs, and some spillover of that growth into the surrounding rural areas. On the other hand, employment is expected to grow by 5% over the next 30 years.

The regional Travel Demand Forecasting Model that predicts transportation assignment forecasts based on future assumptions of development patterns has been updated for use in the transportation planning process.

3.2 The Miami Valley Region Today

When the Region was first settled in the late 1700s, urban land uses followed the river valleys, which were the main transportation arteries prior to the development of mechanized forms of transportation. Most of the heavy industries were located along the rivers, which also provided the major source of water.

Today, employment is still concentrated in some of the original locations even though the Region's economy has since diversified from its industrial base. Although the current land use patterns in the Region have been shaped more by history than by any inherent physical limitations or advantages, the development patterns of the Miami Valley Region can be characterized as following the main transportation network.

Over the past 50 years, the Region has experienced a drastic change in developed areas characterized by an outward movement from the central city to the suburban areas following Interstates I-75, I-70, and I-675 and US 35, as seen in Figure 3.1. According to the 2010 Census, the urbanized area extends north for 20 miles into the City of Troy in Miami County; east for 15 miles into the City of Xenia in Greene County; south for 15 miles to northern Warren County; and west for 8 miles from the Dayton Central Business District (CBD). Further, the 2010 Census indicates that densely settled areas have emerged scattered locations throughout the Region.

3.2.1 Land Use

MVRPC used its GIS capabilities along with the latest aerial photography to examine how the land was utilized in the year 2007. Figure 3.2 shows the generalized land use/land cover in 2007.

Figure 3.2 shows that residential development in the Region is spread fairly evenly throughout the urbanized area, with high concentrations between the eastern half of Montgomery County and western part of Greene County and along I-75 in Miami County. Since 2000, increased residential development has occurred in northern Warren County as well. The Region's residential development is largely low-density in character.

Commercial development is spread somewhat less evenly, with concentrations around three suburban malls and in the Dayton CBD. Additional commercial areas are found along the major transportation routes, such as Interstates, US Routes, and State Routes, and at the junctions of major roadways, such as the intersection of I-75/I-675, I-70/SR 202, and I-675/SR 48. However, outside of these highly concentrated locations, there is still a mixture of shopping centers, strip center development, and neighborhood shopping districts, with several rural and suburban municipalities also retaining recognizable downtown commercial districts. As a result, most parts of the Region are well served by retail and service facilities.

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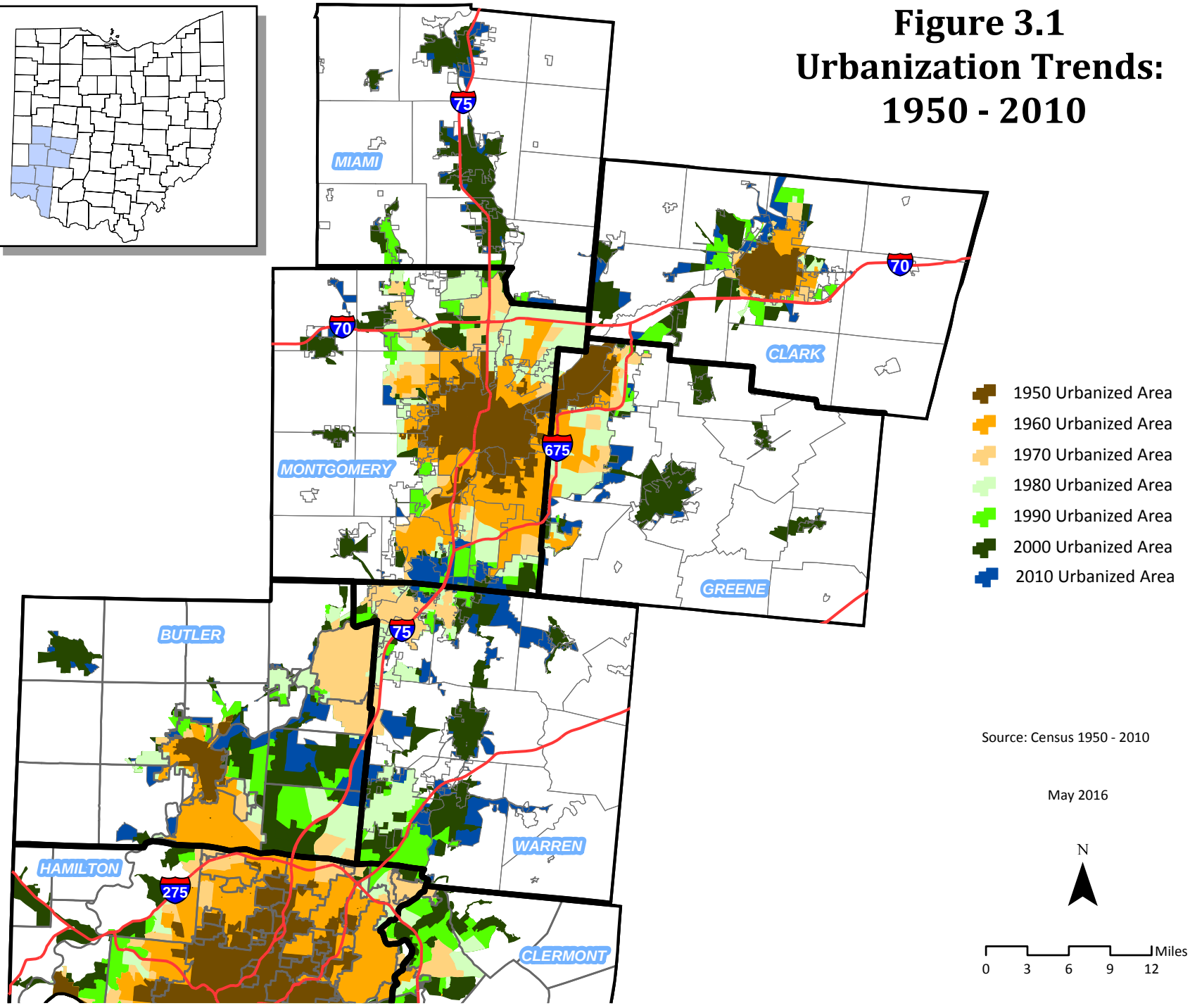
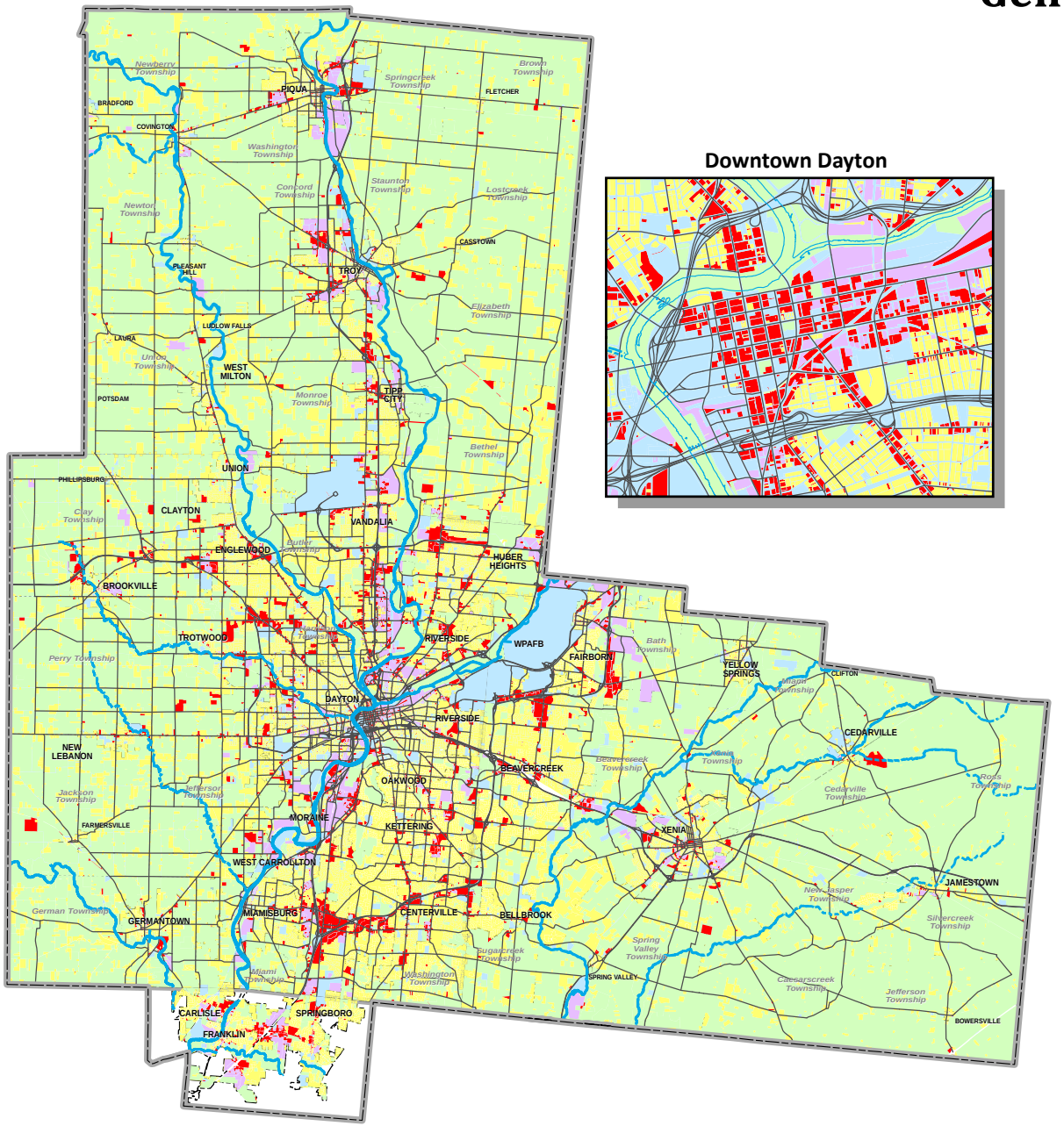
Figure 3.1
Urbanization Trends: 1950 - 2010



MVRPC

Figure 3.2
Generalized Land Use In 2007



Source: MVRPC

May 2016

Industrial development in the Region generally follows the I-75 corridor, which parallels the Great Miami River and provides access to major factories and office clusters stretching from the City of Piqua at the northern edge of the Region to the southern Montgomery County border. The most important concentration of employment outside the I-75 corridor is located along the Greene/Montgomery County border, near the intersection of I-70 with SR 4, and along I-675.

3.2.2 Socioeconomic Data

Three main sources of information were utilized to produce socioeconomic variables. For residence-related variables, the Census was the sole source. For employment, MVRPC used a combination of Covered Employment and Wages by Industry data known as ES202 prepared by the Ohio Department of Jobs and Family Services and obtained from the Ohio Department of Transportation, as well as a commercially available employment database (AmeriList) purchased by MVRPC.

Residence-related data were extracted directly from the 2010 Census at the block level and then aggregated to the Traffic Analysis Zone (TAZ). In addition, the 2006-2010 American Community Survey (ACS) data was used for variables unavailable from the 2010 Census products, for example, automobile availability. For employment-related variables, several steps were taken in order to develop base year data. First, the ES202 data obtained from ODOT was geocoded to the TAZ level. Second, the AmeriList employment database and other in-house databases were used as secondary data sources to complement the ES202 data and fine-tune employment figures. Third, extensive field reviews were conducted throughout the Region for areas with high employment concentrations to verify the locations of individual businesses. Finally, the total employment and employment by 10 industry sectors were generated at the TAZ level following Standard Industry Classification (SIC) codes. The 2000 data were then updated to 2005 and 2010 based on known development patterns. A summary of the Region's socioeconomic data and the percentage share by county is shown in Table 3.1 below.

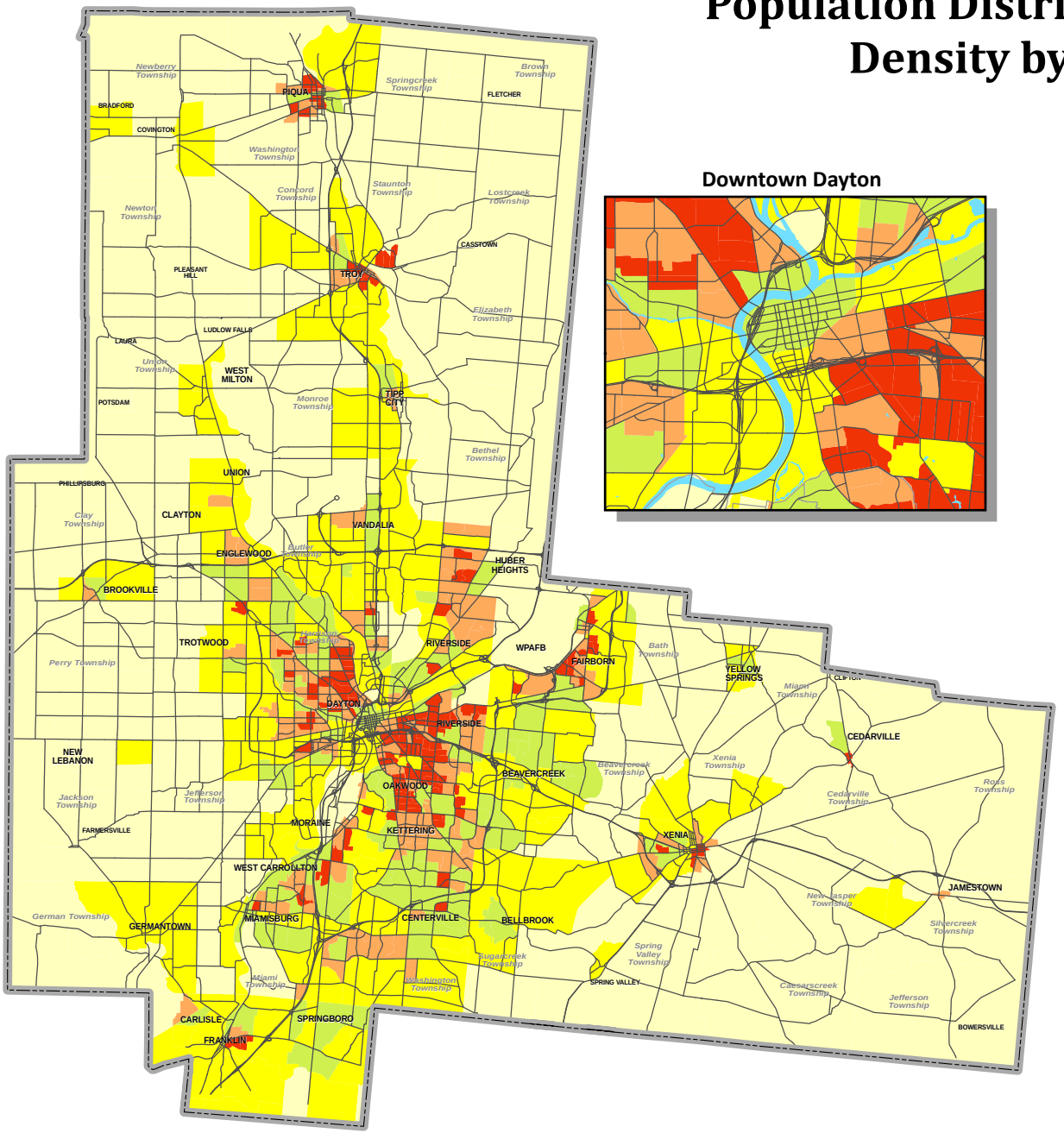
Table 3.1 — 2010 Socioeconomic Data

County	Population[1]	Households[1]	Employment[2]
Greene	161,573 (20.2%)	62,770 (18.5%)	88,282 (20.0%)
Miami	102,506 (12.8%)	40,917 (12.0%)	53,256 (12.1%)
Montgomery	535,153 (66.9%)	223,943 (65.8%)	299,855 (67.9%)
Warren*	39,780 (4.7%)	12,529 (3.7%)	11,041* (2.5%)
Total	**839,012**	**340,159**	**441,393**

Note: * Warren County includes only the Cities of Franklin, Carlisle and Springboro. The employment number for Warren County is an aggregate of TAZs because the employment numbers were developed at the TAZ level. The area covered by these TAZs is slightly larger than the area covered by the cities of Franklin, Carlisle and Springboro.

Source: [1] 2010 Census Summary File 1; [2] MVRPC;

Figure 3.3
Population Distribution - Population Density by Block Group



The Region is home to a population of 839,012. The majority of the population, (67%), lives in Montgomery County. However, a closer look at the population density distribution indicates that the Region has significant variations as shown in Figure 3.3. In general, higher population density is observed around the City of Dayton with the density decreasing away from the center and into the surrounding rural areas. Nonetheless, some of the municipalities in the rural areas also have population densities similar to those found inside the urbanized area.

There are approximately 340,000 households in the Region, with 65.8% located in Montgomery County. The household density distribution is similar to the population density distribution; household density is highest in the developed areas in the City of Dayton and in the immediate suburbs, and gradually decreases outward into the rural areas.

The Region is also home to nearly 442,000 jobs. Similar to the population and household distributions, Montgomery County has the largest employment share, with 67.9% of the Region's total employment, followed by Greene (20%), Miami (12.1%), and northern Warren (2.5%) counties.

3.2.3 Functional Classification

Approximately every ten years, MVRPC, in cooperation with ODOT, conducts a major review of the existing Functional Classification System following the urbanized area changes made by the Decennial Census. MVRPC carried out the most recent update to the functional class system in 2015. MVRPC's proposed regional functional classification system can be seen in Figure 3.4.

According to FHWA, Functional Classification is the grouping of roads, streets, and highways in a hierarchy based on the type of service they provide. Type of service is defined by combinations of mobility and land access as follows:

- Arterials include those classes of highway emphasizing a high level of mobility for the through movement of traffic, with land access being a secondary function. Interstates and freeways represent the highest class of arterials.
- As their name indicates, collectors collect traffic from the lower class facilities and distribute it to the higher class facilities. Their function is divided equally between mobility and land access.
- Local streets are located at the bottom of the hierarchy, their primary function being to provide access to adjacent land uses.

Using these three major categories as the base, roads are then subdivided into rural or urban as shown in Table 3.2.

It should also be noted that only roadways that are functionally classified above the rural minor collector category are eligible to use federal funds, the exception being bridges on non-classified roads.

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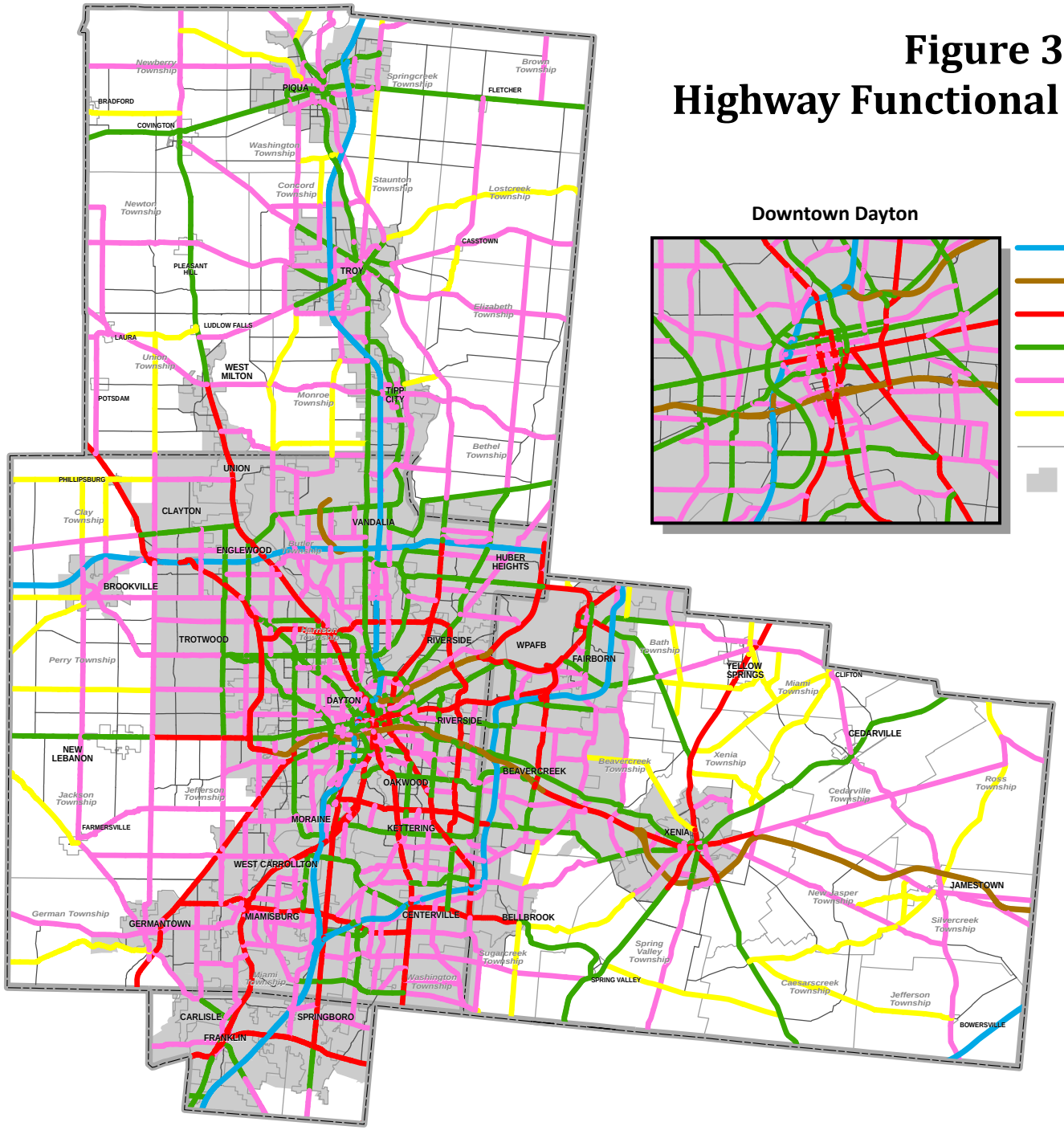
Figure 3.4
Highway Functional Classification



Source: FHWA, ODOT & MVRPC

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Table 3.2 — Functional Classification System

Rural	Urban
• Principal Arterial (Interstate)	• Principal Arterial (Interstate)
• Principal Arterial (Other)	• Principal Arterial (Freeway/Expressway)
• Minor Arterial	• Principal Arterial (Other)
• Major Collector	• Minor Arterial
• Minor Collector	• Collector (Major and Minor)

Source: FHWA

3.2.4 Multimodal Transportation System

The Region offers a variety of multimodal transportation opportunities as seen in Figure 3.5. The Region is served by the Dayton International Airport located in the northern part of Montgomery County, three Interstate highways, and a Greyhound bus terminal located in Trotwood.

Together they connect the Miami Valley Region to other regions in the U.S. by air and ground. Within the Region, a variety of intermodal facilities, such as an extensive transportation network of roads, transit, bikeways, and pedestrian facilities, provide multi-faceted transportation options for better mobility, accessibility, and connectivity. The Region's roadway networks include three interstates (I-70, I-75, and I-675), freeways, and principal arterials, including the intersection of I-70/I-75, a major focal point for intermodal traffic.

Figure 3.6 illustrates multimodal freight infrastructure and facilities located in the Region. Networks of railroads, pipelines, and roadways, along with facilities such as the Dayton International Airport and truck terminals, support the efficient movement of raw materials, manufactured items, merchandise, and/or other material goods passing through and moving within the Region.

The Region is also served by four transit agencies. The Greater Dayton Regional Transit Authority (GDRTA) serves Montgomery County residents with an extensive network of seven different types of fixed routes covering nearly 1,000 miles of directional roadways serving approximately 9 million passenger trips per year. Further, GDRTA's Transit Hubs, located throughout Montgomery County, connect the central city and the suburban areas with bus services at centralized locations.

Greene County is served by the Greene County Transit Board (Greene CATS) on a demand-responsive basis, providing over 185,000 one-way passenger trips per year. Recently, Greene CATS introduced flex-route service from Fairborn to Beavercreek, from Xenia to downtown Dayton, and to provide east-west transit services within Xenia and Fairborn. The Miami County Transit System which consolidated with the City of Piqua Transit System in 2007, provides demand-responsive transit service for Miami County residents including residents of the City of Piqua, with approximately 62,300 passenger trips per year. The Warren County Transit System provides demand-responsive services in Warren County and provides 66,000 passenger trips per year.

The Region offers excellent opportunities for pedestrians and bikers, with an extensive network of bikeways and sidewalks. Further, intermodal facilities such as Park-N-Bike and Park-N-Ride are located throughout the Region.

3.2.5 Airports

The Miami Valley has a long aviation history since the ideas of two young bicycle shop owners became a reality with the first flight of the Wright-B Flyer in 1903. This tradition is continued today at Wright-Patterson Air Force Base, one of the premier aviation research and development centers in the world, and also at the Dayton International Airport, the United States' top 90-minute air market. In addition to the Dayton International Airport, the Region is served by four general aviation airports eligible for funding by the ODOT (see Figure 3.5). The Dayton International Airport is the focal point of the Region's air transportation network, including freight. The other airports in the Region are mainly general aviation airports that serve small private planes for personal and agricultural uses.

James M. Cox Dayton International Airport

The James M. Cox Dayton International Airport (DAY) serves as the primary commercial service airport for the MVRPC Region. The Dayton Airport is located approximately 11 miles north of downtown Dayton in northern Montgomery County on 3,870 acres. The Dayton Airport is less than five minutes from the I-70/I-75 interchange and has three runways: a 10,900-foot primary, a 7,000-foot parallel with operations on a parallel runway when necessary, and an 8,500-foot crosswind runway. The dual runway system allows simultaneous operations on parallel runways with landings and departures on the crosswind runway.

There were five airlines serving the airport in 2015, with Delta Airlines as the single largest passenger carrier. For the 12-month period ending December 31, 2014, the airport had an average of 147 aircraft operations per day, 48% of which were air taxi, 29% commercial, 22% general aviation and less than 1% were military. There are 31 aircrafts based at this airport. There are more than 85 passenger flights a day with nonstop service to 12 major domestic markets carrying over a million passengers annually. In 2015, total passenger enplanements at the Dayton International Airport were 1,072,620. That is a decrease of 6.2 percent from the total passenger enplanements in 2014.

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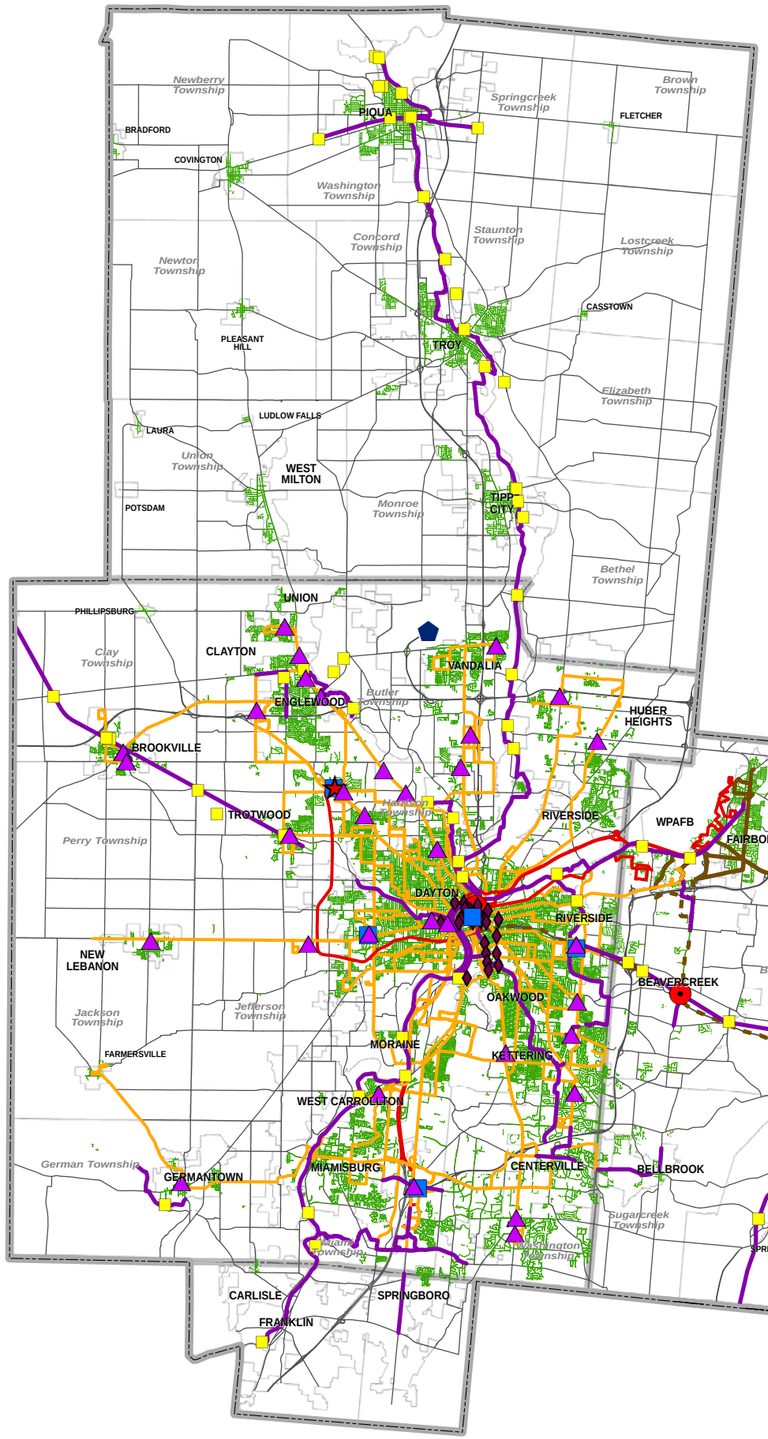
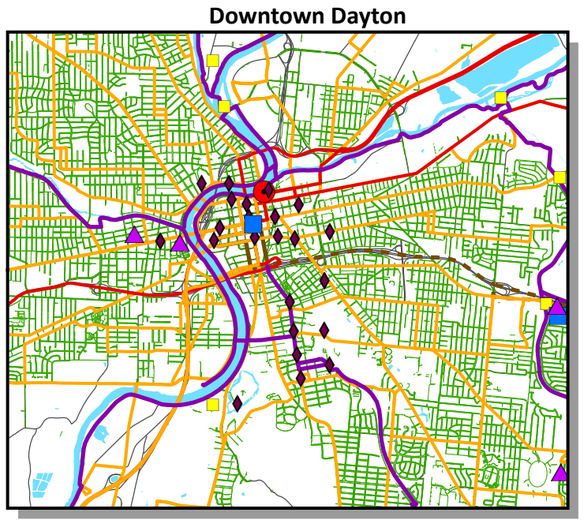
Figure 3.5
Multimodal Passenger Facilities





- Airport
- Greyhound
- GDRTA Hub
- Park-N-Ride
- BikeShare Stations
- Regional Bikeway Hub
- Park-N-Bike
- GDRTA Transit Route
- GDRTA Transit Express Route
- Greene CATS Flex Route
- Greene CATS "No Stops" Along Flex Route
- Regional Bikeway
- Sidewalk

Sources: GDRTA,
Greene CATS, and MVRPC

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N

0 2.5 5 7.5 10 Miles

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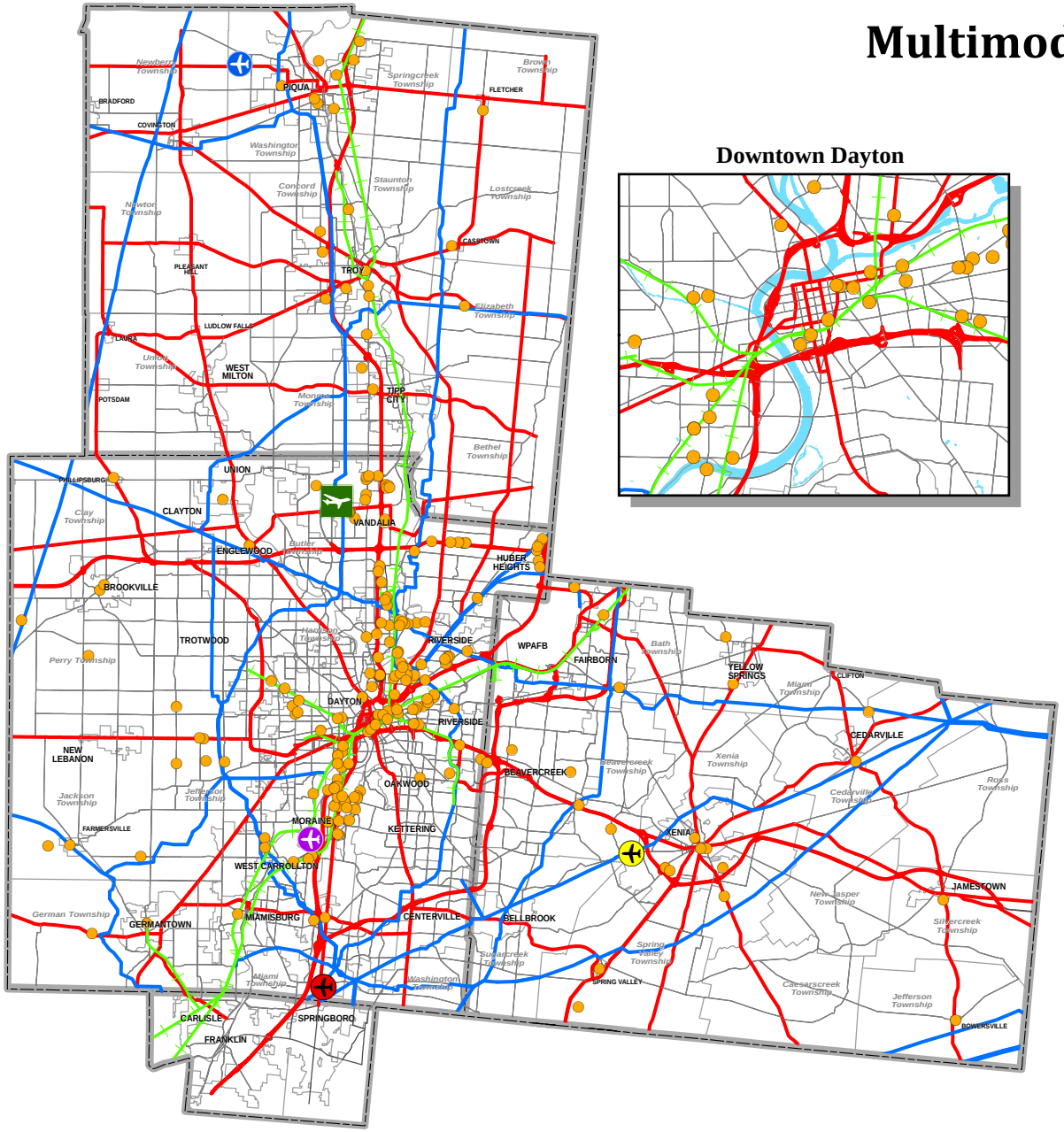
Figure 3.6
Multimodal Freight Facilities



Atlanta, Chicago and Dallas, respectively, are the three busiest domestic routes for the airport between December 2014 and November 2015.

Overall, passenger traffic continues to decrease at the Dayton airport. Passenger traffic at the airport dropped from 162,311 in the first two months of 2014 to 152,061 during the same time period in 2015. In 2015, Dayton airport carried over 8,540 tons of air cargo, a decrease of 6.5% over 2014. The majority (90%) of air cargo through the Dayton airport is FedEx freight.

The City of Dayton continues to pursue a strategy for re-use of the former UPS Cargo Hub at the airport. The facility was acquired by the Industrial Realty Group, a specialist in re-using old sites. It is marketing the building to potential tenants for uses that could include air freight and cargo sorting, manufacturing, storage, bulk commodity distribution, and even an office call center. Because of the building's size — 1.2 million square feet — its managers envision it as home for multiple tenants and mixed uses. A project, currently under development, could extend rail service to the facility.

Greene County Lewis A. Jackson Regional Airport

The Greene County Lewis A. Jackson Regional Airport (I19), situated 8 miles east of Dayton in Beavercreek Township., is undergoing numerous improvements to support increasing general aviation needs in eastern Montgomery County and Greene County. The airport underwent a significant expansion in 2005, adding runway and taxi length as well as service buildings and roads. The Greene County Regional Airport Authority owns the airport and is comprised of seven members of the community.

The 3,975 feet of paved runway at the airport was extended to 4,500 feet with FAA and local funding. For the 12-month period ending September 10, 2015, the airport had an average of 117 aircraft operations per day, 100% of which were general aviation. There are 56 aircrafts based at this airport.

Dayton-Wright Brothers Airport

The Dayton-Wright Brothers Airport (MGY) is a general aviation airport located approximately 12 miles south of the City of Dayton, on State Route 741. I-75 allows easy access to and from the airport. The Dayton-Wright Brothers Airport covers an area of 541 acres which contains one asphalt paved runway (2/20) measuring 5,000 feet.

For the 12-month period ending August 2, 2013, the airport had 89,060 aircraft operations, an average of 244 per day: 93% general aviation, 7% air taxi, and <1% military. There are 73 aircraft based at this airport.

Piqua Hartzell Field Airport

The Piqua Airport — Hartzell Field, home to 27 aircrafts, is located approximately 3 miles from downtown Piqua. The airport has a 4,000-foot runway and is the home of the Hartzell Propeller Factory Service Center. For the 12-month period ending September 25, 2015, the airport had an average of 28 aircraft operations per day: 59% transient general aviation, 39% local general aviation, and 2% air taxi.

3.2.6 Journey to Work Characteristics

The Region's journey-to-work characteristics were examined for Greene, Miami, Montgomery, and Warren counties using data from the 2006-2010 American Community Survey (ACS) 5-year estimates. Warren County was included as a whole for journey to work analysis purposes since detailed place "city" level data is unavailable for the cities of Franklin, Carlisle, and Springboro in the Region. However, an examination of available data indicates that over 60% of Franklin, Springboro, and Carlisle residents worked outside Warren County. This is consistent with the location of these municipalities at the edge of the Montgomery/Warren County border.

Work trip characteristics were examined because, although work trips make up only 10% of person trips during peak commute hours[2], that increment often makes the difference in straining the capacity of the transportation system. Figure 3.7 summarizes journey-to-work characteristics, including commuting patterns, means of transportation, and average travel time to work for Greene, Miami, Montgomery, and Warren counties.

The ACS data revealed that, although the majority of Greene, Miami, Montgomery, and Warren county residents work in the same county in which they live, Montgomery County was a major "work destination" for commuters living in the surrounding counties. Significant portions of Greene and Miami County residents were found to be traveling to Montgomery County for work. Nearly one-third of Greene County residents (31.2%), and 20.7% of Miami County residents worked in Montgomery County according to the 2006-2010 ACS data.

Average travel time to work was analyzed for the Region using the ACS data. The data revealed the average commute time in the Miami Valley Region to be 21.3 minutes. The average commute time was 20.8 minutes for Montgomery County workers, 19.5 minutes for Greene County workers, and 20.7 minutes for Miami County workers.

Travel trends in the Miami Valley Region follow national patterns. As is the case with the U.S., the automobile represents the preferred mode of travel. According to the 2006-2010 ACS, approximately 84% of the Region's residents drove their automobile alone to work.

3.3 The Miami Valley Region in the Year 2040

3.3.1 The Region in 2040

The Plan assumes that the development patterns of the past will remain predominant in the future. The Region will spread further away from the central city and beyond the boundaries of existing suburbs. The future of the Region will be characterized by less concentrated, low density development patterns, away from existing urban centers, and by fragmented land uses where complementary developments are not always in close proximity. However, it is expected that there will be a close relationship between transportation and land use, as future development is likely to occur along freeway corridors.

[2] Federal Highway Administration (FHWA), *1995 National Personal Transportation Survey*.

MVRPC, as a regional agency, maintains locally adopted future land use plans for jurisdictions located in the Region and constantly updates the data as jurisdictional updates become available. Although future land use plan horizon years vary among jurisdictions, they are good indicators of future growth patterns (see Figure 3.8).

As illustrated in Figure 3.8, residential areas are to remain in the eastern part of Montgomery County, western part of Greene County, and along the I-75 corridor in Miami County. However, it is observed that additional residential developments are planned beyond what is currently developed throughout the Region.

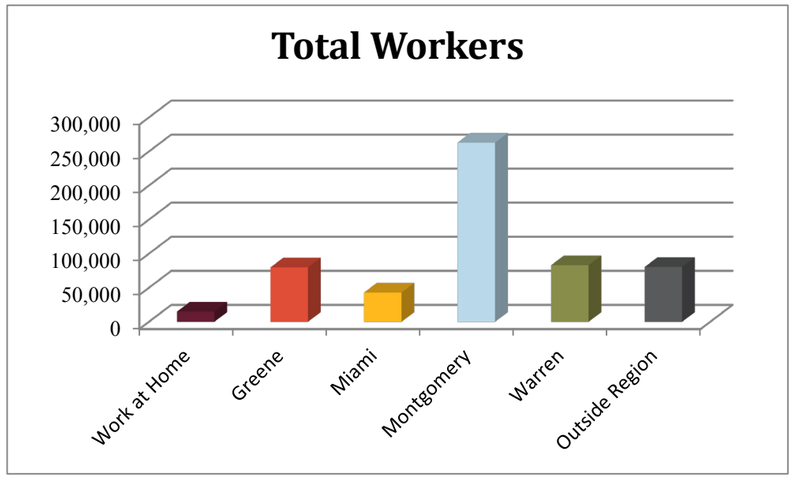
Industrial and commercial areas are planned for the western part of the City of Dayton in the vicinity of SR 49 and southern part of Montgomery County near the county line. In Greene County, commercial areas are planned in the vicinity of the I-675/US 35 interchange and industrial areas along the US 35 bypass south of the City of Xenia. In Miami County, industrial areas are planned on the outskirts of the Cities of Tipp City, Troy, and Piqua.

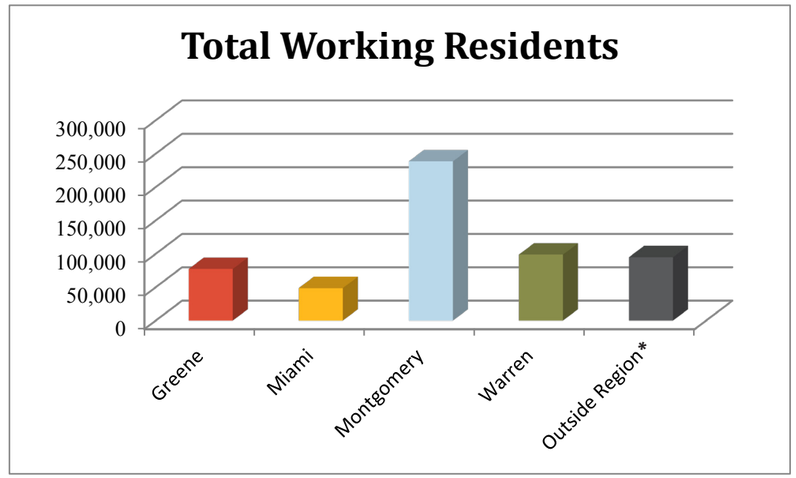
In addition to the expansion of residential, commercial, and industrial areas, it is expected that a certain level of infill development will occur over the next 30 years. For instance, the greater Downtown Dayton area is attracting more businesses and people; several research facilities have been planned in the vicinity of the University of Dayton, Downtown Dayton and surrounding areas are witnessing a spurt in residential development, the inner suburb of Kettering is attracting office and other retail establishments, and in Moraine, the vacant former General Motors plant complex has been reinhabited by a large overseas automotive glass manufacturing company and several other smaller companies.

In summary, MVRPC anticipates that much of the growth in the Region, as illustrated in Figure 3.9, will continue to occur along the fringes of the I-675 corridor in both Greene and Montgomery counties, the I-70 corridor in Montgomery County, the I-75 corridor in Miami County, and the southern portion of I-75 in Montgomery County. Further development will occur along US 35 from the Montgomery/Greene County border, stretching around the eastern edge of the City of Xenia, and along SR 49 in western Montgomery County. Northern Warren County is also projected to experience new development.

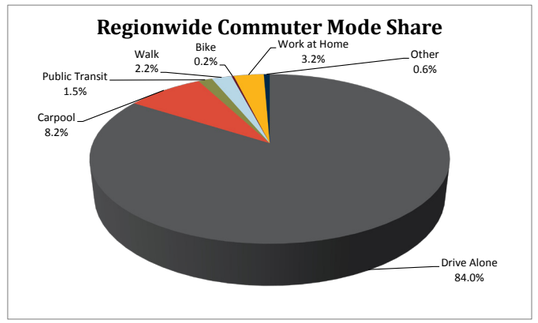
MVRPC

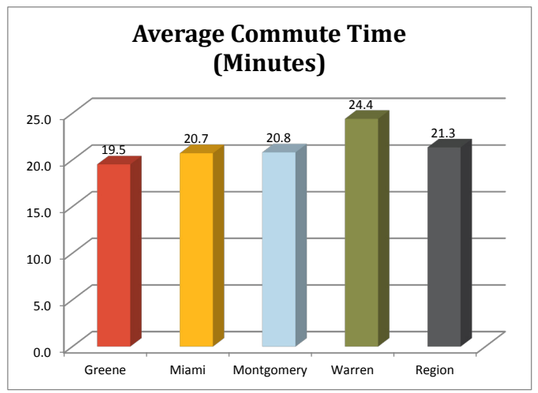
Figure 3.7 Regionwide Journey-to-Work





To / From	Work at Home	Greene	Miami	Montgomery	Warren	Outside Region	Total Working Residents
Greene	2,623	41,630	426	24,126	998	7,583	**77,386**
Miami	1,354	1,332	28,494	10,109	239	7,438	**48,727**
Montgomery	6,979	23,035	4,404	181,478	5,790	22,646	**238,542**
Warren	4,017	2,008	118	12,867	36,955	42,884	**98,849**
Outside Region		11,911	9,463	34,460	39,152		**94,986***
Total Workers	**14,973**	**79,916**	**42,905**	**263,040**	**83,134**	**80,551**	





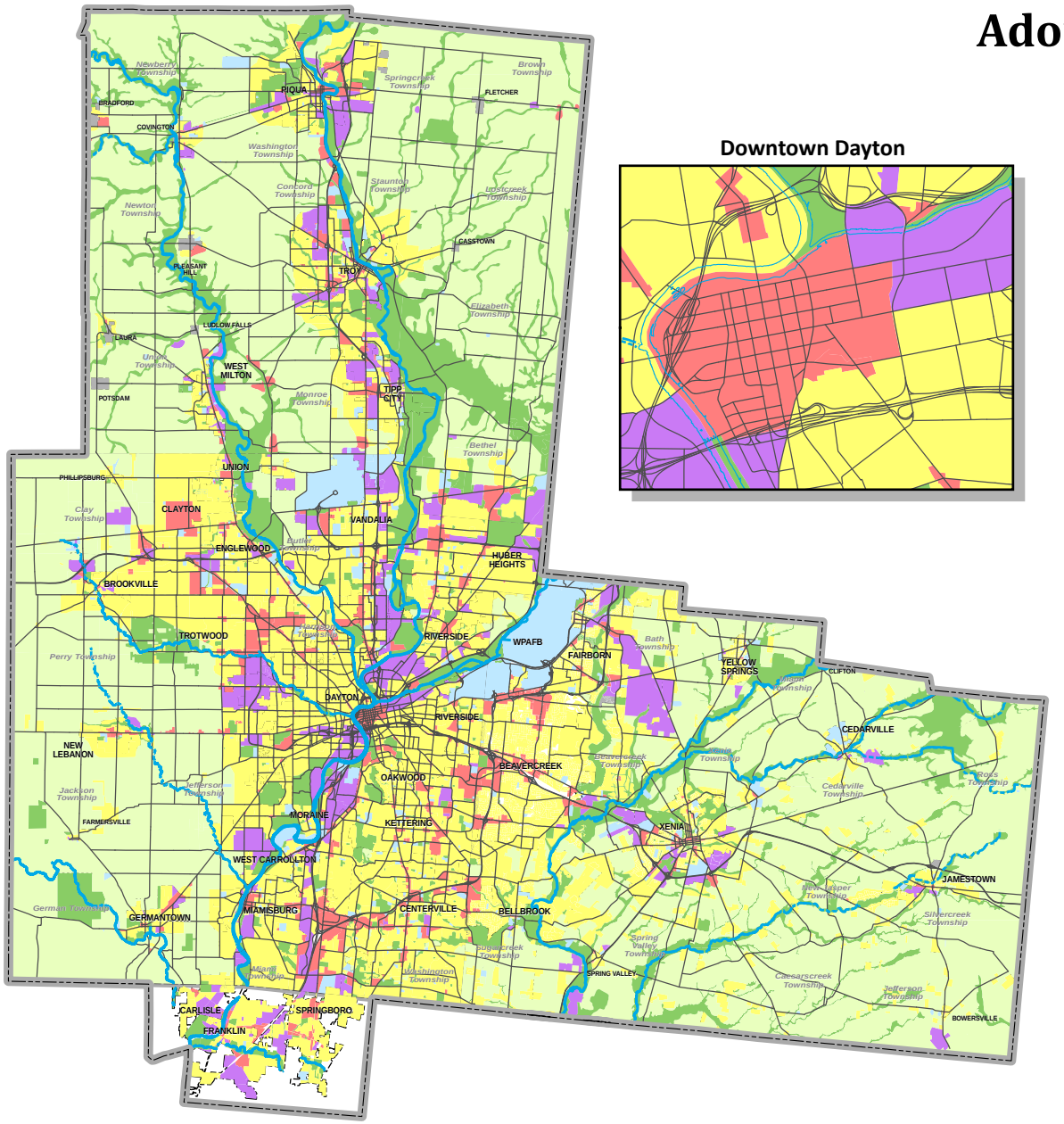
Source: American Community Survey 2006-2010

May 2016

***** Only outside residents working inside the region are considered.

MVRPC

Figure 3.8
Adopted Land Use Plans

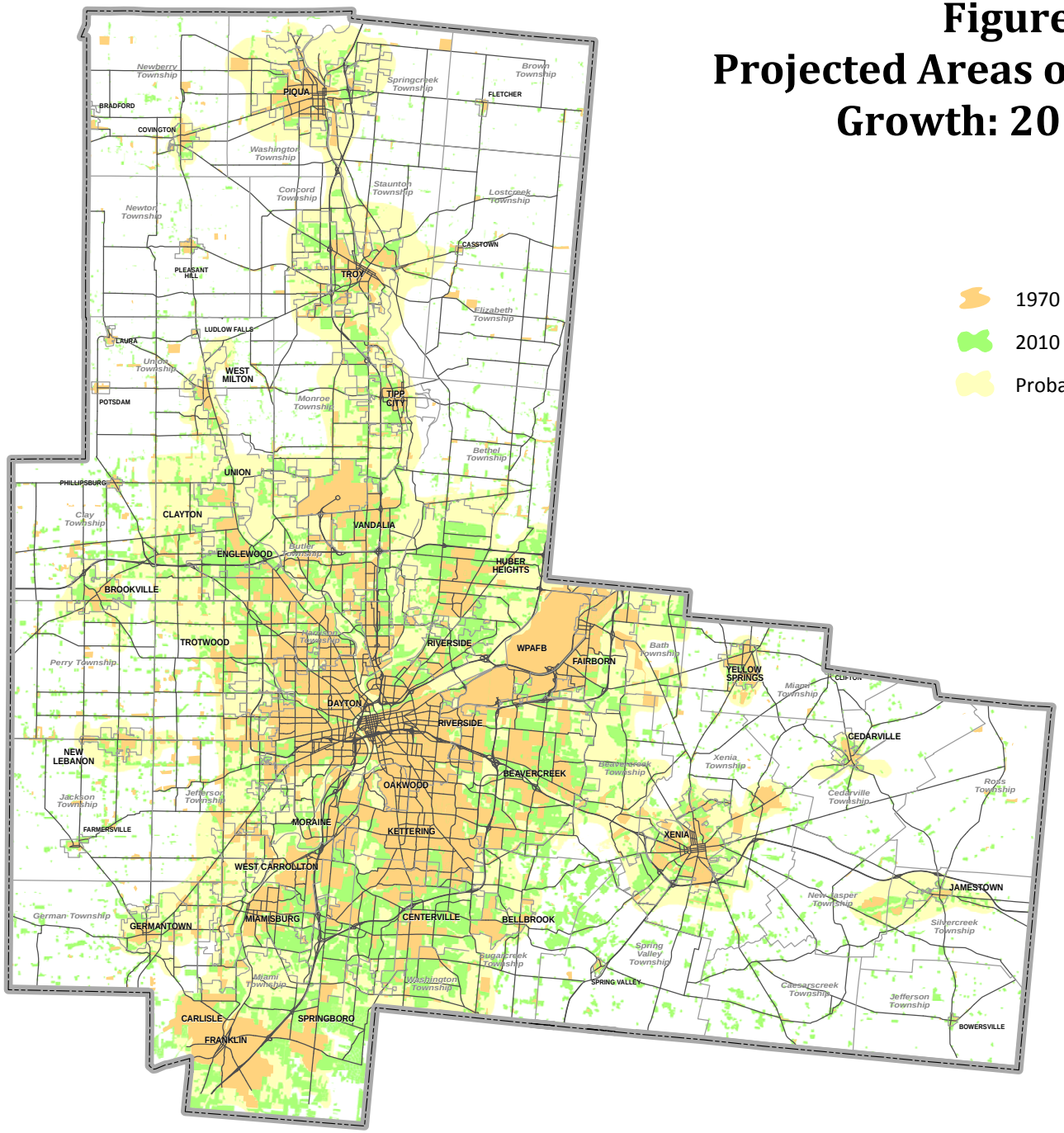


Sources: City and County Comprehensive Plans

Greene County: 1974-2007
Miami County: 2003-2007
Montgomery County: 1970-2006
Warren County: 1981-1999

May 2016

Figure 3.9
Projected Areas of Concentrated Growth: 2010 - 2040



3.3.2 Population and Employment Projections

MVRPC developed 2040 population and employment projections to identify the Region's future socioeconomic characteristics and for subsequent use by the travel demand forecasting model and LRTP analyses. Projections were generated for Greene, Miami, and Montgomery counties.

For the 2016 update of the 2040 LRTP, MVRPC used the forecasts developed for the 2012 LRTP based on the 2010 Census population release. Since the last Plan update, the Ohio Development Services Agency (ODSA) had also updated its long range population forecast. MVRPC compared 2015 projections from ODSA and the MVRPC 2012 LRTP to an extrapolated "2015 Census" by extending the 2010-2014 growth based on the population estimates program for an additional year. The ODSA 2040 projections for Greene and Miami counties showed hardly any growth, while MVRPC's projections appear to be tracking better with the Census Population Estimates Program. Recognizing this, MVRPC worked with ODOT and other interagency consultation partners to be allowed to continue to use its 2012 LRTP population forecast for the 2016 update of the LRTP.

Based on the county level population forecasts, MVRPC estimated county level household changes using the assumption that the group quarter population will remain constant over the planning period and that year 2010 household characteristics will apply through the year 2040. The county level data were then disaggregated to the Traffic Analysis Zone (TAZ) level by assigning known and/or expected growth or decline.

For employment, MVRPC identified several data sources to examine historical trends: Bureau of Labor Market Information of the Ohio Department of Job and Family Services (ODJFS), U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis, and Census County Business Patterns. MVRPC then used the ES202 historical data from ODJFS as the basis to generate 2040 employment forecasts to ensure consistency between the 2010 base year and 2040 horizon year data sources.

Adjustments were also made (at the TAZ level) to the base year employment to account for manufacturing job loses between 2000 and 2010, recognizing that the local economy is moving away from a manufacturing base. The same adjustments were applied to the 2040 projections.

The county level data was disaggregated to the TAZ level by examining a variety of GIS data including:

- Population and urbanized area trends from 1970 to 2010;
- Currently available developable land based on 2007 land use information;
- TAZ proximity to water and sewer service;
- Areas planned for development from local jurisdiction land use plans;
- Areas zoned for development from local jurisdiction zoning plans;
- Areas outside of the 100-year floodplain;
- Subdivision plans acquired from local jurisdictions and/or newspaper development articles; and
- Aerial photography.

Overall, the population of the Region is expected to slightly increase 2.63% over the next 30 years as shown in Table 3.3. However, Miami and Greene counties are expected to gain while Montgomery County is expected to lose population.

Table 3.3 — Population Projections: 2010 – 2040

County	Census 2010	MVRPC 2040	% Change (2010 – 2040)
Greene	161,573 (19.2%)	191,945 (23.4%)	18.80%
Miami	102,506 (12.9%)	109,494 (13.3%)	6.82%
Montgomery	535,153 (67.9%)	518,788 (63.2%)	-3.06%
Total	**799,232**	**820,227**	**2.63%**

Source: 2010 Census/MVRPC

Figure 3.10 shows the population percentage changes from 2010 to 2040 at the TAZ level, illustrating where the population growth and decline are expected to occur. It is anticipated that there will be a continuing outward movement of population characterized by the stabilization of population losses in the older urban areas, continued growth in the newer suburbs, and some spillover of that growth into the surrounding rural areas. Thus, the central city and suburbs are expected to experience the highest population declines while the outlying areas, such as southeastern Montgomery County, areas along the I-75 corridor in Miami County and areas between the City of Beavercreek and along US 35, are expected to experience the highest population gains. Areas in and around the new Austin Pike Interchange are projected to see strong growth, including areas in northern Warren County. Further, downtown Dayton is expected to moderately offset the trend of population decline in the central city when considering continued redevelopment efforts.

Table 3.4 summarizes population density by area type between 2010 and 2040. Overall, the densities for the CBD, suburban, and rural areas are anticipated to be higher in 2040 than in 2010, while the urban area is expected to experience lower density in 2040. Specifically, both Greene and Miami counties will have slightly higher densities in 2040 than in 2010 for both suburban and rural areas because of the outward movement of population. Conversely, Montgomery County is expected to experience a slightly different pattern. As a result of the downtown revitalization efforts, the CBD area will have higher density in the year 2040 than in the year 2010. However, urban and suburban areas are expected to have lower densities in the future, primarily because of the population loss that is forecasted to occur over the next 30 years.

Figure 3.10
2010-2040 Population Change Projection by Traffic Analysis Zone

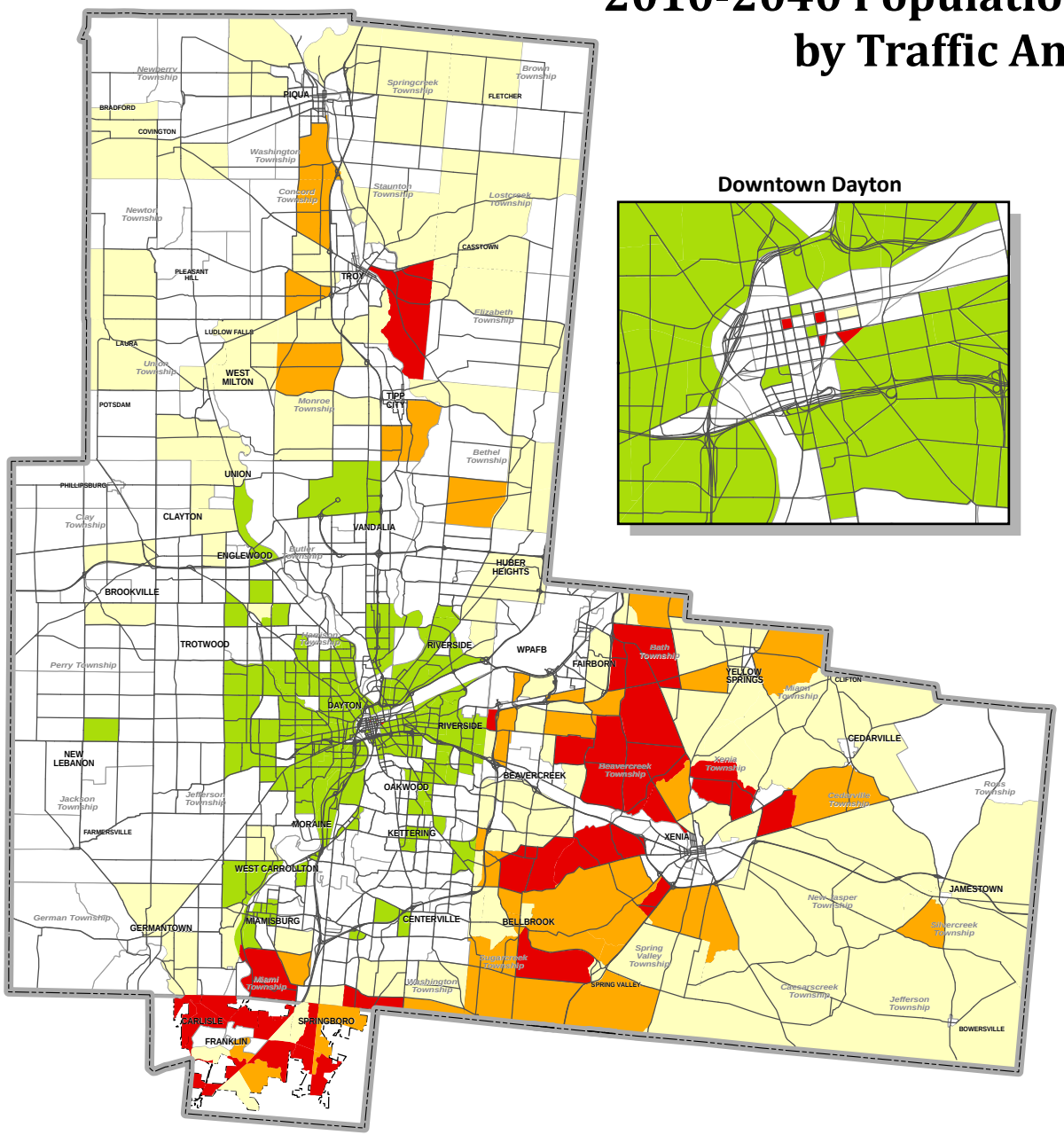


Table 3.4 — Population Density by Area Type: 2010 – 2040 (Persons per Acre)

Area Type	Greene		Miami		Montgomery		Total	
	2010	2040	2010	2040	2010	2040	2010	2040
CBD	-	-	-	-	4.48	4.73	4.47	4.73
Urban	5.63	5.63	7.89	7.89	5.99	5.40	6.10	5.55
Suburban	1.90	2.35	1.04	1.31	1.99	1.83	1.79	1.87
Rural	0.14	0.19	0.15	0.16	0.17	0.17	0.15	0.17

Source: MVRPC

Overall, employment in the Region is expected to grow over the next 30 years by approximately 5%. The employment projections by county are summarized in Table 3.5. Both Greene and Miami counties are expected to experience moderate employment growth between 2010 and 2040 (18.81% in Greene County and 7.16% in Miami County). Montgomery County employment is expected to fluctuate. Employment declined from 2005 to 2010 mirroring population losses but is expected to slightly rebound even as it continues to slide as a percentage of the regional employment.

Table 3.5 — Employment Projections: 2010 – 2040

County	2010	2040	% Change (2010 – 2040)
Greene	88,282 (20.0%)	104,887 (22.6%)	18.81%
Miami	53,256 (12.1%)	57,068 (12.3%)	7.16%
Montgomery	299,855 (67.9%)	301,668 (65.0%)	0.61%
Total	**441,393**	**463,633**	**5.03%**

Source: MVRPC

In general, it is anticipated that the urbanized areas will experience minor employment decline, while outlying areas will experience slight employment growth through 2040. The greater Downtown Dayton area is projected to experience a moderate resurgence in employment due to various revitalization efforts. However, the employment growth is mainly expected to occur along major road corridors such as Interstate I-75, I-70, US 35, SR 4, and SR 49.

Employment density changes over the next 30 years are summarized in Table 3.6. As a Region, the greater Downtown Dayton Areas and suburban areas are expected to gain employment density between 2010 and 2040 due to downtown redevelopment efforts and the anticipation of jobs following population to the outlying areas of the Region. Urban and suburban areas in Greene and Miami counties are expected to experience the highest employment density growth, while rural area densities will remain constant. Overall, the urban area is the only area expected to have a lower employment density by 2040 (3.07 in 2010 and 2.86 in 2040).

Table 3.6 — Employment Density by Area Type: 2010 – 2040 (Jobs per Acre)

Area Type	Greene		Miami		Montgomery		Total	
	2010	2040	2010	2040	2010	2040	2010	2040
CBD	-	-	-	-	31.87	33.70	31.75	33.70
Urban	5.45	5.60	4.88	5.06	2.91	2.67	3.07	2.86
Suburban	1.17	1.42	0.67	0.89	1.07	1.04	1.02	1.11
Rural	0.02	0.04	0.04	0.04	0.03	0.04	0.03	0.03

Source: MVRPC

3.4 Travel Demand Forecasting Model

ODOT and MVRPC have worked closely together to establish and maintain a regional travel demand forecasting model since the 1960s (last updated in 2007, with a validation year of 2005). The model is a series of computerized mathematical programs using databases to rationalize the social, physical, and psychological constraints of travel patterns.

3.4.1 Combined OKI/MVRPC Travel Demand Model

The OKI/MVRPC Travel Demand Forecasting Model (TDFM) includes the combined planning regions under the jurisdictions of the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) and MVRPC. The combined OKI/MVRPC TDFM was developed as part of the North-South Transportation Initiative which extended the OKI model to the combined OKI/MVRPC super-region. For MVRPC, the combined model provides additional modeling capabilities including the ability to model and forecast mode choice and the addition of a truck model component. Further, the combined model also incorporated the results of a 1995 external travel survey by ODOT. In 2005, the combined model was updated again to incorporate the results of a household interview survey in the MVRPC Region, change the model interface to Cube Voyager, and improve model functionality. The changes primarily affected trip generation distribution functions in the MVRPC Region. In 2007, in preparation for the 2008 LRTP update, the model was validated using circa 2005 traffic counts and socioeconomic data and in 2011 the horizon year was extended to 2040. The remainder of the discussion in this section focuses on the MVRPC Region.

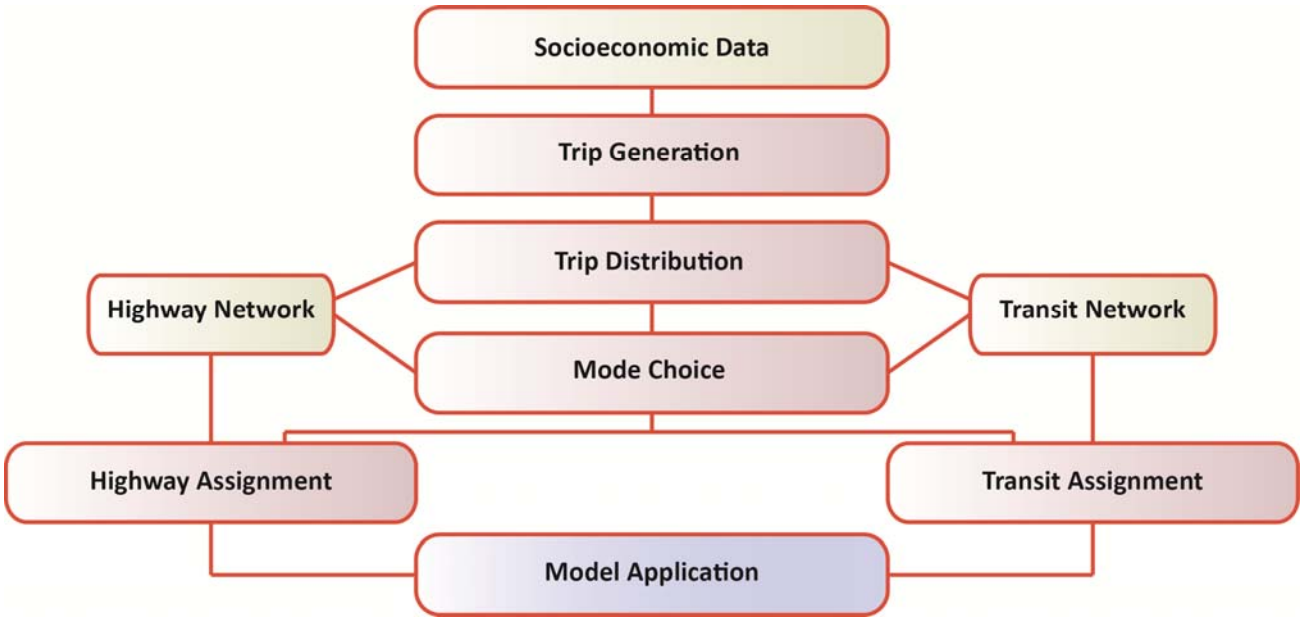
Figure 3.11 shows the basic model structure and how different components interact with one another. Data inputs are shown in green and the various model steps are shown in pink. The results of the model are then used in model applications (violet) such as congestion management, air quality, or as needed by on-going regional transportation studies.

The OKI/MVRPC Regional Travel Demand Model is based on the conventional trip-based four-step modeling approach. The main model components fall within the following five categories:

- Data Inputs — data inputs include the socioeconomic variables used in trip generation, as well as the transit and highway networks;
- Trip Generation — the process of estimating the number of person trip productions and attractions in each Traffic Analysis Zone (TAZ);

- Trip Distribution — the process of creating joined person-trips by linking trip productions and attractions across the combined super-region;
- Modal Choice — the process of estimating the number of person-trips using a particular mode for each origin/destination interchange; and
- Trip Assignment — the process of accumulating auto and transit trips onto specific highway and transit facilities in the Region.

Figure 3.11 — Basic Model Structure



3.4.2 Data Inputs

Model data inputs fall into two main categories: socioeconomic variables and transportation networks.

Socioeconomic variables at the TAZ level are used as an input to trip generation and can be broadly divided between households and related variables (persons, workers, and autos per household) and employment classified into three categories (low, medium, and high) based on the ability of an establishment to attract trips. Employment was subdivided by category using SIC codes. Table 3.7 shows the industry sectors that comprise each category.

Three main sources of information were utilized to produce the 2010 base-year model. For residence-related variables, the 2010 Decennial Census was the sole source. For employment, MVRPC used a combination of ES202 data prepared by the Ohio Department of Jobs and Family Services as well as a commercially available employment database (AmeriList) purchased by MVRPC.

Table 3.7 — Employment Classification by SIC Code

Employment Category	Industry Sectors
Low	Agricultural, Construction, Mining, Manufacturing, and Transportation
Medium	Fire-Insurance-Real Estate, Public, Service, and Wholesale Retail
High	Retail

Source: U.S. Office of Management and Budget

Households and employment are forecasted for year 2040. For intermediate years, the model has the built-in capability of interpolating between available data sets, 2010-2040. Information on the forecasting methodology and data sources is available in Section 3.3.2 of this chapter. Table 3.8 summarizes 2010 and 2040 Census/forecasted socioeconomic variables.

Table 3.8 — Year 2010 and 2040 Forecasted Socioeconomic Variables

Variable	Area Type				
	CBD	Urban	Suburban	Rural	Total
# of TAZs	65	209	413	130	817
Acres	880	30,675	297,967	495,879	825,401
2010 Census Population	-	-	-	-	799,232
2010 Households	2,151	77,584	220,039	27,856	327,630
2010 Employment	28,042	94,306	303,504	15,541	441,393
2040 Population	-	-	-	-	820,227
2040 Households	2,280	70,336	229,678	32,550	334,844
2040 Employment	29,653	87,835	329,415	16,730	463,633
2010 Persons per Household	1.30	2.33	2.41	2.66	2.40
2010 Workers per Household	0.61	1.11	1.27	1.41	1.22
2010 Autos per Household	0.63	1.42	1.82	2.26	1.74

Source: 2010 Census/MVRPC

The base-year transportation network is based on the existing year 2010 roadway facilities and available fixed transit routes. The network is updated on an annual basis using a combination of field surveys and orthophotos. Roadway inventory information, such as number of lanes, is then coded in the format required by the model, along with all other relevant information such as roadway capacity and speeds. A transit network, based on the 2010 GDRTA fixed transit routes (local and express), was also developed for two different time periods: peak and off-peak. The travel demand model does not have the capability of forecasting demand-responsive transit services; therefore, mode choice is only available in Montgomery County.

Future-year highway networks are developed for the following years (2019 E+C, 2020, 2030, and 2040) based on the feasibility period in the congestion management project list provided in Chapter 5 and also include completed projects between 2010 and 2015. The 2019 E+C (Existing plus Committed) network includes all projects that are currently funded in the Transportation Improvement Program (TIP). On the transit side, all future year networks are based on current (2015) transit routes, since transit service levels are expected to remain constant throughout the planning period.

3.4.3 Trip Summary Overview

The forecasting model and methodology first replicated existing (2010) conditions. The network was then used to forecast traffic for year 2040 based on the Existing plus Committed transportation system (2040 E+C) and for the year 2040 based on all the projects in the CM list (2040 Plan). Intermediate year forecasts were also produced for years 2020, 2022, 2030, and 2040 for use in the air quality conformity analysis.

Table 3.9 shows trips by trip purpose and mode for year 2010 and 2040 Plan. The table shows trips increasing by approximately 6% from 2010 to 2040.

Table 3.9 — Typical Weekday Trip Summary

Analysis Period	Person Trips								Vehicle Trips		
	Auto				Transit						
	HBW	HBU	HBO	NHB	HBW	HBU	HBO	NHB	Truck	EI	EE
2010 Peak	326,621	12,926	597,517	403,619	-	-	-	-	36,496	116,203	19,886
2010 Off-Peak	214,682	22,400	824,946	451,672	-	-	-	-	73,845	107,309	19,886
2010 Total	**541,303**	**35,326**	**1,422,463**	**855,291**	**16,018**	**209**	**11,206**	**5,083**	**110,341**	**223,512**	**39,772**
2040 Peak	327,633	13,090	595,058	420,235	-	-	-	-	54,249	169,997	30,456
2040 Off-Peak	215,140	22,672	821,290	455,272	-	-	-	-	109,848	156,938	30,456
2040 Total	**542,773**	**35,762**	**1,416,348**	**875,507**	**15,548**	**193**	**10,388**	**4,862**	**164,097**	**326,935**	**60,912**

Source: MVRPC

CHAPTER 4
LONG RANGE TRANSPORTATION PLANNING & THE CONGESTION MANAGEMENT PROCESS

4.1 Overview

MVRPC has assimilated many of the state and federal goals, strategies, and programs to manage congestion through its Long Range Transportation Plan (LRTP), Transportation Improvement Program (TIP), and various regional projects, strategies, and initiatives. This chapter focuses on the evaluation of the existing regional multimodal transportation network and the overall impact of the approved 2040 LRTP Congestion Management (CM) project list on managing regional congestion. In addition, the chapter documents how congestion evaluation and management serves as input to a number of MVRPC planning processes and programs. Other relevant congestion management efforts undertaken as part of the on-going transportation planning processes at MVRPC are also addressed, including public transportation, alternative modes, and technology-related solutions such as the Freeway Management System.

4.1.1 Summary of Congestion Management Efforts

Introduction to Congestion

"Congestion" is generally defined from the perspective of the roadway user. The public's perception of congestion relies primarily on their own experiences when traveling on the nation's roadways. However, an engineer would describe congestion as the condition where traffic demand approaches and/or exceeds the roadway's ability to facilitate travel at normal speeds. Typically, roadway congestion manifests itself as "stop-and-go" traffic conditions.

According to the Federal Highway Administration (FHWA), roadway congestion consists of three key elements: severity, extent, and duration. The blending of these elements determines the overall effect of congestion on roadway users. Roadway congestion occurs due to a number of planned and unplanned events either in isolation or in tandem. In some cases, the clockwork nature of recurring congestion can be the sole event. For example, up to 40 percent of roadway congestion can be attributed to physical bottlenecks (i.e. sections of the roadway system that have reached their operational capacity). However, presented below, research by FHWA has identified several additional root causes for roadway congestion along with their percent contribution as a cause of national roadway congestion. Collectively, these events can cause what is known as 'non-recurring congestion':

- Traffic Incidents (25%) — Random events occurring in the travel lanes that disrupt otherwise "normal" traffic flow, such as crashes, disabled vehicles, or roadway debris;
- Weather (15%) — Environmental conditions can affect driver behavior, causing motorists to drive more slowly and/or allow for larger gaps between cars;
- Work Zones (10%) — Construction activities that alter traffic flow due to lane or shoulder restrictions, lane shifts, or temporary closures;

- Traffic Control Devices (5%) — Poorly timed or spaced signals and railroad crossings can cause intermittent disruptions in traffic flow;
- Special Events (5%) — Sudden increases in traffic demand due to planned or unplanned events, particularly in rural areas, can temporarily overburden the roadway system;
- Fluctuations in Normal Traffic Flow (Unknown) — Day-to-day changes in the traffic demand placed on the system due to random unknown causes.

Other than bottlenecks resulting from maximized roadway capacity, the above listed events take place with irregularity throughout the day. Therefore, accurately predicting travel times between two points becomes increasingly difficult as irregular congestion disrupts the transportation network over longer periods of time and larger sections of roadway, leading to frustration for commuters, commercial operators, and public officials.

Regional Report Card

MVRPC has undertaken the development of a performance measurement and reporting program to evaluate the impact and effectiveness of congestion strategies in the Region (see Table 4.1). The performance measures help evaluate various parameters including transportation system conditions, transportation system safety and incidence response, as well as accessibility to alternative modes of transportation such as transit, biking, and walking.

4.2 Roadway Congestion in the Miami Valley Region

MVRPC used its regional travel demand model to develop scenarios consistent with the congestion management projects proposed by the 2040 Plan (see Table 5.2 in Chapter 5). Three scenarios were developed: 2010 Base conditions, 2040 Existing plus Committed (E+C), and 2040 Plan. The 2040 Plan scenario includes all projects in the Long Range Transportation Plan (LRTP), while the E+C scenario includes only projects that are funded in the SFY 2016-2019 Transportation Improvement Program (TIP). Socioeconomic data from 2010 is used on the Base scenario, while 2040 forecasted socioeconomic data is used on the 2040 E+C and Plan scenarios. Detailed information on socioeconomic data assumptions is available in Chapter 3.

Performance measure statistics for the base and future year scenarios were generated for each roadway segment by using CMAQT software developed by the Ohio Department of Transportation (ODOT). Systemwide congestion was identified by location and quantified by severity using the level of service (LOS) performance measure. Ten freeway corridors were identified for further study and a variety of congestion performance measures were utilized to compare the corridors including volume-to-capacity ratios, average speeds, cost of vehicle delay, travel time index, and crash rates.

Table 4.1 — Regional Report Card

	Measure	Description	Data[1]		Goal	Actual	Trend
System Performance	Average Freeway Speed (mph)	Source: INRIX	NA	60.2 (2013)	—	—	■
	Congested System	Congested Lane-Miles; Source: Texas Transportation Institute	29.0 % (2007)	24.0% (2011)	↓	↓	-5%
	Annual Freeway Vehicle Hours of Delay	In hours; Source: INRIX	NA	696,167 (2013)	↓	—	■
	Annual Cost of Vehicle Delay on Freeways	In millions; Source: INRIX	NA	$24.33 (2013)	↓	—	■
	Annual Cost of Truck Delay on Freeways	In millions; Source: INRIX	NA	$12.82 (2013)	↓	—	■
0 Safety	Incident Response	Average duration of major freeway incidents[2] in minutes; Source: INRIX	NA	98 (2013)	↓	—	■
	Mean Distance Between Calls	Miles between service calls; Source: GDRTA	NA	15,813 (2013)	↓	—	■
	Rate of Fatalities	Total fatalities per 100 million Daily Vehicle Miles Traveled; Source: ODPS	0.82 (2008-10)	0.88 (2011-13)	↓	↑	9%
	Rate of Serious Injuries	Total incapacitating injuries per 100 MDVMT[3] Source: ODPS	8.39 (2008-10)	7.88 (2011-13)	↓	↓	-65%
	Transit Incidents	Transit incidents per 100,000 trips; Source: NTD	0.28 (2008-10)	0.27 (2011-13)	↓	—	■
Accessibility	Miles of Regional Bikeway	Additions to Regional Bikeway System In miles; Source: MVRPC	165 (2010)	198 (2014)	↑	↑	20%
	Population Served by Bikeway	Population within ½ mile of a Regional Bikeway; Source: U.S. Census, MVRPC	28.3% (2000)	28.8% (2010)	↑	—	■
	Employment Served by Bikeway	Employment within ½ mile of a Regional Bikeway; Source: QCEW, MVRPC	43.2% (2000)	43.8% (2010)	↑	—	■
	Population Served by Transit	Population within ½ mile of a GDRTA Bus Route; Source: U.S. Census, MVRPC	79.8% (2000)	79.5% (2010)	↑	—	■
	Employment Served by Transit	Employment within ½ mile of a GDRTA Bus Route; Source: QCEW, MVRPC	85.4% (2000)	89.3% (2010)	↑	↑	4.5%
	Work trips by bike and walking	Work trips in the Region by biking and walking; Source: U.S. Census, ACS 2006-2010	2.55% (2000)	2.79% (2010)	↑	—	■
	Population living in mixed land use district	Population living in districts integrated with residential and employment land uses; Source: U.S. Census, QCEW, MVRPC	NA	36% (2010)	↑	—	■

[1]For data cells marked "NA", comparable data is not available for an earlier period. 2013 data will be used to establish a baseline for future updates of the Report. [2]Incidents are any major collision, occasional roadwork, obstruction, inclement weather, etc.. [3]Million Daily Vehicle Miles Traveled.

4.2.1 Level of Service

Level of Service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists. Volume-to-capacity (V/C) ratio is a measure of the traffic volume on a road compared to the capacity of the road. The capacity of a road depends on its physical and operational characteristics and varies by functional class. A higher V/C ratio indicates that the traffic volume of the road is nearing its capacity and is becoming congested.

The analyses presented in this section are based on calculations by CMAQT software and its definition of LOS and V/C ratio. LOS is broken down into six levels (A through F), with significant traveler delay and recurring congestion occurring at LOS D, E, and F. LOS was used to identify specific locations of congestion in the Base (2010), Existing plus Committed (2040 E+C) and the Long Range Transportation Plan (2040 LRTP) networks. Figures 4.1, 4.2, and 4.3 identify roads having LOS D (V/C>0.751) or worse.

2010 Base

In the Base (2010) network, roadway congestion is located mainly on I-75 and US-35 in Montgomery County, particularly in the downtown Dayton area. Roadway congestion is also present on surface roadways near local-access interchanges.

2040 E+C

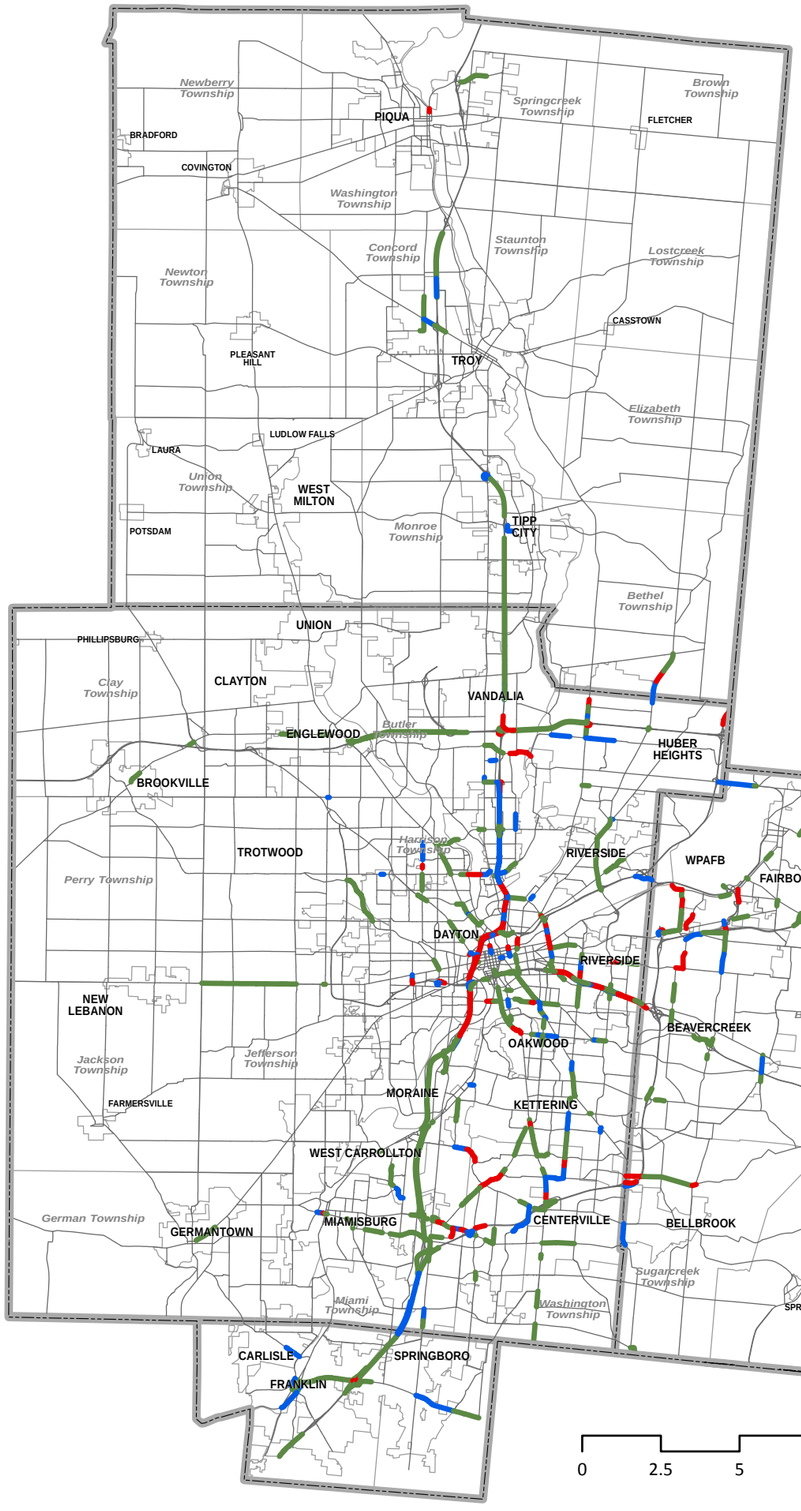
Roadway congestion is increasingly present in the 2040 E+C network. The majority of freeway sections in Montgomery County will operate at LOS E or F, with significant roadway congestion along I-75 through downtown Dayton, in Miami County, and near the Warren County border in Montgomery County. Congestion will also spread to I-70 and on surface roadways in rural sections of Greene County, particularly US 42 and US 68. Various projects, including interchange and freeway reconstruction, are included in the 2040 LRTP to improve the freeway performance; this is reflected in Figure 4.3 representing the 2040 Plan scenario.

2040 Plan

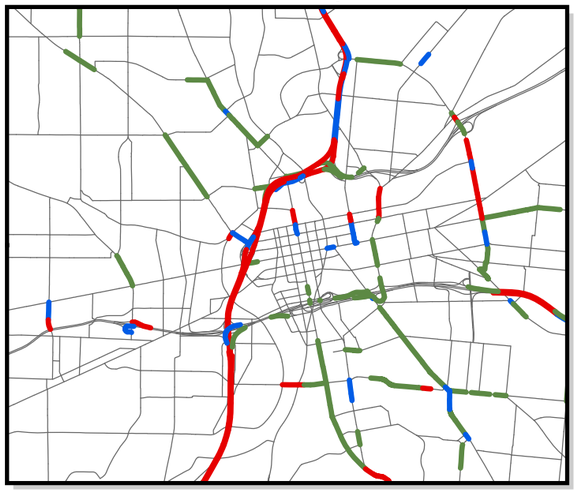
Under the 2040 LRTP scenario, the level of service generally improves even as demand grows, but the majority of the I-75 corridor in Montgomery County is still expected to operate at LOS F. Since the addition of another lane in each direction was deemed financially unfeasible within the 2040 timeframe, and given the importance of the corridor to the regional economy, MVRPC recommends continued monitoring and potential implementation of additional travel demand management strategies along the corridor in the medium to long-term timeframe.

MVRPC

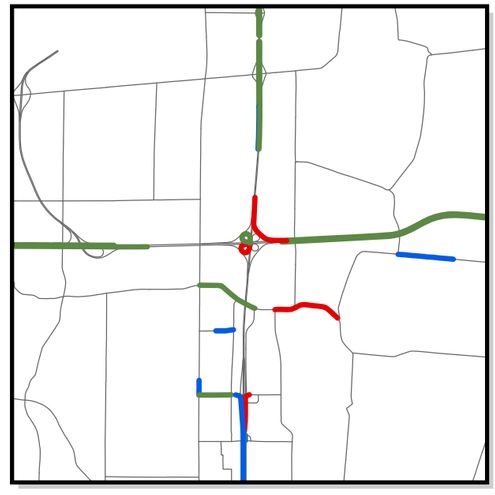
Figure 4.1
Level of Service
2010 Base



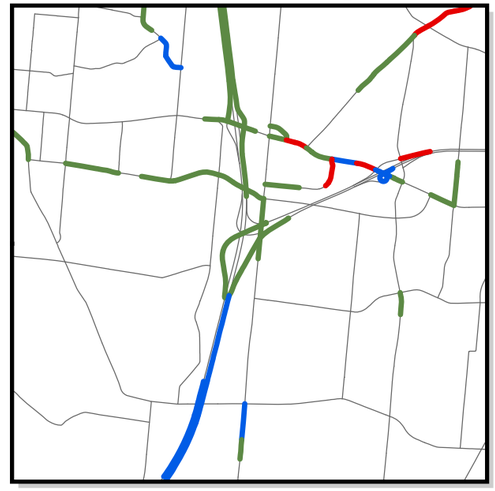
Downtown Dayton



I-70/I-75 Interchange



I-75/I-675 Interchange



Level of Service

- D
- E
- F

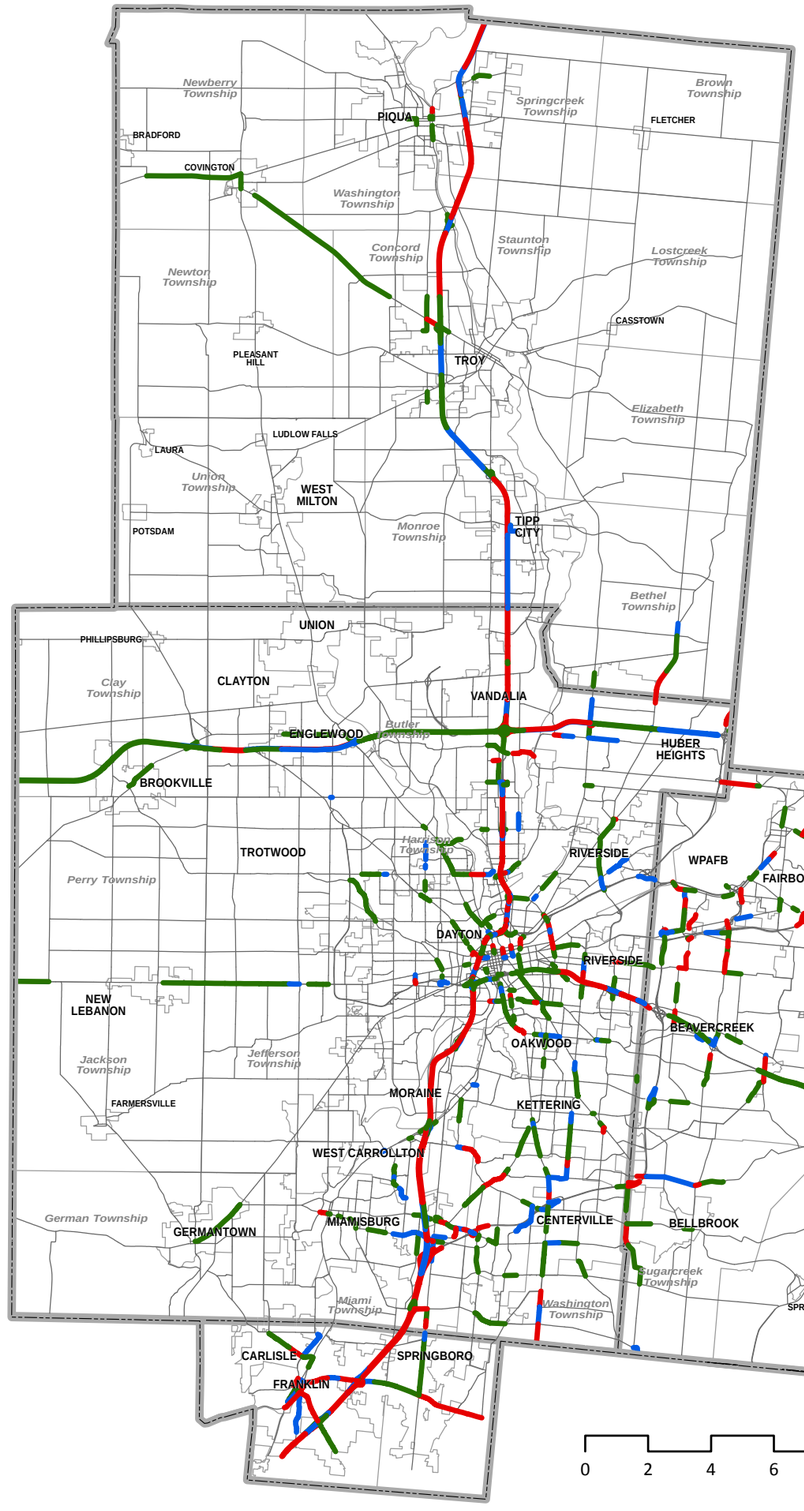
Boundary

- County
- City
- Township

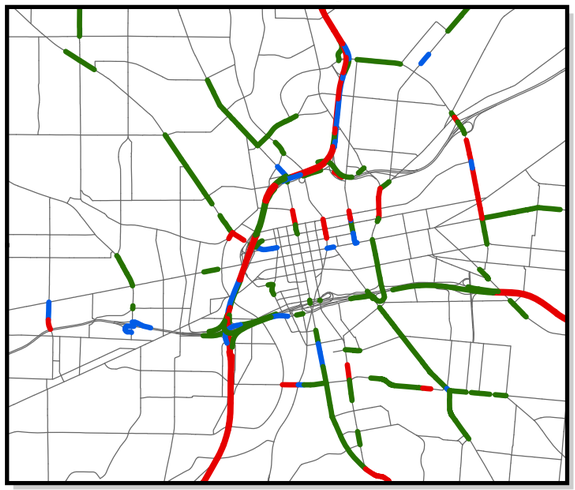
Source: MVRPC
May 2016

MVRPC

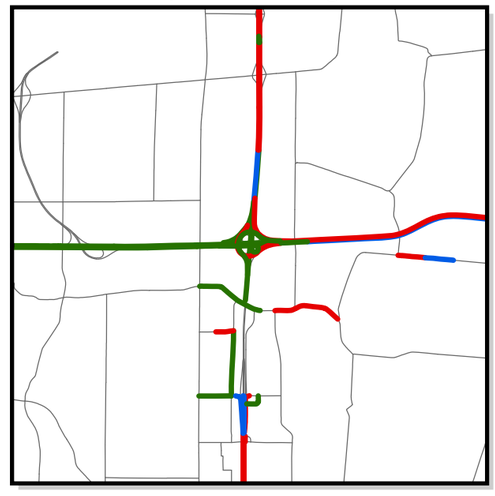
Figure 4.2
Level of Service
2040 Existing + Committed



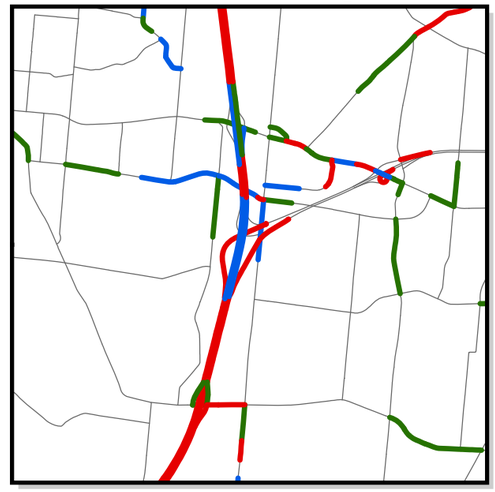
Downtown Dayton



I-70/I-75 Interchange



I-75/I-675 Interchange



LOS

- D
- E
- F

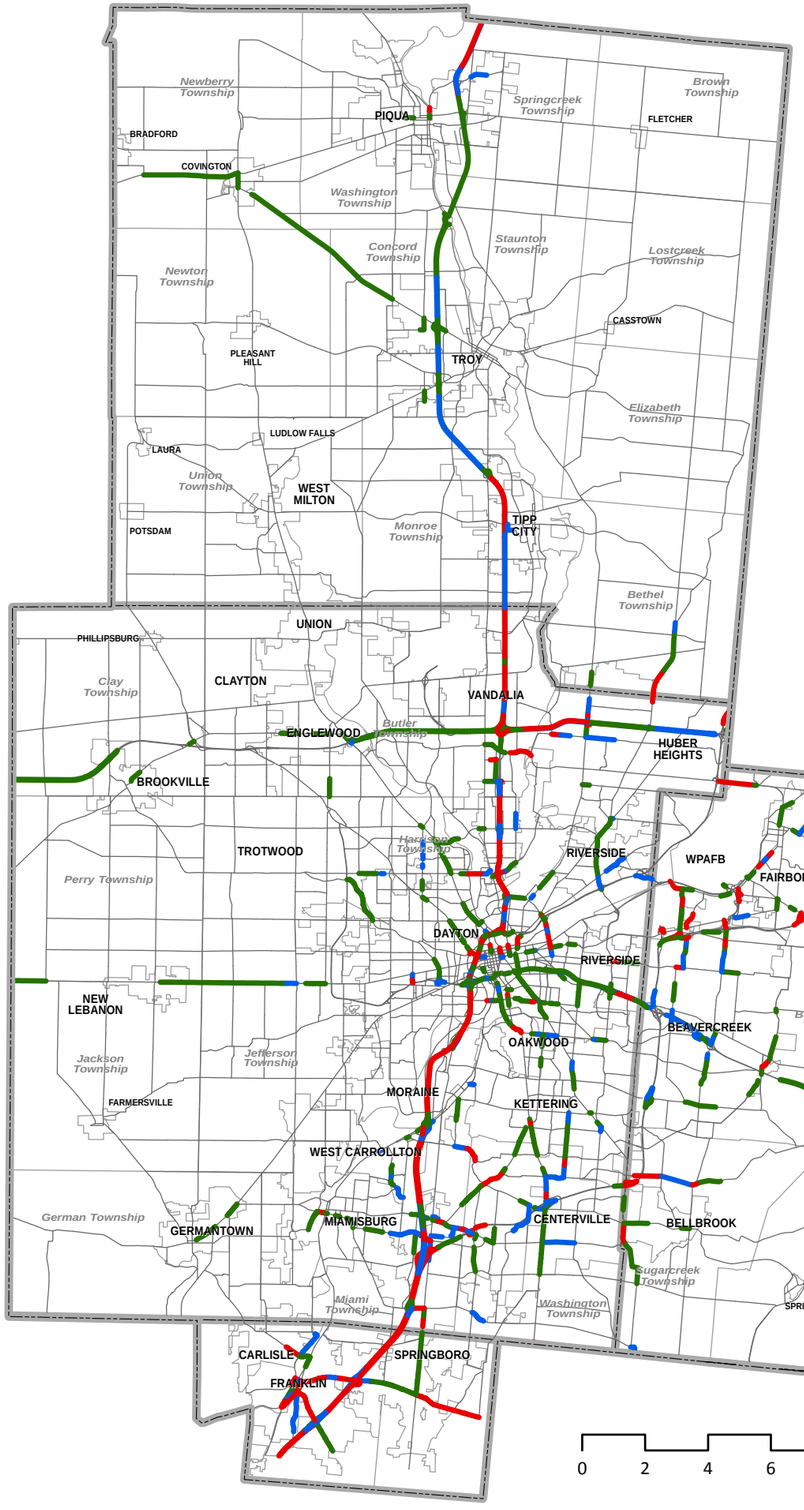
Boundary

- County
- City
- Township

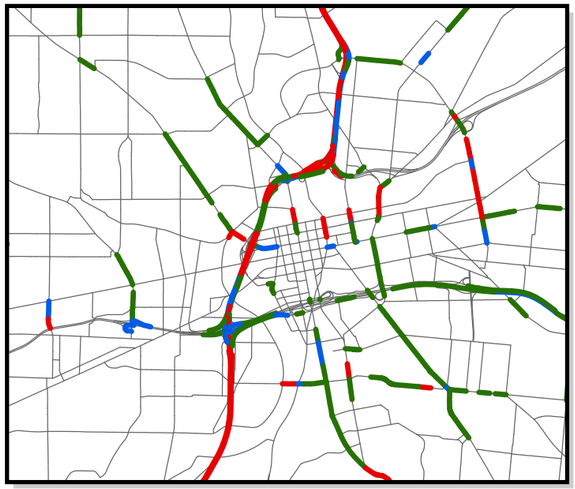
Source: MVRPC
May 2016

MVRPC

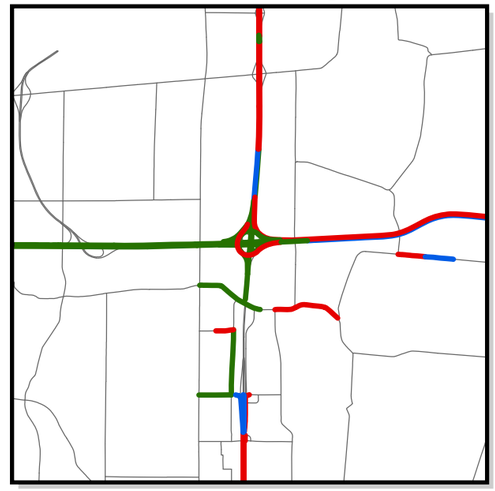
Figure 4.3
Level of Service
2040 Plan



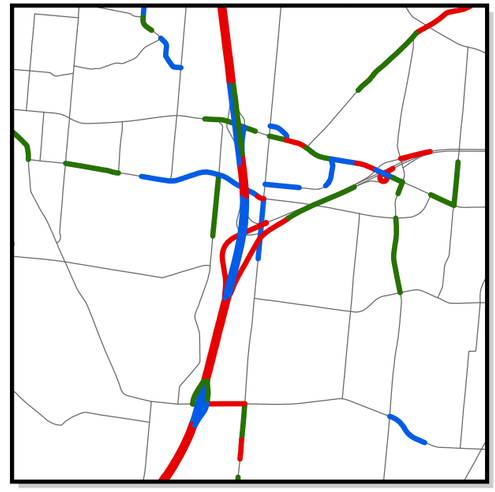
Downtown Dayton



I-70/I-75 Interchange



I-75/I-675 Interchange



Level of Service

- D
- E
- F

Boundary

- County
- City
- Township

Source: MVRPC
May 2016

4.2.2 Freeway Corridor Analysis

In the Dayton Region, freeway travelers experience some of the worst congestion levels in the area. As part of the congestion management process, ten freeway corridors in the Region were identified for detailed congestion study and analyses (Figure 4.4). Table 4.2 compares the corridors to each other. MVRPC's 2015 Congestion Management Process Technical Report includes a detailed corridor profile and corridor performance data for each of the corridors mapped in Figure 4.4. Each corridor profile includes:

Corridor Location

Each corridor profile has a location map of the corridor that provides a close-up view of where the corridor is located in the Region and the surrounding land uses. The land uses are based on the existing land cover in the Region (as of 2007).

Corridor Congestion Scan

MVRPC utilized third-party vendor INRIX's[3] website to generate congestion scan charts that provided a robust visualization of congestion occurrences along a corridor and allowed for detailed exploration of each corridor. The congestion scan chart, based on average raw speeds along a corridor, provides a consolidated view of the extent of slow traffic specific to each location along a corridor, in each direction over a 24-hour period. The congestion scan charts were plotted as raw speeds on weekdays for the year 2013.

Corridor Profile

Each corridor profile figure includes descriptive statistics such as the length, number of lanes, functional class, access control, presence of intelligent transportation systems and deployment, transit service and whether the corridor is part of the nationally-designated primary freight network.

Corridor Summary Data

All corridor congestion performance statistics, such as, daily volume, truck volume, v/c ratio, travel time index, cost of vehicle delay, total crashes and crash rates, are summarized in this table on the profile page of each corridor.

The congestion corridors listed in Table 4.2 are used to identify current and future deficiencies related to travel time and/or level of service for development of projects or programs that can be funded through various funding programs such as Congestion Mitigation/Air Quality (CMAQ), Surface Transportation Program (STP) or through the Federal Transit Administration (FTA).

[3] INRIX is a commercially available database that provides a variety of travel reliability and congestion measures for an extensive roadway network based on cellphone, other vehicle probes, and traditional road sensors. INRIX can be accessed by the Ohio MPOs through an ODOT contract.

Figure 4.4 — Map of Corridors

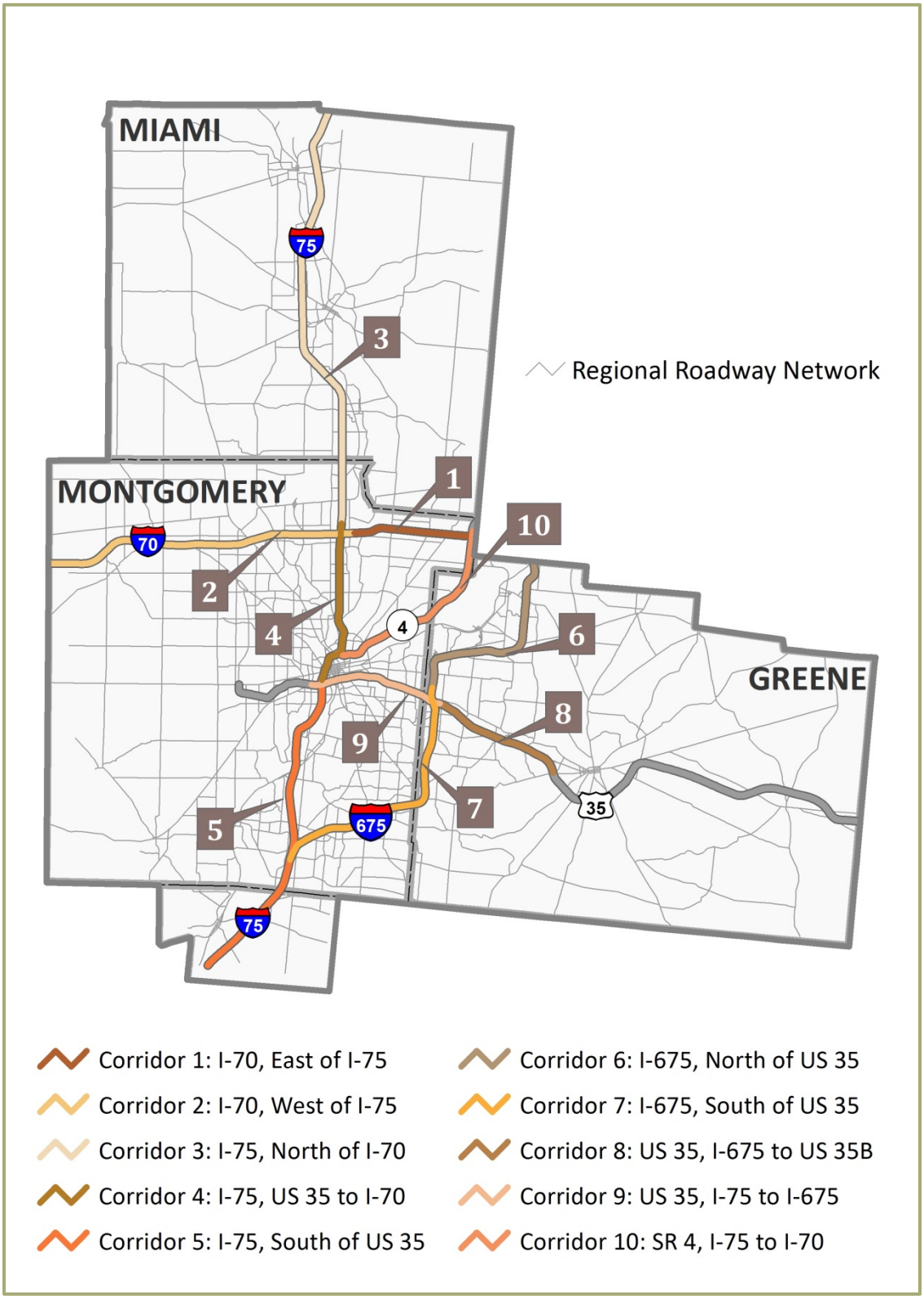


Table 4.2 — Corridor Performance Comparison

Congestion Performance	Corridor 1: I-70 — East of I-75	Corridor 2: I-70 — West of I-75	Corridor 3: I-75 — North of I-70	Corridor 4: I-75 — US 35 to I-70	Corridor 5: I-75 — South of US 35	Corridor 6: I-675 — North of US 35	Corridor 7: I-675 — South of US 35	Corridor 8: US 35 — I-75 to I-675	Corridor 9: US 35 — East of I-675	Corridor 10: SR 4 — I-75 to I-70
Daily Volume (2010)	62,200	49,400	54,500	95,400	96,000	53,000	65,700	72,300	39,600	21,600
Daily Volume (2040 Estimated)	103,700	77,200	105,000	127,300	136,800	69,800	81,200	81,100	52,100	28,700
Truck Volume (2010)	14,800	17,200	12,100	14,000	15,400	7,900	4,500	4,600	4,100	1,700
Truck Volume (2040 Estimated)	28,300	26,200	21,100	25,200	27,500	11,200	7,000	5,600	6,600	4,700
Posted Speed (in mph)	65	65 – 70	65 – 70	55 – 65	55 – 65	65	65	55	50 – 55	50 – 60
Average Speed (AM Peak Hour: 7 – 8 AM)	66.8	65.9	67.2	62.3	65.8	67.1	67.1	58.6	58.6	61.5
Average Speed (PM Peak Hour: 4 – 5 PM)	66.9	66.1	67.2	61.3	62.8	67.1	67.3	58.5	53.4	61.6
V/C Ratio (2010 – AM Peak)	0.71	0.63	0.64	0.93	0.84	0.44	0.53	0.87	0.48	0.39
V/C Ratio (2040 Est. – AM Peak)	0.92	0.90	0.91	0.99	1.10	0.57	0.65	0.97	0.62	0.39
V/C Ratio 2010 – PM Peak	0.70	0.66	0.71	0.93	0.83	0.44	0.52	0.85	0.62	0.42
V/C Ratio (2040 Est. – PM Peak)	0.92	0.95	1.01	0.99	1.09	0.57	0.65	0.94	0.79	0.45
Travel Time Index 2013 – Peak Hours	0.96	0.98	0.96	1.00	1.06	0.97	0.97	1.01	1.07	0.99
Cost of Vehicle Delay (In '000s of 2013 dollars)	$436	$3,039	$3,341	$3,236	$10,700	$349	$573	$1,147	$1,399	$114
Total Crashes (2011-2013)	242	710	1,037	974	1,781	578	757	467	462	152
Crash Rate (In MVMT; 2011-2013)	0.55	0.77	0.75	0.93	1.01	0.90	0.82	0.94	1.61	0.58

Conclusions

Congestion is most noticeable on I-75 and US 35, reaching its highest levels during the evening peak period. On I-75, congestion levels are the highest between the Grand Avenue and Dryden Road exits in the northbound direction in the evening peak periods. This is primarily owing to the construction impacts of the ongoing phase 2 of the downtown subcorridor reconstruction project. The I-75 corridor, south of US 35, has the highest number of total crashes amongst all freeways in the Region as well as the largest cost associated with vehicle delays. On US 35, east of I-675, congestion is spread out over a larger daily time window in both directions primarily along the section in the corridor that has three at-grade intersections. This corridor also has the highest crash rate of 1.61 per MVMT of all analyzed corridors in the Region.

Over the past decade, MVRPC has funded a number of studies to address congestion on freeways. Several projects, including interchange modifications and freeway widening and reconstruction, are included in the LRTP to improve freeway performance. Intelligent Transportation Systems (ITS), have also been deployed to improve freeway performance. Each corridor profile provides a brief mention of recently completed or ongoing projects along that corridor to address congestion.

4.3 Congestion and Safety

The Dayton Regional Safety Initiative (DaRSI) began in SFY 2006 as a response to the emphasis placed on roadway safety by the 2005 Federal Transportation Bill known as SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users). In an effort to reduce roadway fatalities and injuries throughout the Miami Valley, the original safety analysis was initiated in SFY 2006. The goal of DaRSI is to generate a list of locations in need of safety countermeasures to reduce the frequency or severity of accidents.

MVRPC analyzes crash data to help improve transportation safety and inform the planning process. A number of statistical and comparative analyses are performed on the regional crash data, which is collected from Ohio Department of Transportation (ODOT) and the Ohio Department of Public Safety (ODPS) in three-year intervals. MVRPC analyzes crash trends and generates a list of high-crash locations that identify roadways that may need further examination to determine need for improvement.

The SFY 2015 High Crash Location Analysis used the roadway crash data for the years 2011 – 2013 to rank intersections and roadway segments based on the frequency and severity of crashes. These high-crash locations were prioritized as low, medium, and high priority, and include 157 intersections and 221 segments. A few excerpts from the *2011-2013 Crash Data Report for the Miami Valley Region* are presented in the following paragraphs.

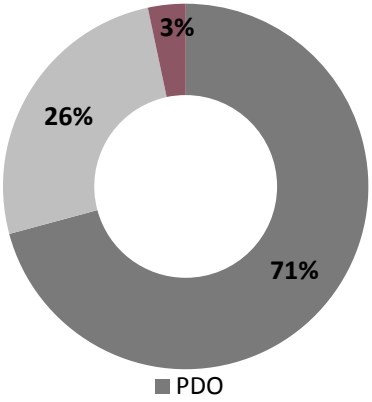
Over the past ten years, the number of crashes reported annually in the Miami Valley has decreased. From 2004 to 2013, total reported crashes decreased by 30%. In 2004, 23,626 crashes were reported, compared to 16,506 in 2013. This decline was noticeable despite fluctuations in vehicle miles traveled (VMT) experienced during the same period.

Serious Crashes

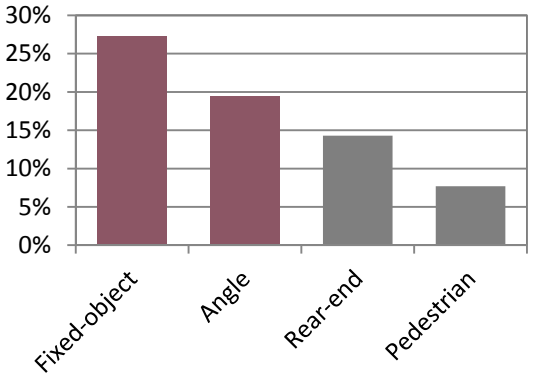
Serious crashes are those that lead to an incapacitating injury or loss of life. Although, serious crashes represented a small percent of total crashes (3%), a total of 1,245 serious injury crashes and 170 fatal crashes occurred between 2011-2013. The remaining crashes led to minor injuries or property damage only (PDO).

Twenty-seven percent (27%) of serious crashes were fixed object crashes, and 19% were angle. These crashes varied by age group of drivers involved. Thirty-seven percent (37%) of fixed-object crashes involved youth, ages 16 to 25. Similarly, 23% of angle crashes involved seniors, ages 66 and above.

Percent Total Crashes by Severity



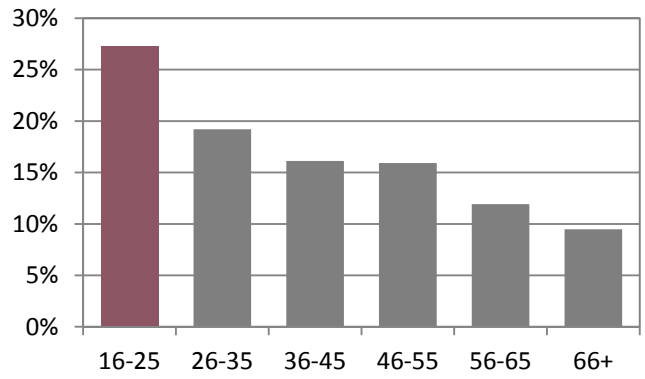
Top Crash Types Leading to Serious Crashes



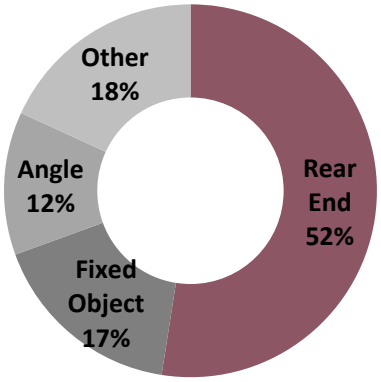
Distracted Driving

In SFY 2013, law enforcement officers were required to include detailed information on distracted driving in crash reports. Therefore, only preliminary data is available. This early data indicates that in 2012 and 2013, 1,208 crashes involving a distracted driver occurred. These include distractions inside the vehicle (internal), external distractions, phones and other electronic devices. People aged 16 to 25 were most frequently reported in distracted driving. The top crash type reported with distracted driving was rear ends. Fifty-two percent (52%) of distracted driving crashes were rear ends.

Age Groups of Distracted Drivers



Types of Crashes Involving Distractions



This analysis platform allows comparisons between the SFY 2015 update and past and future iterations of the Regional Safety Analysis. As future analyses are completed, MVRPC can work with our regional partners to identify locations where a roadway safety continues to be a public hazard. Pre- and post-implementation data can also be compared using the analysis platform to determine if implemented safety countermeasures are achieving noticeable reductions in crash frequency and/or severity. For more information on the Dayton Regional Safety Initiative and SFY 2015 High Crash Locations Analysis, please access http://www.mvrpc.org/transportation/long-range-planning-lrtp/transportation-safety.

4.4 Public Transportation

An important tool to manage recurring and non-recurring congestion is the regional public transportation system. Public transportation provides people with mobility and access to employment, community resources, medical care, and recreational opportunities in communities across the Region. It also has the potential to significantly reduce congestion on the regional roadway network. The role of public transit in roadway congestion management is to give commuters an alternative to the automobile for local trips. The Miami Valley Region is served by four transit agencies including the Greater Dayton Regional Transit Authority (GDRTA), offering fixed route services; Greene CATS, offering deviated fixed route and demand responsive services; and Miami County Public Transit (MCPT) and Warren County Transit Service (WCTS) offering demand responsive services only (see Chapter 6 - Figure 6.1).

4.4.1 Load Factor Analysis

Transit is less attractive when passengers must stand for long periods of time, especially when transit vehicles are highly crowded. When passengers must stand, it becomes difficult for them to use their travel time productively, which eliminates a potential advantage of transit over the private automobile. Crowded vehicles also slow down transit operations, as it takes more time for passengers to get on and off[4]. Load factor is a measure of ridership compared to seating capacity of a route for a given period of time. Similar to level of service on roadways, the relative comfort that a passenger may experience while seated on a transit vehicle is given a level of service label of A through F as seen in Table 4.3. A load factor of 1.0 means that all seats are taken.

Table 4.3 — Transit Vehicle LOS and Load Factor [5]

LOS	Load Factor	Passenger Conditions
A	0.00-0.50	No passenger needs to sit next to another
B	0.51-0.75	Some passengers may need to sit together, but not all
C	0.76-1.00	All passengers may sit together, limited seat choice
D	1.01-1.25	Some passengers will need to stand
E	1.26-1.50	Full vehicle, spacing between passengers at maximum level of tolerability
F	>1.50	Crush load, extremely intolerable

[4] Transit Capacity and Quality of Service Manual—2nd Edition
[5] TCRP Report 100: Transit Capacity and Level of Service Manual 2003

Table 4.4 shows all GDRTA fixed routes that experienced a LOS D or worse for each specific time period.

Table 4.4 — Maximum Load Factor Level of Service

Maximum Load Factor Level of Service AM Peak (4:30AM-9:30AM)				
Route Name	**Route Name**	**Peak Headway**	**Load Factor AM Peak**	**LOS AM Peak**
12N	Five Oaks	30	1.48	E
8N	Salem Ave.-Northwest Hub	15	1.41	E
9S	Miami Chapel	25	1.24	D
9N	Greenwich Village	25	1.11	D
7N	N. Main St.	15	1.05	D
17N	Vandalia	30	1.03	D
Maximum Load Factor Level of Service PM Peak (2:30PM-6:30PM)				
Route Name	**Route Name**	**Peak Headway**	**Load Factor PM Peak**	**LOS PM Peak**
8N	Salem Ave.-Northwest Hub	15	1.85	F
12N	Five Oaks	30	1.72	F
8S	Nicholas-Westown Hub	15	1.68	F
9N	Greenwich Village	25	1.47	E
1W	W. Third-Drexel	20	1.26	E
7N	N. Main St.	15	1.17	D
9S	Miami Chapel	25	1.03	D
Maximum Load Factor Level of Service Off Peak (9:30AM-2:30PM, 6:30PM-1:00AM)				
Route Name	**Route Name**	**Off Peak Headway**	**Load Factor Off Peak**	**LOS Off Peak**
12N	Five Oaks	25	1.38	E
9S	Miami Chapel	25	1.29	E
9N	Greenwich Village	25	1.21	D
19S	Moraine-South Hub	60	1.18	D
14N	Trotwood	60	1.16	D
7N	N. Main St.	20	1.12	D
16N	Union	60	1.08	D
19N	Huber Heights	60	1.08	D
7S	Watervliet	20	1.05	D
14S	Centerville	60	1.05	D

Source: GDRTA

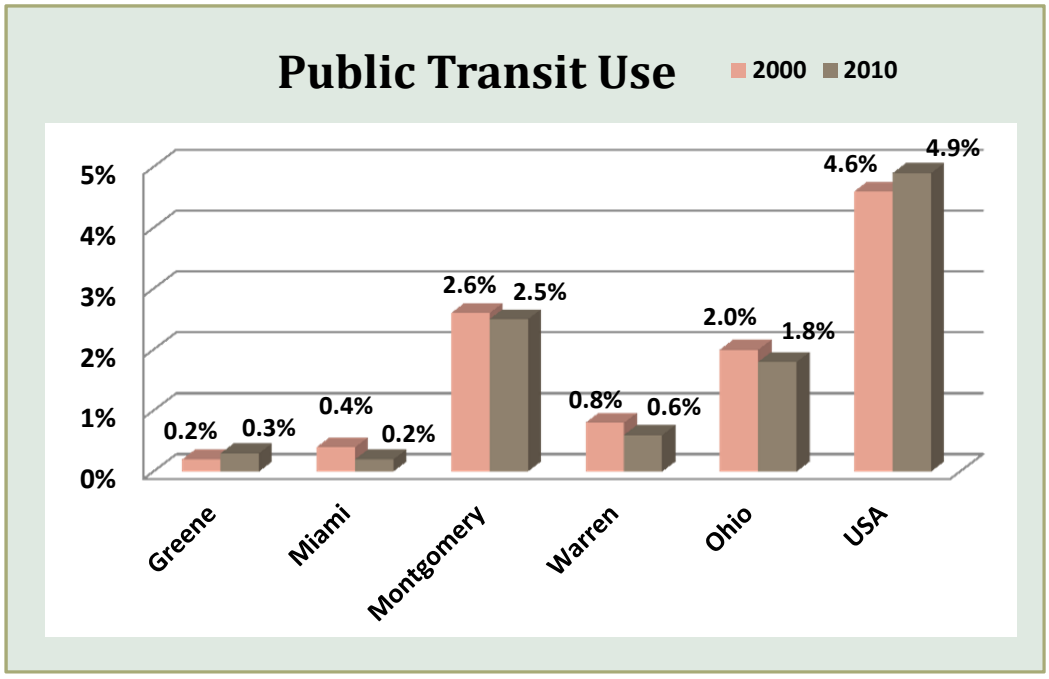
The results of the load factor analysis indicate that the majority of the GDRTA routes are experiencing Levels of Service less than 1.0 with acceptable levels of passenger congestions. Only routes 1W, 7N/S, 8N/S, 9N/S, 12N, 14N/S, 17N, 19N/S experience passenger congestion greater than 1.0 during one or more time periods. Most of these routes correlate directly with routes that

experienced the highest average daily ridership and operate in the Region's most transit dependent areas.

4.4.2 Regional Analysis

The vast majority of the Miami Valley Region population commutes by single occupancy vehicle. Transit remains a very small portion of the regional commuting profile. Being that Montgomery County is served by the largest and only fixed-route system, its residents use public transit more than any other county in the Region. About 2.5% of Montgomery County residents use public transit on a daily basis compared to less than 1% for Greene, Miami, and Warren Counties. While all counties in the Region use public transit less than the United States average, Montgomery County residents use public transit in greater numbers than Ohio residents as a whole. Figure 4.5 displays public transit usage for all counties in the Region compared to both the Ohio and United States averages.

Figure 4.5 — Regional Public Transit Use



Source: CTTP 2000; American Community Survey 2006-2010

4.5 Regional Intelligent Transportation Systems

ITS (Intelligent Transportation Systems) continues to be at the forefront of transportation planning as MVRPC proceeds with the Region's Early Deployment Plan. The plan focuses on making the transportation system more efficient and responsive to drivers by using technological improvements instead of making major road capacity expansions. In addition to many signal coordination systems implemented throughout the years, the Freeway Management System was completed in 2012 and provides timely and accurate traveler information to motorists that can be accessed through www.ohgo.com or mobile applications.

To maintain and build upon the Region's strong ITS foundation, the Miami Valley Region ITS stakeholders initiated the development of the Miami Valley ITS Regional Architecture in 2003. Simply put, the regional architecture defines the framework on which to build the ITS system. It functionally defines what the pieces of the system are and the information that is exchanged between them. A regional architecture is required by both the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) to qualify ITS projects for federal funding after April 2005. The ITS architecture was updated in 2008 and again in 2013 and is maintained as needed by MVRPC staff.

4.6 Congestion Management Strategies

Currently, there are a number of strategies that transportation planners and engineers implement to reduce the geographic and temporal extent of roadway congestion. These countermeasures include both physical and operational roadway improvements. More often, two or more of these strategies are combined to provide for maximum congestion relief. Below is an abbreviated list of potential roadway congestion countermeasures:

- Access Management — These physical roadway treatments attempt to regulate the manner in which motorists access adjacent land uses by consolidating multiple driveways, providing exclusive turning lanes, and/or incorporating various median treatments including two-way left-turn lanes and non-traversable barriers.

- Traffic Signal Timing — Adjusting signal times for current roadway demand can be a cost effective way to increase roadway capacity and is one of the most basic roadway congestion countermeasures.

- Freeway Management Systems — These systems integrate a number of operational enhancements, such as cameras, dynamic message signs, and highway advisory radio, into a traffic management center which provides the motoring public with up-to-the-minute updates on current traffic conditions, allowing them to bypass areas with roadway congestion.

- Travel Demand Management — A transportation policy that aims to spread transportation demand amongst numerous modes, including carpooling, transit, and bikeway/pedestrian pathways, to reduce dependence on the automobile.

- Traffic Incident Management — A program that encourages the quick, safe, and coordinated removal of traffic incidents to restore normal traffic flow.

- Value Pricing — A strategy that charges travelers a user fee to access congested corridors during pre-determined periods of high demand.

- Adding Capacity – By increasing the carrying capacity of a roadway, the growth of congestion may be alleviated.

MVRPC's *2015 Congestion Management Process Technical Report* includes a matrix describing a toolbox of congestion countermeasures either currently implemented in the Region or their suitability for application in the Region in the future. Table 4.5 includes some congestion mitigation strategy examples from the toolbox. As technologies emerge and our understanding of roadway congestion expands, the use of these and other strategies will have a significant effect on reducing roadway congestion, thus providing a safer and more reliable transportation network.

Table 4.5 — Sample Congestion Mitigation Strategies*

Congestion Mitigation Strategy	Description	Currently Implemented in Dayton	Suitability of Application to MPO Region	Illustration / Photograph
Highway Capacity Addition Strategies				
Highway Capacity Expansion	This strategy involves increasing the capacity of congested roadways through additional general purpose travel lanes and/or upgrading interchanges on freeways. Strategies to add capacity are the most costly and least desirable strategies. They should only be considered after exhausting all feasible demand and operational management strategies.	Yes; Downtown Dayton Subcorridor Reconstruction Project; I-70/I-75 Interchange Modification, Upgrade of South Dixie Interchange from Partial to Full Interchange; Various I-70 Widening Projects.	Medium - Selected locations only.	
Alternative Transportation Mode Strategies				
Bicycle and Pedestrian Projects Including Exclusive Non-Motorized ROW and New Sidewalk Connections	Investments in these modes can increase safety and mobility in a cost-efficient manner, while providing a zero-emission alternative to motorized modes. In many cases, bicycle lanes can be added to existing roadways through restriping. Abandoned rail rights-of-way and existing parkland can be used for medium-to-long distance bicycle trails, improving safety, and reducing travel times.Increasing sidewalk connectivity encourages pedestrian traffic for short trips.	Yes. Implementation of new Regional Bikeways and Trails as well as Designated Bicycle Lanes on Facilities and Routes at the local level. Implementation of the federally-funded Safe Routes to School program provides 100 percent funding to communities to invest in pedestrian and bicycle infrastructure surrounding elementary schools. A Bikeshare program is being implemented in Dayton in spring of 2015.	High.	
Travel Demand Management Strategies				
Transportation demand management (TDM) strategies are used to reduce travel during the peak, commute period. They are also used to help agencies meet air quality conformity standards, and are intended to provide ways to provide congestion relief/mobility improvements without high cost infrastructure projects.				
Alternative Work Hours	There are three main variations: staggered hours, flex-time, and compressed work weeks.	Yes; Alternative Work Hours are becoming more common. WPAFB, the Region's largest employer, allows a variety of work schedules.	Medium to High.	
Intelligent Transportation Systems (ITS) Strategies				
The strategies in ITS use new and emerging technologies to mitigate congestion while improving safety and environmental impacts. Typically, these systems are made up of many components, including traffic sensors, electronic signs, cameras, controls, and communication technologies.				
Dynamic Messaging	Dynamic Messaging uses changeable message signs to warn motorists of downstream queues; it provides travel time estimates, alternate route information, and information on special events, weather, or accidents.	The Dayton/Springfield Freeway Management System (http://www.mvrpc.org/transportation/long-range/its), combines technological and operational solutions to manage congestion growth. It also enhances existing incident and traffic management activities on the regional freeway network and provide timely and accurate traveler information to motorists. In 2013, ODOT launched a new website (www.ohgo.com) designed to provide motorists with real-time travel information using ITS technology on Ohio's roadways. GDRTA is in the process of implementing a mobile app project which would allow app users to select their route to see real-time tracking data on all running buses. The app is expected to be implemented in 2015.	High.	
Advanced Traveler Information Systems (ATIS)	ATIS technology provides access to an extensive amount of data to travelers, such as real-time speed estimates and information on alternate route options.		High.	
Transportation System Management Strategies				
Traffic Signal Coordination	Signals can be pre-timed and isolated, pre-timed and synchronized, actuated by events, set to adopt one of several pre-defined phasing plans or set to calculate an optimal phasing plan based on current conditions.	Yes. There are numerous examples throughout the Region. This strategy is particularly well-suited for built-up urban areas where capacity expansion is difficult or unfeasible.	High.	
Other Miscellaneous Strategies				
Traffic Incident Management	This strategy addresses primarily non-recurring congestion, typically includes video monitoring and dispatch systems, and may also include roving service patrol vehicles.	Yes; ODOT, in collaboration, with State Farm, launched the State Farm Safety Patrol Program that provides for freeway incidence response vehicles to improve traffic flow and reduce traffic congestion due to stalled vehicles as well as offers roadway assistance to mortorists in need.	High.	

* To view the complete congestion mitigation matrix, see Table 5.1 in MVRPC's *2015 Congestion Management Process Technical Report.* (http://www.mvrpc.org/transportation/long-range-planning-lrtp/congestion-management-process)

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CHAPTER 5
CONGESTION MANAGEMENT STRATEGIES — HIGHWAY

5.1 Overview

Following the Long Range Transportation Plan kick-off meeting in August 2015, MVRPC worked with stakeholders in the Region to develop Congestion Management (CM) highway projects for the period between SFY 2016 and 2040, including all roadway capacity expansion projects and other projects not covered under the operations and maintenance program.

In order to develop the final congestion management project list for the 2040 LRTP update, MVRPC hosted a series of work group meetings, followed by regional open house public participation meetings. The process continued by identifying future revenue capacity and conducting a systematic evaluation of projects.

As a result, the 2040 LRTP includes 235 projects with a total cost of $1,971.15 million. The congestion management list is fiscally constrained, with a projected revenue of $2,783.37 million. As required by the FAST Act, both costs and revenues are expressed in year of expenditure dollars.

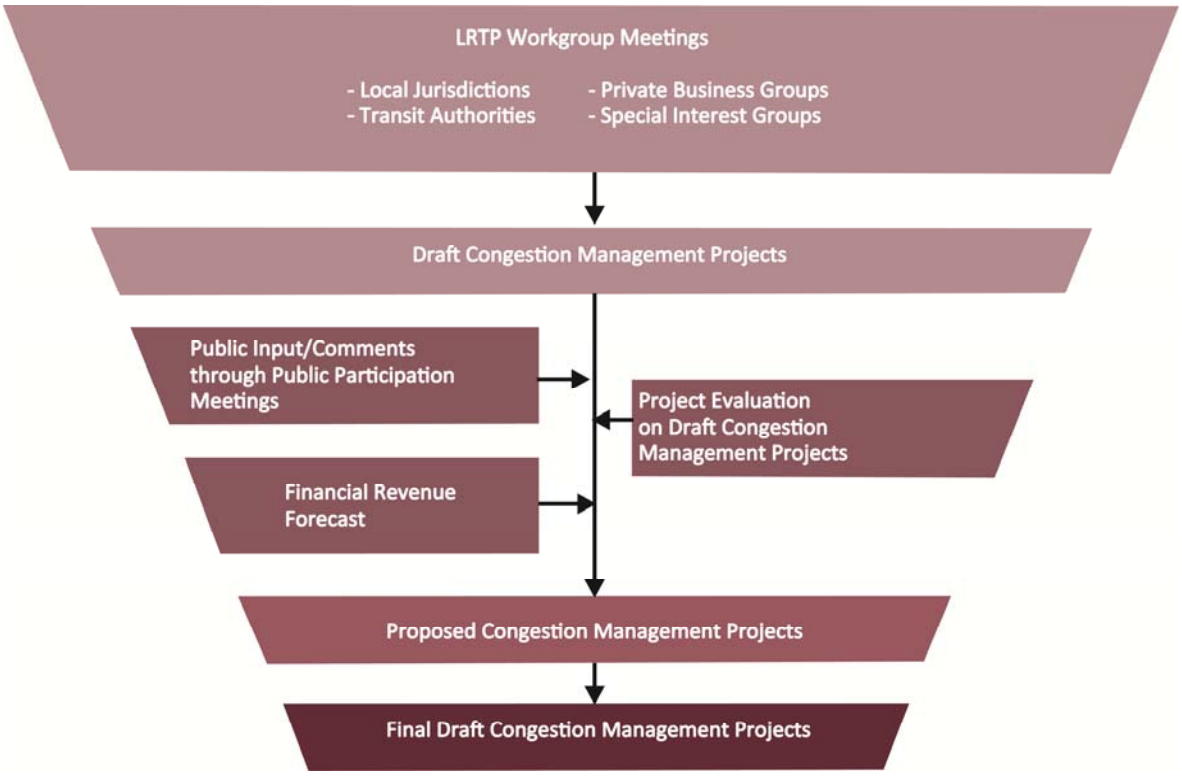
5.2 Process Overview

MVRPC developed the final CM projects following several interactive steps in conjunction with local stakeholders in the Region as illustrated in Figure 5.1. Representatives of all stakeholders in the Region, from local jurisdictions to the general public, were also involved in every step of the process.

MVRPC first invited stakeholders to the 2040 LRTP work group meetings to solicit and discuss projects. MVRPC staff then compiled the draft, not-fiscally-constrained, project list and modified it as necessary to make the list of projects consistent. MVRPC hosted public participation meetings to present the draft CM list and to solicit comments from the general public. After the meetings, applicable comments received from the public were forwarded to the appropriate project sponsor and, if necessary, the projects were modified. Next, the financial analysis was conducted to determine the available 25-year revenue. Staff then completed the project evaluation process and developed a fiscally constrained proposed project list. Finally, the proposed project list was presented at the MVRPC committee meetings and adopted by the Board of Directors in December, 2015, which then directed staff to begin the analyses pertaining to the Plan update.

The following sections of this chapter provide in-depth information on each step of the congestion management project development process.

Figure 5.1 — Congestion Management Projects Development Process Overview



5.3 Work Group Meetings

MVRPC invited both governmental and non-governmental organizations to the 2040 LRTP work group meetings to solicit projects by sending an invitation letter. In addition, Project Profile and Evaluation Forms, along with pertinent background information materials on the state of the transportation system, were mailed prior to the meetings and made available on the work group meeting webpage.

Project sponsors were encouraged to submit forms electronically, using a user friendly point and click forms. It is important to note that Project Profile and Evaluation Forms were submitted for all projects, not just new (not in the previous Plan) projects, to ensure that the project evaluation could be completed for the entire roster of projects.

The background information materials attached with the invitation letter and available on the work group webpage included:

- List and maps of Congestion Management Projects in the current LRTP;
- Project Evaluation System, including project profile and evaluation forms, criteria definitions, and maps;
- Tips for Project Submission and Guide to Work Group Webpage.

A seminar for jurisdictions on how to submit LRTP projects, was held following the August 2015 Technical Advisory Committee (TAC) meeting.

Five meetings were held at the MVRPC office on the following dates and times. Figure 5.2 contains the list of invitees to each meeting.

- Miami County: 9:30 am on Tuesday, September 8, 2015
- Montgomery County: Northern Area - 2:00 pm on Tuesday, September 8, 2015
  Southern Area - 9:30 am on Wednesday, September 9, 2015
  Central Area - 2:00 pm on Wednesday, September 9, 2015
- Greene and Warren Counties: 9:30 am on Thursday, September 10, 2015

At the meetings, CM projects included in the previous LRTP were reviewed and discussed to identify those that have been completed or are under construction, to update the current status of remaining projects (including deletion of projects), and to identify new projects. The Project Profile Form and the Project Evaluation Form were then turned in by the project sponsors at the end of the meeting or submitted electronically.

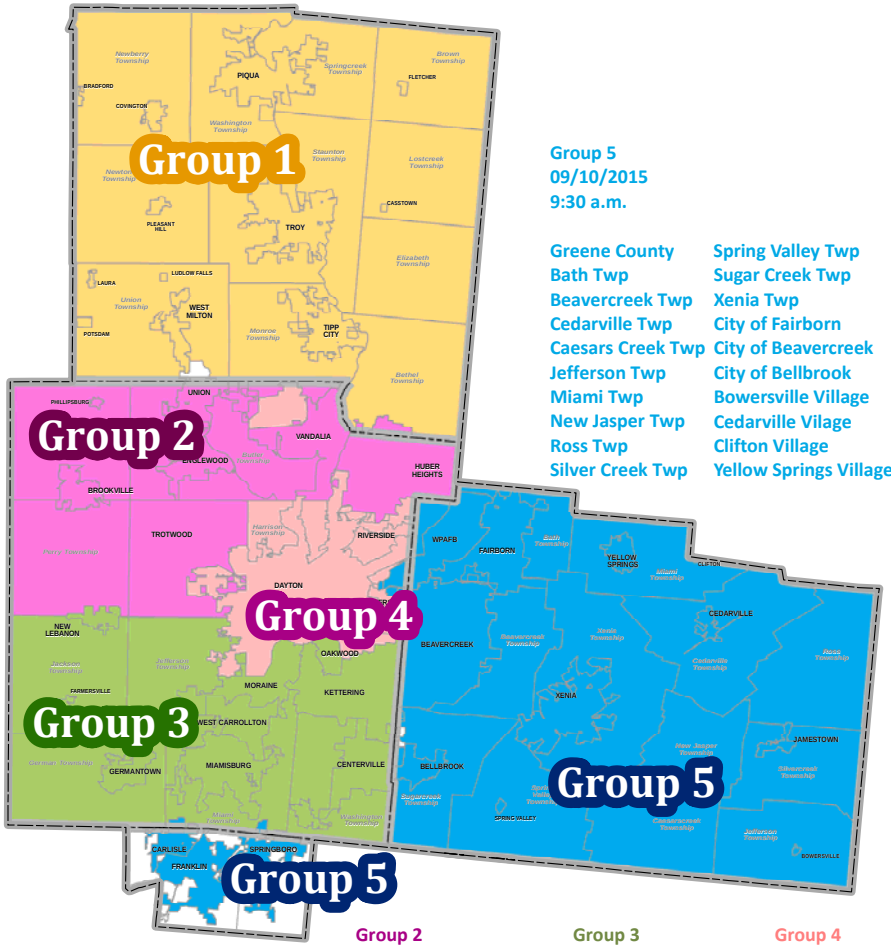
MVRPC received a total of 237 CM projects. Once all the projects were submitted, the staff compiled the projects and worked with the appropriate project sponsor to fine-tune the projects in terms of scope, feasibility, and cost to develop a draft, not-fiscally-constrained, CM project list. Further, the draft project list was sent to project sponsors for their review prior to the public participation meetings in October.

In general, project cost was estimated by the project sponsor and included in the Project Profile Form. However, other sources such as the TIP and relevant transportation studies were also used when necessary. Due to recent trends in construction related inflation, project sponsors were encouraged to re-estimate the cost of all projects being submitted to the LRTP process using up-to-date assumptions.

5.4 Public Participation

Three open house public participation meetings were held on October 20, 21, and 22, 2016, to present the draft CM projects and to solicit comments from the general public and other interested parties. Comments received regarding the draft CM projects were reviewed by MVRPC staff, forwarded to the appropriate project sponsor and, if necessary, projects were modified accordingly. All comments were also presented to the TAC and Board of Directors prior to the adoption of the draft congestion management project list. Please refer to Chapter 10 – Public Participation and Consultation for more information regarding the October public participation meetings.

Figure 5.2
LRTP Work Group Meetings



Group 1
09/08/2015
9:30 a.m.

Miami County
Bethel Twp
Brown Twp
Concord Twp
Elizabeth Twp
Lostcreek Twp
Monroe Twp
Newberry Twp
Newton Twp
Springcreek Twp
Staunton Twp
Union Twp
Washington Twp
Bradford Village
Casstown Village
Covington Village
Fletcher Village
Laura Village
Ludlow Falls Village
City of Piqua
Pleasant Hill Village
Potsdam Village
City of Tipp City
City of Troy
West Milton Village
ODOT District 7

Group 2
09/08/2015
2:00 p.m.

Montgomery County
Greene County
Miami County
Butler Twp
Clay Twp
Perry Twp
City of Brookville
City of Clayton
City of Englewood
City of Huber Heights
Phillipsburg Village
City of Trotwood
City of Union
City of Vandalia
Verona Village
ODOT District 7

Group 3
09/09/2015
9:30 a.m.

Montgomery County
Greene County
German Twp
Jackson Twp
Jefferson Twp
Miami Twp
Washington Twp
City of Centerville
Farmersville Village
Germantown Village
City of Kettering
City of Miamisburg
City of Moraine
New Lebanon Village
City of Oakwood
City of West Carrolton
ODOT District 7

Group 4
09/09/2015
2:00 p.m.

Montgomery County
Harrison Twp
City of Dayton
City of Riverside
ODOT District 7

Group 5
09/10/2015
9:30 a.m.

Greene County
Bath Twp
Beavercreek Twp
Cedarville Twp
Caesars Creek Twp
Jefferson Twp
Miami Twp
New Jasper Twp
Ross Twp
Silver Creek Twp
Spring Valley Twp
Sugar Creek Twp
Xenia Twp
City of Fairborn
City of Beavercreek
City of Bellbrook
Bowersville Village
Cedarville Vilage
Clifton Village
Yellow Springs Village
Jamestown Village
Spring Valley Village
City of Xenia
City of Carlisle
City of Franklin
City of Springboro
WPAFB
ODOT District 8

Source: MVRPC
May 2016

N

0 3 6 9 12 Miles

Non-Jurisdictional Groups Invited:

B-W Greenway Community
Central State University
CityWide Development Corporation
CSX Transportation
Dayton Area Board of Realtors
Dayton Area Chamber of Commerce
Dayton Cycling Club
Dayton Development Coalition
Dayton History
Dayton International Airport
Dayton Power & Light
FHWA, Ohio
Five Rivers Metro Park
FTA, Region 5
GDRTA
Greater Dayton Area Hospital Association
Greene CATS
Greene County Airport
Greene County Economic Development
Greene County Park District
Greene Soil & Water Conservation District
Greenways of Greater Dayton
Jet Express
Meijer Warehouse
Miami Conservancy District
Miami County Economic Development
Miami County Park District
Miami County Soil & Water Conservation District
Miami County Transit
Miami Liberty Cab Company
Miller Valentine Group
Montgomery County Economic Development
Montgomery Co. Soil & Water Conservation District
Montgomery Co. Transportation Improvement District
Nature Conservancy, Ohio Chapter
Norfolk Southern Railroad
Ohio Development Services Agency
Ohio Rail Development Commission
Preservation Dayton Inc.
RAPCA
Sinclair Community College
South Metro Regional Chamber of Commerce
Tecumseh Land Trust
Three Valley Conservation Trust
Troy Area Chamber of Commerce
University of Dayton
USF Holland
Wright State University

Note: Group invitees are welcome to invite any other persons/organizations as necessary

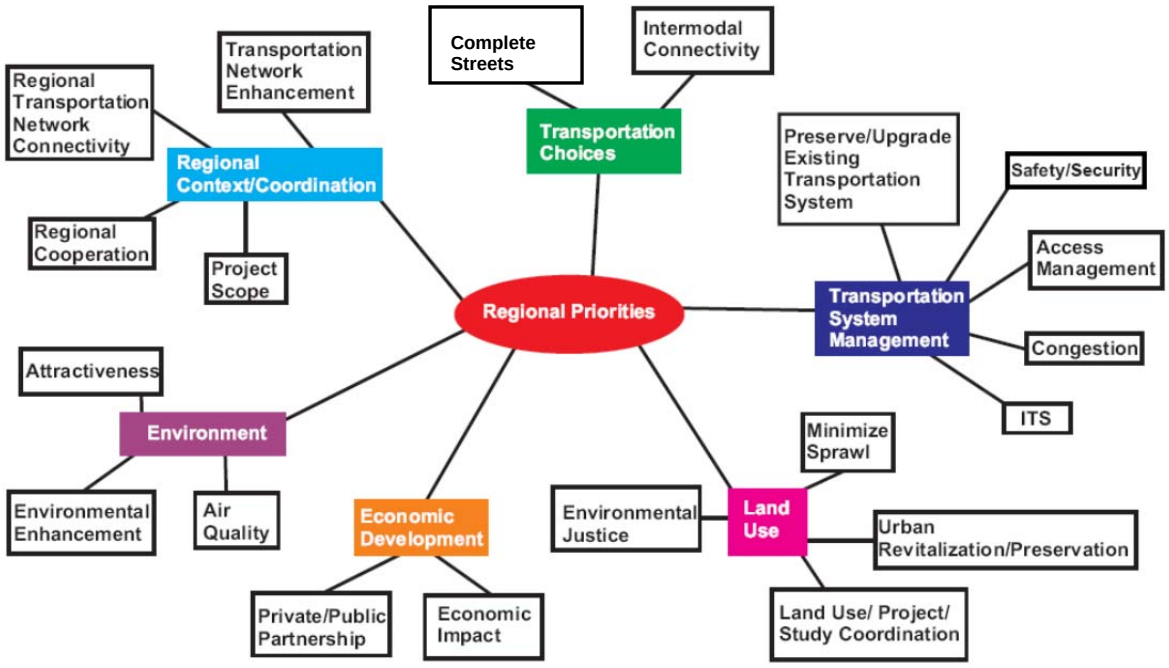
5.5 Project Evaluation

MVRPC developed the Project Evaluation System (PES) for the 2004 LRTP in order to advance transportation projects that are consistent with regional transportation priorities. The PES was based on the common themes and transportation values identified by the 2003 visioning process TransAction 2030 and reflected under the Plan goals and objectives described in Chapter 1.

In 2006, MVRPC undertook a major review of the project evaluation system to ensure that the process is a more collaborative, transparent, and interactive way to work with member jurisdictions. As a result, some criteria were modified, additional explanation and examples were provided, and a complete set of maps and data were made available to project sponsors to aid in the self-scoring process. The PES is now available on the MVRPC website along with all relevant information and the MVRPC staff works with participants to ensure a full understanding of the process, including hosting a seminar for project sponsors. PES maps and criteria are updated as needed to ensure that they are based on the most recent information.

Figure 5.3 illustrates the conceptual design structure of MVRPC's PES.

Figure 5.3 — Project Evaluation System Design Concept



The PES is both exhaustive and equitable, while also being easy to understand. Although some of the criteria under the different categories may appear to overlap, the attributes that they measure for each project remain distinct and unique. Specifically, the PES for highway projects measures 20

indicators, with a maximum total of 70 points grouped by 6 themes. These themes are: Regional Context/Coordination; Transportation Choices; Transportation System Management; Land Use; Economic Development; and Environment. Based on the PES, a Project Evaluation Form was developed so that a project sponsor could complete the project evaluation and attach it to the Project Profile Form at the time of project submission.

Once all Project Evaluation Forms were received, MVRPC staff reviewed them for consistency, accuracy, and completeness of data for each individual project. A cross-examination of all projects was also conducted to ensure that the evaluation remained equitable. Other factors such as existing traffic counts, future projected traffic volumes, future land use plans, and corridor completion were incorporated into the evaluation process to determine the proposed fiscally-constrained project list.

5.6 Congestion Management Projects

Based on public input, future revenue projections by timeframe, and the project evaluation process, MVRPC proposed 235 projects with a total cost of $1,971.15 million for the 2040 LRTP. In general, the majority (235 out of 237) of the projects submitted to the LRTP process are included in the final CM list. However, due to additional requirements regarding the LRTP financial plan, some projects were moved to later years of the Plan where financial capacity was expected to be available. Decisions about what projects to cut or move to a later period were made based on the PES score, public input, and consultation with the project sponsor. Two projects were moved to a "vision list" that includes projects that are proposed to be implemented beyond the 2040 horizon year of the Plan. MVRPC presented the proposed project list to its committees and the Board of Directors adopted it on December 3, 2015, making the proposed project list the final draft list. Minor changes to the list occurred between December 3, 2015, and the plan adoption on May 5, 2016 and the list was again presented to the public in April 2016. The final 2040 LRTP CM projects are included in Table 5.2. Figures 5.4, 5.5, 5.6, and 5.7 illustrate locations of CM projects in the Region. The vision list is provided in Table 5.3.

Table 5.2 includes the following information about each project:

- Project ID Number;
- County;
- Roadway Name;
- Assumed feasible implementation period;
- Mileage (length of project in miles);
- Cost (in millions of 2015/YOE dollars; TIP project costs in the year in which the funds are committed);
- TIP (Yes = in TIP, YP = partially in TIP (e.g. PE/ROW Phases only), NF = committed project with local funds or federal funds outside the TIP years, No = not in TIP/not funded); and
- Description of project.

All 235 CM projects can be categorized by project type as follows:

- Studies – 2 projects;
- Road or Bridge Widening – 35 projects;
- Interchange, Intersection Improvement, Turn Lane Additions – 134 projects;
- Road/Bridge Replacement, Realignment, or Reconstruction – 20 projects;
- Signal Improvement or Signal Interconnect – 2 projects;
- Bike/Pedestrian – 7 projects;
- New Road, New Interchange, or Road Extension – 22 projects;
- Road Diets – 11 projects; and
- Miscellaneous – 2 projects.

5.7 Status of Recently Completed and Under Construction Projects

I-70 Widening in Montgomery County

The I-70 Corridor Major Investment Study (MIS) was completed in 1998 to address congested travel conditions on the I-70 corridor in Montgomery County and to accommodate capacity needs resulting from the proposed redesign of the I-70/I-75 interchange. The addition of a third lane was recommended as the preferred alternative due to the large percentage of through trips within the corridor. Since then various phases have been completed and the latest phase, the widening of I-70 between Airport Access Road and SR 48, is currently under construction with an expected completion date in 2017.

Downtown Dayton Sub-Corridor

Originally developed as part of the North South Transportation Initiative, this project will improve I-75 between Keowee Street and Edwin C. Moses Boulevard in Downtown Dayton to address safety and capacity concerns by adding continuous through lanes, eliminating left entrance and exit ramps, and increasing the spacing between interchanges. The project is divided into three phases — Phase 1A was completed in 2011 and Phase 1B in 2014. The final phase, Phase 2, is also under construction and expected to be completed in 2017.

- Phase 1A: Interchange upgrades at SR 4 and Main Street-Grand Avenue;
- Phase 1B: Addition of third lane on I-75 at the US 35 interchange; and
- Phase 2: Re-design of the I-75 and ramps in Downtown Dayton.

US 35 in Montgomery County

In 2004, MVRPC in cooperation with ODOT, conducted the US 35 Corridor Major Investment Study (MIS), to identify improvements to the US 35 corridor from I-75 to I-675. This section of US 35 is one of the oldest sections of freeway in Ohio and needs geometric improvements to address safety, congestion, and accessibility issues resulting from increased traffic and changing traffic characteristics over the last 50 years. The goal of the study was to address these issues while meeting the economic and environmental constraints of the implementing agencies and neighborhoods.

The project design and the first two phases including replacing mainline bridges and addressing design deficiencies at the Smithville Road and Woodman Drive interchanges have been completed. Funding is currently being sought for widening US 35 between Steve Whalen Boulevard and I-675, to add a lane in each direction. When completed, the project (154C-G in the Plan) will reduce peak hour congestion and improve safety throughout the corridor by correcting geometric deficiencies, improving lane continuity, and reducing crashes.

US 35 in Greene County

Completed in 2004, the Major Investment Study (MIS) evaluated the conversion of US 35 from North Fairfield Road to the Xenia Bypass to a limited access facility by eliminating the at-grade intersections at Shakertown Road, Factory Road, Alpha Road, Orchard Lane, and Valley Road.

Based on concerns and goals identified by the Steering Committee, the purpose of the study was outlined as:

- Recommending an acceptable strategy for converting this section of US 35 to a limited-access facility;
- Addressing impacts to regional mobility, the local road network, and the environment; and
- Identifying a comprehensive, cost-effective package of transportation solutions consistent with public need and the area's long-term transportation planning goals.

The currently recommended alternative combines interchanges at Factory/Orchard and Valley Roads with modified local access for Shakertown and Alpha Roads. The project has completed environmental review, and is currently in the preliminary engineering phases, represented by Project 9A-B in the Plan. The relocation of Shakertown Road is funded in SFY 2020.

Recently, a new alternative design of making US 35 a "superstreet" has been proposed. With the proposed new superstreet redesign, drivers traveling north on Factory Road or Orchard Lane would not be able to turn left on US 35. They would turn right and drive a short distance before making a U-turn on US 35 to travel west or to continue on Factory Road or Orchard Lane. The proposal is currently being evaluated by ODOT and the local jurisdictions for its feasibility, and it's potential in addressing safety and transportation issues identified in the Study.

US 40 Logistics Improvements

This project involves improving US 40 from Airpark Boulevard to Peters Pike to a five-lane cross section and improve the interchange at the Airport Access Road and US 40. The preliminary engineering, design, and right-of-way phases are currently funded in the TIP.

5.8 Fiscal Constraint

The CM projects in the 2040 LRTP are fiscally constrained, with a total cost of $1,971.15 million and a total projected revenue of $2,783.37 million when expressed in year of expenditure dollars. Table 5.1 shows a summary of costs and revenues by timeframe. Project costs, for projects outside the TIP, were inflated using FY 2016, U.S. Office of Management and Budget, U.S. Budget Economic Assumptions for Consumer Price Index for FY 2019 or 2.3 percent per year. This resulted in inflation factors of 1.13, 1.26, and 1.58 for years 2020, 2025, and 2035, the mid-years of the Plan periods (2020), (2021-2030), and (2031-2040). A few projects outside the TIP years were not inflated because their cost estimates reflect ODOT's Ellis and are already inflated according to ODOT guidelines. These projects are identified in Table 5.2 as TIP: NF. Complete documentation of the revenue forecast, can be found in the Financial Summary Report.

Table 5.1 — Congestion Management Projects Costs and Revenues (in millions of 2015 / Year of Expenditure dollars)

Costs/ Revenues	Short Term Plan (2016-2020)	Medium Term Plan (2021-2030)	Long Term Plan (2031-2040)	For Full 25 Year Plan
2015				
- Cost	170.82	611.57	648.57	1,430.96
- Revenues	323.95	861.57	861.57	2,047.08
YOE				
- Cost	177.10	769.83	1,024.44	1,971.15
- Revenues	335.06	1,087.73	1,360.58	2,783.37

Source: MVRPC

5 GRE I-675 / Grange Hall Road
Feasible: 2031-2035 Mileage: NA Cost: $24.37 / $38.49 Proposed: Yes TIP: No
Add full movements at Grange Hall Road interchange.

9A GRE US 35 — Phase I
Feasible: 2021-2025 Mileage: 1.50 Cost: $82.80 / $104.54 Proposed: Yes TIP: YP
Eliminate the existing at grade intersections at Factory Road, Alpha Road, and Orchard Lane and replace them with full access interchange at Factory Road. Preliminary engineering is partially funded in the SFY 2016-2019 TIP.

9B GRE US 35 — Phase II
Feasible: 2021-2025 Mileage: 1.00 Cost: $24.60 / $31.06 Proposed: Yes TIP: YP
Eliminate the existing at grade intersection at Trebein/Valley Road and replace with full access interchanges at Trebein/Valley Road. Preliminary engineering is partially funded in the SFY 2016-2019 TIP.

9C GRE Shakertown Road
Feasible: 2016-2020 Mileage: NA Cost: $3.41 / $3.41 Proposed: Yes TIP: NF
Relocation and extension of Shakertown Road and realignment of Alpha Bellbrook Road to intersect Shakertown Road, west of Factory Road to eliminate the intersection of Shakertown Road and US 35.

10A GRE US 42
Feasible: 2026-2030 Mileage: 1.40 Cost: $3.75 / $4.73 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Stevenson Road to Bickett Road.

10B GRE US 42
Feasible: 2026-2030 Mileage: 0.62 Cost: $1.65 / $2.08 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Bickett Road to Hickman Road.

10C GRE US 42
Feasible: 2036-2040 Mileage: 0.98 Cost: $2.60 / $4.11 Proposed: Yes TIP: No
Upgrade to standard 2-lane width from Hickman Road to Nash/Charleton Road.

10D GRE US 42
Feasible: 2026-2030 Mileage: 1.57 Cost: $5.33 / $6.73 Proposed: Yes TIP: No
Widen US 42 from Church Street to Stevenson Road from 2 to 3 lanes.

17B GRE SR 72
Feasible: 2026-2030 Mileage: 4.20 Cost: $4.04 / $5.10 Proposed: Yes TIP: No
Widen at intersections, safety upgrades and roadway realignment as needed from north of Klontz Road to one mile north of Federal Road.

21 GRE SR 235
Feasible: 2026-2030 Mileage: 1.00 Cost: $3.90 / $4.92 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from I-675 to Byron Road.

24A GRE SR 444
Feasible: 2016-2020 Mileage: 0.60 Cost: $1.75 / $1.75 Proposed: Yes TIP: Yes
Widen from 2 to 3 lanes from Sandhill Road to I-675.

24B GRE SR 444 — Phase III

Feasible: 2026-2030 Mileage: 1.00 Cost: $3.80 / $4.80 Proposed: Yes TIP: No

Narrow the western portion and widen the eastern portion to create a uniform 3-lane section from Central Avenue to Sandhill Road.

24C GRE SR 444 — Phase II

Feasible: 2021-2025 Mileage: 1.10 Cost: $4.70 / $5.93 Proposed: Yes TIP: No

Narrow the roadway to 3 lanes and install bike lanes and access management techniques from Dayton Drive to Central Avenue.

32A GRE Bickett Road

Feasible: 2026-2030 Mileage: 1.25 Cost: $17.68 / $22.32 Proposed: Yes TIP: No

Relocate from just north of Little Miami Scenic Trail to just north of Wilberforce-Switch Road; including a roundabout at the Campus Drive/US 42 intersection, an extension of Brush Row Road to Wilberforce-Switch Road, and a roundabout at the new intersection.

34C GRE Dayton Drive

Feasible: 2016-2020 Mileage: 0.29 Cost: $1.20 / $1.20 Proposed: Yes TIP: Yes

Widen from 2 to 3 lanes from SR 235 to Maple Avenue.

39A GRE Dayton-Xenia Road

Feasible: 2016-2020 Mileage: 1.50 Cost: $3.58 / $3.58 Proposed: Yes TIP: Yes

Widen from E. Lynn Drive to Woods Drive to provide a center two way left turn lane, add sidewalks along both sides of the roadway, install curb and gutter and storm sewer improvement, possibly add on-street parking.

39B GRE Dayton-Xenia Road

Feasible: 2016-2020 Mileage: 1.50 Cost: $3.79 / $3.79 Proposed: Yes TIP: Yes

Widen from 2 to 3 lanes from Woods Drive to Wallaby Drive to provide a center two-way left turn lane. In addition, the project will add an 8' wide sidepath on both sides of the roadway, improved shoulders, and installation of curb and gutter and storm sewer improvements.

48 GRE Grange Hall Road / Shakertown Road

Feasible: 2016-2020 Mileage: NA Cost: $1.40 / $1.58 Proposed: Yes TIP: No

Improve intersection by adding left and right turn lanes and installing a signal.

50 GRE Garland Extension - West

Feasible: 2036-2040 Mileage: 0.70 Cost: $3.00 / $4.74 Proposed: Yes TIP: No

Extend as 2 lanes from its eastern terminus at Maple Avenue to Meadowlands Drive.

53B GRE Grange Hall Road

Feasible: 2026-2030 Mileage: 2.30 Cost: $6.90 / $8.71 Proposed: Yes TIP: No

Widen from Kemp Road to Southview Drive and SR 835 to Patterson Road from 2 lanes to 3 lanes and add pedestrian and bicycle amenities.

54D GRE Hawkins-Schoolhouse Road

Feasible: 2031-2035 Mileage: 0.40 Cost: $1.03 / $1.63 Proposed: Yes TIP: No

Widen Hawkins-Schoolhouse Road from Fairground Road to western terminus from 2 to 3 lanes with turning lanes to serve as the future extension of Progress Drive.

54E GRE Hollywood Boulevard Extension

Feasible: 2026-2030 Mileage: 0.40 Cost: $1.44 / $1.82 Proposed: Yes TIP: No

Extend Hollywood Boulevard as 2 lanes with turn lanes from western terminus to Fairground Road; include traffic signals at Fairground Road.

58C GRE Kemp Road
Feasible: 2016-2020 Mileage: 0.45 Cost: $1.84 / $1.84 Proposed: Yes TIP: NF
Widen from 2 to 3 lanes from Grange Hall Road to Meadowcourt Road.

58D GRE Kemp Road
Feasible: 2021-2025 Mileage: 1.00 Cost: $2.40 / $3.03 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from N. Fairfield Road to Hidden Woods Boulevard.

58E GRE Kemp Road
Feasible: 2026-2030 Mileage: 1.55 Cost: $3.56 / $4.50 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Meadowcourt Drive to Gerspacher Road, then transition to meet existing 5-lane section at N. Fairfield Road.

66C GRE New Germany-Trebein Road
Feasible: 2026-2030 Mileage: 0.35 Cost: $1.80 / $2.27 Proposed: Yes TIP: No
Widen from 3 to 5 lanes from Lillian Lane to Big Woods Drive.

70B GRE Progress Drive Extension-North
Feasible: 2031-2035 Mileage: 1.00 Cost: $3.57 / $5.64 Proposed: Yes TIP: No
Extend Progress Drive from Dayton-Xenia Road to Hawkins Schoolhouse Road as 3 lanes.

74 GRE Shakertown Road
Feasible: 2031-2035 Mileage: 3.80 Cost: $12.00 / $18.95 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from County Line Road to relocated Shakertown Road, see project 9A.

78C GRE Trebein Road
Feasible: 2036-2040 Mileage: 2.00 Cost: $6.20 / $9.79 Proposed: Yes TIP: No
Widen from 2 to 3 lanes fom Dayton-Yellow Springs Road to Xenia Drive; add bike and pedestrian facilities, widen culverts, and improve safety of vertical and horizontal curves.

340A GRE US 42 Access Road
Feasible: 2021-2025 Mileage: 1.00 Cost: $3.73 / $4.71 Proposed: Yes TIP: No
Extend Regency Drive from Country Club Drive to US 42 as 2 lanes; including connecting Regency Drive with Wilson Drive and Marshall Drive.

343 GRE US 42 / East Church Street
Feasible: 2016-2020 Mileage: NA Cost: $1.44 / $1.44 Proposed: Yes TIP: Yes
Reconstruct a skewed intersection into a perpendicular intersection with a new traffic signal.

344 GRE Sheelin / Massie Drive Connector
Feasible: 2021-2025 Mileage: 0.38 Cost: $1.44 / $1.82 Proposed: Yes TIP: No
Extend 2 lanes of Sheelin Drive across US 35 from Reid Avenue to June Drive; including traffic signals at W. Main Street.

345 GRE Industrial Boulevard Extension
Feasible: 2021-2025 Mileage: 0.47 Cost: $0.93 / $1.17 Proposed: Yes TIP: No
Extend as 3 lanes from its northern terminus at Lower Bellbrook Road to W. Second Street.

407 GRE I-675
Feasible: 2026-2030 Mileage: NA Cost: $0.50 / $0.63 Proposed: Yes TIP: No
Feasibility study to construct new interchange on I-675 in the vicinity of Shakertown Road to improve job access to land in Beavercreek and Kettering.

411 GRE North Fairfield Road

Feasible: 2021-2025 Mileage: 1.00 Cost: $3.30 / $4.17 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Shakertown Road to Indian Ripple Road.

---

414 GRE Funderburg Road

Feasible: 2031-2035 Mileage: 1.30 Cost: $3.40 / $5.37 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Colonel Glenn Road to Dayton Yellow Springs Road.

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415 GRE Garland Avenue Extension

Feasible: 2036-2040 Mileage: 0.90 Cost: $4.50 / $7.11 Proposed: Yes TIP: No

Extend as 2 lanes from Trebein Road to SR 235.

---

417 GRE Schwerman Drive

Feasible: 2036-2040 Mileage: 1.00 Cost: $2.70 / $4.26 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Adams Street to SR 444; including improvements to the Sandhill Road intersection.

---

418 GRE Beaver Valley Road Extension

Feasible: 2031-2035 Mileage: 0.30 Cost: $1.50 / $2.37 Proposed: Yes TIP: No

Extension of Beaver Valley Road to bypass intersection of Dayton-Xenia Road with Factory Road.

---

425 GRE Upper Bellbrook Road

Feasible: 2021-2025 Mileage: 0.38 Cost: $1.44 / $1.82 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Colorado Drive to Progress Drive; including a pedestrian path.

---

426 GRE Greene County Industrial Park Road Extension

Feasible: 2021-2025 Mileage: 0.41 Cost: $1.76 / $2.22 Proposed: Yes TIP: No

Extend 3-lane road from Greene County Industrial Park south of US 35 By-pass to US 68; including appropriate turning lanes on US 68.

---

431 GRE Valley Springs Connector Road

Feasible: 2021-2025 Mileage: 0.82 Cost: $2.50 / $3.16 Proposed: Yes TIP: No

Provide a 3-lane connector road from Orchard Lane to the proposed Valley Road / US 35 interchange.

---

433 GRE US 35

Feasible: 2026-2030 Mileage: 1.00 Cost: $9.00 / $11.36 Proposed: Yes TIP: No

Reconfigure the US 35 and Business 35 interchange located on the west side of Xenia for safety and operational purposes.

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434 GRE West Main Street / Hospitality Drive

Feasible: 2016-2020 Mileage: 0.20 Cost: $0.79 / $0.79 Proposed: Yes TIP: Yes

Construction of a "T" intersection at By-pass 35 and US 35 along with the construction of a traffic signal at the intersection of Hospitality Dr. and W. Main St. to allow for all turning movements.

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443 GRE Indian Ripple Road

Feasible: 2031-2035 Mileage: 1.00 Cost: $4.00 / $6.32 Proposed: Yes TIP: No

Widening from 3 to 5 lanes from Darst to Grange Hall Roads and widening from 2 to 3 lanes from Grange Hall to N. Fairfield Roads and extension of sidepath system from Darst to N. Fairfield Roads.

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451 GRE Fairborn Schools Street Upgrades

Feasible: 2021-2025 Mileage: 2.00 Cost: $5.20 / $6.57 Proposed: Yes TIP: No

Widening Garland and Trebein Roads from 2 to 3 lanes, and adding turn lanes on Commerce Center for future school expansion on the adjacent property.

452 GRE Maple Avenue — Phase II
Feasible: 2021-2025 Mileage: 1.10 Cost: $2.90 / $3.66 Proposed: Yes TIP: No
Widen from 2 lanes to 3 and add bike lanes from Doris Drive to Dayton-Yellow Springs Road.

453 GRE Kauffman Avenue
Feasible: 2026-2030 Mileage: 2.00 Cost: $5.20 / $6.57 Proposed: Yes TIP: No
Left turn lanes and right turn drop lanes will be added at intersections from National Road to Colonel Glenn Highway.

454 GRE Garland Avenue Bike Path
Feasible: 2021-2025 Mileage: 1.05 Cost: $0.92 / $1.16 Proposed: Yes TIP: No
Install a bike path on City-owned property from the proposed bike lanes on Maple Avenue to the existing path on Garland Avenue near I-675.

455 GRE Van Eaton Road / Hedges Road Intersection
Feasible: 2036-2040 Mileage: NA Cost: $1.32 / $2.08 Proposed: Yes TIP: No
Intersection re-alignment to eliminate offset intersection.

456 GRE East Main Street / North Patton Street / Jasper Road
Feasible: 2031-2035 Mileage: NA Cost: $1.67 / $2.64 Proposed: Yes TIP: No
Reconstruct a five (5) point intersection with a roundabout.

89A MIA I-75 — Phase I
Feasible: 2031-2035 Mileage: 2.89 Cost: $41.15 / $64.98 Proposed: Yes TIP: No
Rehabilitate and widen from 4 to 6 lanes from 1.13 miles north of SR 41 to 0.42 miles north of CR 15 (Piqua-Troy Road).

89B MIA I-75 — Phase II
Feasible: 2036-2040 Mileage: 4.04 Cost: $37.75 / $59.61 Proposed: Yes TIP: No
Rehabilitate and widen from 4 to 6 lanes from 0.42 miles north of CR 15 (Piqua Troy Road) to CR 25A.

92B MIA US 36 Reconstruction
Feasible: 2036-2040 Mileage: 0.70 Cost: $5.75 / $9.08 Proposed: Yes TIP: No
Reconstruction and widening from 2 to 3 lanes and upgrade from rural cross section to urban cross section with curb and gutter and utility upgrades from Sunset Drive to RM Davis Parkway.

96 MIA SR 41
Feasible: 2021-2025 Mileage: 0.60 Cost: $2.03 / $2.56 Proposed: Yes TIP: No
Widen from 2 to 5 lanes from just west of Kings Chapel Drive to Washington Road.

98 MIA SR 48
Feasible: 2031-2035 Mileage: 1.30 Cost: $8.00 / $12.63 Proposed: Yes TIP: No
Widen from 2 to 3 lanes beginning at Pinewood Drive, going south to the Montgomery County line; improve the intersections at Frederick-Garland Road and Emerick Road.

103 MIA Commerce Boulevard — Phase III
Feasible: 2026-2030 Mileage: 0.60 Cost: $3.60 / $4.55 Proposed: Yes TIP: No
Extend Commerce Center Boulevard from its eastern terminus to intersect SR 718 at Barnhard Road.

105A MIA County Road 25A
Feasible: 2016-2020 Mileage: 0.70 Cost: $4.30 / $4.30 Proposed: Yes TIP: Yes
Widen from 2 to 4/5 lanes from SR 571 to Michaels Road. (Project Sold).

105B MIA County Road 25A — Phase V

Feasible: 2031-2035 Mileage: 1.51 Cost: $6.04 / $9.54 Proposed: Yes TIP: No

Widen from 2 to 4/5 lanes from the Montgomery County line to Evanston Road.

105C MIA County Road 25A

Feasible: 2016-2020 Mileage: 0.50 Cost: $3.05 / $3.05 Proposed: Yes TIP: Yes

Widen from 2 to 4/5 lanes from Michaels Road to Evanston Road to coordinate with Miami County project 105B and Montgomery County project 272B.

108 MIA Donn Davis Way Connection

Feasible: 2031-2035 Mileage: 1.00 Cost: $4.30 / $6.79 Proposed: Yes TIP: No

Extend as 3/4 lanes from Kessler-Cowlesville Road to the existing Donn Davis Way at Parkwood Avenue, crossing North Hyatt Street north of Arapaho Trail.

112 MIA Evanston Road

Feasible: 2021-2025 Mileage: 1.82 Cost: $4.90 / $6.19 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from CR 25A to Tipp-Canal Road; including a proposed bike/pedestrian crossing over I-75 (attached to existing overpass) and construction of either an on- or off-street bike/pedestrian path.

113 MIA Experiment Farm Road

Feasible: 2031-2035 Mileage: 0.33 Cost: $1.56 / $2.46 Proposed: Yes TIP: No

Widen from 2 to 5 lanes from just north of Corporate Drive to Eldean Road.

113A MIA Eldean Road / Experiment Farm Road

Feasible: 2021-2025 Mileage: 0.33 Cost: $1.75 / $2.21 Proposed: Yes TIP: No

Realign the offset intersection.

121 MIA McKaig Road

Feasible: 2021-2025 Mileage: 1.40 Cost: $2.02 / $2.55 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Dorset Road to Cartwright Court.

139A MIA Washington Road / Wilson Road

Feasible: 2026-2030 Mileage: 0.74 Cost: $1.35 / $1.70 Proposed: Yes TIP: No

Realign Washington Road to intersect Wilson Road at McKaig Road.

351 MIA SR 571

Feasible: 2021-2025 Mileage: 1.50 Cost: $7.50 / $9.47 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Main Street to Davis Road; including intersection and signal improvements at Stone Meadows Boulevard.

354 MIA Railroad Overpass / New Connector Road

Feasible: 2036-2040 Mileage: 0.70 Cost: $8.00 / $12.63 Proposed: Yes TIP: No

Construct new 2/3 lane roadway from Donn Davis Way to North Third Street in Tipp City; including a railroad grade separation at the CSX railroad line.

371 MIA SR 41

Feasible: 2021-2025 Mileage: 0.51 Cost: $1.13 / $1.43 Proposed: Yes TIP: No

Widen from 5 to 7 lanes from Experiment Farm Road to I-75.

501 MIA Tipp-Cowlesville Road

Feasible: 2021-2025 Mileage: 1.31 Cost: $3.50 / $4.42 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Crane Road to CR 25A.

503A MIA Statler Road — Phase I

Feasible: 2031-2035 Mileage: 1.00 Cost: $4.00 / $6.32 Proposed: Yes TIP: No

Reconstruction and widening from 2 to 3 lanes and upgrade from rural cross section to urban cross section with curb and gutter and utility upgrades from the Great Miami River to I-75 (west side).

503B MIA Statler Road — Phase II

Feasible: 2031-2035 Mileage: 1.00 Cost: $4.60 / $7.26 Proposed: Yes TIP: No

Reconstruction and widening from I-75 to Troy-Sidney Road to industrial development standards with curb and gutter and utility extensions.

506A MIA Garbry Road — Phase I

Feasible: 2026-2030 Mileage: 0.90 Cost: $4.60 / $5.81 Proposed: Yes TIP: No

Reconstruction and widening from 2 lanes to 3 lanes and upgrade from rural cross section to urban cross section with curb and gutter, sidewalks, and utility upgrades from CSX Railroad Crossing to Kienle Drive.

506B MIA Garbry Road — Phase II

Feasible: 2026-2030 Mileage: 0.50 Cost: $2.30 / $2.90 Proposed: Yes TIP: No

Reconstruction, widening, and upgrade from rural cross section to urban cross section with curb and gutter, sidewalks, and utility upgrades from Kienle Drive to US 36.

506C MIA Looney Road / Garbry Road Intersection

Feasible: 2016-2020 Mileage: NA Cost: $1.63 / $1.63 Proposed: Yes TIP: Yes

Construction of a roundabout at the intersection of Garbry Road and Looney Road.

507 MIA Swailes Road Extension

Feasible: 2036-2040 Mileage: 0.70 Cost: $1.35 / $2.13 Proposed: Yes TIP: No

New roadway extension from the western termini of Swailes Road at Nashville Road to Wilson Road at SR 55.

508A MIA Peters Road — Phase I

Feasible: 2026-2030 Mileage: 0.41 Cost: $1.24 / $1.57 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Dickerson Drive to Premwood Road.

508B MIA Peters Road — Phase II

Feasible: 2031-2035 Mileage: 0.80 Cost: $1.96 / $3.10 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Premwood Road to Swailes Road.

509A MIA Northern Connector — Phase I

Feasible: 2036-2040 Mileage: 1.30 Cost: $3.49 / $5.51 Proposed: Yes TIP: No

New 3-lane roadway from CR 25A to Troy-Sidney Road.

509B MIA Northern Connector — Phase II

Feasible: 2036-2040 Mileage: 1.70 Cost: $3.60 / $5.69 Proposed: Yes TIP: No

New 3-lane roadway from Troy Sidney Road to Troy Urbana Road.

509C MIA Northern Connector — Phase III

Feasible: 2036-2040 Mileage: 1.68 Cost: $3.94 / $6.22 Proposed: Yes TIP: No

New 3-lane roadway from Troy Urbana Road Crossing SR 55 to SR 202.

512A MIA Eldean Road — Phase I

Feasible: 2021-2025 Mileage: 1.20 Cost: $3.00 / $3.79 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Experiment Farm Road to CR 25A.

512B MIA Eldean Road — Phase II
Feasible: 2026-2030 Mileage: 1.03 Cost: $2.57 / $3.24 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Washington Road to Experiment Farm Road.

512C MIA Eldean Road — Phase III
Feasible: 2031-2035 Mileage: 1.14 Cost: $2.85 / $4.50 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from SR 41 to Washington Road.

514 MIA Piqua-Troy Road
Feasible: 2026-2030 Mileage: 1.19 Cost: $2.98 / $3.76 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from the Troy north corporation limit to Troy-Sidney Road.

516A MIA Washington Road — Phase I
Feasible: 2021-2025 Mileage: 1.87 Cost: $4.68 / $5.91 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from SR 718 to 0.6 miles south of SR 41.

516B MIA Washington Road — Phase II
Feasible: 2031-2035 Mileage: 0.81 Cost: $2.03 / $3.21 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from SR 41 to Eldean Road.

516C MIA Washington Road — Phase III
Feasible: 2036-2040 Mileage: 1.94 Cost: $4.85 / $7.66 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Eldean Road to Farrington Road.

517B MIA Farrington Road — Phase II
Feasible: 2021-2025 Mileage: 1.03 Cost: $2.58 / $3.26 Proposed: Yes TIP: No
Widen Farrington Road from 2 to 3 lanes from Washington Road to Experiment Farm Road.

518B MIA Kinna Drive — South
Feasible: 2021-2025 Mileage: 0.70 Cost: $2.20 / $2.78 Proposed: Yes TIP: No
Construct a 3-lane extension from SR 571 to Evanston Road.

520A MIA Peters Road — Phase I
Feasible: 2026-2030 Mileage: 2.09 Cost: $5.23 / $6.60 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Kessler-Cowlesville Road to Swailes Road.

520B MIA Peters Road — Phase II
Feasible: 2031-2035 Mileage: 1.10 Cost: $2.75 / $4.34 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from SR 571 to Kessler-Cowlesville Road.

528 MIA I-75 / SR 571
Feasible: 2036-2040 Mileage: NA Cost: $1.61 / $2.54 Proposed: Yes TIP: No
Interchange modification to improve capacity of existing ramps and replace structure with 5-lane capacity structure.

530 MIA Riverside Drive
Feasible: 2016-2020 Mileage: 0.46 Cost: $1.94 / $2.19 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from 600 feet north of Adams Street to the Duke Park north boundary.

531C MIA Main Street — Streetscape

Feasible: 2021-2025 Mileage: 0.20 Cost: $1.70 / $2.15 Proposed: Yes TIP: No

Rehabilitate and improve East Main Street / SR 571 from First Street eastward to and including the crossing of the Great Miami River Bikeway (GMRB).

531D MIA Main Street — Streetscape

Feasible: 2026-2030 Mileage: 0.25 Cost: $1.50 / $1.89 Proposed: Yes TIP: No

Rehabilitate and improve West Main Street / SR 571 from Hyatt Street eastward to the CSX Railroad Tracks; including an interconnection among the existing traffic signals.

532 MIA Experiment Farm Road

Feasible: 2036-2040 Mileage: 1.96 Cost: $4.90 / $7.74 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Eldean Road to Farrington Road.

533 MIA Northern Access Interchange Feasibility Study

Feasible: 2021-2025 Mileage: NA Cost: $0.42 / $0.53 Proposed: Yes TIP: No

Traffic study to look at future improvements needed to improve vehicular access between SR 41 and CR 25A including potential for an Eldean Road Interchange at I-75.

535 MIA SR 571

Feasible: 2036-2040 Mileage: 1.50 Cost: $10.00 / $15.79 Proposed: Yes TIP: No

Widen from 2 to 5 lanes from Peters Road to CR 25A.

537A MIA SR 41 Traffic Signal Interconnect

Feasible: 2021-2025 Mileage: NA Cost: $0.75 / $0.95 Proposed: Yes TIP: No

Extend communication backbone to allow traffic signals to operate as a closed loop system at the intersections with Dorset Road and Marybill Drive.

540 MIA Troy-Sidney Road

Feasible: 2021-2025 Mileage: 1.00 Cost: $4.00 / $5.05 Proposed: Yes TIP: No

Reconstruction and widening of Troy-Sidney Road from US 36 to Statler Road. The project will consist of roadway reconstruction to industrial development standards with curb and gutter and utility extensions.

541 MIA Kyle Park Drive

Feasible: 2021-2025 Mileage: 0.33 Cost: $2.00 / $2.53 Proposed: Yes TIP: No

Construct Kyle Park Drive as a 3-lane roadway from S. Hyatt Street easterly to S. First Street including a sidewalk on one side of Kyle Park Drive and a 10' wide bikeway on the other.

542 MIA CR 25A - YMCA Bikeway

Feasible: 2021-2025 Mileage: 1.00 Cost: $1.00 / $1.26 Proposed: Yes TIP: No

Construct a new 10' bikeway from the Robinson Branch YMCA southerly to and crossing at the intersection of Donn Davis Way and CR 25A, connecting to the existing bikeway on Donn Davis Way, and continuing from existing bikeway on Donn Davis Way at Tipp-Cowlesville Road easterly on Crane Road to the Great Miami River Bike Trail, just east of North Third Street.

543 MIA County Road 25A

Feasible: 2021-2025 Mileage: 0.50 Cost: $1.10 / $1.39 Proposed: Yes TIP: No

Upgrade and widen from 4 to 5 lanes, and enhance CR 25A between the Meijer Distribution Center northerly to Exit 69 at I-75.

544 MIA Crane Road Bikeway

Feasible: 2021-2025 Mileage: 0.40 Cost: $0.90 / $1.14 Proposed: Yes TIP: No

Construct a new 10' bikeway/multi-use recreational trail from intersection of N. Hyatt Street and Crane Road easterly crossing the CSX railroad tracks to the Great Miami River Bikeway.

545 MIA CSX Rail Spur

Feasible: 2036-2040 Mileage: 0.38 Cost: $4.00 / $6.32 Proposed: Yes TIP: No

Construct a 2,000 foot rail spur on the west side of the CSX railroad tracks within and proximate to the 113 acre Prill property bounded on the north by Crane Road, on the south by Parkwood Drive, N. Hyatt Street on the west, and the CSX tracks on the east.

643 MIA SR 201 — Phase VIII

Feasible: 2021-2025 Mileage: 0.16 Cost: $1.70 / $2.15 Proposed: Yes TIP: No

Widen from 2 to 4 lanes from Montgomery County line to Singer Road; including a grass median island, curb, gutter, storm drainage system, and landscaping enhancements.

144C MOT I-70

Feasible: 2031-2035 Mileage: 7.70 Cost: $53.31 / $84.19 Proposed: Yes TIP: No

Rehabilitate and widen 4 to 6 lanes; beginning at Arlington Road to SR-48. (Interchange improvements will be included on this project if the Interchange Modification Study requires any improvements.)

154E MOT US 35 — Phase IIB

Feasible: 2021-2025 Mileage: 3.16 Cost: $30.39 / $38.37 Proposed: Yes TIP: No

US 35 from Livingston Avenue to I-675, major rehabilitation of existing pavement, construction of an additional lane in each direction, and bridge work. Construction plans for the project are complete.

154F MOT US 35 — Phase III

Feasible: 2021-2025 Mileage: 0.78 Cost: $16.36 / $20.65 Proposed: Yes TIP: No

US 35 at Woodman Drive / SR 835 interchange modification. Construction plans for the project are complete.

154G MOT US 35 — Phase IV

Feasible: 2026-2030 Mileage: 0.73 Cost: $15.41 / $19.46 Proposed: Yes TIP: No

US 35 at Smithville Road interchange modification. Construction plans for the project are complete.

155D MOT US 35

Feasible: 2026-2030 Mileage: 2.00 Cost: $5.95 / $7.51 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Union Road to Lutheran Church Road.

155E MOT US 35

Feasible: 2026-2030 Mileage: 1.00 Cost: $2.73 / $3.45 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Lutheran Church Road to Diamond Mill Road.

166 MOT SR 48

Feasible: 2026-2030 Mileage: 1.10 Cost: $5.55 / $7.01 Proposed: Yes TIP: No

Widen from 2 to 5 lanes from Phillisburg-Union Road to Miami County line.

167 MOT SR 48

Feasible: 2031-2035 Mileage: 1.67 Cost: $3.01 / $4.75 Proposed: Yes TIP: No

Widen from 2 to 5 lanes from the Warren County line to Sheehan Road.

184B MOT SR 725

Feasible: 2021-2025 Mileage: 1.00 Cost: $7.20 / $9.09 Proposed: Yes TIP: No

Widen from 2 to 5 lanes from Bigger Road to Wilmington Pike.

202E MOT Social Row Road

Feasible: 2021-2025 Mileage: 1.70 Cost: $11.00 / $13.89 Proposed: Yes TIP: No

Widen from 2 to 5 lanes from 2000' east of Yankee Street to SR 48.

209A MOT Arlington Road
Feasible: 2026-2030 Mileage: 1.20 Cost: $6.30 / $7.95 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from I-70 to US 40.

209C MOT Arlington Road
Feasible: 2016-2020 Mileage: NA Cost: $10.93 / $10.93 Proposed: Yes TIP: Yes
Replace and widen bridge over I-70 from 2 to 3 lanes.

220 MOT Clyo Road
Feasible: 2026-2030 Mileage: 2.42 Cost: $8.50 / $10.73 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Spring Valley Road to Social Row Road.

221B MOT Clyo Road
Feasible: 2026-2030 Mileage: 1.00 Cost: $3.00 / $3.79 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from St. Leonard's Way to Spring Valley Pike.

229 MOT Edwin C. Moses Boulevard
Feasible: 2031-2035 Mileage: 0.59 Cost: $50.00 / $78.96 Proposed: Yes TIP: No
Widen from 2 to 5 lanes from Broadway Street to I-75.

238 MOT Harshman Road
Feasible: 2021-2025 Mileage: 0.40 Cost: $7.25 / $9.15 Proposed: Yes TIP: No
Widen from 4 to 5 lanes from Eastwood Metropark entrance to SR 4.

244C MOT Hoke Road
Feasible: 2026-2030 Mileage: 1.28 Cost: $6.50 / $8.21 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from US 40 to Smith Drive; including intersection improvements and traffic signals at Wenger Road.

248B MOT Dayton-Keowee Street Bridge
Feasible: 2016-2020 Mileage: 0.10 Cost: $13.40 / $13.40 Proposed: Yes TIP: Yes
Rehabilitate/replace and widen bridge over the Great Miami River.

253 MOT Little Richmond Road / Diamond Mill Road
Feasible: 2036-2040 Mileage: NA Cost: $1.15 / $1.82 Proposed: Yes TIP: No
Correct the split-T intersection at Diamond Mill Road.

260 MOT Mad River Road
Feasible: 2026-2030 Mileage: NA Cost: $3.50 / $4.42 Proposed: Yes TIP: No
Improve and realign intersections of Yankee Street and Munger Road.

272B MOT North Dixie Drive
Feasible: 2021-2025 Mileage: 0.80 Cost: $2.50 / $3.16 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from the Vandalia north corporation limit to the Miami County line.

293A MOT Phillisburg-Union Road
Feasible: 2031-2035 Mileage: 1.80 Cost: $3.00 / $4.74 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from SR 48 to Haber Road.

298 MOT Salem Avenue
Feasible: 2031-2035 Mileage: 1.10 Cost: $8.00 / $12.63 Proposed: Yes TIP: No
Widen from 4 to 5 lanes from Hillcrest Avenue to Curundu Avenue.

301 MOT Seybold Road / Crestway
Feasible: 2026-2030 Mileage: 1.00 Cost: $1.13 / $1.43 Proposed: Yes TIP: No
Realign the split T-intersection at Westbrook Road.

335A MOT Yankee Street — Phase II
Feasible: 2016-2020 Mileage: 0.55 Cost: $3.40 / $3.40 Proposed: Yes TIP: Yes
Widen from 2 to 3 lanes from Social Row Road/Austin Boulevard to Winding Green Way. (Project Sold).

335B MOT Yankee Street — Phase III
Feasible: 2021-2025 Mileage: 0.75 Cost: $6.00 / $7.58 Proposed: Yes TIP: No
Widen from 2 to 5 lanes from Winding Green Way to Spring Valley Pike.

335C MOT Yankee Street — Phase IV
Feasible: 2026-2030 Mileage: 0.55 Cost: $2.45 / $3.09 Proposed: Yes TIP: No
Widen from 3 to 5 lanes from Social Row Road/Austin Pike to Winding Green Way.

336 MOT Yankee Street
Feasible: 2021-2025 Mileage: 0.60 Cost: $2.20 / $2.78 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Social Row Road/Austin Boulevard to Warren County Line.

338C MOT Miamisburg-Springboro Pike, Section 1 — Phase II
Feasible: 2031-2035 Mileage: 0.50 Cost: $1.85 / $2.92 Proposed: Yes TIP: No
Widen from 3 to 5 lanes from Peacock Lane to Medlar Road.

338D MOT Miamisburg-Springboro Pike, Section 2 — Phase I
Feasible: 2021-2025 Mileage: 0.90 Cost: $8.70 / $8.70 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Medlar Road to Benner Road.

338E MOT Miamisburg-Springboro Pike, Section 2 — Phase II
Feasible: 2036-2040 Mileage: 0.90 Cost: $3.50 / $5.53 Proposed: Yes TIP: No
Widen from 3 to 5 lanes from Medlar Road to Benner Road.

338F MOT Benner Road
Feasible: 2021-2025 Mileage: 1.40 Cost: $8.53 / $10.77 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Dayton-Cincinnati Pike to Miamisburg-Springboro Pike.

338G MOT I-75
Feasible: 2036-2040 Mileage: 2.62 Cost: $22.18 / $35.03 Proposed: Yes TIP: No
Widen from 6 to 8 lanes from approximately Pennyroyal Lane to I-675.

368 MOT Webster Street Bridge Replacement
Feasible: 2016-2020 Mileage: 0.13 Cost: $10.00 / $10.00 Proposed: Yes TIP: Yes
Replace and widen from 4 to 5 lanes. (Project Sold).

369 MOT Helena Street Bridge Replacement
Feasible: 2016-2020 Mileage: 0.09 Cost: $7.80 / $7.80 Proposed: Yes TIP: Yes
Replace and widen from 2 to 3 lanes.

372A MOT Spring Valley Road
Feasible: 2031-2035 Mileage: 1.40 Cost: $4.50 / $7.11 Proposed: Yes TIP: No
Widen from 2/3 to 5 lanes from SR 48 to Clyo Road.

372B MOT Spring Valley Road
Feasible: 2031-2035 Mileage: 2.10 Cost: $9.80 / $15.48 Proposed: Yes TIP: No
Widen from 3 to 5 lanes from Yankee Street to SR 48.

603B MOT Wolf Creek Pike / Lutheran Church Road / Seybold Road
Feasible: 2026-2030 Mileage: 1.00 Cost: $1.00 / $1.26 Proposed: Yes TIP: No
Realign the offset intersection.

603D MOT Lutheran Church Road / Little Richmond Road
Feasible: 2026-2030 Mileage: 1.00 Cost: $1.00 / $1.26 Proposed: Yes TIP: No
Realign the offset intersection.

608 MOT Brookville-Salem Road
Feasible: 2031-2035 Mileage: 2.10 Cost: $7.20 / $11.37 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from SR 49 to Brookville-Phillipsburg Road.

611A MOT Hoke Road — South
Feasible: 2031-2035 Mileage: 0.60 Cost: $1.60 / $2.53 Proposed: Yes TIP: No
Widen Hoke Road to three (3) lanes from south of Career Drive to Westbrook Road and add traffic signals at the Westbrook intersection.

613B MOT Union Road
Feasible: 2031-2035 Mileage: NA Cost: $1.42 / $2.24 Proposed: Yes TIP: No
Widen from Westbrook Road to US 35 to add left turn lanes at the Shiloh Springs Road and Little Richmond Road intersections.

613C MOT Union Road
Feasible: 2036-2040 Mileage: 6.50 Cost: $4.19 / $6.62 Proposed: Yes TIP: No
Improve geometry from SR 4 to Fairview Drive by eliminating the horizontal curves/offsets at the Lower Miamisburg Road intersections; including an extension of Union Road along the current north/south alignment through Lower Miamisburg Road, creating a new four-leg intersection.

614A MOT Basore Road
Feasible: 2021-2025 Mileage: 0.50 Cost: $1.06 / $1.33 Proposed: Yes TIP: No
Widen and extend from 2 to 3 lanes from Turner Road to Shiloh Springs Road; including curb.

615A MOT Westbrook Road
Feasible: 2031-2035 Mileage: 6.30 Cost: $24.00 / $37.90 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from SR 48 to Diamond Mill Road.

626 MOT Olive Road / Taywood Road Connector
Feasible: 2026-2030 Mileage: 0.36 Cost: $2.00 / $2.53 Proposed: Yes TIP: No
New roadway connecting the southern terminus of Taywood Road at Westbrook Road to the northern terminus of Olive Road at Salem Bend Road.

628A MOT Diamond Mill Road
Feasible: 2036-2040 Mileage: 7.80 Cost: $5.86 / $9.25 Proposed: Yes TIP: No
Improve roadway geometry and left turn lanes on Diamond Mill Road at the Upper Lewisburg-Salem Road, Westbrook Road, Air Hill/Shiloh Springs Road, Wolf Creek Pike, and Old Dayton Road intersections; including a realignment of the Shiloh Springs Road/Air Hill Road intersection.

628B MOT Diamond Mill Road

Feasible: 2036-2040 Mileage: 8.10 Cost: $3.55 / $5.61 Proposed: Yes TIP: No

Improve roadway geometry and add left turn lanes on Diamond Mill Road from the Germantown north corporation limit to US 35 at the Dayton-Farmersville Road, Hemple Road, Farmersville-West Carrollton Road, and Manning Road intersections; including a realignment of the Hemple Road intersection.

631 MOT Upper Lewisburg-Salem Road

Feasible: 2026-2030 Mileage: 1.4 Cost: $6.60 / $8.33 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Arlington Road to Brookville-Salem Road.

633 MOT Farmersville-West Carrollton Road

Feasible: 2026-2030 Mileage: 1.50 Cost: $3.75 / $4.73 Proposed: Yes TIP: No

Widen from 2 to 4 lanes from Central Avenue to Infirmary Road, including dedicated right and left turn lanes at intersections.

635 MOT Farmersville-West Carrollton Road

Feasible: 2026-2030 Mileage: 0.90 Cost: $4.75 / $6.00 Proposed: Yes TIP: No

Provide grade separation over CSX Railroad tracks, including a relocation of approximately 1,500 feet of Infirmary Road to the west of the CSX Railroad tracks.

636 MOT Central Avenue/Miami Avenue

Feasible: 2016-2020 Mileage: 0.25 Cost: $0.85 / $0.96 Proposed: Yes TIP: No

Upgrade existing intersection by improving turning radii for westbound to northbound traffic, including a dedicated left turn lane for southbound to eastbound traffic.

637 MOT Little York Road — Phase I

Feasible: 2021-2025 Mileage: 0.45 Cost: $5.00 / $6.31 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Miller Lane to North Dixie Drive.

647 MOT Little York Road — Phase II

Feasible: 2026-2030 Mileage: 1.50 Cost: $5.40 / $6.82 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from North Dixie Drive to Peters Pike.

648 MOT Little York Road — Phase III

Feasible: 2031-2035 Mileage: 1.50 Cost: $7.30 / $11.53 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Peters Pike to Frederick Pike.

650 MOT Frederick Pike

Feasible: 2036-2040 Mileage: 2.00 Cost: $6.60 / $10.42 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Little York Road to US 40.

654 MOT Broadway Street

Feasible: 2026-2030 Mileage: 1.00 Cost: $5.75 / $7.26 Proposed: Yes TIP: No

Realign and widen roadway from 2 to 3 lanes from Germantown Street to Edwin C. Moses Boulevard.

656 MOT Smithville Road

Feasible: 2026-2030 Mileage: 1.00 Cost: $6.32 / $7.98 Proposed: Yes TIP: No

Widen from 2/4 to 3/5 lanes from US 35 to Fourth Street.

661 MOT Washington Street

Feasible: 2026-2030 Mileage: 0.30 Cost: $3.45 / $4.36 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Perry Street to Veteran's Parkway.

665 MOT Sheehan Road
Feasible: 2036-2040 Mileage: 1.50 Cost: $4.00 / $6.32 Proposed: Yes TIP: No
Widen Sheehan Road from Social Row Road to Bonnie Anne Place from 2 to 3 lanes.

668 MOT Kitridge Road
Feasible: 2026-2030 Mileage: 0.60 Cost: $2.88 / $3.64 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Gander Road to the Dayton east corportation limit.

669 MOT Spring Valley Pike
Feasible: 2031-2035 Mileage: 1.20 Cost: $4.60 / $7.26 Proposed: Yes TIP: No
Widen from 2 to 3 lanes from Clyo Road to the Greene County Line.

670A MOT Centerville Station Road — Phase I
Feasible: 2026-2030 Mileage: 0.61 Cost: $3.60 / $4.55 Proposed: Yes TIP: No
Widen Centerville Station Road from Park East Court to Wilmington Pike from 2 to 3 lanes.

670B MOT Centerville Station Road — Phase II
Feasible: 2031-2035 Mileage: 0.45 Cost: $1.10 / $1.74 Proposed: Yes TIP: No
Widen Centerville Station Road from Brainard Woods Drive to Park East Court from 2 to 3 lanes.

676 MOT I-75 / Needmore Road Interchange
Feasible: 2036-2040 Mileage: NA Cost: $31.99 / $50.52 Proposed: Yes TIP: No
Interchange modification to improve capacity of existing ramps; widen Needmore Road bridge over I-75 to 8 lanes.

677 MOT I-75 / Edwin C. Moses Boulevard
Feasible: 2031-2035 Mileage: NA Cost: $19.80 / $31.27 Proposed: Yes TIP: No
Short term improvements at the interchange and nearby access points to improve traffic flow during special events.

678 MOT I-75 / Wagner Ford Road
Feasible: 2031-2035 Mileage: NA Cost: $54.46 / $86.00 Proposed: Yes TIP: No
Interchange modification to address geometric and operational deficiencies.

679 MOT I-75 / SR 725
Feasible: 2026-2030 Mileage: NA Cost: $5.00 / $6.31 Proposed: Yes TIP: No
Modify the ramp terminals to improve traffic flow and safety.

680 MOT I-75 / US 40 / Northwoods Boulevard
Feasible: 2036-2040 Mileage: NA Cost: $38.08 / $60.14 Proposed: Yes TIP: No
Interchange modifications to reduce weaving movements.

800A MOT West Moraine Connector — Phase I
Feasible: 2026-2030 Mileage: 1.00 Cost: $8.25 / $10.42 Proposed: Yes TIP: No
Widen Pinnacle Road from Moraine/Jefferson Township boundary to Infirmary Road, Infirmary Road from Pinnacle Road to Hemple Road, and Hemple Road from Infirmary Road to 800 feet west of Infirmary Road; including new drainage culverts, side road drainage, bike/pedestrian paths, and realignment of the intersection at Infirmary Road and Hemple Road.

800B MOT West Moraine Connector — Phase II
Feasible: 2031-2035 Mileage: 1.00 Cost: $2.70 / $4.26 Proposed: Yes TIP: No
Widen Hemple Road from 800 feet west of Infirmary Road to SR 4; including new drainage culverts, side road drainage, bike/pedestrian paths, and realignment of the intersection at Hemple Road and SR 4.

803A MOT US 40

Feasible: 2021-2025 Mileage: 0.30 Cost: $1.45 / $1.83 Proposed: Yes TIP: No

Widen US 40 to three lanes from Haber Road to the main entrance of the Northmont School Campus and add a traffic signal and right turn lane on Haber Road.

803B MOT US 40

Feasible: 2026-2030 Mileage: NA Cost: $1.00 / $1.26 Proposed: Yes TIP: No

Widen to provide left turn lanes at Arlington Road.

804 MOT SR 48

Feasible: 2036-2040 Mileage: 0.50 Cost: $2.80 / $4.42 Proposed: Yes TIP: No

Traffic signal upgrades, street lighting, sidewalks, curb and gutter, and drainage issues on SR 48 from Westbrook Road to Hacker Road.

808 MOT SR 4

Feasible: 2026-2030 Mileage: 2.00 Cost: $7.09 / $8.95 Proposed: Yes TIP: No

Upgrade intersections at Manning Road/Jamaica Road, Union Road, and Infirmary Road in the communities of Moraine and Germantown; including turn lanes and traffic signals.

810 MOT Helena Street

Feasible: 2021-2025 Mileage: 0.25 Cost: $2.88 / $3.64 Proposed: Yes TIP: No

Realign and widen from 2 to 3 lanes from Riverside Drive to Forest Avenue.

815 MOT Dog Leg Road / Frederick Pike / Meeker Road

Feasible: 2031-2035 Mileage: 0.50 Cost: $1.75 / $2.76 Proposed: Yes TIP: No

Install roundabout to consolidate three intersections.

816 MOT Alex-Bell Road and Mad River Road

Feasible: 2021-2025 Mileage: 0.50 Cost: $1.50 / $1.89 Proposed: Yes TIP: No

Install roundabout or traffic signal.

818 MOT US 35 / SR 49

Feasible: 2026-2030 Mileage: NA Cost: $0.87 / $1.10 Proposed: Yes TIP: No

Improve the intersection by adding turn lanes and improving signal timing and progression.

820 MOT Farmersville-Johnsville Road

Feasible: 2036-2040 Mileage: 10.50 Cost: $3.49 / $5.51 Proposed: Yes TIP: No

Improve roadway geometry from the Farmersville north corporation limit to Westbrook Road; including improvements at the Westbrook Road, Brookville-Pyrmont Pike, and US 35 offset interections, with new turn lanes at US 35.

821 MOT Alex Road

Feasible: 2021-2025 Mileage: 0.25 Cost: $0.85 / $1.07 Proposed: Yes TIP: No

Widen to add southbound right turn lane on Alex Road from Watertower Lane to SR 725.

822A MOT Wilmington Pike — Phase II

Feasible: 2016-2020 Mileage: 0.68 Cost: $3.20 / $3.61 Proposed: Yes TIP: No

Widen Wilmington Pike from I-675 to Brown Road from 4 to 6 through lanes with turn lanes as needed.

822B MOT Wilmington Pike — Phase III

Feasible: 2026-2030 Mileage: 0.37 Cost: $2.50 / $3.16 Proposed: Yes TIP: No

Widen Wilmington Pike from Clyo Road to I-675 from 4 to 6 through lanes with turn lanes as needed.

823B MOT I-675 / Wilmington Pike Interchange

Feasible: 2026-2030 Mileage: NA Cost: $30.00 / $37.88 Proposed: Yes TIP: No

Long term interchange modifications to increase the capacity of Wilmington Pike and the existing ramps.

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830 MOT East Third Street

Feasible: 2031-2035 Mileage: 2.21 Cost: $2.30 / $3.63 Proposed: Yes TIP: No

Widening of East Third Street at Findlay and Irwin Streets for the installation of left turn lanes.

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831 MOT Keowee Street

Feasible: 2016-2020 Mileage: 0.78 Cost: $5.00 / $5.00 Proposed: Yes TIP: Yes

Widening of Keowee Street from 4 to 5 lanes from SR 4 to Helena Street for the installation of left turn lanes.

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832 MOT North Main Street

Feasible: 2021-2025 Mileage: 2.15 Cost: $3.50 / $4.42 Proposed: Yes TIP: No

Widening of North Main Street from 4 to 5 lanes at the intersections with Ridge Avenue, Parkwood Drive, and Santa Clara Avenue for the installation of left turn lanes.

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833 MOT Patterson Boulevard

Feasible: 2026-2030 Mileage: 0.78 Cost: $2.70 / $3.41 Proposed: Yes TIP: No

Installation of left turn lanes on Patterson Boulevard at the intersections with Auto Club Drive, Lincoln Street, Stout Street, and Apple Street.

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834 MOT Riverview Avenue

Feasible: 2021-2025 Mileage: 0.38 Cost: $1.40 / $1.77 Proposed: Yes TIP: No

Widening to 5 lanes from Edwin C. Moses Boulevard to Great Miami Boulevard for the installation of left turn lanes.

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835 MOT Salem Avenue

Feasible: 2026-2030 Mileage: 1.80 Cost: $4.20 / $5.30 Proposed: Yes TIP: No

Widening of Salem Avenue from 4 to 5 lanes at the intersections with Kenwood, Emerson, Wabash, and Elsmere Avenues for the installation of left turn lanes.

837B MOT First Street

Feasible: 2021-2025 Mileage: 1.12 Cost: $5.76 / $7.27 Proposed: Yes TIP: No

Installation of left turn lanes on East First Street from Keowee Street to Springfield Street.

837C MOT Springfield Street

Feasible: 2016-2020 Mileage: 1.80 Cost: $2.65 / $2.65 Proposed: Yes TIP: Yes

Installation of left turn lanes on Springfield Street from First Street to Lonoke Avenue.

837D MOT Washington Street

Feasible: 2016-2020 Mileage: 0.35 Cost: $2.43 / $2.43 Proposed: Yes TIP: Yes

Installation of left turn lanes and bike lanes on Washington Street from Perry Street to Jefferson Street.

837E MOT Springfield Street

Feasible: 2016-2020 Mileage: 1.80 Cost: $2.33 / $2.33 Proposed: Yes TIP: Yes

Installation of left turn lanes on Springfield Street from Lonoke Avenue to McFadden Avenue.

837F MOT Springfield Street

Feasible: 2016-2020 Mileage: 1.80 Cost: $2.00 / $2.00 Proposed: Yes TIP: Yes

Installation of left turn lanes on Springfield Street from McFadden Avenue to Smithville Road.

838 MOT Wayne Avenue

Feasible: 2021-2025 Mileage: 0.56 Cost: $2.00 / $2.53 Proposed: Yes TIP: No

Widening of Wayne Avenue from 4 to 5 lanes from Wyoming Street to Anderson Street for the installation of left turn lanes.

839 MOT Webster Street

Feasible: 2031-2035 Mileage: 0.50 Cost: $2.50 / $3.95 Proposed: Yes TIP: No

Widening of Webster Street to 5 lanes from Deeds Park Drive to Keowee Street for the installation of left turn lanes.

840 MOT Harshman Road Bridge

Feasible: 2016-2020 Mileage: 0.50 Cost: $10.00 / $10.00 Proposed: Yes TIP: Yes

Replace bridge over the Mad River. Provide left turn lanes and bikeway on the bridge. (Project Sold).

841 MOT Dayton - Third Street Bridge

Feasible: 2016-2020 Mileage: 0.25 Cost: $20.00 / $20.00 Proposed: Yes TIP: NF

Replace bridge over the Great Miami River. Provide left turn lane and shared use path on the bridge.

842 MOT Multi-Modal Rail Extension

Feasible: 2016-2020 Mileage: 4.54 Cost: $19.80 / $22.35 Proposed: Yes TIP: YP

Multiphase project to connect CSXT mainline to Dayton International Airport. Phase I will include the improvement of existing track spur and Phase II will include the construction of new track from the I-75 bridge travelling west to the eastern property boundary line of the Dayton International Airport. The Environmental Study for this project is funded in the TIP.

844 MOT County Line Road

Feasible: 2021-2025 Mileage: 0.68 Cost: $3.00 / $3.79 Proposed: Yes TIP: No

Widening of County Line Road between Vale Drive and East Dorothy Lane. Roadway is currently a 3-lane section in this area and the proposed project will widen County Line Road to a 4-lane section, with 2 southbound lanes, a single northbound lane, and a center two-way-left-turn lane. Additional improvements include a traffic signal modification at the intersection with Tonawanda Trail, modified street lighting, and the construction of a 10-feet wide multi-use sidepath along the west side of the road.

849 MOT South Elm Street Intersection Improvements

Feasible: 2021-2025 Mileage: 0.90 Cost: $2.25 / $2.84 Proposed: Yes TIP: No

Realign four poorly designed intersections along S. Elm Street to correct intersection sight distance deficiencies at Hazelwood Circle, Blossom Hill Road, Ironwood Drive, and Black Forest Drive.

851 MOT Washington Church Road

Feasible: 2031-2035 Mileage: 1.02 Cost: $2.84 / $4.48 Proposed: Yes TIP: No

Widen to 3 lanes from Austin Boulevard to 500 feet north of Spring Valley Pike with combination curb and gutter, concrete walk, and a multi-use path.

855 MOT SR 4 / Harshman Road Interchange

Feasible: 2021-2025 Mileage: NA Cost: $4.24 / $5.35 Proposed: Yes TIP: No

Reconfigure SR 4 exit ramps at Harshman Road to improve safety.

856 MOT Springfield Street

Feasible: 2016-2020 Mileage: 1.30 Cost: $1.52 / $1.72 Proposed: Yes TIP: No

Reconstruction of Springfield Street to add a dedicated turn lane to the proposed Air Force Museum entrance gate, with combined curb and gutter, sidewalks, storm sewer system, and utility relocations/adjustments.

857A MOT Valley Pike — Phase II

Feasible: 2016-2020 Mileage: 0.28 Cost: $1.80 / $2.03 Proposed: Yes TIP: No

Reconstruct Valley Pike to an urban 3-lane section with combined curb and gutter, sidewalks, storm sewer system, and utility relocations from Broadmead Boulevard to Pleasant Valley Avenue.

858 MOT Wolf Creek Pike Improvements

Feasible: 2021-2025 Mileage: 2.00 Cost: $6.00 / $7.58 Proposed: Yes TIP: No

Wolf Creek Pike from Little Richmond Road to SR 49, construct concrete curb and gutter, storm drainage, sidewalk, and pavement for bike lanes on both sides.

859 MOT Dryden Road Multi-Modal Path — Phase I

Feasible: 2021-2025 Mileage: 1.40 Cost: $0.75 / $0.95 Proposed: Yes TIP: No

Construct multimodal (bike, skate, walk) path along Dryden Road in front of former GM property to Northlawn Avenue to connect industrial property and West Moraine residential areas to the River Corridor bikepath.

860 MOT Dryden Road Multi-Modal Path — Phase II

Feasible: 2026-2030 Mileage: 1.40 Cost: $0.85 / $1.07 Proposed: Yes TIP: No

Construct multimodal (bike, skate, walk) path along Dryden Road from Arbor Boulevard to East River Road to loop through industrial areas and connect to the River Corridor bikepath.

862 MOT Wilmington Pike Traffic Signal System Upgrade

Feasible: 2016-2020 Mileage: 2.11 Cost: $1.89 / $1.89 Proposed: Yes TIP: Yes

Provide upgraded communication between traffic signals and include rebuilding or equipment upgrades at the individual intersections as needed to improve safety and operations.

863 MOT SR 49

Feasible: 2036-2040 Mileage: 1.27 Cost: $0.75 / $1.18 Proposed: Yes TIP: No

Corridor improvement - alternative will include addressing the SR 49 / I-70 interchange; SR 49 / Brookville-Salem intersection; and the SR 49 / US 40 intersection. Possible road diet.

864 MOT I-75 / Austin Boulevard Interchange

Feasible: 2016-2020 Mileage: 0.75 Cost: $1.00 / $1.13 Proposed: Yes TIP: No

Implement findings from current IOS to add an additional right turn lane from Austin Boulevard WB to I-75 NB.

865 MOT East Third Street

Feasible: 2036-2040 Mileage: 0.65 Cost: $5.75 / $9.08 Proposed: Yes TIP: No

Roadway narrowing on East Third Street from Keowee Street to Springfield Street to reduce travel lanes from 3/4 to 3.

866 MOT Germantown Street

Feasible: 2031-2035 Mileage: 0.78 Cost: $3.80 / $6.00 Proposed: Yes TIP: No

Installation of a left turn lane on Germantown Street from Washington Street to James H. McGee Boulevard.

867 MOT Hudson Avenue / Main Street

Feasible: 2026-2030 Mileage: 0.24 Cost: $1.20 / $1.52 Proposed: Yes TIP: No

Realignment of Hudson Avenue at Main Street including widening Main Street from 4 to 5 lanes to install a left turn lane from Santa Clara Avenue to Norman Street.

868 MOT Monument Avenue

Feasible: 2026-2030 Mileage: 1.08 Cost: $4.10 / $5.18 Proposed: Yes TIP: No

Installation of a left turn lane on Monument Avenue from Keowee Street to Findlay Street.

869 MOT Webster Street

Feasible: 2026-2030 Mileage: 0.83 Cost: $4.10 / $5.18 Proposed: Yes TIP: No

Installation of a left turn lane on Webster Street from Keowee Street to Stanley Avenue.

870 MOT West Third Street

Feasible: 2031-2035 Mileage: 0.72 Cost: $3.50 / $5.53 Proposed: Yes TIP: No

Installation of a left turn lane on West Third Street from Abbey Avenue to Gettysburg Avenue.

871 MOT Lyons Road Pedestrian Path

Feasible: 2016-2020 Mileage: 0.80 Cost: $1.56 / $1.56 Proposed: Yes TIP: NF

Construct new pedestrian pathway from Byers Road east along Lyons Road to approximately 1,200 feet north along Springboro Pike.

872 MOT Washington Church Road Extension

Feasible: 2021-2025 Mileage: 0.63 Cost: $1.56 / $1.96 Proposed: Yes TIP: No

Construct new 2/3 land roadway approximately 3,300 feet south from intersection of Washington Church Road and Austin Boulevard to Montgomery/Warren County line.

874 MOT Airway Road

Feasible: 2016-2020 Mileage: 0.86 Cost: $1.90 / $2.14 Proposed: Yes TIP: No

Resurface with curb, gutter, sidewalk, storm infrastructure, and lighting from Woodman Drive east to City Limit. Intersection improvements at Spinning Road and Airway Road and traffic signal at Woodman Drive and ASC access drive.

875 MOT Springfield Street

Feasible: 2016-2020 Mileage: 0.69 Cost: $1.44 / $1.63 Proposed: Yes TIP: No

Resurface with curb, gutter, sidewalk, storm infrastructure, and lighting from Woodman Drive to west City Limit. Include access management improvements and incorporate bike lane by changing cross section from 4 to 2 lanes with turn lane.

876 MOT Needmore Road

Feasible: 2021-2025 Mileage: 0.65 Cost: $1.36 / $1.72 Proposed: Yes TIP: No

Resurface, re-establish ditch line, update storm infrastructure, and provide street lighting between SR 201 and SR 202. Increase road width and accommodate new left turn for NB/WB traffic.

877 MOT US 40 Logistics Improvements

Feasible: 2016-2020 Mileage: 1.5 Cost: $12.71 / $14.35 Proposed: Yes TIP: YP

Improve US 40 from Airpark Boulevard to Peters Pike to a five-lane cross section and improve the interchange at the Airport Access Road and US 40. Preliminary engineering, design and right-of-way phases are currently funded in the TIP.

878 MOT Shroyer Road Improvements

Feasible: 2016-2020 Mileage: 2.1 Cost: $1.90 / $1.90 Proposed: Yes TIP: Yes

Shroyer Road from the City of Oakwood North Corp. limit to Dorothy lane Avenue, resurface road and implement road diet to reduce lanes from 4 to 2 lanes with turn lanes and bike lanes to improve safety, then transition to existing 5-lane section at the intersection with Dorothy Lane Avenue. Shroyer Road from Dorothy Lane Avenue to Stroop Road, resurface road using existing configuration.

710C WAR SR 73 / I-75 — Phase III

Feasible: 2021-2025 Mileage: 1.04 Cost: $2.60 / $3.28 Proposed: Yes TIP: No

Reconstruct SR 73 with overlay and widening for approximately 4,000 feet; including a new signal at the intersection of SR 73 and Greenwood Lane/Sharts Road and reconstruction of both Greenwood Lane and Sharts Road with overlay and widening for approximately 1,500 feet. Construct a new signal at the intersection of SR 73 and Greenwood/Sharts.

710D WAR SR 73 / I-75 — Phase IV

Feasible: 2021-2025 Mileage: 1.08 Cost: $3.50 / $4.42 Proposed: Yes TIP: No

Reconstruct Ramp D as a two-lane exit ramp from SR 73 south until the proposed edge of pavement intersects with existing I-75 edge of pavement and the Ramp E loop entrance ramp from SR 73 to the existing ramp pavement at the I-75 bridge; including a new traffic signal at the intersection of Ramp D and SR 73.

715 WAR Clearcreek Franklin Road

Feasible: 2016-2020 Mileage: 0.70 Cost: $1.20 / $1.35 Proposed: Yes TIP: No

Widen from 2 to 3 lanes from Whispering Pines to Pennyroyal Road adding curb and gutters and storm sewers. Re-profile roadway to correct vertical deficiencies and re-stripe roadway to include bike lanes.

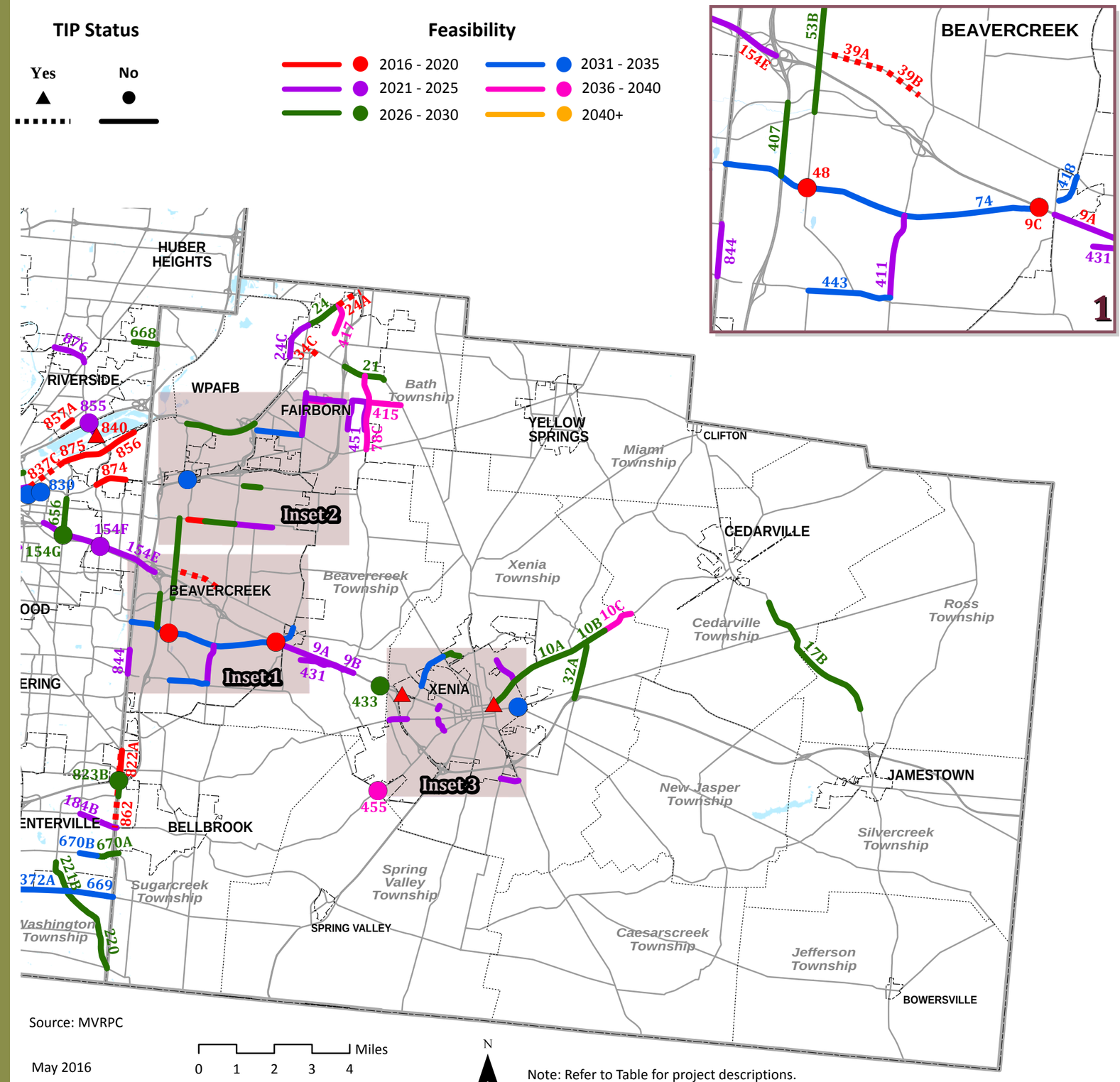
Source: MVRPC

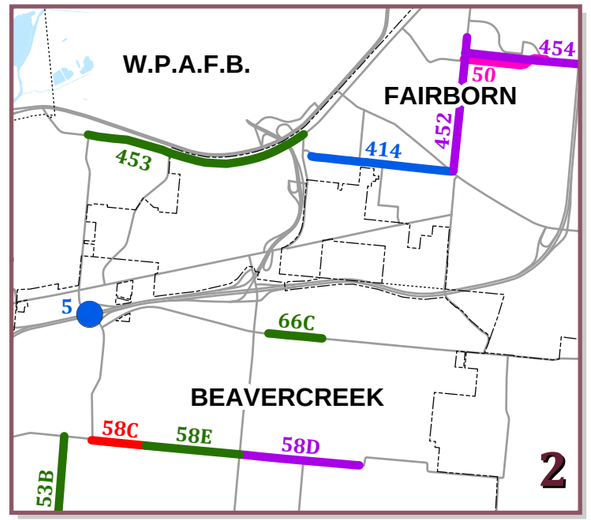
Table 5.3 — Congestion Management Projects Vision List

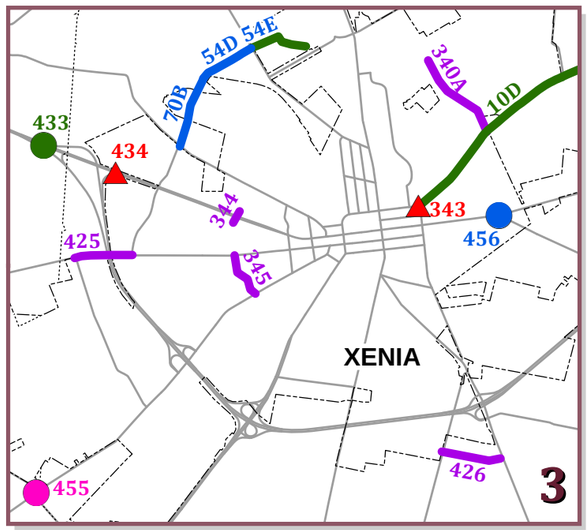
Project	Description	Mileage	Cost (millions of 2015 dollars)
147E on I-75 in Montgomery County	Safety upgrade and modernization of I-75 from I-675 to Edwin C. Moses Boulevard; including widening from 6 to 8 lanes.	8.8 miles	225.43
147F on I-75 in Montgomery County	Safety upgrade and modernization of I-75 from Wagner Ford Road to Benchwood Wyse Road; including widening from 6 to 8 lanes.	2.7 miles	79.21

Source: MVRPC

Figure 5.4
Congestion Management Projects: Greene County

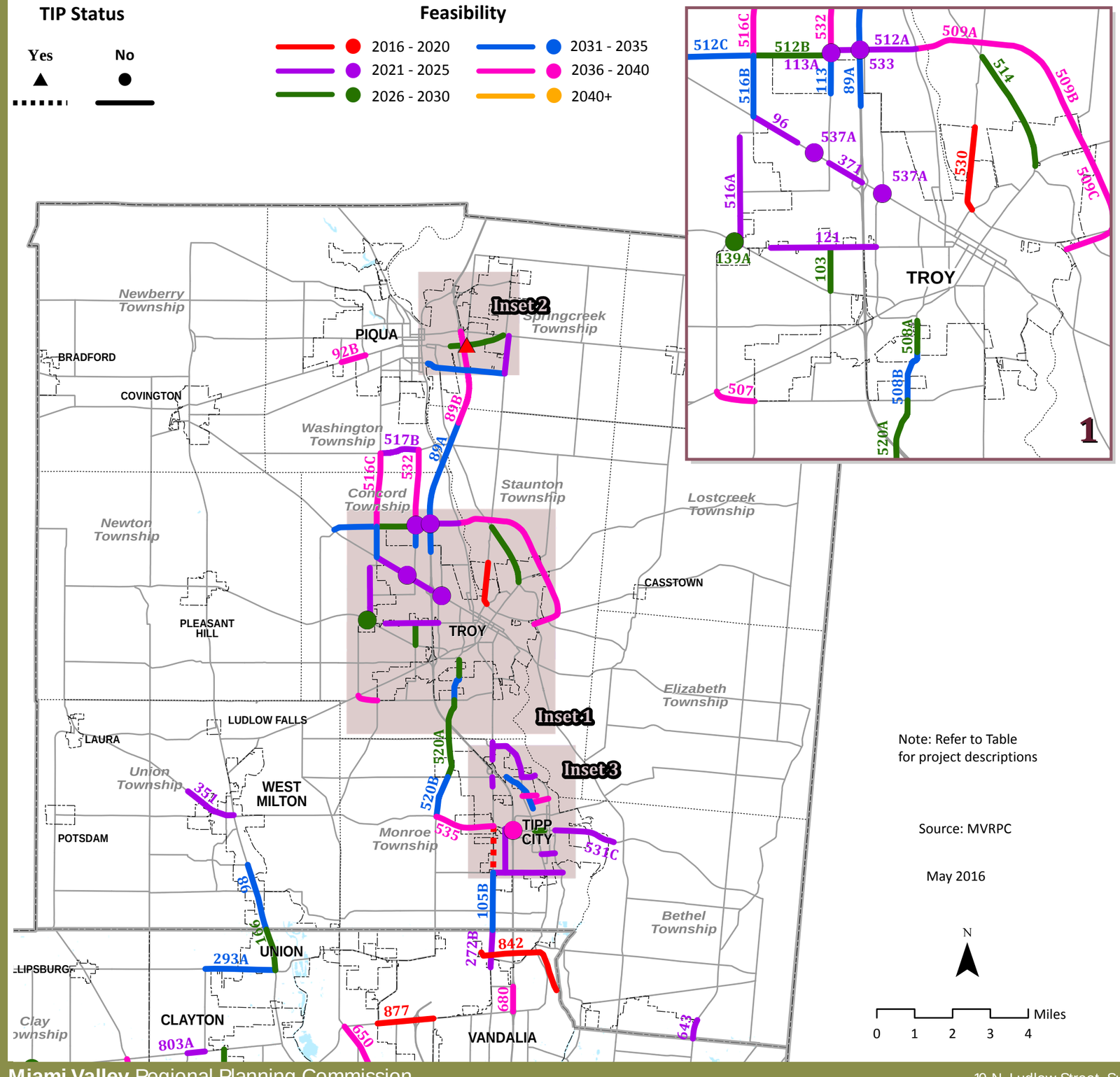






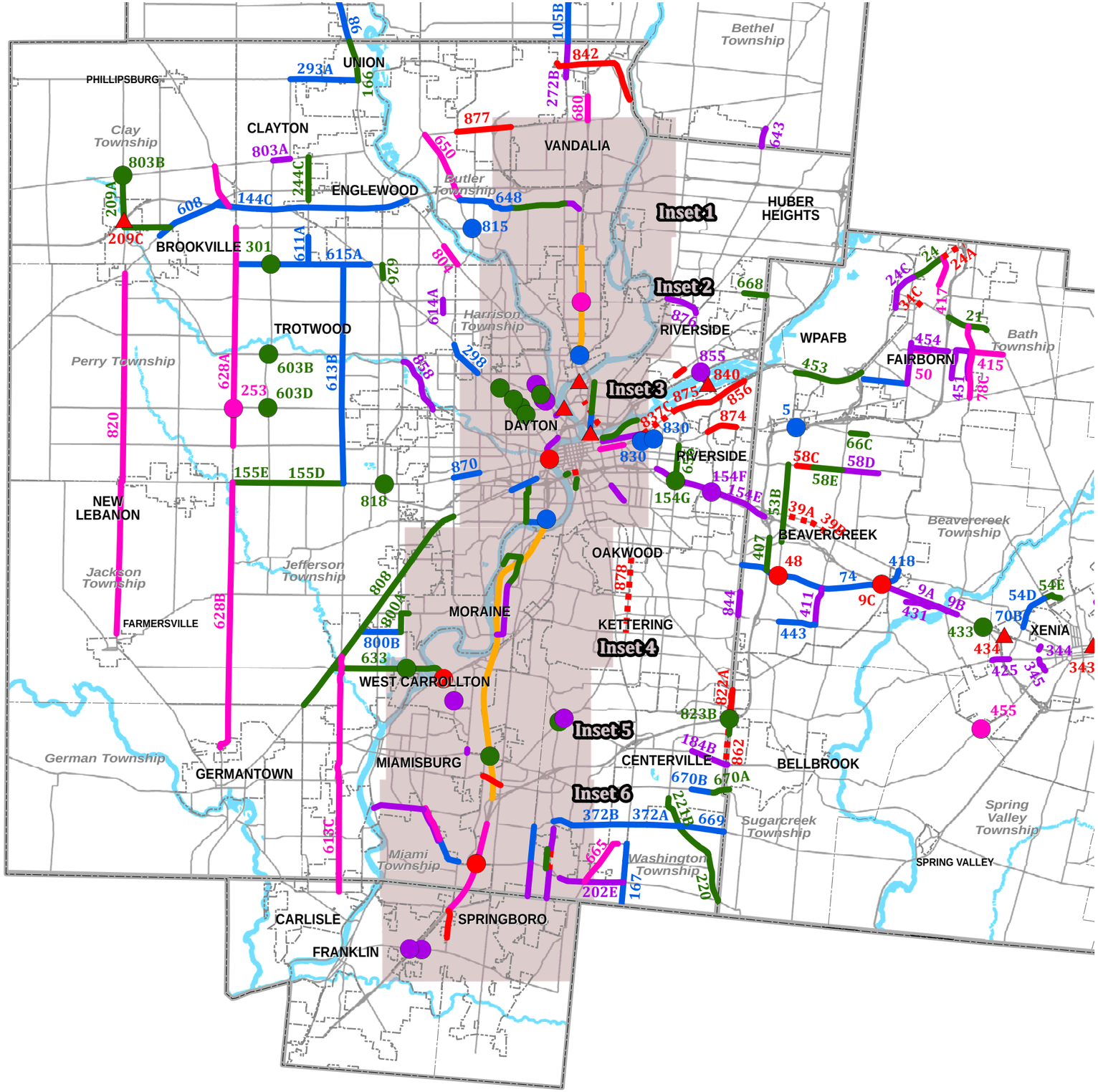
MVRPC

Figure 5.5
Congestion Management Projects:
Miami County



MVRPC

Figure 5.6
Congestion Management Projects: Montgomery County, Carlisle, Franklin, and Springboro



TIP Status

Yes ▲ ⋯⋯ No ● ——

Feasibility

2016 - 2020	2031 - 2035
2021 - 2025	2036 - 2040
2026 - 2030	2040+

Note: Refer to Table for project descriptions.

Source: MVRPC

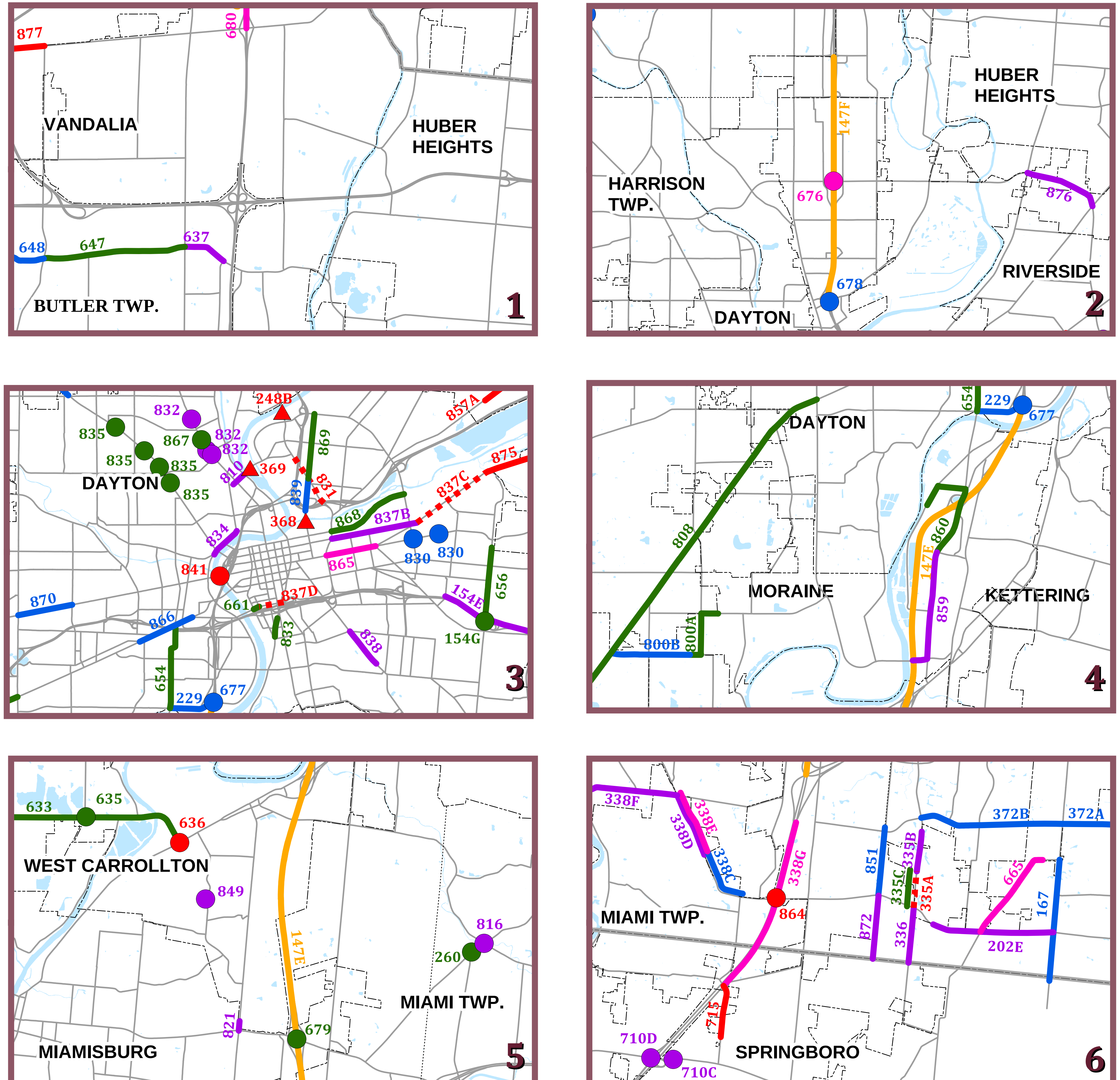
May 2016

0 1.5 3 4.5 6 Miles

N

MVRPC

Figure 5.7 Congestion Management Projects: Montgomery County Insets



TIP Status

Yes	No
▲ (dotted line)	● (solid line)

Feasibility

- 2016 - 2020
- 2021 - 2025
- 2026 - 2030
- 2031 - 2035
- 2036 - 2040
- 2040+

Note: Refer to Table for project descriptions.

Source: MVRPC

May 2016

N

CHAPTER 6
CONGESTION MANAGEMENT STRATEGIES — TRANSIT

6.1 Overview

For the Region to progress, it must have a comprehensive transportation system that serves the needs of travelers using all modes of transportation with reasonable mobility options for all residents including those using public and human services transportation. The 2040 Long Range Transportation Plan addresses future mobility needs by including transit programs and projects that provide alternatives to the private automobile.

As discussed in Section 3.2.4, four transit agencies serve the Region (see Figure 6.1). The Greater Dayton Regional Transit Authority provides fixed-route service in Montgomery County. The Greene County Transit Board (Greene CATS) provides flex-route service as well as demand-responsive service in Greene County. The Miami County Transit System and the Warren County Transit System provide demand-responsive service in Miami and Warren counties, respectively.

As part of the 2000 Census, the Dayton Urbanized Area boundary was redrawn, resulting in the reclassification of the transit systems in Miami County and Greene County from rural to urban systems. This means that the rural program funding source will no longer be available for the newly designated urban transit systems and that funding for these transit systems will now come from the Federal Transit Administration's (5307) Bus Tier Urban Transit Funding.

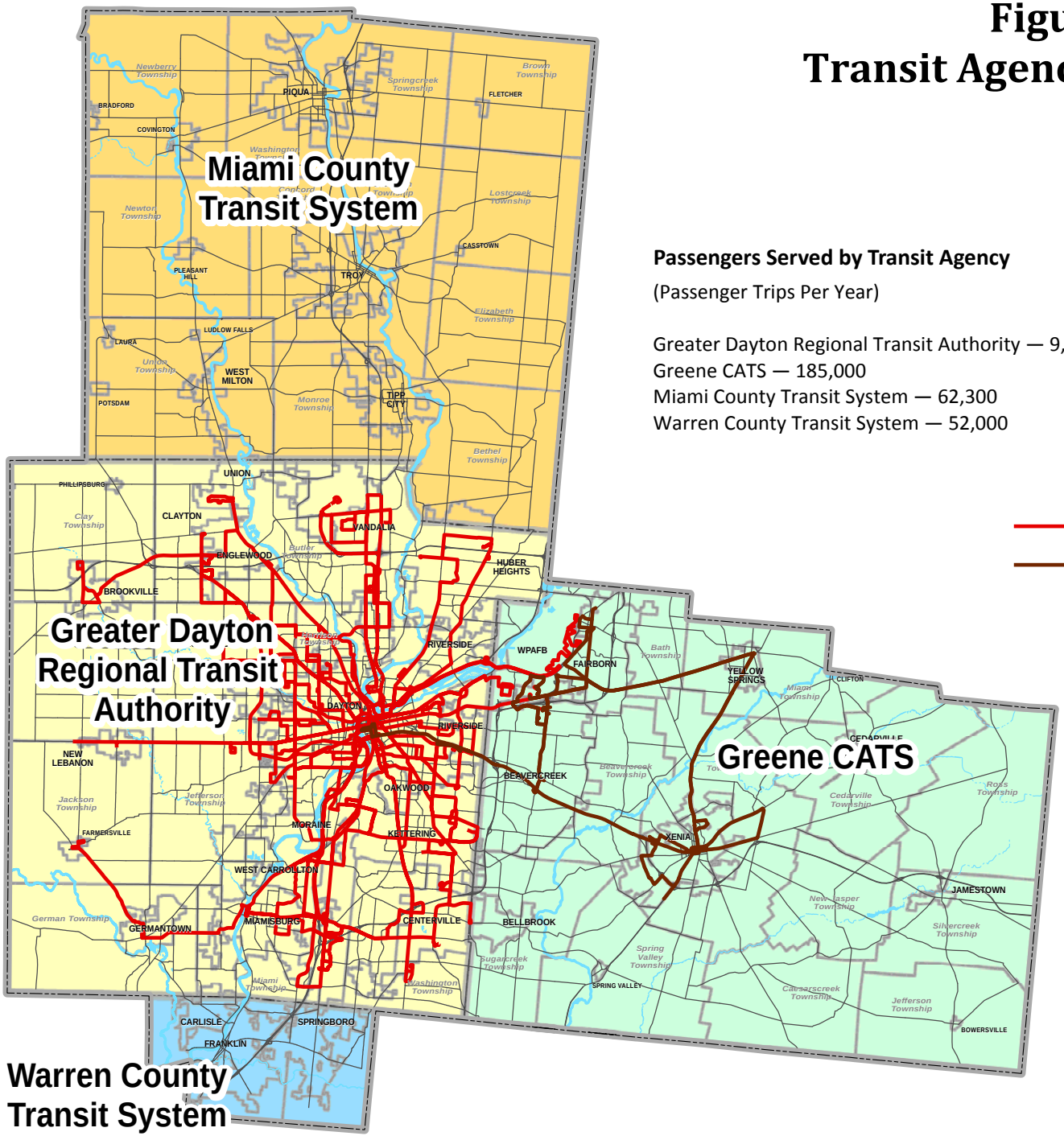
In December of 2002, ODOT asked MVRPC to play a lead role in crafting a funding agreement to suballocate the FTA's 5307 funding between the urban transit operators annually. At ODOT's request, MVRPC formed a sub-committee consisting of officials from GDRTA, the Greene County Board of Commissioners, and the Miami County Commission. The funding agreement has been approved and signed by all three organizations/entities, and is administered by MVRPC annually. MVRPC and the transit agencies are currently developing a process to allocate FTA's 5339 funding.

6.1.1 Financial Outlook

Financial forecasts for the regional transit agencies were provided by each agency in year of expenditure dollars for the same periods, using the, FY 2016, U.S. Office of Management and Budget, U.S. Budget Economic Assumptions for Consumer Price Index for FY 2019 (2.3 percent per year) to project inflation into the future. The analysis shows that the various transit programs are fiscally constrained throughout the life of the Plan and the complete financial analysis can be found in the LRTP Financial Summary Report.

MVRPC

Figure 6.1
Transit Agency Service Areas



Passengers Served by Transit Agency

(Passenger Trips Per Year)

Greater Dayton Regional Transit Authority — 9,000,000
Greene CATS — 185,000
Miami County Transit System — 62,300
Warren County Transit System — 52,000

GDRTA Fixed Transit Routes

Greene CATS Flex Routes

Source: GDRTA, Greene CATS, Miami County Transit System, and Warren County Transit System

May 2016

N

0 2 4 6 8 Miles

6.2 Greater Dayton Regional Transit Authority

The long range planning process used by GDRTA is based upon strategic plan priorities, as well as federal directives. This planning process has led to the current transit system and has also assisted in the development of the 2040 LRTP.

6.2.1 Service Description and Social/Economic Impacts

GDRTA provides approximately 9 million passenger-trips per year through an extensive network of fixed routes, covering nearly 1,000 miles of directional roadways. Further, GDRTA's Transit Centers, located throughout Montgomery County, connect the central city and the suburban areas with bus services at centralized locations.

Fixed Route Service

GDRTA serves Montgomery County and Wright Patterson Air Force Base (WPAFB) and Wright State University (WSU) in Greene County through a network of 31 bus routes. There are 10 local routes that provide downtown-based service, mostly within the City of Dayton; 6 suburban routes that provide downtown-based service for 18 suburban jurisdictions; 3 cross-town routes that provide service between nine jurisdictions; 4 express routes serving nine jurisdictions, with service to downtown; 2 feeder routes that provide intra-neighborhood service within 4 jurisdictions; 3 Senior Mobility routes; and 3 Rural routes.

Project Mobility

GDRTA also provides paratransit service for people with disabilities through Project Mobility. Individuals who are certified as being ADA-eligible for paratransit service can utilize this generally door-through-door service, available seven days a week. In accordance with ADA regulations, service is provided for trips that begin and end within ¾ mile of GDRTA's regular fixed routes.

The Social and Economic Benefits of GDRTA's Service

A majority of RTA riders (62%) use the RTA to get to jobs another 15% use the service for shopping/social purposes and 13% for educational trips. This creates an economic engine for the community and results in $4 of economic return for every $1 invested in public transportation.

The RTA's community grants program has contributed federal dollars in the amount of $2.3 million to 21 jurisdictions. This has helped leverage support for $2.9 million of transit related capital improvements in our community.

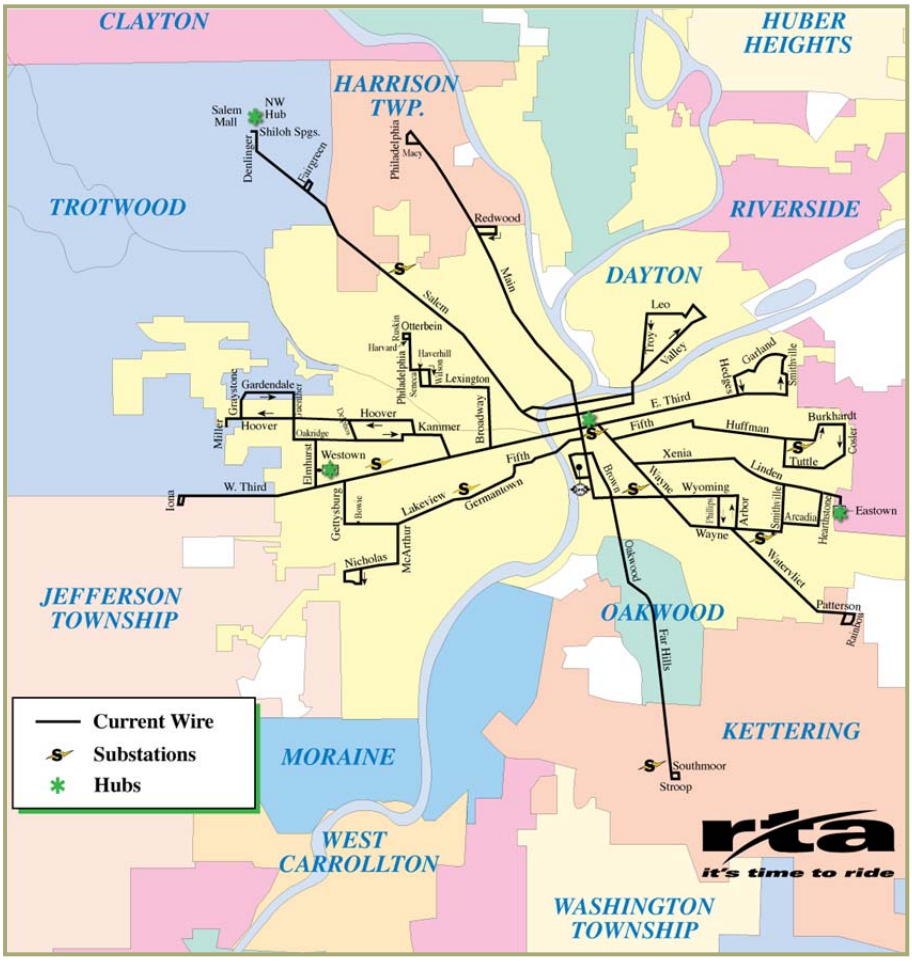
To benefit the community, the RTA has invested in environmentally friendly technology using electric trolley and hybrid diesel vehicles. In 2010, RTA was designated the highest possible certification as a five-star Ohio Green Fleet by Clean Fuels Ohio. GDRTA is also currently testing Dual Mode vehicles that operate on and off the electric trolley wire.

6.2.2 The Future Service

A shift in the commuter travel of Miami Valley residents from the central city to the suburbs has challenged the GDRTA mission. GDRTA is poised to offer customers flexible, broad-based public transportation and has outlined the following programs that will address the community's changing transportation needs.

Electric Trolleybus Service — GDRTA is committed to clean air methods of transportation with its electric trolleybuses. Fifty-seven electric trolleybuses were purchased from 1996 through 1998 as a replacement of the old electric fleet. In 2010, RTA conducted a cost/benefit analysis which recommended continued operation of trolley buses along with community support from those benefitting communities. It also recommended a future procurement plan that meets budget constraints and a change to A/C propulsion. In addition, GDRTA is currently testing the use of new technologies in dual mode trolley buses that could operate with off wire capabilities including hybrid-diesels and battery powered vehicles. Figure 6.2 depicts GDRTA's current electric trolleybus service system.

Figure 6.2 — GDRTA Trolleybus Service



Community-Based Service — Within its financial capabilities, GDRTA will continue to research and implement more specialized and targeted services to address the needs of special populations within the community. Becoming more demand-driven and being more responsive to individual populations will be a focus. One example is the implementation of community-based routes that are targeted to the ever-increasing senior population. This service provides curb access for those seniors who can still utilize fixed-route service but find it more difficult to access the mainline bus stops along a fixed route. Transportation is provided by smaller vehicles that allow safer access to the smaller parking lots at retirement communities, giving access to shopping, medical, and social facilities. Currently there are 3 Senior Mobility routes in operation.

GDRTA will also investigate possible partnerships and sponsorships of routes designed to address the transportation needs of companies who have relocated or are locating to outlying areas. GDRTA will work with area chambers of commerce and major employers to develop rider incentives for employers to use as employee benefits. There will also be the possible development of a "fair share" ridership program for employers as a contribution to clean air.

Regional Hub Network — Due to the shift in commuter travel patterns and the community's support and partnership, GDRTA implemented the Regional Hub Network. Benefits realized are:

- Improved regional mobility by providing a variety of route options including crosstown, express, and downtown-based service;
- Maximized service efficiency by reducing duplicated vehicle miles, and instead providing neighborhood feeder routes in selected areas;
- Enhanced rider comfort and security by providing climate-controlled passenger waiting areas, security, public restrooms, and route/schedule information;
- Improved electric trolleybus system with extended select trolley routes to logical termini, such as regional hubs; and
- Promotion of economic development by providing a link between surrounding communities to retail and service functions near the hubs.

Improving Cross-town Service — GDRTA will continue to investigate ways to improve cross-town service, to provide direct community-to-community service, and enhance possible connections between counties surrounding the current GDRTA service area.

Intelligent Transportation Systems (ITS) — GDRTA will continue to focus on the latest ITS technologies available to assist in providing more cost-effective, safe, and reliable transportation services. Automatic Vehicle Locators and Automatic Passenger Counters are installed, as well as fare boxes for the entire fleet. GDRTA redesigned its website to greatly enhance information to the customer including automatic notification of changes to service via text alerts and an on-line trip planner. GDRTA will continue to search for improved payment systems for customers as well as providing real-time information using smartphone technology to improve the customer travel experience.

In addition, signalization changes and dedicated bus lanes will be pursued, as well as any regional ITS architecture that will allow universal notification of accidents and congestion.

University and Regional School Involvement — GDRTA will continue to investigate the transportation needs of our area's universities and regional school districts. Programs such as university passes and subsidized intra-campus shuttle service will be researched.

Participation in Regional Events — GDRTA will continue to support tourism by providing service to various community events.

Regional Development — GDRTA will continue to participate in regional projects that strengthen the link between transit and community planning. GDRTA has been able to leverage federal funding support for community projects involved with the revitalization of downtown Dayton and the Region. Support for the downtown baseball stadium, the RiverScape Project, the Schuster Performing Arts Center and the Wright Stop Transit Plaza, is consistent with GDRTA's goal of improving the quality of life in the older, built-up portion of our community. To further improve Wright Stop Plaza, GDRTA used a federal earmark and other funds to demolish a derelict hotel building and constructed a covered transit hub with 10 turn-in lanes for convenient boarding and transfer waits as well as an indoor waiting area, convenience stores, and a fresh food market.

Job Access — Jobs are being created or relocated in areas within the Region where public transit does not presently exist. GDRTA will continue its efforts in providing access to jobs to improve opportunities for the unemployed and underemployed. GDRTA recently implemented new job access service to the P&G Facility in the City of Union, developments in the Northwoods Boulevard area, and the Austin Landing development.

Levels of Service — GDRTA anticipates service levels (vehicle hours and vehicle miles) to remain constant. GDRTA will address growing transportation needs by reallocating resources where possible, and seek innovative revenue sources to assist with future operating expenses.

Federal Emphasis Areas — Continuing its efforts to address federal emphasis areas in planning, GDRTA will target and study promising transit markets (e.g., employment centers, day-care facilities, tourist attractions, etc.) and identify traditional and non-traditional transit options to encourage new and increased ridership. Planning efforts will include analysis of innovative services, which may be community-based, employer-based, or organization-based, and an annual planning seminar sponsored in conjunction with the Ohio Planning Conference with nationally recognized speakers on topics of regional significance.

Planning funds will be used to support efforts to improve ridership, address quality of life issues, update an analysis of the hub system, as well as support initiatives that will stress the most recent emphasis areas.

6.2.3 GDRTA Assumptions for 2016 – 2040

The following assumptions were made in developing the GDRTA Long Range Transportation Plan project lists, costs, and revenues:

Fiscal Constraint — GDRTA Long Range Transportation Plan project list is fiscally constrained.

Service and Ridership — Service area remains approximately the same. However, new markets will continue to be explored (e.g., additional expansion into western Greene County) and possible extensions into northern Warren and southern Miami Counties.

Service Configuration

- Service area remains approximately the same. However, new markets will continue to be explored (e.g., additional expansion into western Greene County. Possible extensions into northern Warren and southern Miami Counties).
- GDRTA will continue to operate as a multiple hub/transfer system.
- GDRTA will pursue dual-mode vehicle technology for service extensions off existing electric trolley wire.
- GDRTA is in compliance with ADA and will continue to work with human services transportation coordination efforts.
- Annual vehicle hours and vehicle miles will slightly increase.
- Annual ridership will slightly increase.
- Average fare will be consistent with inflation.

Fleet Changes — GDRTA anticipates a fleet size as follows:

- Electric Trolleys – 45;
- Diesels 30’ to 40’ – 111;
- Project Mobility Vehicles – 75; and
- Contingency 35’ to 40’’ Diesels – remain at 20 percent.

Capital Needs — The following vehicles will be purchased:

- 86 new electric trolley buses,
- 218 new large diesel buses, and
- 70 new Project Mobility/New Market vehicles.

Electric Trolleybus Infrastructure — Continued maintenance of substation and overhead distribution system.

Other

- Utility vehicle fleet to be replaced several times over the 2016-2040 period;
- Vehicle equipment;
- Upgrades to our facilities and hubs;
- Office/shop equipment;
- Capitalized leases;

- Planning projects; and
- Community projects.

6.2.4 Project List, Cost, and Revenues

A summary of GDRTA's Long Range project list is presented in Table 6.1.

Table 6.1 — GDRTA 2040 LRTP Projects
(in millions of Year of Expenditure dollars)

Project	Cost
Capital Projects	***521.17***
Revenue Vehicles & Equipment	
- Electric Buses - 86 (Fleet of 45)	105.40
- Diesel - 218 (Fleet of 111)	111.66
- Project Mobility Buses - 70 (Fleet of 75)	38.19
- Vehicle Equipment	9.54
Electric System Infrastructure	92.63
Transit Hubs & Facility Improvements	
- Longworth Campus	33.42
- Downtown Campus	18.58
- Countywide Transit Hubs	16.42
- Facilitywide Security Items	3.94
Equipment	
- Maintenance Equipment	6.34
- Office Equipment & Furnishings	3.28
- Computer Equipment & Software	19.32
- Support / Utility Vehicles	4.14
Passenger Amenities	
- General Transit Enhancements	8.31
- Community Specific TE Projects	33.39
Planning Projects	0.15
Capital Tire Lease	16.46
Operating / Maintenance Projects	***2,233.00***
Total	***2,754.17***

Source: GDRTA

6.3 Greene County Transit Board

The Greene County Transit Board is a public body that was formed to provide public transit for Greene County and to help coordinate social services transportation in the County. The commonly known name of the transit service is "Greene CATS". The Board contracts out the day-to-day operations of the transit service to a private company currently First Transit.

6.3.1 Service Description

The service is a combination of traditional demand responsive and flex route services. It is wheelchair accessible and serves a mix of fare-paying and contract riders. The transit service area is Greene County with trips to Montgomery County and surrounding counties as needed. In addition, the Greene County Transit Board works with local social services agencies to help coordinate social services transportation and to provide a wider range of transportation options to riders.

6.3.2 Plan Assumptions

The following assumptions were made in developing the Greene CATS project lists, expenses, and revenues for the 2040 LRTP:

- Adding peak, evening, and weekend, flex route service beginning in 2016;
- No change in fares 2016: traditional demand responsive service $3.00 each one way in Greene County; $6 each way to and from Montgomery County; $0.75 for children 13 and under; flex services $1.50 each way, $0.75 for elderly, disabled, and children (13 and under);
- No change in FTA or ODOT formula funding or local revenue sources; and
- Continue to work with social services agencies to foster coordination and brokerage programs.

Table 6.2 — Greene CATS 2040 LRTP Operating Statistics

	Short Term Plan 5 years (2016-2020)	Long Term Plan 10 years (2021-2030)	Long Term Plan 10 years (2021-2030)	Full 25 Year Plan
Vehicle-miles 1,400,000/yr	7,000,000	14,000,000	14,000,000	**35,000,000**
Vehicle-hours 75,000/yr	375,000	750,000	750,000	**1,875,000**
Fleet size	42	42	42	-
Passenger trips 185,000/yr	925,000	1,850,000	1,850,000	**4,625,000**

Source: Greene CATS

6.3.3 Project List, Cost, and Revenues

A summary of the Greene CATS 2040 LRTP project list is presented in Table 6.3.

Table 6.3 — Greene CATS 2040 LRTP Expenses Summary (in millions of 2015 / Year of Expenditure dollars)

Major Projects	Cost
Capital	***12.5***
- Bus Purchase – 175 (Fleet of 42)	8.75
- Shop/Office Equipment	0.13
- Planning Projects	2.25
- Other Capital Projects	1.37
Operating / Maintenance	***82.37***
Total (2015 dollars)	**94.87**
Total (YOE dollars)	**127.30**

Source: Greene CATS

6.4 Miami County Transit System

As a result of the 2000 Census classifying Miami County as an urbanized area, the Board of Commissioners established a Miami County Transit Department effective January 2, 2004. The Miami County Transit staff is responsible for the growth, financial, and operational aspects of the department. Operations and Maintenance are currently contracted to First Transit.

6.4.1 Service Description

Miami County Transit System provides demand responsive transit services within the geographic area of Miami County. The service area was expanded in January 2007 to include the City of Piqua, which operated a rural transit system through 2006. Funding for the rural transit system in the City of Piqua was eliminated effective January 1, 2007, at which time the merger of the Piqua Transit Service and the Miami County Transit System concluded.

Miami County Transit offers a connection with GDRTA in two areas (one on Route 17 Vandalia and one on Route 18 Huber Heights).

Miami County Transit provides service six days a week. Monday through Friday from 5:00 AM to 6:00 PM, and Saturday from 8:00 AM to 2:00 PM.

The County anticipates continued increases in benefits for local human service organizations. Many of these organizations have the opportunity to utilize Miami County Transit as a method of expanding existing programs.

In limited cases, special transit trips may have trip ends (such as major employers, medical facilities, etc.) outside of Miami County, but within ODOT's 50-mile radius constraint. The system provides approximately 62,300 trips annually. Annual increases in passenger counts are expected.

These increases will require a thoughtful approach in order to absorb new riders into the existing infrastructure of the system and operate within available resources. The current fleet consists of eighteen small transit buses, all are lift equipped and ADA accessible.

6.4.2 Project List, Cost, and Revenues

A summary of the Miami County Transit System's 2040 LRTP project list is presented in Table 6.4 below.

Table 6.4 — Miami County Transit 2040 LRTP Projects
(in millions of Year of Expenditure dollars)

Project	Cost (YOE)
Capital	***6.91***
- Small Buses - 75 (Fleet of 18)	6.49
- Shop/Office Equipment	0.08
- Security Equipment	0.17
- Planning Projects	0.17
Operating / Maintenance	***34.13***
Total	**41.04**

Source: Miami County Transit

6.5 Public Transit Human Services Transportation

6.5.1 Coordinated Public Transit-Human Services Transportation Plan

SAFETEA-LU required that proposed projects under three FTA formula programs (the Specialized Needs of Elderly Individuals and Individuals with Disabilities Program — Section 5310, Job Access and Reverse Commute — Section 5316, and the New Freedom — Section 5317) be derived from a locally developed coordinated public transit/human services transportation plan. MAP-21/FAST Act has maintained the coordinated planning requirement, but has changed specific programs governed by that requirement. Specifically, Section 5316 (New Freedom) funding was combined with Section 5310 to create a revamped program now called Enhanced Mobility for Seniors and Individuals with Disabilities Program. The Section 5316 program (Job Access and Reverse Commute or JARC) ended and the funding was redirected to regional transit agencies to enhance transit services for job access. The Coordinated Plan must be developed and managed through a process that includes representatives of public, private, and non-profit transportation and human services providers, as well as the public including; non-drivers, people with disabilities, and the elderly.

In the Dayton urbanized area, MVRPC, in cooperation with the regional transit agencies, took the lead in developing the Coordinated Public Transit Human Services Transportation Plan which was endorsed by the MVRPC Board of Directors in April 2008. Summaries of the Plan findings and recommendations are included below with the recommendations listed in order of priority. In 2012, the HSTC plan was updated documenting progress of the initial findings and identifying new focus areas. Most of these findings remain true in 2016, largely due to underlying demographic trends, such as the aging of the Region's population and the related increase in people with disabilities. In addition, lack of local operating funding to expand transportation services for the elderly and the disabled has been an impediment to making significant progress on many issues.

Findings from the Coordination Plan

- Need for better public transit connections across county boundaries;
- Lack of transportation options at night and on weekends;
- Difficulty of finding information on available services;
- Infrequent transit service on some routes;
- Need for advance scheduling decreasing potential demand;
- Increasing demand for dialysis-related transportation and transportation for other repetitive medical treatments;
- Aging of the Region's population and the growing transportation needs of seniors;
- Need to complete essential sidewalks, curb cuts, and other elements of the pedestrian infrastructure, especially along fixed and flex-route transit lines;
- Growing number of low-income residents living in suburban and rural settings with limited transportation options;

- Recognition that lack of transportation options for non-drivers is a high-priority, regional issue; and
- An overarching emphasis on coordination among agencies, funders, and users to ensure cost-effective use of the Region's transportation assets.

Recommendations

- Coordinated travel information at the regional or county level;
- Connecting existing public transit services;
- Developing agency coordination agreements;
- Taxi subsidy options for project mobility trips;
- Vanpools for work and other trips;
- Expansion of current public transportation services;
- Brokering transportation operations;
- Additional local funding support for transportation options;
- Multi-county transportation services; and
- Regional transportation coordination.

Progress on Plan Findings and Recommendations

- Cross-county connections of transit agencies have improved significantly, Greene County flex service now connects from Xenia to the GDRTA Eastown and Downtown Dayton Hubs as well as direct Greene CATS service to Sinclair Community College. In addition, GDRTA has added direct service to the Fairfield Mall area in Greene County and Miami County Transit has added connections to GDRTA in Montgomery County (Vandalia and Huber Heights).
- In 2012, the Regional Directory of Transit and Human Services transportation was converted to a website: www.miamivalleyridefinder.org. This website lists contact information and services for public and non-profit transportation providers throughout Greene, Miami, Montgomery and northern Warren counties.
- A mobility manager is now housed at Greene CATS. While the primary focus of this position is on Greene County residents, the mobility manager assists with regional issues including providing administration of the www.miamivalleyridefinder.org website. The mobility manager also provides travel training and referrals and other services to non-drivers.
- Job-related transit service connects residents of the men's homeless shelter with the Montgomery County Job Center and the downtown GDRTA hub.
- Continuation of the Senior Transportation Expansion Project in Montgomery County which provides funding to support transportation services provided by senior centers in various communities.
- Improvement of sidewalk infrastructure, including the addition of concrete passenger landing pads and ADA curb cuts in multiple jurisdictions, improving access to fixed-route transit for people with disabilities and the elderly.
- Hosting of coordinated driver training events by GDRTA and Goodwill Easter Seals of the Miami Valley.

6.5.2 Section 5310 Program under MAP-21/FAST Act

MAP-21/FAST Act changed the long-established FTA Section 5310 program from a statewide allocation to a regional allocation in large urbanized areas like the Greater Dayton Urbanized Area. The Region now receives an annual allocation of funds to support the special transportation needs of seniors and individuals with disabilities.

The Miami Valley Regional Planning Commission has been named the Designated Recipient for Section 5310 funds in Greene, Montgomery, Miami and northern Warren Counties by the Governor of the State Ohio. In that role, MVRPC is responsible for awarding program funds to ensure that transportation options for seniors and people with disabilities will be maintained and improved. The primary method for achieving this goal is to provide financial support for accessible vehicles to non-profit agencies and government entities which supplement the service available through the public transit systems in those counties.

The Greater Dayton Regional Transit Agency (GDRTA) is a partner in administering the 5310 program and acts as the purchasing agent for the program. In addition, GDRTA will maintain continuous control of Section 5310 vehicles throughout the useful life of the vehicle by way of a lease arrangement with participating agencies. Participating agencies will make a one-time lease payment equal to 20% of the value of the vehicle being purchased. The local match will need to be paid in full when the lease is signed. When a vehicle reaches the useful life criteria established by FTA, the vehicle will be titled over to the operating agency which can continue using the vehicle or properly dispose of said vehicle.

Under current law, competitive selection is allowed, but not required. A decision will be made annually whether competitive selection is appropriate for the current cycle of funding. In addition to accessible vehicles, other eligible projects will include pedestrian infrastructure improvements, when those improvements enhance access to fixed route transit, preventive maintenance projects for vehicles that have been awarded through the 5310 process, and mobility management activities.

Agencies which request 5310 funding are required to be, or to become, active members of the Regional Transportation Coordination Council and to track and report certain performance indicators.

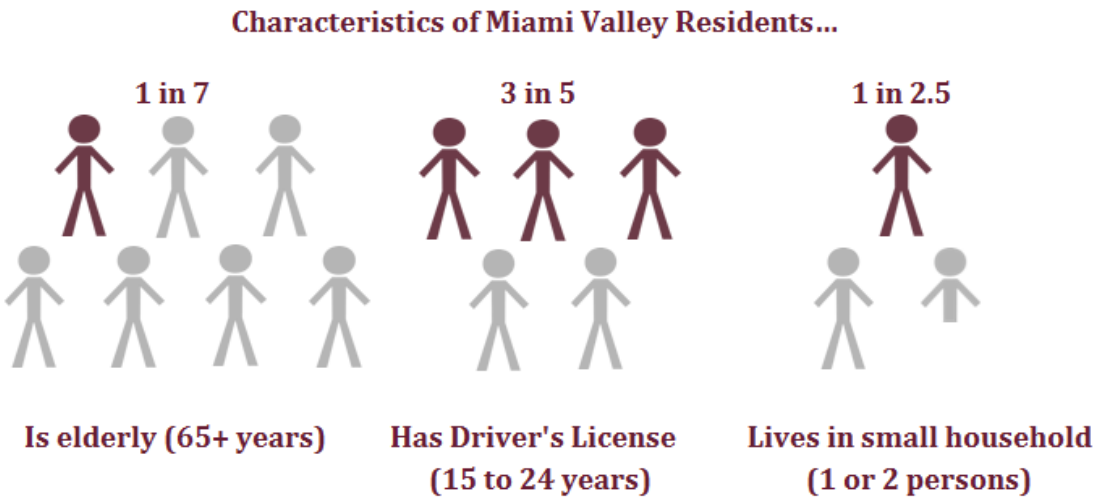
CHAPTER 7
ALTERNATIVE MODES AND DEVELOPMENT CHOICES

7.1 Overview

As the Region grows, it is essential to plan a comprehensive transportation system that serves the needs of travelers using all modes of transportation, allowing for reasonable mobility choices for all residents. The 2040 LRTP addresses future transportation needs by including programs and projects that provide alternatives to traditional forms of transportation and thereby aid in curtailing the demand for single occupancy vehicle travel, reducing congestion, harmful emissions, and the reliance on petroleum-based products. Alternative modes and development choice strategies can also spur economic development in existing communities, create strong places with a sense of community, and help preserve open space and environmentally sensitive areas.

7.1.1 Trends

Between 2000 and 2010, the Region's elderly population (older than 65 years) increased by 16 percent while also experiencing a subtle increase in the amount of that population that lives in suburban and rural areas. At the same time, younger people are increasingly delaying the age at which they get their first driver's license. In 2013, approximately 62 percent of the population between the ages of 15 to 24 years had driver's licenses in the Miami Valley, and while this rate is higher than the national average, it is still lower than previous decades. Younger drivers are also more likely to drive less if driving costs increase and generally have a higher preference for living close to work. It is also important for elderly residents to live in an environment in which they are not being pushed to drive beyond the ages at which it is safe to do so.



On the household front, 40 percent of the household population in the Region now lives in a 1 or 2 person household, a 9 percent increase since 2000. Younger generations are also choosing to postpone homeownership; as a result, the region experienced a 10 percent increase in the population living in rental housing units between 2000 and 2010.

Population changes, transportation, and living preference shifts are combining into a non-traditional demand for varied living arrangements and transportation choices. On the housing end there is strong demand for senior/elderly housing as well as infill and urban housing. There is also interest in development of suburban areas near transit and other amenities. Successful regions will need to address these preferences to retain existing residents and attract new ones.

Improvements in transportation technologies are addressing some of these challenges. Car-sharing, bike-sharing, and ride-sharing services, such as Uber and Lyft, are providing a reasonable alternative/supplement to automobile ownership with new models, such as GetAround (car-sharing of privately owned automobiles), also emerging. On a longer horizon, emerging self-driving and autonomous vehicle technologies will also impact congestion, mobility, safety, and development patterns. Additional information about Dayton's Bike Share program, Link, is provided later in this chapter.

These demographic, socio-economic, and technology-oriented shifts are expected to continue into the future so it is increasingly important for regions to plan for and provide alternatives.

7.2 Funding Outlook

Financial forecasts for the programs and projects described in this chapter are based on annual averages as shown in the current SFY 2016-2019 TIP and are assumed to be in 2015 dollars. A summary is provided in Table 7.1 below and additional details can be found in the Financial Analysis Summary.

Table 7.1 — 2040 Forecasted Cost and Revenues for Alternative Modes (in millions of 2015 / Year of Expenditure dollars)

Program	Cost/Revenues					
	Four Year TIP (2016-2019)	Annual Average	Short Term Plan-5 years (2016-2020)	Long Term Plan-10 years (2021-2030)	Long Term Plan-10 years (2031-2040)	For Full 25 Year Plan
RIDESHARE	1.73	0.43	2.16	4.32	4.32	10.81
Vanpool Subsidy	0.56	0.14	0.70	1.40	1.40	3.50
Air Quality	1.65	0.41	2.06	4.12	4.12	10.30
Bikeway/Pedestrian	4.89	-	4.89	-		4.89
Total (2015 dollars)	**8.83**	**-**	**9.81**	**9.84**	**9.84**	**29.50**
Total (YOE dollars)	**8.83**	**-**	**9.94**	**12.43**	**15.54**	**37.91**

Source: MVRPC

7.3 Ridesharing Programs

Ridesharing and other travel demand management strategies are expected to continue to be important elements in the effort to reduce ground-level ozone (smog) and particle pollution. The RIDESHARE Program celebrated its 35th anniversary in 2014.

MVRPC's RIDESHARE Program is available for free to anyone who lives, works or attends college/school in Montgomery, Greene, Miami, Preble, Darke, and Clinton counties. When commuters register for RIDESHARE, the matching software tries to link them with others who live and/or work/attend college near them. They then receive a match list of people who have similar schedules and destinations. Commuters can call those on the list and make arrangements to form a carpool or vanpool.

MVRPC teamed up with CCSTCC and developed a Commuter Club Card which included year-long discounts to local and national retailers throughout the Miami Valley. The cards were developed as a way to say "Thank You" to residents participating in the program and along with a short survey regarding commuting, were sent to everyone in the RIDESHARE database and distributed throughout the year at special events.

Additionally, as a way to encourage ridesharing, MVRPC coordinates with the Dayton Dragons minor league baseball team and the City of Kettering's Fraze Pavilion to offer special carpool parking at specific home games and concerts. Attendees can pre-register for the parking if they intend to rideshare to the event as a carpool of 4 people. The designated parking is conveniently located and specifically reserved for them. Special promotions, such as these, allow residents the opportunity to be rewarded for using alternative modes and to get used to thinking about ridesharing no matter where they need to go.

There will be a continued effort to incorporate innovative promotions and incentives to encourage the use of alternative transportation including construction awareness campaigns like the I-75 Modernization Project and other planned, large-scaled, reconstruction projects.

Over the years, rideshare service improvements have included:

- The development of a *Guaranteed Ride Home Program* that allows commuters to take a taxicab or rent a car for one day, up to four times a year, and are reimbursed 80% of the full fare/rental fee.
- Improvements to www.miamivalleyrideshare.org that allow commuters to register for the service on-line. The RIDESHARE hotline, 1-800-743-SAVE and 937-223-SAVE, is available to those without Internet access. Both are on the RIDESHARE road signs, which continue to be one of the top three ways that people learn about the program (behind television and radio advertising).
- The addition of local bike routes/paths so cyclists could be matched with others who want to bike to work or college (Pedal Pals Program).

- A new feature was enabled on the RIDESHARE website to allow users to receive an email notification to alert them when new users match their commuting parameters (route, destination, start/end timeframe, etc.).

7.3.1 Vanpool Program

The vanpool program continues to be a very attractive commuting option for people traveling longer distances to work. Two recognized vanpool providers, vRide (formerly VPSI) and Enterprise Holdings, Inc., work with local businesses, most notably, Wright-Patterson Air Force Base, to present vanpooling information to their employees. Generally, anyone travelling more than 25 miles one-way can benefit by joining a vanpool. Vans are available in seven, nine, and fifteen-passenger models and made available for lease on a monthly basis to groups traveling longer distances. MVRPC has applied for and received CMAQ funds to offer vanpool lease subsidies of $500 per month, for up to 36-months, to encourage vanpooling.

7.4 Air Quality Program

The Regional Ozone Action Program was developed in 1994 as a public information/behavior modification campaign to inform Dayton/Springfield residents about ground-level ozone issues and how the general public's behavior can impact not only air quality, but also the Region's economy. In 2004, it was expanded to include particle pollution and renamed the Miami Valley Air Quality Program. RAPCA monitors the Miami Valley's air pollution levels year-round and MVRPC, in coordination with RAPCA, issues Air Pollution Advisory (APA) notices when air pollution levels begin to rise. The general public, the top 100 local businesses, member jurisdictions, day care centers, senior citizen centers, Ear, Nose and Throat doctors, and local media are alerted, and citizens are encouraged to take action to reduce air pollution. The website, www.miamivalleyair.org, includes information about air quality and pollution prevention.

In 2011, an "Air Pollution Advisory" logo was developed for Dayton/Springfield, Columbus, and Cleveland and it is distributed to the media. In addition, the Dayton Daily News and Springfield Daily Sun feature the words "An Air Pollution Advisory has been issued for today" on the front page, above the masthead, of both papers on days when an APA is in effect and tips on how to reduce air pollution are included on the newspapers' local pages. The logo is featured in a 30-second television commercial explaining what an "APA" is, how it relates to the Air Quality Index (AQI), and suggested air pollution reduction strategies.

Extensive advertising, focusing on actions that the general public can take to reduce air pollution and incorporating FHWA's slogan, "It All Adds Up to Cleaner Air" include:

- Driving less by carpooling, vanpooling, taking the bus, riding a bike or walking (coordination with MVRPC's RIDESHARE/ Alternative Transportation Program is emphasized);
- Keeping vehicles properly tuned, not "topping off" the tank, making sure the gas cap fits tightly, and refueling in the evening when smog is less likely to form;
- Mowing lawns after 6:00 pm and limiting the use of gasoline-powered lawn equipment such as weed-whackers, leaf blowers, snow blowers, and chain saws; and
- Eliminating outdoor burning, including leaves, wood, or trash; mulching or composting leaves/yard waste; reducing or eliminating fireplace and wood stove use – consider retrofitting wood stoves with a filter or use gas logs instead.

MVRPC partnered with RAPCA in 2015 to develop an Idle-Free Education Campaign. The two agencies developed a toolkit to provide to local schools, libraries, daycare centers, hospitals, parks and municipalities, to inform visitors that their campus is an Idle-Free Zone. Outdoor signage and informational brochures were made available free-of-charge to any organization wanting to implement the program. This campaign received funding through the Ohio Environmental Education Fund Mini Grant.

7.5 Bikeway and Pedestrian Program and Projects

Bikeways and sidewalks are both important components of an intermodal transportation network since all transportation trips contain a pedestrian element at some point. In addition to maintaining a project listing of actual projects being implemented or planned for the future, MVRPC also conducts extensive outreach and planning efforts related to bikeway and pedestrian mobility.

7.5.1 The Miami Valley Comprehensive Local – Regional Bikeways Plan

This plan, originally adopted by the Board of Directors in December 2008, and updated in 2015, inventories bicycle facilities and identifies future bikeway connections at both the regional and local network levels. The purpose of the plan is to create a complete system of bicycle facilities that connect people to desired destinations – including their homes. Further, the plan encourages policies and programs that will foster increased bicycle use across the Miami Valley Region. The 2015 Update assesses both national and regional data regarding safety, barriers to cycling, and preferred cycling environments to highlight the general support for bike facilities that provide greater degrees of physical separation from motor traffic.

Adapting the "Level of Traffic Stress" (LTS) analysis methodology[6] for a regional (versus municipal) scale, the 2015 Update identifies locations where new low stress locations could improve bicycle connectivity for all. MVRPC staff mapped the entire Region to identify where the low-stress islands

[6] Mineta Transportation Institute, 2012

already exist. The initial premise was that the Miami Valley Trails network is a large low-stress (LTS 1) set of facilities as are residential streets. Roads that are federally functionally classified were assessed using the scale developed by the Mineta Institute. Most were found to be LTS 4 facilities (≥35 mph speeds), with a small minority found to be LTS 3 (≥30 mph speeds and/or 4 lanes). Using GIS analysis, the largest low stress islands were identified in terms of population and visual review was applied to the largest islands to identify potential projects that would provide low-stress connections from those islands to either the trails network or neighboring islands.

Figure 7.1 illustrates the LTS analysis using the transportation network in the Kettering/Beavercreek area. The complete regional maps can be found at http://www.mvrpc.org/transportation/bikeways-pedestrians/mvrpc-bikeways-plan.

The 2015 Update does not alter MVRPC's regional focus to bikeway infrastructure in the Miami Valley and completing key regional bikeways connections and filling gaps in existing corridors remains a primary focus for the agency. But in addition, the 2015 Update calls on jurisdictions in the Region to identify and build safe, convenient, and low stress, connections from the regional bikeways to neighborhoods, parks, commercial centers, and downtowns that will enlarge the reach of the regional bicycle network. Each connection makes the whole system more valuable.

Since 2008, significant progress has been made to implement the recommendations of the Plan. In addition to bicycle infrastructure, a number of non-infrastructure strategies have been initiated across the region by MVRPC and/or partner agencies including:

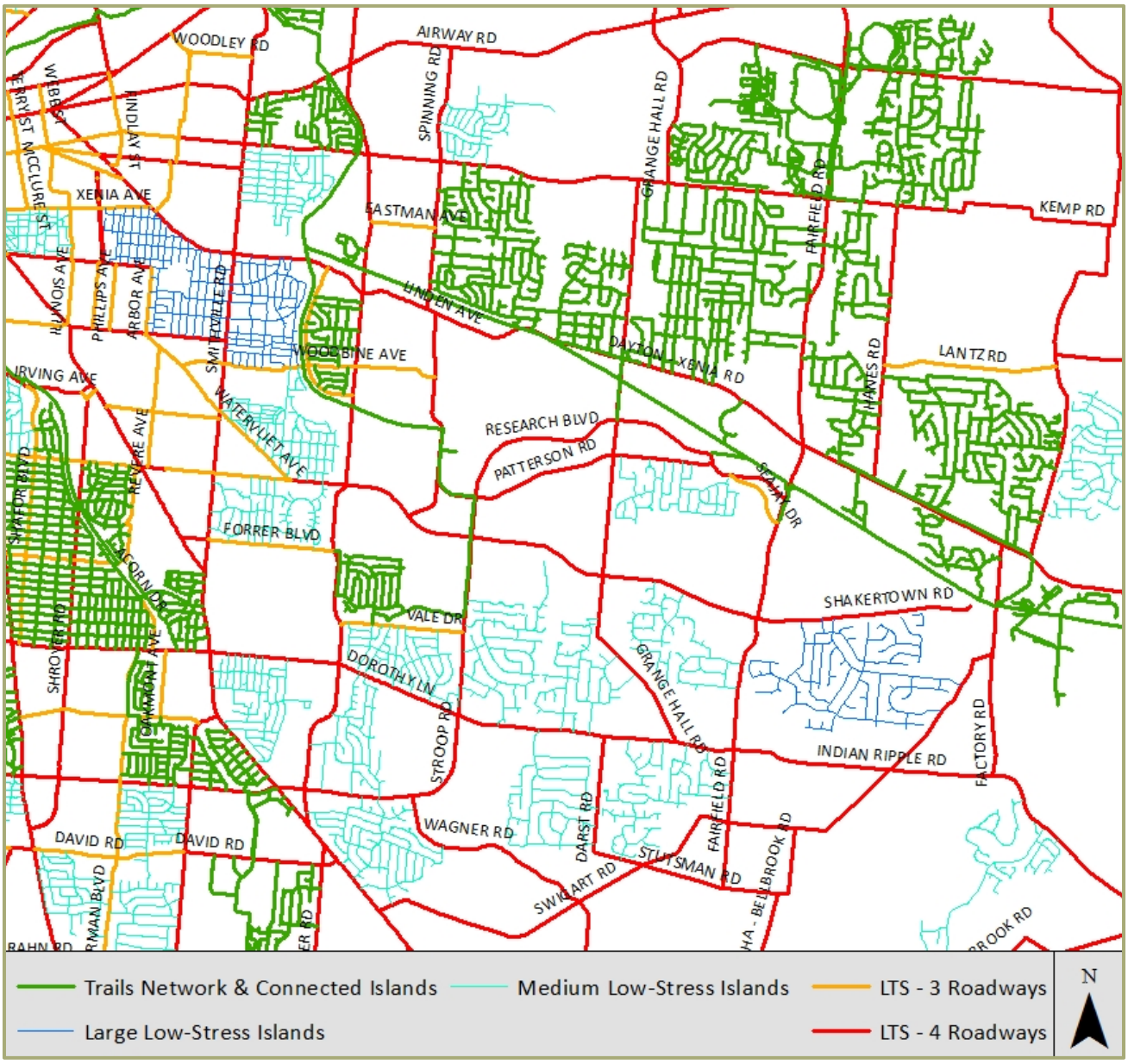
Development of Complete Streets Policies — MVRPC adopted its Regional Complete Streets Policy in January 2011. The cities of Dayton, Riverside and Piqua have also adopted similar policies for their jurisdictions.

Creation of a Regional Bikeways Committee — The committee evolved from an existing committee of trail managing agencies, with the significant inclusion of member jurisdictions interested in adding on-street bike infrastructure to their communities. Active participants have included Dayton, Kettering, Riverside, Springboro, Troy, and Yellow Springs.

Bicycle and Pedestrian Counts — With the cooperation of the trail managing agencies, comprehensive Trail User Surveys were completed in 2009 and 2013. MVRPC initiated a multi-faceted bicycle count program in 2015 including aggregations of trail counter data and use of on-road bicycle counters.

Continued support for the Regional Bikeways Map — MVRPC and partner agencies last updated the regional bikeways map in 2014. In addition, the cities of Dayton, Piqua, Kettering, and Springboro, and the village of Covington developed and distributed their own map of bike routes and bike-friendly streets.

Figure 7.1 — Bikeway Level of Stress Analysis



Development of Public Service Announcements (PSAs) — Two safety PSAs were developed featuring the executive directors of both MVRPC and Bike Miami Valley regarding cycling with motor traffic on the regionals roads. Bike Miami Valley is the regional cycling advocacy organization.

Miami Valley Cycling Summits — MVRPC, Bike Miami Valley, and numerous regional partners have held four Summits in Dayton (2009 and 2011), Springfield (2013), and Piqua (2015). Planning is underway for the 2017 Summit to be held in Fairborn.

Partnerships — MVRPC and regional partners Greater Dayton Regional Transit Authority, Five Rivers MetroParks, and the Miami Conservancy District have continued the Drive Less Live More campaign each year since its inception in 2007.

Continued Support for Bike Month/Bike to Work Week/Bike to Work Day — MVRPC and the Drive Less Live More program continued the downtown Dayton Bike to Work Day program and saw significant growth in attendance over the last seven years. With the event at RiverScape MetroPark, more than 700 riders attended in 2015.

Coordinated Marketing — In early 2012, MVRPC and a consortium of partners, including park districts, transit agencies, and convention and visitors bureaus re-launched a one-stop cycling information web site for the Miami Valley, www.miamivalleytrails.org. The 2015 Bikeway Plan Update also includes a number of policy recommendations to develop a supportive cycling ecosystem in the Miami Valley including:

- Continued support for funding bicycle and pedestrian infrastructure, at the federal, state, regional, and local levels.
- Promotion of the Miami Valley Trails as a regional transportation asset, a business development opportunity, and a draw for out-of-region tourists.
- Enhanced partnerships: Continue to develop relationships with Bike Miami Valley to amplify the agency's voice and increase the reach of the agency's messages. Develop connections to the League of American Bicyclists and continue to encourage jurisdictions in the area to seek Bike Friendly Community status.

The 2015 plan also lists numerous program suggestions under the other Es: Education, Encouragement, Enforcement, Equity, and Evaluation. The plan recognizes that effective implementation of these non-engineering programs is essential to achieving the success of the Region's bicycle transportation goals.

7.5.2 Bikeway and Pedestrian Projects

Table 7.2 lists projects with local, state, or federal funds committed for implementation. These projects represent approximately $4.27 million of investment. The Long Range Regional Bikeway and Pedestrian Project list presented in Table 7.3 includes proposed long range regional bikeway and pedestrian projects for the east-west and north-south corridors, with a total cost of $97.19 million. Figure 7.2, Regional Bikeway and Pedestrian Projects, shows the location of all existing and proposed regional bicycle/pedestrian ways.

Table 7.2 — Funded Regional Bikeway and Pedestrian Projects
(Cost in year of expenditure dollars)

Corridor Direction	Corridor Name	Map Label	Bikeway Limits	Owner / Maint.	Type of Facility	Width (feet)	Length (miles)	Cost
North-South	Dayton-Kettering Connector	J1	Installation of bike lanes on Jefferson Street from Buckeye Street to E. Fifth Street.	Dayton	On-Street	NA	0.3	$627,000
North-South	Great Miami River Trail	K10b	Construct trail on the west bank of the Great Miami River from current trail terminus at Courtyard Hotel to W. River Road.	Dayton	Off-Street	12	1.0	$481,000
East-West	Old National Road Trail	Z1b	Construct a bikeway paralleling US 40 from Northmont Schools Property to Hoke Road in Clayton.	Clayton	On/Off-Street	10	1.0	$635,000
East-West	Old National Road Trail	Z2	Construct a bikeway through Englewood MetroPark using marked park roads, new shared use path, and a new covered bridge.	Five Rivers MetroParks/ Englewood	Off-Street	12	2.3	$3,150,000
Regional Totals for Short Range Projects							**4.6**	**$4,893,000**

Source: MVRPC

Table 7.3 — Long Range Regional Bikeway and Pedestrian Projects (Unfunded - Cost in 2015 dollars)

Corridor Direction	Corridor Name	Map Label	Bikeway Limits	Owner / Maint.	Type of Facility	Width (feet)	Length (miles)	Cost
East-West	Ohio-to-Indiana Trail	A1	From the existing Cardinal Trail bike route, traveling north on High St. to abandoned Conrail ROW, then east along Conrail ROW.	Miami County	Off-Street	10	3.5	$778,179
East-West	Ohio-to-Indiana Trail	A2	Construct shared use path between Piqua and Miami/Champaign county line via Garbry's Big Woods Reserve/Sanctuary.	Miami County	Off-Street	10	9.0	$1,878,626
East-West	Possum Creek Jefferson Township Connector	AA1	Construct trail on/along West River Road to Sun Watch Village and Guthrie Road to Possum Creek MetroPark.	Dayton	On/Off-Street	Varies	3.6	$895,277
East-West	Possum Creek Jefferson Township Connector	AA2	Construct trail from Possum Creek MetroPark to Arthur Fisher Park and along Dayton-Liberty Road to Union Road.	Jefferson Twp., Montgomery County	On/Off-Street	Varies	3.8	$570,000
East-West	Fairborn-Yellow Springs-Cedarville Connector Trail	B1	Construct shared use path between South St. and Xenia Dr.; add bike lanes on Xenia Dr. between shared use path and Yellow Springs-Fairfield Rd.	Fairborn	Off-Street	10	1.6	$471,892
East-West	Fairborn-Yellow Springs-Cedarville Connector Trail	B3	Widen/add shoulders on Black Lane, Armstrong Road, W Enon Road, N Enon Road and Yellow Springs-Fairfield Road to the Little Miami Scenic Trail.	Greene County, Fairborn, Yellow Springs	On-Street	6	8.2	$3,295,240
East-West	Fairborn-Yellow Springs-Cedarville Connector Trail	B4	Widen shoulders on SR 343 and SR 72 between Yellow Springs and Cedarville.	Greene County	On-Street	6	7.7	$2,633,212
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C1	Construct shared use path along Twin Creek between Main St. and SR 4/SR 725 intersection.	Germantown	Off-Street	10	1.0	$286,691
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C10	From Sackett-Wright Park in Bellbrook to the Little Miami Scenic Trail.	Greene County	Off-Street	10	4.6	$1,100,000
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C11	Widen shoulders between Spring Valley and Bowersville via Spring Valley-Pointersville Rd. and Hussey Rd.	Greene County	On-Street	6	16.3	$5,512,398
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C2	Widen shoulders on Lower Miamisburg Rd./Riverview Ave./Maue Rd. between SR 4 and Alexandersville Rd.	Montgomery County, Miamisburg	On-Street	Varies	6.8	$2,837,899

Table 7.3 — Long Range Regional Bikeway and Pedestrian Projects (Unfunded - Cost in 2015 dollars)

Corridor Direction	Corridor Name	Map Label	Bikeway Limits	Owner / Maint.	Type of Facility	Width (feet)	Length (miles)	Cost
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C4	Retrofit Spring Valley Pike to include bike lanes between Yankee St. and McEwen Rd.	Washington Township	On-Street	6	0.4	$123,532
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C5	Traveling east from McEwen Rd., along residential streets, to Alexandersville-Bellbrook Pike.	Washington Township, Centerville	On-Street	NA	5.0	$1,432,103
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C7	From existing SR 725 bikeway, traveling east from Marwyck Dr. to Wilmington Pike.	Centerville	Off-Street	12	0.7	$253,113
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C8	Traveling east along SR 725, from Wilmington Pike to 0.02 miles east.	Bellbrook	Off-Street	12	0.0	$25,000
East-West	Germantown-Spring Valley-Bowersville Connector Trail	C9	Traveling east along SR 725, from Bellevue Dr. to Rosecrest Dr.	Bellbrook	Off-Street	12	0.5	$123,127
East-West	Iron Horse Trail	D1	Sign/stripe bike facility along Valleywood Drive from Dorothy Lane to Wilmington Pike (.89 mi) and then construct a .25 mile bikeway along Wilmington Pike to the Wilmington/Stroop Intersection.	Kettering	On/Off-Street	Varies	1.2	$80,000
East-West	Iron Horse Trail	D2	Construct a new bikeway from Galewood St. along Little Beaver Creek and Woodman Blvd. to Vale Dr.	Kettering	Off-Street	12	0.4	$99,475
East-West	Mad River Trail	E4	Northeast from existing Mad River Corridor Bikeway along former railroad to Enon.	Greene County Park District	Off-Street	10	2.8	$599,592
East-West	Great Miami-Little Miami Connector Trail	F1	Construct shared use path along SR 123 between downtown Franklin and Clear Creek; construct shared use path along Clear Creek between SR 123 and Lower Springboro Rd.	Warren County	Off-Street	12	3.6	$971,212
East-West	Great Miami-Little Miami Connector Trail	F2	Widen shoulders on Lower Springboro Rd. between proposed Clear Creek Trail and US 42.	Warren County	On-Street	6	8.7	$2,984,977
East-West	Wolf Creek Trail	G2a	Construct multi-use path on the east side of the roadway.	City of Trotwood	Off-Street	10	1.6	$6,383,000

Table 7.3 — Long Range Regional Bikeway and Pedestrian Projects (Unfunded - Cost in 2015 dollars)

Corridor Direction	Corridor Name	Map Label	Bikeway Limits	Owner / Maint.	Type of Facility	Width (feet)	Length (miles)	Cost
East-West	Wolf Creek Trail	G2b	Installation of 6,550' of bike path to connect Wolf Creek Trail near the intersection of Wolf Creek Pike and NW Connector (SR 49) and the intersection of Olive Road and Modern Way in the City of Trotwood.	City of Trotwood	Off-Street	10	1.3	$191,000
East-West	Wolf Creek Trail	G3	Construct Shared use path between existing Wolf Creek Trail (near Dodson) and Montgomery/Preble County line.	Five Rivers MetroParks	Off-Street	12	2.2	$532,040
North-South	Bellbrook-Fairborn Connector Trail	I1	Signed shared roadway from SR 725 along W. Walnut St. to existing bikeway at Bellbrook Park.	City of Bellbrook	On-Street	Varies	0.3	$135,402
North-South	Bellbrook-Fairborn Connector Trail	I4	WSU to Kauffman Ave. Bikeway traveling north from Colonel Glenn Hwy. to Wright State Road.	Wright State University	Off-Street	10	1.0	$231,788
North-South	Bellbrook-Fairborn Connector Trail	I5	Construct sidepath from Old Mill Lane to Kemp Rd.	Beavercreek	Off-Street	8	2.5	$1,000,000
North-South	Iron Horse Trail	J3a	Construct a bicycle/pedestrian crossing at I-675, 0.33 mi east of Loop Rd and extend the trail to Alex Bell Rd. (See J3b for alternate alignment.)	Centerville	On/Off-Street	Varies	0.5	$5,000,000
North-South	Iron Horse Trail	J3b	Construct a bicycle facility along Whipp and Hewitt to the existing Sidepath on Bigger Rd, crossing I-675 to Clyo Rd. (See J3a for alternate alignment.)	Centerville/ Kettering	On/Off-Street	Varies	1.5	$250,000
North-South	Iron Horse Trail	J4	Extend Iron Horse Trail from Boyce Road to Social Row Road using Clareridge Lane, Spring Valley and Atchison Roads.	Centerville	On-Street	Varies	2.4	$675,493
North-South	Great Miami River Trail	K12	Replace Bridge in Piqua with ADA Compliant Structure.	Miami County Park District	Off-Street	10	0.5	$3,124,885
North-South	Great Miami River Trail	K7	Traveling north from Johnston Farm to the County Line.	Miami County Park District	Off-Street	10	2.1	$456,557
North-South	Great Miami River Trail	K9	Construct Great Miami River Trail between Baxter Drive and Miami River Preserve Park.	Franklin, Middletown, Miami Conservancy District	Off-Street	12	2.0	$1,386,572
North-South	Stillwater River Trail	L1	From existing bikeway at Sinclair Park, traveling north to Grossnickle Park.	Five Rivers Metro-Parks/Various	Off-Street	10	4.7	$2,990,725

Table 7.3 — Long Range Regional Bikeway and Pedestrian Projects (Unfunded - Cost in 2015 dollars)

Corridor Direction	Corridor Name	Map Label	Bikeway Limits	Owner / Maint.	Type of Facility	Width (feet)	Length (miles)	Cost
North-South	Stillwater River Trail	L3	From the existing Englewood Reserve Bikeway, traveling north along the Stillwater River corridor, to SR 55.	Miami County Park District	Off-Street	10	10.4	$3,413,921
North-South	Stillwater River Trail	L5	Construct shared use path roughly paralleling SR 48 between Covington and Ludlow Falls.	Miami County Park District	Off-Street	10	10.0	$2,051,460
North-South	Wolf Creek Connector Trail	M1	Widen shoulders along Union Rd. from the Wolf Creek Bikeway to the existing path at I-70.	Englewood, Trotwood	On-Street	6	4.1	$1,688,055
North-South	Wolf Creek Connector Trail	M2	Widen shoulders along US 40 from Union Blvd. to the Englewood Reserve (also serves the Old National Road Trail).	Englewood	On-Street	6	0.6	$249,370
North-South	Wolf Creek Connector Trail	M3	Widen shoulders on Union Rd. between Existing Wolf Creek Trail in Trotwood and SR 725.	Montgomery County	On-Street	6	11.6	$3,975,305
East-West	Great-Little Trail	N1	Construct shared use path along Miamisburg-Springboro Rd./Austin Pike/Social Row Rd. between Medlar Rd. and Wilmington-Dayton Rd.; widen shoulders on Ferry Rd./Lytle Rd. between Wilmington-Dayton Rd. and North St. in Corwin; develop signed on-street bikeway.	Mont. County, Centerville Washington	On/Off-Street	Varies	10.7	$2,491,329
North-South	Bowersville-Jamestown-Clifton Connector Trail	O1	Widen shoulders on SR 72 between Bowersville and Jamestown.	Greene County	On-Street	6	5.4	$1,842,903
North-South	Bowersville-Jamestown-Clifton Connector Trail	O2	Widen shoulders on Charleston Rd. and Selma-Jamestown Rd. between Jamestown and Greene/Clark County line.	Greene County	On-Street	6	10.4	$3,506,843
North-South	Troy-Fletcher Connector Trail	P1	Widen shoulders along SR 55 and SR 589, providing an on-street bikeway linking Troy, Casstown, and Fletcher.	Troy, Miami County	On-Street	6	10.6	$3,596,324
East-West	Cardinal Trail	Q1	Widen roadway shoulders along the Cardinal Trail route (Covington-Gettysburg Rd.) between Covington and the Miami/Darke County line.	Miami County	On-Street	6	4.7	$1,564,309
East-West	Cardinal Trail	Q2	Widen roadway shoulders along the Cardinal Trail route between Covington and the Miami/Champaign County line. (Spring St., CR 30, Farrington Rd., Peterson Rd., Alcony-Canover Rd., Loy Rd.)	Miami County	On-Street	6	20.1	$6,722,240

Table 7.3 — Long Range Regional Bikeway and Pedestrian Projects (Unfunded - Cost in 2015 dollars)

Corridor Direction	Corridor Name	Map Label	Bikeway Limits	Owner / Maint.	Type of Facility	Width (feet)	Length (miles)	Cost
East-West	Laura-Troy Connector Trail	R1	Construct shared use path along former railroad corridor between Laura and Ludlow Falls.	Miami County	Off-Street	10	6.6	$1,388,219
East-West	Laura-Troy Connector Trail	R2	Construct shared use path roughly paralleling SR 55 and along former Penn Central Railroad between Ludlow Falls and Troy.	Miami County	Off-Street	12	7.6	$1,920,678
North-South	SR 741 Bikeway	T1a	Construct bike facility along SR 741 from the Cox Arboretum entrance to the north terminus of the facility constructed under PID #90289.	Montgomery County	On/Off-Street	Varies	0.5	$183,000
North-South	SR 741 Bikeway	T1b	Construct bike facility along SR 741 between Mall Park Drive and Ferndown Drive.	Montgomery County	On/Off-Street	Varies	1.7	$623,000
North-South	SR 741 Bikeway	T1c	Construct a bike facility along SR 741 from entrance to Waldruhe Park to Austin Pike.	Montgomery County	On/Off-Street	Varies	0.6	$220,000
North-South	SR 741 Bikeway	T2a	Construct bike lanes on SR 741 between Austin Pike and the current terminus of the bike lanes approx. 1,000 feet south of W. Tech Drive.	Springboro, Warren County	On-Street	6.0	0.2	$56,000
East-West	Carriage Hills Connector Trail	U1	Connect Great Miami River Trail and Carriage Hills MetroPark via shared use path through Carriage Trails development.	Various	Off-Street	12	4.2	$1,063,000
North-South	Carriage Hills Connector Trail	U2	Connect Carriage Hills MetroPark and New Carlisle via widened shoulders on SR 202, Singer Rd., Palmer Rd., SR 571, Dayton-Brandt Rd., and shared use path on former railroad corridor between Dayton-Brandt Rd. and New Carlisle.	Miami County, Montgomery County	On/Off-Street	Varies	8.0	$2,431,000
North-South	Carriage Hills Connector Trail	U3	Connect Huffman MetroPark and Carriage Hill MetroPark via Union School House, Baker, Kitridge, and Bellefontaine Roads.	Montgomery County, Five Rivers MetroParks	On-Street	Varies	8.3	$2,302,289
East-West	Great Miami River-Centerville Connector Trail	V1	Construct trail following local streets and shared use paths connecting Moraine, West Carrollton, Washington Township, Centerville, and Bellbrook via Cox Arboretum, Yankee Park, Grant Park and Pleasant Hill Park.	Various	On/Off-Street	Varies	8.2	$1,881,895
East-West	Great Miami River-Creekside Connector Trail	X1	Construct trail extension roughly paralleling US 35 to 4th St. along RR ROW then west to Keowee St and north to Monument Avenue.	Dayton, Five Rivers MetroParks	Off-Street	12	3.1	$770,679

Table 7.3 — Long Range Regional Bikeway and Pedestrian Projects (Unfunded - Cost in 2015 dollars)

Corridor Direction	Corridor Name	Map Label	Bikeway Limits	Owner / Maint.	Type of Facility	Width (feet)	Length (miles)	Cost
NA	Troy Bikeway Hub	Y1	Construct Troy Bike Hub structure.	Troy	NA	NA	0.0	$200,000
NA	Piqua Bikeway Hub	Y2	Redevelop a historical building into a Bike Hub at the intersection of the GMR trail and the Piqua-Covington Fletcher Trail.	Piqua	NA	NA	0.0	$500,000
East-West	Old National Road Trail	Z1a	Construct a bikeway paralleling US 40 from the intersection with The Wolf Creek Trail to Northmont Schools property.	Montgomery County, Five Rivers MetroParks	On/Off-Street	Varies	5.9	$1,467,259
East-West	Old National Road Trail	Z1c	Construct a bikeway paralleling US 40 from Centenial Park in Englewood to Englewood MetroPark.	Englewood	On/Off-Street	Varies	0.8	$106,400
East-West	Old National Road Trail	Z3	Construct bikeway paralleling US 40 from Frederick Pike to the Taylorsville Dam (Great Miami Trail) through Dayton Airport property and City of Vandalia.	Vandalia, Dayton	On/Off-Street	Varies	6.3	$1,894,334
Regional Totals for Long Range Projects							**272.62**	**$97,418,820**

Source: MVRPC

7.5.3 Dayton Bike Share Program — Link

The Dayton Bike Share program, Link, opened for operation on May 5, 2015 and was made possible by a strategic partnership of more than a dozen entities. The original capital improvements were funded by MVRPC's Surface Transportation Program (STP). The Greater Dayton RTA maintains the bike share equipment and balances the distribution of bikes across the network and Bike Miami Valley handles customer memberships, organizational partnerships, education, as well as marketing and promotions. Bike sharing offers several economic, livability, transportation, environmental, and health benefits to the businesses, employees, visitors, and residents of downtown Dayton and surrounding neighborhoods. It reduces the carbon footprint and frustration with moving a car and parking. Link features 24 strategically located stations, within an approximate two mile radius of downtown Dayton. In 2015, users took over 26,000 trips, rode over 65,000 miles, and burned over 2,500,000 calories. The program attracted over 4,000 unique users and sold over 450 annual memberships and 6,800 24-Hour memberships.

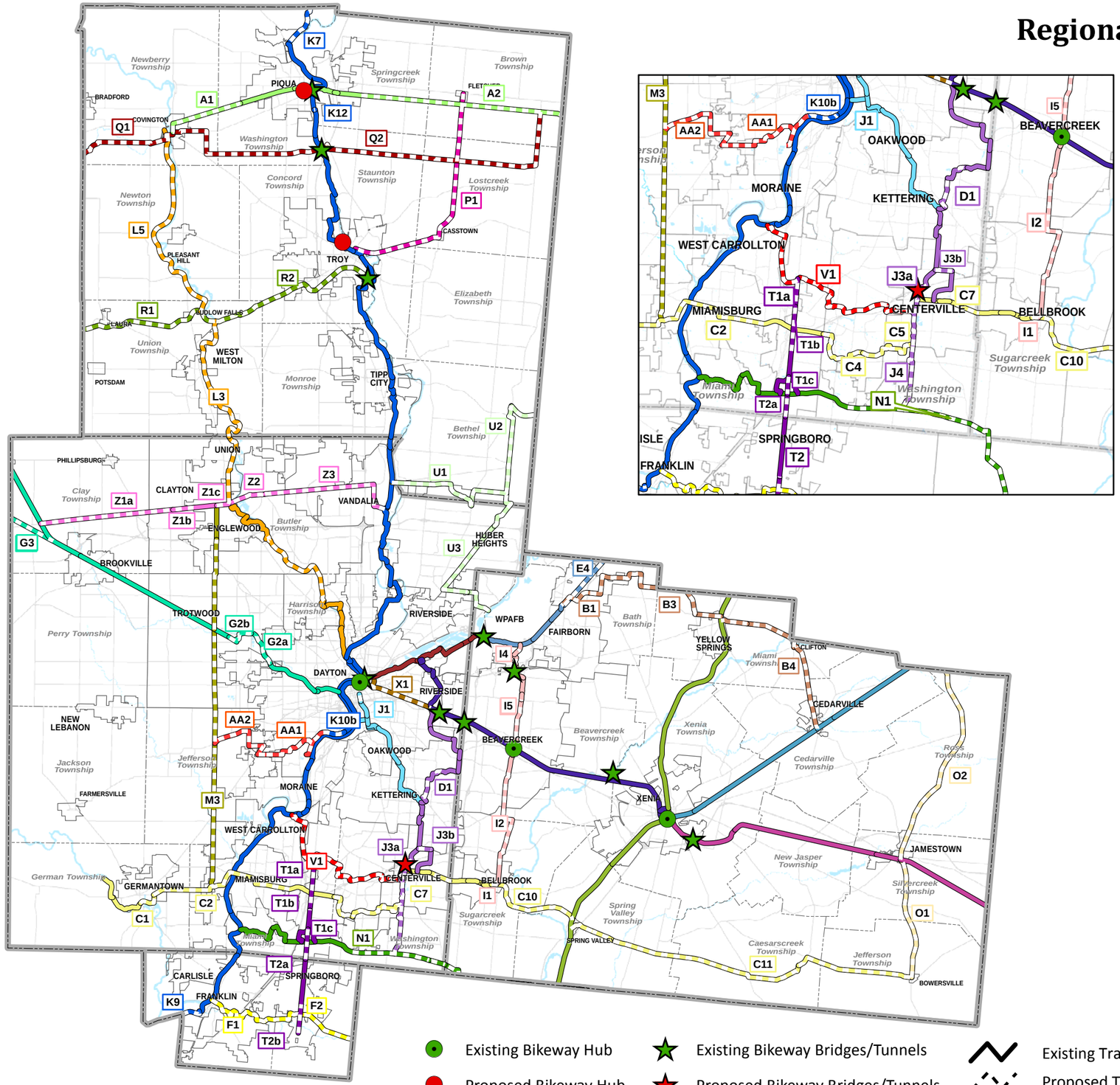
7.6 Development Choices – Going Places

In April 2012, the MVRPC Board of Directors endorsed the Concentrated Development Vision resulting from the Going Places initiative. In this Vision, development would be concentrated around regional assets and in areas that already have infrastructure; rehabilitation and/or repurposing of vacant and underused structures would be encouraged; and the preservation of agricultural land and other open space would be a priority. More specific characteristics are detailed below and illustrated in Figure 7.3.

- Encourage the rehabilitation and/or repurposing of existing structures.
- Focus on the maintenance of existing infrastructure.
- Locate any new development in areas with existing infrastructure .
- Revive the Region's older communities.
- Preserve prime farmland and support agricultural enterprise.
- Improve the quality of educational opportunities throughout the Region.
- Foster a sense of connection and cooperation between the Region's communities.
- Increase the number and quality of transportation options.
- Encourage development around the Region's assets.
- Encourage the rehabilitation and/or reuse of vacant industrial sites.
- Encourage energy-efficient building practices and the retrofitting of older structures for energy efficiency.
- Use land in a way that builds a sense of community.
- Maintain and expand the Region's parks, natural areas, and recreation amenities.
- Encourage the development of quality, realistic, affordable housing throughout the Region.
- Revive the Region's core city—the City of Dayton.

MVRPC

Figure 7.2
Regional Bikeway & Pedestrian Network



- Bellbrook-Fairborn Connector (I)
- Bowersville-Jamestown-Selma Connector (O)
- Cardinal Trail (Q)
- Carriage Hills Connector (U)
- Creekside Trail
- Dayton-Kettering Connector (J - Updated)
- Fairborn-Yellow Springs-Cedarville Connector (B)
- Germantown-Bowersville Connector (C)
- Great Miami River Trail (K - Updated)
- Great Miami River-Centerville Connector (V)
- Great Miami River-Creekside Connector (X)
- Great Miami-Little Miami Connector (F)
- Great-Little Trail (N - Updated)
- Iron Horse Trail (J)
- Laura-Troy Connector (R)
- Little Miami Scenic Trail
- Mad River Trail
- Ohio to Indiana Trail (A)
- Ohio-to-Erie Trail
- Old National Road Trail (Z - New)
- Possum Creek Jefferson Township Connector (AA)
- SR 741 Corridor (T)
- Simon Kenton Trail
- Stillwater River Trail (L)
- Troy-Fletcher Connector (P)
- Wolf Creek Connector (M)
- Wolf Creek Trail (G)
- Wright Brothers-Huffman Prairie Trail (E)
- Xenia-Jamestown Connector

Existing Bikeway Hub
Proposed Bikeway Hub
Existing Bikeway Bridges/Tunnels
Proposed Bikeway Bridges/Tunnels
Existing Trail
Proposed Trail

May 2016

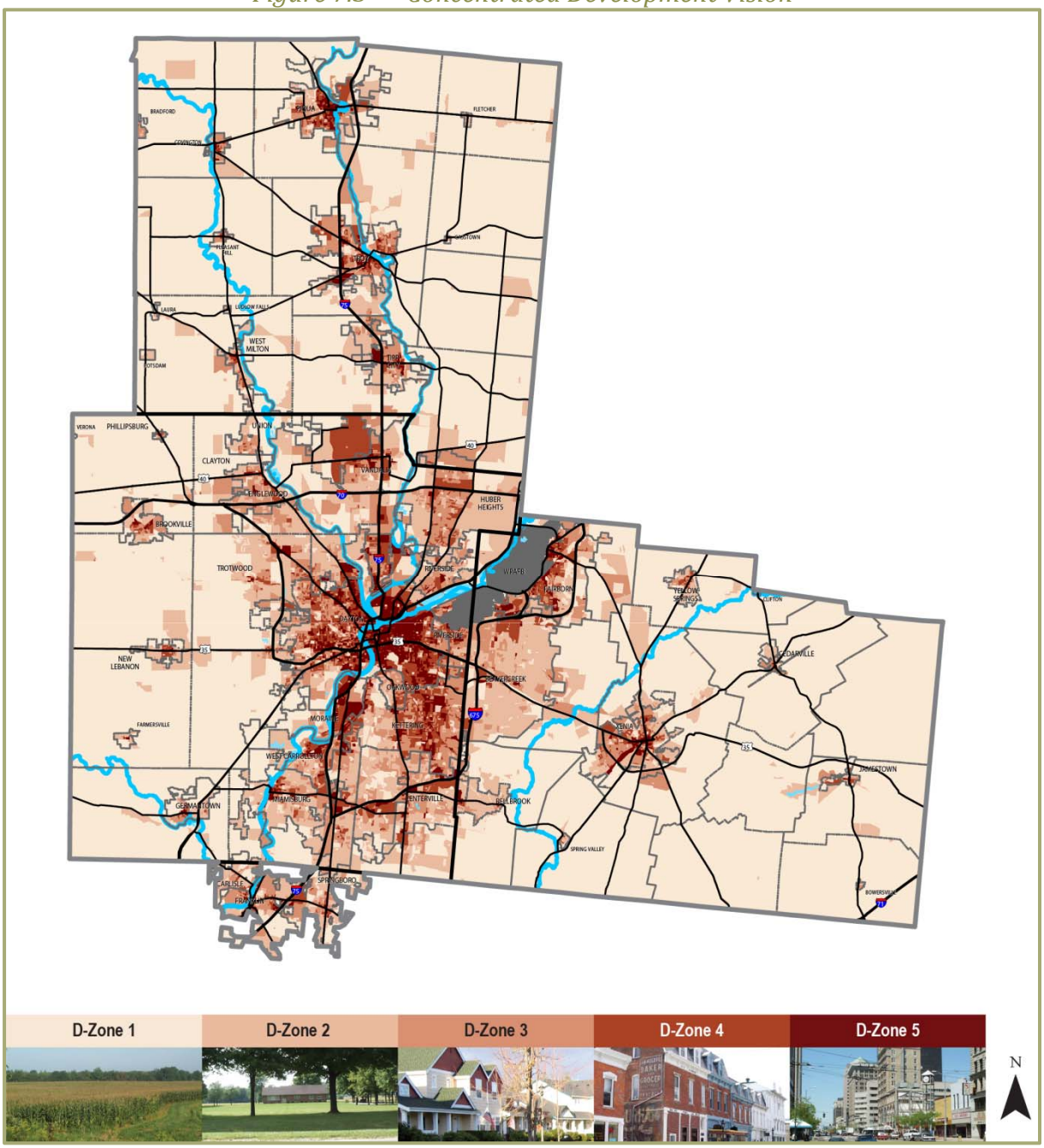
N

0 2 4 6 8 Miles

Going Places committees also identified a set of eleven implementation tools to support the Concentrated Development Vision. The tools address the following major needs:

- Providing better information for strong decision making,
- Strengthening regional collaboration, and
- Building the Region's capacity for solutions.

Figure 7.3 — Concentrated Development Vision



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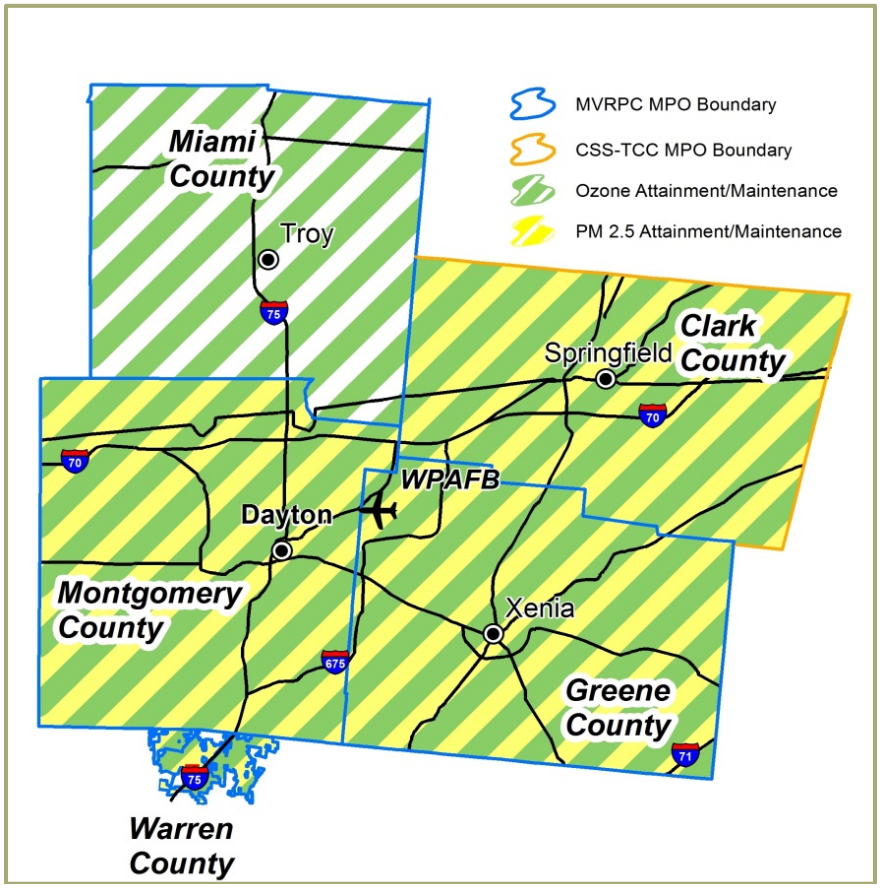
CHAPTER 8
ENVIRONMENTAL PLANNING

8.1 Air Quality Planning

8.1.1 Background

MVRPC is comprised of the counties of Greene, Miami, and Montgomery as well as the Cities of Franklin, Carlisle, and Springboro in northern Warren County. Warren County is located in the Cincinnati air quality Region (Cincinnati Region), with the remainder counties in the MPO located in the Dayton/Springfield air quality Region (D/S Region). The D/S Region also includes Clark County, which is represented by a different MPO, the Clark County Springfield Transportation Coordinating Committee (CCSTCC). Due to multiple air quality regions and MPOs, conformity is closely coordinated with neighboring organizations, with MVRPC being the lead agency in the D/S Region and the Ohio-Kentucky-Indiana Regional Council of Governments (OKI) being the lead agency in the Cincinnati Region. Figure 8.1 illustrates this complex situation.

Figure 8.1 — Air Quality Standards Designations



MVRPC conducts transportation conformity in accordance with the Clean Air Act Amendments of 1990 which expanded transportation's role in contributing to national clean air goals. The 1990 amendments expanded the definition of "transportation conformity" to:

> *Conformity to the (air quality implementation) plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not (i) cause or contribute to any new violations of any standards in any area, (ii) increase the frequency or severity of any existing violation of any standard in any areas, or (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.*

8.1.2 Air Quality Standards

In April 2004, the United States Environmental Protection Agency (U.S. EPA) issued final designations regarding the 1997 8-hour ozone standard. The 1997 8-hour standard is violated when the 3-year average of the annual fourth highest daily maximum 8-hour ozone average concentration exceeds 0.08 ppm (parts per million). All four counties (Clark, Greene, Miami, and Montgomery) in the Dayton/Springfield Region (D/S Region) and Warren County in the Cincinnati Region were designated as basic non-attainment for ozone. The D/S Region was designated to attainment/maintenance for 1997 ozone in August 2007. The Cincinnati Region was designated to attainment/maintenance for 1997 ozone in May 2010. The Cincinnati Region is also designated marginal non-attainment for the 2008 ozone standard, exceeded when the 3-year average of the annual fourth highest daily maximum 8-hour ozone average concentration is over 0.075 ppm. On March 6, 2015, U.S. EPA published the final rule for the Implementation of the 2008 NAAQS for Ozone: State Implementation Plan Requirements, 80 FR 12264, effective April 6, 2015. The final rule revokes the 1997 ozone standard for all purposes including transportation conformity.

In December 2004, the U.S. EPA issued air quality designations regarding the fine particulate (or PM 2.5) standard. Clark, Greene, Montgomery, and Warren counties were designated non-attainment for the annual PM 2.5 standard. The annual standard is exceeded if the 3-year average of annual mean PM 2.5 concentrations is greater than 15 micrograms per cubic meter. The Cincinnati Region was designated attainment/maintenance in December 2011. The D/S Region was also re-designated to attainment/maintenance for PM 2.5 on September 26, 2013 and approved budgets are used to demonstrate conformity to the PM 2.5 standard.

8.1.3 Regional Emissions Analysis Summary

For the 2016 update of the Long Range Transportation Plan update MVRPC followed the latest transportation conformity regulations (April 2012) and worked in coordination with State and Federal partners through the interagency consultation process (See Appendix A on technical document). Detailed documentation of the socio-economic assumptions, emission factors, and analyzed years can be found at the links below for each respective Region. The D/S Region approved maintenance plans do not include transportation control measures.

http://www.oki.org/wp-content/uploads/2015/02/DraftFY16-19TIPConformity.pdf

http://www.mvrpc.org/sites/default/files/dayspr_lrtp_2016_draft.pdf

A summary of the regional emission analyses is presented in Tables 8.1 to 8.3. The results indicate that the 2040 Plans demonstrate conformity to the PM2.5 and 8-hour ozone standards State Implementation Plans (SIPs) consistent with the April 2012 U.S. EPA Transportation Conformity Regulations.

Table 8.1 — Dayton/Springfield Region PM 2.5 Regional Emissions Analysis (Tons per Year)

	2015 Budget	2020 Emissions	2022 Budget	2022 Emissions	2030 Emissions	2040 Emissions
GRE/MOT						
PM2.5		192.65		174.47	152.94	154.94
NOx		4,991.81		4,152.57	2,859.05	2,526.90
CLA						
PM2.5		45.59		41.46	37.67	38.47
NOx		1,292.76		1,093.76	803.55	724.53
Totals						
PM2.5	404.43	238.24	261.33	215.93	190.60	193.41
NOx	12,865.54	6,284.57	6,270.64	5,246.33	3,662.59	3,251.42

Table 8.2 — Cincinnati Region 8-Hour Ozone Regional Emissions Analysis (Tons per Day)

Ohio and Indiana Maintenance Area	2020	2030	2040
Ohio/Indiana VOC Budget	42.81	42.81	42.81
Pending Ohio/Indiana VOC Budget	*30.00*	*18.22*	*18.22*
Ohio/Indiana VOC Emissions	24.15	14.78	10.52
Ohio/Indiana NOx Budget	73.13	73.13	73.13
Pending Ohio/Indiana NOx Budget	*30.79*	*16.22*	*16.22*
Ohio/Indiana NOx Emissions	23.95	12.92	10.04

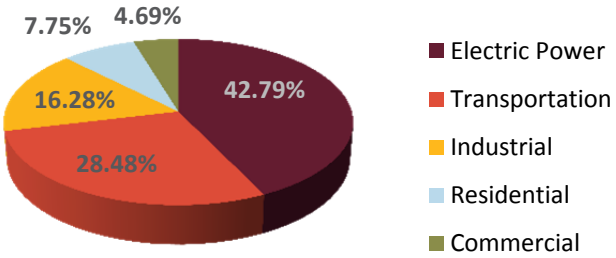
Table 8.3 — Cincinnati Region PM 2.5 Regional Emissions Analysis (Tons per Year)

Ohio and Indiana Maintenance Area	2021	2030	2040
Ohio/Indiana PM2.5 Budget	1,241.19	1,241.19	1,241.19
Ohio/Indiana PM2.5 Emissions	238.67	186.71	163.68
Ohio/Indiana NOx Budget	21,747.71	21,747.71	21,747.71
Ohio/Indiana NOx Emissions	7,570.54	4,519.39	3,637.11

8.2 Transportation and Climate Change

Climate change refers to the changes in temperatures and weather patterns resulting from systems such as the greenhouse effect. The transportation system's relation to climate change is two-fold; one as a major contributor of greenhouse gases and two because of the potential impact that climate change can have on transportation infrastructure (e.g. more frequent or more severe flooding of roads).

Both nationally and in Ohio, power plants contribute the most to greenhouse gas emissions. However, as the economy of the State transitions away from manufacturing, transportation emissions continue to increase as a percentage of the total. In Ohio, they are the second largest contributing sector. The chart at right shows the 2013 distribution of CO2 emissions in Ohio.[7]



Transportation sources and transportation plans can also play a role in addressing climate change through improved vehicle technology, alternative energy sources, encouraging and promoting transportation alternatives to the single occupancy automobile, and roadway infrastructure that accommodates various transportation users. Chapter 7 documents MVRPC's strategies toward a more sustainable transportation system, including the Region's Complete Streets Policy, adopted in 2011.

8.3 Environmental Mitigation in SAFETEA-LU/FAST Act

> *The final metropolitan transportation planning rules state that "metropolitan transportation plans shall include a discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan T-Plan. Discussion may focus on policies, programs, or strategies. The discussion shall be developed in consultation with Federal, State, and Tribal land management, wildlife, and regulatory agencies."*

Using guidance and databases from ODOT Environmental Services (OES) as a starting point, MVRPC analyzed the Long Range Transportation Plan projects for potential environmental impacts using GIS overlay techniques. When available, OES databases were enhanced with local or internal data sources. Mitigation techniques for various types of environmental effects are also discussed along with any applicable local mitigation resources.

[7] EPA 2015. Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2013. U.S. Environmental Protection Agency, Washington, D.C. April 2015. EPA 430-R-15-004

8.3.1 Process Overview

Identification of possible projects with impacts to environmental resources began with the congestion management projects in the 2040 Long Range Transportation Plan. These projects were classified into two categories: Significant Projects and Non-Significant Projects. Projects were classified as "Significant" if, by virtue of their implementation/construction, there was a probability of potential impacts to the Region's natural resources. Such projects were typically capacity projects such as road widening, lane additions, and interchange addition/modification projects. Projects were classified as "Not Significant" if their implementation was unlikely to result in major impacts to the Region's environmental resources. These projects were typically non-capacity adding intersection improvement projects such as the addition of a turn lane and/or signal coordination projects.

Based on the above classification, potential environmental impacts were only determined for the significant projects. A few of the significant projects are already included in MVRPC's current Transportation Improvement Program (TIP) and have environmental documentation in place. These were excluded from the list of analyzed projects since their environmental effects are already well-documented. Figure 8.2 shows projects classified according to their potential environmental impact.

A separate map was created using GIS for each of the Region's environmental resources: endangered species habitats; cultural, historic and archaeological resources; wetlands, rivers and streams; total maximum daily load; superfund sites; and parklands. The remaining significant projects were evaluated for potential environmental impacts by overlaying them on various environmental resource maps using GIS. Projects in direct conflict with the Region's endangered species habitats, wetlands, parklands etc. were identified as potentially affecting these environmental resources and displayed on maps in Figure 8.3.

Table 8.4 describes mitigation guidelines and strategies designed to address potential project impacts to environmental resources. Though not resources per se, this includes superfund sites, and those which are on the National Priorities List are described in the next section in more detail. Since the projects were evaluated for impacts at a macro level rather than determining specific impacts, the mitigation strategies encompass a menu of options to address a wide-range of potential impacts and are not project-specific. Detailed assessment of individual projects in future stages of project development may emphasize the importance of certain mitigation efforts, where needed, while rendering others redundant. It is the policy of MVRPC to require that all federally funded projects comply with applicable environmental statutes as a condition to receiving funding. The table also lists agencies with which to coordinate and consult on conservation of the resources.

Finally, a discussion on the various locally available mitigation resources and locally functioning environmental conservation organizations is provided at the end of this section. These agencies have also been added to MVRPC's public participation list.

Table 8.4 — Environmental Resources for Mitigation

Resource	Statute	Regional Resources
Wetlands, Rivers, and Streams	**Wetlands**: U.S. ACE mitigation guidelines are outlined in the Regulatory Guidance Letter 02-02, dated December 24, 2002. The Ohio Environmental Protection Agency has specific guidelines for wetland mitigation included in the Ohio Administrative Code 3745-1-50-54. **Rivers & Streams**: No formal rules in Ohio, but mitigation is required for unavoidable impacts. Case-by-case requirements negotiated with OEPA and U.S. ACE by the ODOT Office of Environmental Services.	The Region has approximately 35 square mles of wetlands, of which about 6% are woody wetlands. The Region contains all or part of many rivers and streams, including designated scenic rivers: the Little Miami River, the Stillwater River, and the Greenville Creek. There are also several major lakes. Much of the Region is contained in the Great Miami River Watershed. These healthy waterways provide many opportunities for water-based recreation, and habitats for fish.
Threatened and Endangered Species/Fish and Wildlife	The Region is bound by regulations to build and operate its roadway projects with no, or minimal, impacts to protected species and their habitats. Statutes providing and defining these regulations include: the National Environmental Policy Act, the Endangered Species Act, the Clean Water Act, and the Ohio Revised Code.	Land-use changes have been the most common cause for decline in species range and diversity. Contamination and degradation of natural waters has also contributed to loss of habitat. The Miami Valley has wetlands, river corridors, moist and dry woods, farmland, and prairies that serve as habitat for numerour plants and animal species. The Region is part of the largest hardwood forest in the world, and an important flyway for migrating birds.
Historic, Cultural, or Archaeological Resources	Historic and cultural resource reviews for all federal and state funded projects in the Region are planned and designed to comply with the National Environmental Policy Act, the National Historic Preservation Act, Section 4(f) of the Department of Transportation Act, the Ohio Revised Code, and 36 CFR Part 800 (the implementing regulations for Section 106 of the National Historic Preservation Act). All acts require that historic and cultural resources be considered during the development of all transportation projects in Ohio.	The Region has numerous cultural, archaeological, and National Register historic sites. As of October 2011, 235 sites in the Region were listed on the National Register of Historic Places (NRHP). Additionally, 4 undisturbed archaeological sites are located throughout the area. These sites are important to our communities and heritage.
Parklands	Section 4(f) of the Department of Transportation Act requires that special effort be made to preserve public park and recreation lands, wildlife and waterfowl refuges, and historical sites. Section 4(f) specifies that federally-funded transportation projects requiring the use of land from a public park, recreation area, wildlife and waterfowl refuge, or land of significant historic site can only occur if there is no feasible and prudent alternative. Using Section 4(f) land requires all possible planning to minimize harm.	The Region has one national park, several state and local parks, and wildlife and waterfowl refuges. The parklands are subdivided into natural protection areas and recreational areas. These sites are important to our communities for their promotion of healthy active lifestyles, connection to natural environments and preservation.
Hazardous Materials	The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and its Superfund Amendments and Reauthorization Act (SARA) amendment establish national policy and procedures for identifying and cleaning up sites found to be contaminated with hazardous substances. The Acts created the Hazard Ranking System (HRS), which determines the likely level of threat to human health and the environment upon initial investigation. High-ranking projects are eligible to be placed on the National Priority List, which enables application for environmental clean-up funds. CERCLA is important to the highway planning process primarily in the acquisition of right-of-way. Accepting financial liability for contaminated property may adversly affect the financial feasibility of a project. Additionally, significant need for clean-up may cause project delays.	Eleven sites in the Region are on the NPL. Another 40 sites, though not currently on the NPL, are potentially contaminated sites and sources of concern. Table 8.5 provides a summary of the NPL sites, HRS scores, and stage of cleanup. Additionally, a brief summary of each site is provided below.

Coordination and Consultation	Mitigation
The ODOT Office of Environmental Services in cooperation with ODOT Districts, the ODOT-Office of Real Estate, the ODOT-Office of Aerial Engineering, and project consultants coordinate to develop all stream and wetland mitigation projects.	Mitigation needs are determined, and an analysis is performed to develop mitigation opportunities. A plan of action is developed in coordination with resource and regulatory agencies, along with a report. The report is submitted with permit applications, with revisions before permit approval. Conservation easements are procured. Funding is received and credits obtained. Construction plans are developed and carried out with monitoring and post-construction monitoring by ODOT.
The Fish and Wildlife Coordination Act (16 U.S.C. 661-666) requires coordination among (1) the agency proposing the highway project, (2) the U.S. Fish and Wildlife Service of the Department of the Interior, and (3) the state agency responsible for protecting wildlife resources whenever the waters of any stream or other water body are proposed to be impounded, diverted, or otherwise modified.	A Habitat Conservation Plan, as required by the Endangered Species Act, may include: • Preserving habitat through an acquisition or a conservation easement; • Enhancing or restoring degraded or former habitat; • Creating new habitat; • Establishing buffer areas around existing habitat; • Modifying land-use practices; and • Restricting access to habitat.
Consultation with various entities, including the Federal Highway Administration (FHWA), the State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation (ACHP), city historic preservation offices, local public officials, local orginizations, and the public, is required during the project development process.	A mitigation plan is developed with stakeholders (e.g. ODOT, SHPO, FHWA, local officials, organizations, and the public) through the Section 106 Memorandum of Agreement (MOA) consultation process. Measures vary depending on the projected impact and may include aesthetic treatments, avoidance, archaeological data recovery, salvage/re-use of historic materials, and other methods. Measures must be completed and accounted for with SHPO and FHWA.
Project sponsors, ODOT, and officials with jurisdiction over Section 4(f) resources closely coordinate throughout the project development process to minimize harm or mitigate impacts on protected resources. Long-range planning should account for well-known Section 4(f) resources throughout the Region that would pose a significant loss if affected. It is, however, premature to analyze individual projects' Section 4(f) impacts this early in the process.	The cost of mitigation should be a reasonable public expenditure in light of the severity of the impact on the Section 4(f) resource in accordance with federal requirements. Mitigation for common Section 4(f) resource impacts may be: • Improving access or expansion/pavement of parking area; • Landscape or screening of resource; • Installation of beautification enhancements such as park benches, trash receptacles, signage, etc.; • Maintenance of traffic accommodation or rerouting of traffic; • Minimizing construction noise or limiting construction to specific times; • Direct compensation for improvements to on-site resources; and • Design refinements.
The U.S. EPA provides guidelines and Hazard Ranking System scores. There is a seven stage process: 1) New listing 2) Remedial assessment not begun 3) Remedial assessment not begun with removal 4) Study Underway 5) Remedy Selected 6) Desing Underway 7) Construction Underway 8) Construction Complete Note that, in many cases, "construction complete" does not mean cleanup is complete. There may be ongoing actions required once the infrastructure is in place.	If any initial studies or preliminary environmental evaluations identify known or potential hazardous waste sources, alternatives to avoid the site must be explored. If the site cannot be avoided, an assessment including sampling and possibly a characterization of the problem should be conducted. When a hazardous waste site is identified, the type of regulatory actions it is subject to and any environmental databases or lists that it appears on along with regulatory identification numbers should be specified. In addition: • Environmental site assessment screenings (and any other required assessments) will be conducted on a project-by-project basis; and • Unavoidable encroachment on an identified hazardous site will be mitigated according to all applicable federal, state, and local requirements.

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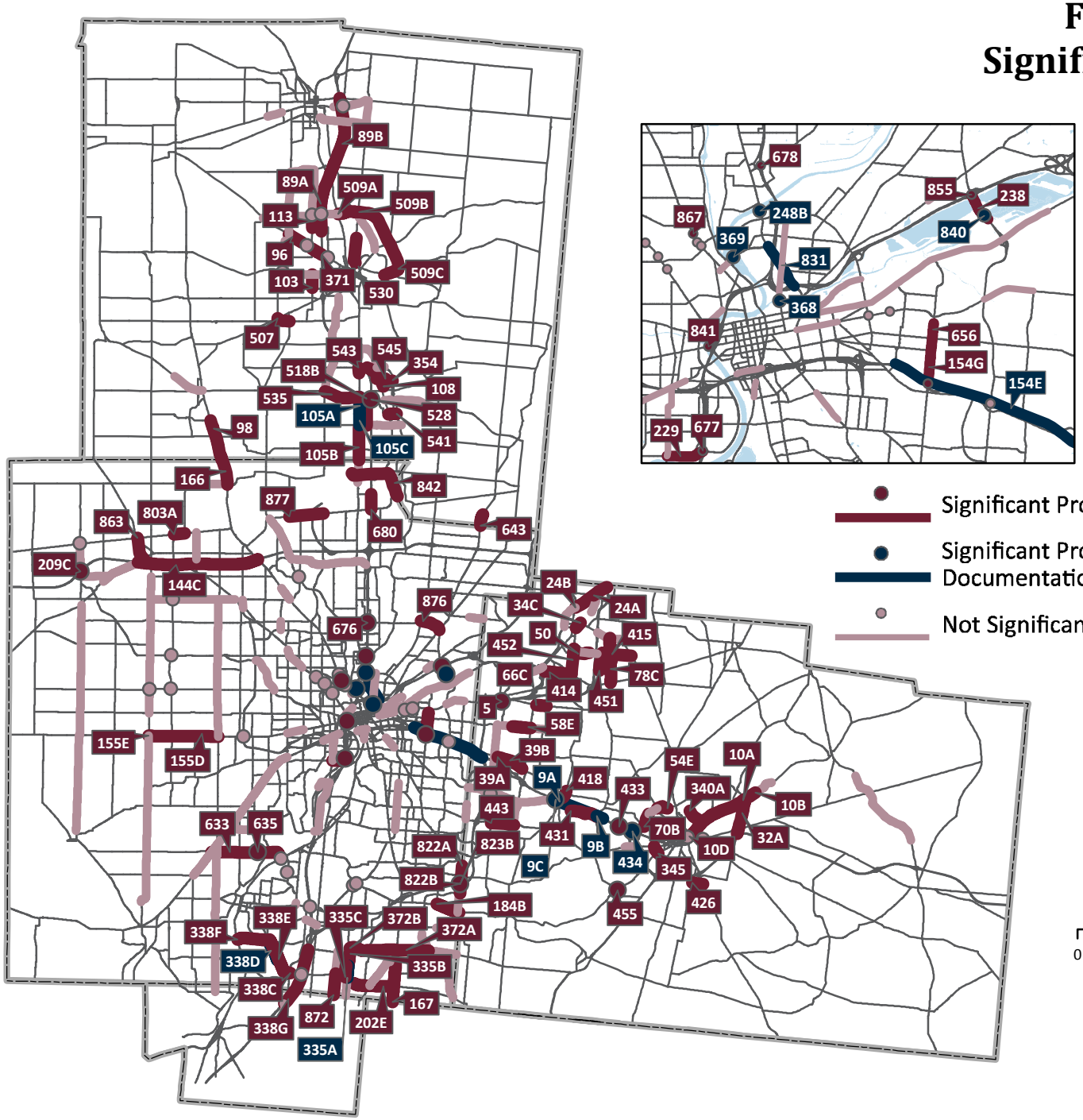
Figure 8.2
Significant Projects

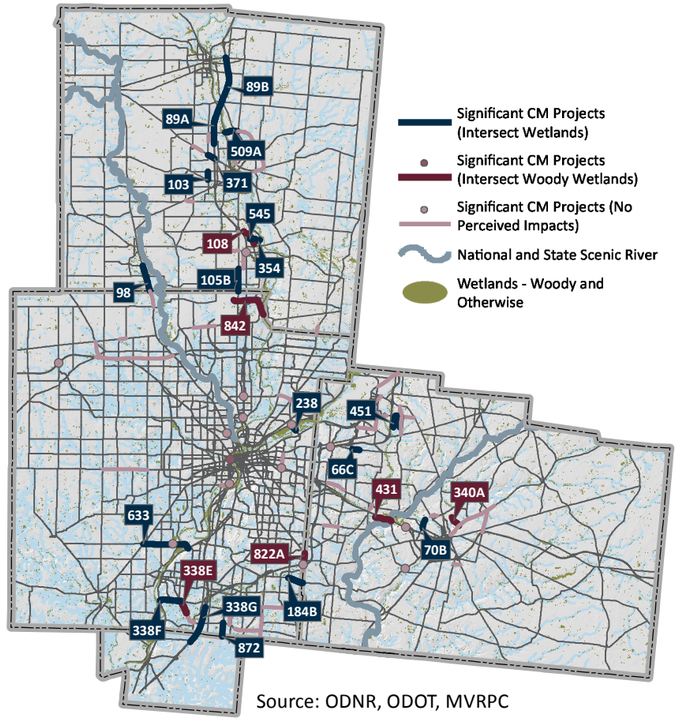


May 2016

Source: MVRPC

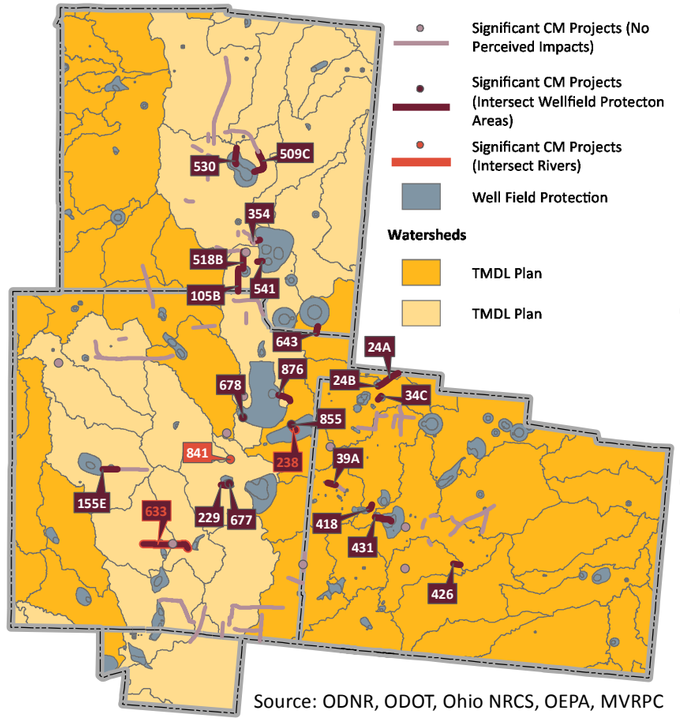
MVRPC

Wetlands and Scenic Rivers



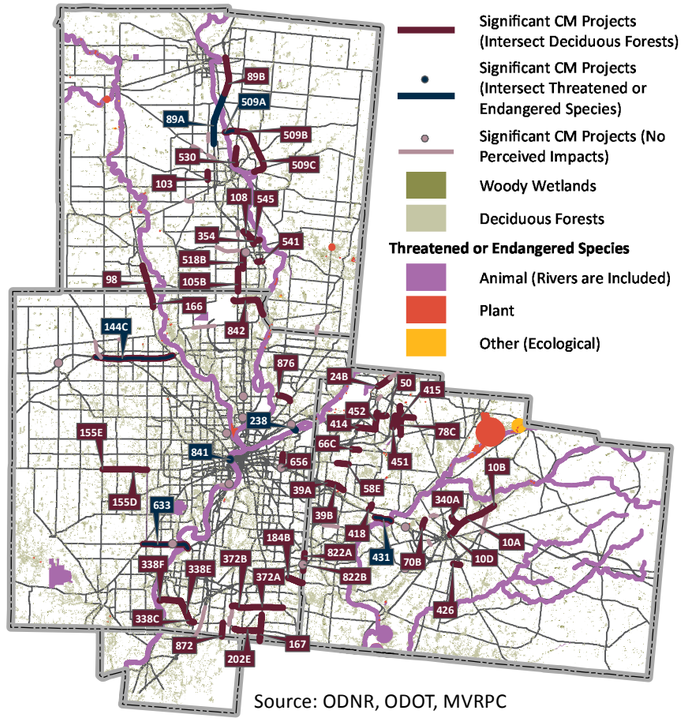
Source: ODNR, ODOT, MVRPC

Watersheds and Wellfields



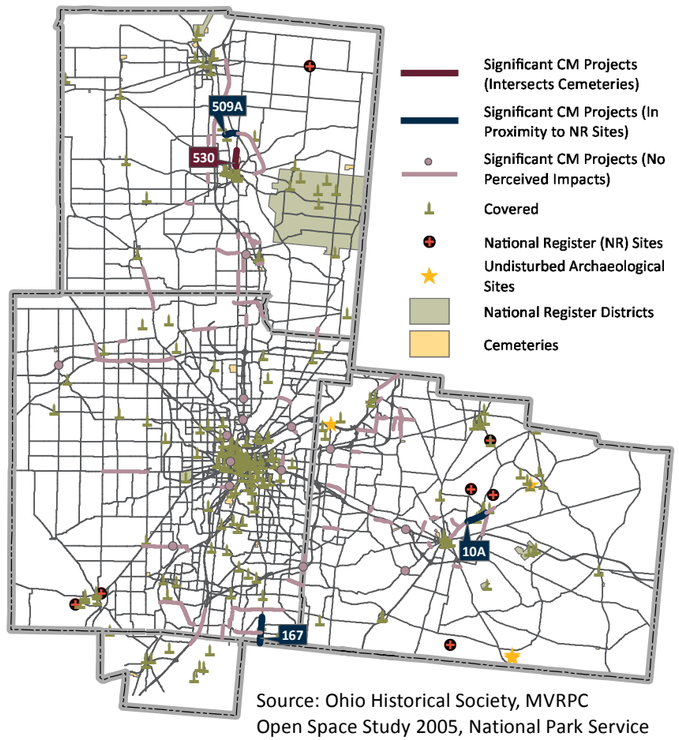
Source: ODNR, ODOT, Ohio NRCS, OEPA, MVRPC

Endangered Species



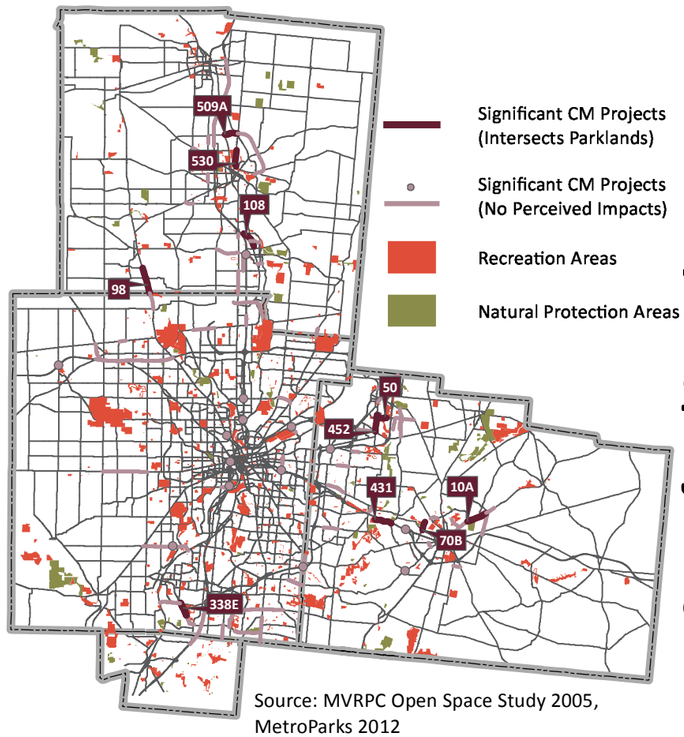
Source: ODNR, ODOT, MVRPC

Cultural Features



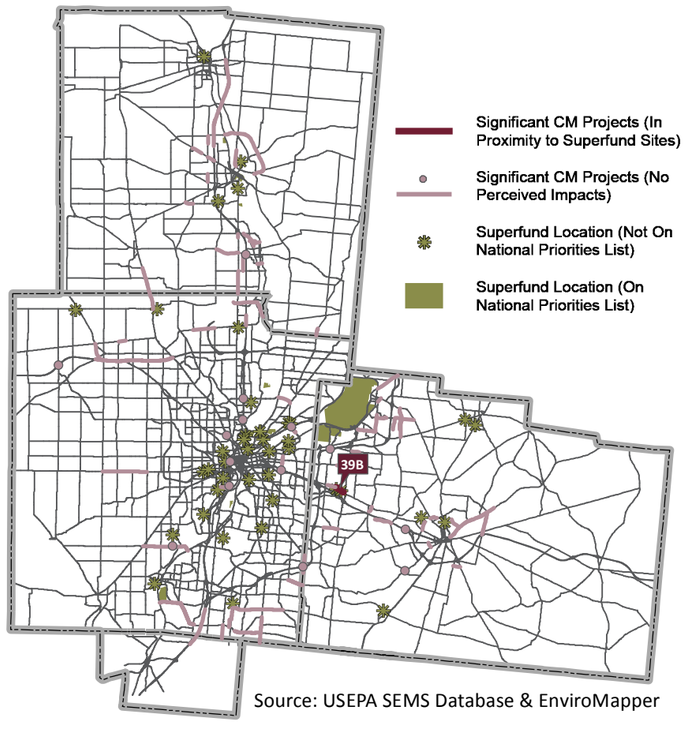
Source: Ohio Historical Society, MVRPC Open Space Study 2005, National Park Service

Parklands



Source: MVRPC Open Space Study 2005, MetroParks 2012

Superfund Locations



Source: USEPA SEMS Database & EnviroMapper

Figure 8.3 Environmental Mitigation Analysis

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Table 8.5 — Superfund Sites on Final NPL

Site Name and Location	HRS Score	Stage of Clean-up	Description
Lammers Barrel Factory, Greene County	69.33	Remedy Selected	According to former employees, Lammers Barrel Factory sold and reclaimed all types of solvents. Any inventories of chemicals handled at the facility were reportedly destroyed in a fire. Sampling analysis identified an area of ground water contamination along the northern end of the Valleywood subdivision, located southeast of the facility.
United Scrap Lead Co. Inc., Miami County	58.15	Construction Completed	The United Scrap Lead Co., Inc. reclaimed lead batteries, generating an estimated 32,000 cubic yards of crushed battery cases, which were used as fill material. Monitoring wells on-site are contaminated with lead, according to tests conducted by the State. Two residential water wells contain lead above background levels but within the standards for drinking water.
Wright-Patterson Air Force Base, Montgomery/Greene Counties	57.85	Construction Completed	Past Air Force activities in support of operational missions have resulted in the creation of several unlined waste disposal areas throughout the base. More than 791 tons of waste have been disposed on the Base, including solvents, contaminated thinners, degreasing sludges, tetraethyllead sludge, and miscellaneous hazardous chemicals. In 1985, the Base and OEPA found 1,1,1-trichloroethane, tetrachloroethylene, trichloroethylene, 1,2-dichloroethane, and manganese in on-base wells.
Miami County Incinerator, Miami County	57.84	Construction Completed	A combination of poor geologic location and environmentally unsound disposal practices resulted in significant contamination to one of the most productive and valuable aquifers in Ohio. All landfilling operations stopped in l978, and the site now serves as a transfer station for wastes that are disposed of elsewhere.
North Sanitary Landfill, Montgomery County	50	Remedy Selected	Several industrial facilities are located adjacent to the property. Industrial and municipal wastes from the Dayton area were used to fill unlined gravel pits that were created by former mining operations. These pits contained water that may have entered the sand and gravel aquifer that the pits intersect.
Behr Dayton Thermal System, Montgomery County	50	Study Underway	The site hosts a manufacturer of parts and sub-assemblies of HVAC equipment for auto manufacturers. Industrial solvent cleaners were used in the site manufacturing processes. The solvent cleaners included TCE, tetrachloroethene, 1,1,1-trichloroethane and sulphuric acid. Such compounds have been reported in shallow ground water beneath the Behr facility. Ground water has been contaminated above USEPA's Safe Drinking Water Act's maximum contaminant level (MCL) for TCE. Also, TCE vapors have migrated into residential homes and commercial businesses above a safe indoor air level.
East Troy Contaminated Aquifer, Miami County	50	Study Underway	Two ground water plumes on the site are contaminated at various levels with VOCs, including cis-1, 2-dichloroethene (cis-1, 2-DCE), tetrachloroethene (PCE), and trichloroethene (TCE). The State of Ohio currently has an agreement in place to address a source area for one of the plumes. There is no source control on the second plume. The State and USEPA are working to find a comprehensive solution to address both plumes, any additional source areas, and potential issues related to vapor intrusion.

Site Name and Location	HRS Score	Stage of Clean-up	Description
Sanitary Landfill Co., Montgomery County	35.57	Construction Completed	The landfill reportedly accepted municipal wastes and various types of industrial wastes, including solvents. The landfill is located above gravel deposits. Wells supplying drinking water are drilled into an aquifer which may be connected to the gravel deposits, according to a U.S. Geological Survey study. Thus, there is a potential for contamination of public water wells.
Mound Plant (USDOE), Montgomery County	34.61	Construction Completed	The Mound operates to support U.S. weapons and energy programs. The major waste areas include a landfill in which solvents, paints, and photoprocessing and plating bath solutions were deposited; several leach beds used to dispose of solutions containing radionuclides and/or explosive/pyrotechnic materials; and an area in which a solution contaminated with plutonium was spilled.
Powell Road Landfill, Montgomery County	31.62	Construction Completed	Wastes were dumped on the site, including strontium chromate and benzidine. The wastes are toxic, persistent, flammable, and highly volatile. There is no evidence of the landfill being lined, and some containers are leaking. Ground water nearby supplies private wells and the surface water is used for recreational purposes.
West Troy Contaminated Aquifer, Miami County	50	Study Underway	VOCs have been detected in two of the five wells in the field, from a yet-unidentified source. Contaminants found in untreated well water include tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE) and 1,1,1-trichloroethane (TCA). PCE amounts were found to exceed the federal maximum contaminant level. A groundwater plume has been identified heading toward the field. Further investigation is needed to identify the source of VOC contamination and define the precise extent of the ground water plume.

Source: U.S. EPA SEMS Database https://cumulis.epa.gov/supercpad/cursites/srchsites.cfm

8.3.2 Stormwater Mitigation

The FAST Act of 2015 added a factor for MPOs to consider strategies to reduce or mitigate stormwater impacts of surface transportation. Storm water discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall and snow events. Storm water often contains pollutants in quantities that could adversely affect water quality. In Ohio, OEPA implements the federal stormwater program to ensure compliance with the Clean Water Act and National Pollutant Discharge Elimination System (NPDES) requirements.

Construction sites, including transportation improvements, impact Ohio's waters by adding pollutants, especially sediment, to rainwater running off of construction sites during construction as well as making long-term land use changes that alter the hydrology and pollutant loading of local streams. If a project disturbs one or more acres of ground, the project sponsor must get a permit to discharge stormwater from the site and control stormwater discharges through the use of Best Management Practices (BMPs). Typically, projects are screened during the environmental process and if they exceed the acreage limit, BMPs are included in the construction plans. ODOT's Location and Design Manual has information on acceptable BPM methods.

There are two storm water permit application options construction activities in Ohio. The first is to submit an individual NPDES permit application and the second is to file a Notice of Intent (NOI) form requesting coverage under a general permit. The general permit process is usually easier and faster than the individual permit process. MVRPC requires that all project sponsors comply with applicable federal and state requirements as a condition of receiving funding.

8.3.3 Regional Mitigation and Consultation Resources

The main purpose of various conservation organizations in the Region is to monitor and protect regional land including natural resources and historical properties. Close partnerships with individuals, businesses, and local jurisdictions are a key component for these organizations to achieve their conservation goals. A brief description of each organization in the Region is provided in Table 8.6.

Table 8.6 — Environmental Conservation Organizations in the Region

Responsible Organization	Type of Conservation Organization	Description
Three Valley Conservation Trust	*Land Trust*	The Three Valley Conservation Trust actively seeks to protect agricultural land, forested lands, wildlife areas, wetlands and other scenic or natural lands. The Trust protects streams in Butler, Preble, Montgomery and Darke Counties in Ohio, and very small parts of Wayne, Franklin, and Union Counties in SE Indiana. The Trust has been awarded a $192,000 State grant to help establish priorities for the conservation of area streams.
Miami Conservancy District	*Flood Protection*	The Miami Conservancy District established its Groundwater Preservation Program in 1997 to develop and maintain an ongoing watershed-wide technical program to help protect and manage the area's aquifer and groundwater resources. Over the years, the organization has branched out to meet the Region's water needs. MCD has been actively involved for many years in promoting recreation along the Region's rivers and streams as well as being a key partner in projects like downtown Dayton's RiverScape, by bringing together state and federal funds to leverage local dollars.
Tecumseh Land Trust	*Land Trust*	The Trust's purpose is to preserve agricultural land, open space, and historic structures in voluntary cooperation with landowners and their heirs, and to educate the public about methods of private land conservation. The Trust currently has about 10,000 acres of farmland in Clark and Greene counties under protective conservation easements.
Ohio Chapter of the US Department of Agriculture	*Government Agency*	Natural Resources Conservation Service (NRCS) assists owners of Ohio's private land with conserving their soil, water, and other natural resources. NRCS partners with the Miami Valley Conservancy District to conserve local soil and water. Several environmental conservation and mitigation programs are offered by NRCS in partnership with local agencies. These include EQIP – Environmental Quality Incentives Program, SWCA – Soil and Water Conservation Assistance, WHIP – Wildlife Habitat Incentives Program, and the WRP – Wetlands Reserve Program.
B-W Greenway Community (B-WGC) Land Trust	*Land Trust*	B-WGC's purpose is to educate the public about the value of wetlands and the importance of connecting the Beavercreek and Wenrick Wetlands with a greenway; to promote sustainable use of land within B-WGC while balancing human and wildlife needs; and to protect, preserve, and steward open space for farming, recreation, habitat, and watershed management.
Beaver Creek Wetlands Association	*Land Trust*	BCWA helps protect the wetland ecosystems in the Beaver Creek watershed in Greene County through partnerships, community networks, and public education.

Responsible Organization	Type of Conservation Organization	Description
Ohio Chapter of the Worldwide Conservation Organization	*Nature Conservancy*	The Nature Conservancy works to protect large landscapes made up of plants, animals, and natural communities all over Ohio including the Miami Valley Region.
Little Miami, Inc.	*Watershed / Land Trust*	Little Miami, Inc. (LMI) was founded in 1967 as a 501(c)(3) nonprfit organization dedicated to the restoration and protection of the Little Miami Wild & Scenic River. The organization owns over 50 nature preserves along the Little Miami and several tributaries, preserving over 12% of the Little Miami's riverfront forests. An additional 39% of the riverfront lands are protected through public and quasi-public ownership.
Honeycreek Watershed Association	*Watershed*	The Association seeks to protect and enhance the ground and surface water resources of the Honey Creek Watershed through education and project implementation. The Association helps preserve the Watershed by protecting riparian lands, monitoring water quality to identify potential sources of pollution, and educating residents about everything from proper septic system maintenance to landscaping with native vegetation.
Dayton History	*Historical Preservation*	This regional organization collects, preserves, interprets, presents and promotes the Region's assets, stories and experiences. The organization also maintains "Preservation Watch List" for the Region's historical assets.
Preservation Dayton, Inc.	*Historical Preservation*	Preservation Dayton actively promotes the work of preservation, protection and enhancement, and historically sympathetic revitalization of the Dayton, Ohio community through advocacy and a variety of other creative methods.
Greene County	*Parks and Recreation*	The County is the home of nearly 2,000 acres of green space held in public interest in 43 parks and recreation sites. These parks and recreations sites are owned and managed by two separate, but cooperative organizations: the Greene County Park District (1,139 acres) and the Greene County Recreation, Parks and Cultural Arts Department (994 acres). The Park District has traditionally been associated with passive recreation and conservation of its green spaces while the Recreation, Parks and Cultural Arts Department provides extensive service including an active recreation focus to the Park District properties.
Five Rivers MetroParks	*Parks and Recreations*	The Five Rivers MetroParks (FRMP) district is a nationally recognized park system composed of natural area parks, gardens, sensitive river corridors, urban parks, and a network of recreational trails. Its key mission is to protect rapidly disappearing open space and natural areas in the Miami Valley.
Miami County Park	*Parks*	The County offers beautiful farmland, the Great Miami River, and charming parks. The Miami County Park District has 15 parks and recreation sites. The mission of the District is to acquire and manage outstanding natural resources for the purpose of preservation, conservation, education, and passive leisure activities for the people of Miami County. The District continues to strive to excel in the areas of environmental education, bikeway development, and land acquisition.

Source: MVRPC

CHAPTER 9
COMMUNITY IMPACT ASSESSMENT

9.1 Overview

MVRPC conducts a Community Impact Assessment to address Environmental Justice (EJ) issues in the 2040 LRTP, and ensure that socially disadvantaged population groups do not bear an unreasonable or inequitable share of the costs associated with planning processes and initiatives. As such, MVRPC undertook extensive measures to identify locations where such disadvantaged populations are concentrated in the Region.

The technical analyses — travel time to work; travel time to major facilities such as shopping centers, universities, and hospitals; and transit and regional bikeway accessibility — were performed, and findings indicated that the disadvantaged population groups were largely unaffected by the 2040 LRTP in comparison to the general population.

The following sections of this chapter articulate the efforts and results of MVRPC's measures towards addressing Environmental Justice (EJ) issues in the 2040 LRTP.

9.2 Background[8]

MVRPC, as a MPO, receives federal funding to support many of its programs and activities, and must address the federal EJ requirements as a condition of receiving those funds.

9.2.1 Principles of Environmental Justice

The U.S. Department of Transportation (U.S. DOT) describes the three basic principles of EJ as:

- Ensuring public involvement of low-income and minority groups in decision making;
- Preventing "disproportionately high and adverse" impacts of decisions on low-income and minority groups; and
- Assuring low-income and minority groups receive proportionate share of benefits.

In general, this means that for any program or activity for which any federal funds will be used, the agency receiving the federal funds must make a meaningful effort to involve low-income and minority populations in the decision-making processes established for the use of federal funds, and evaluate the nature, extent, and incidence of probable favorable and adverse human health or environmental impacts of the program or activity upon minority or low-income populations.

[8] Ohio Department of Transportation (ODOT), Guidance and Best Practices for Incorporating Environmental Justice into Ohio Transportation Planning and Environmental Processes, August, 2002.

9.2.2 Regulatory Framework

Under Title VI of the 1964 Civil Rights Act and related statutes, each federal agency is required to ensure that no person is excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, age, sex, disability, or religion. Title VI bars intentional discrimination as well as disparate impact discrimination (i.e., a neutral policy or practice that has a disparate impact on low income and minority groups).

The National Environmental Policy Act of 1969 (NEPA) stressed the importance of providing for, "all Americans a safe, healthful, productive, and aesthetically pleasing surroundings," and provided a requirement for taking a "systematic, interdisciplinary approach" to aid in considering environmental and community factors in decision-making.

This approach was further emphasized in the Federal-aid Highway Act of 1970: 23 United States Code 109(h). It established a further basis for equitable treatment of communities affected by transportation projects. It requires consideration of the anticipated effects of proposed transportation projects upon residences, businesses, farms, accessibility of public facilities, tax base, and other community resources.

On February 11, 1994, President Clinton, recognizing that the impacts of federal programs and activities may raise questions of fairness to affected groups, signed Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The Executive Order requires that each federal agency shall, to the greatest extent allowed by law, administer and implement its programs, policies, and activities that affect human health or the environment so as to identify and avoid "disproportionately high and adverse" effects on minority and low-income populations.

On June 29, 1995, the U.S. Department of Transportation (U.S. DOT) published its draft Order to Address Environmental Justice in Minority Populations and Low-Income Populations in the Federal Register. The report was primarily a reaffirmation of the principles of 1964's Title VI.

On April 15, 1997, U.S. DOT published the final Order to Address Environmental Justice in Minority Populations and Low-Income Populations (U.S. DOT Order 5610.2). The order complies with the President's 1994 Executive Order 12898.

On October 1, 1999, a U.S. DOT letter interpreting EJ further clarified that transportation agencies are to ensure that low-income populations and minority populations receive a proportionate share of benefit from federally funded transportation investments.

On August 11, 2000, Executive Order 13166: Improving Access to Services for Persons with Limited English Proficiency, was signed by President Clinton. This executive order stated that individuals who do not speak English well and who have a limited ability to read, write, speak, or understand English are entitle to language assistance under 1964's Title VI with respect to a particular type of service, benefit, or encounter.

In June 2012, the Federal Highway Administration (FHWA) issued FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 6640.23A)

that require the FHWA to implement the principles of the DOT Order 5610.2(a) and the Executive Order 12898 by incorporating environmental justice principles in all FHWA programs, policies, and activities.

9.3 MVRPC's Approach to Environmental Justice

Recognizing the importance of incorporating EJ issues into the transportation planning process, MVRPC initiated both quantitative and qualitative approaches to address EJ requirements for the 2040 LRTP.

MVRPC adopted four main approaches during the process of updating its 2040 LRTP to address EJ issues, following the guidelines in Guidance and Best Practices for Incorporating Environmental Justice into Ohio Transportation Planning and Environmental Processes, published by ODOT, and recommendations of the Ohio EJ Task Force. This guidance document presents methods and approaches for ensuring that the interests of minority and low-income populations are considered and the impacts on these populations are identified and addressed within the current transportation decision-making processes. Further, it presents concepts for developing public participation programs that reach target populations. MVRPC's approach included:

- Defining target populations;
- Identifying target areas;
- Conducting tests for adverse impacts; and
- Taking extra public participation efforts to fully engage diverse population groups.

9.4 Defining Environmental Justice Populations

MVRPC's analysis groups included racial and ethnic minorities, persons in poverty, persons with disabilities, and the elderly. Further, MVRPC expanded the EJ target population to include other traditionally disadvantaged groups, such as persons of Hispanic origin and households without automobiles.

9.4.1 Data Sources

A variety of data sources exist pertaining to population demographics. Not all sources, however, are of equal quality. MVRPC, therefore, used the 2010 Census and 2008-2012 American Community Survey (ACS) data as primary data sources for analysis of target population groups. For minority, elderly, and Hispanic variables, 2010 Census Summary File 1 (SF1) block level data were aggregated to the traffic analysis zone (TAZ) level using GIS. For the remaining variables (poverty, disability, and zero-car households), 2008-2012 ACS 5-Year Estimate block group data was converted to the TAZ level, using spatial analysis techniques.

9.4.2 Definition of Population Groups

MVRPC defined the target populations as follows:

Minority Population

All persons of races other than Caucasian were considered minorities, including African-American; American Indian or Alaska Native; Asian; Native Hawaiian or Other Pacific Islander; some other race alone; and persons of two or more races. It is important to note that the population of Hispanic origin was not counted as a race since the U.S. Census Bureau treats persons of Hispanic origin as an ethnic group, not a race.

Persons in Poverty

Persons in poverty are defined as the sum of the number of persons in families with income below the poverty threshold and the number of unrelated individuals with incomes below the poverty thresholds. The set of poverty thresholds varies by family size and composition and age of householder. MVRPC defined the poverty population based on available ACS data tabulated for total household population plus non-institutionalized group quarters.

Disabled Population

In 2010, the ACS began using a new definition of disabled populations, focusing on the impact conditions have on basic functioning rather than the presence of conditions. Consistent with this new definition, MVRPC defined the disabled population based on available ACS data tabulated for household population 18 years of age and over. A person was considered as having a disability if he/she met any of the following conditions. A brief description of each disability category is as follows:

- Hearing difficulty — deaf or having serious difficulty hearing.
- Vision difficulty — blind or having serious difficulty seeing, even when wearing glasses.
- Cognitive difficulty — because of a physical, mental, or emotional problem, having difficulty remembering, concentrating, or making decisions.
- Ambulatory difficulty — having serious difficulty walking or climbing stairs.
- Self-care difficulty — having difficulty bathing or dressing.
- Independent living difficulty — because of a physical, mental, or emotional problem, having difficulty doing errands alone such as visiting a doctor's office or shopping.

Elderly Population

The elderly population is defined as all persons 65 years of age and older.

Hispanic Population

Persons who classified themselves in one of the specific Spanish/Hispanic/Latino origin categories listed, such as Mexican, Mexican-American, Puerto Rican, or Cuban, as well as those who indicated that they were of other Spanish/Hispanic/Latino origin. Persons of Hispanic origin may be of any race.

Zero-Car Households

Zero-Car Households are households with no automobiles at home and available for the use of household members.

9.4.3 Limited English Proficiency Population

In SFY 2013, MVRPC completed a Limited English Proficiency (LEP) analysis for the MPO area.[9] The analysis indicates that less than 1 percent of the population 5 years or older (approximately 5,400 individuals) is not proficient in English. Approximately 50 percent of the LEP individuals speak Spanish as their primary language with the remainder speaking other Indo-Euro, Asian Pacific, or other languages. As a result, MVRPC is focusing its outreach efforts on the Spanish speaking population.

Posters, both English and Spanish versions, advertising the public participation meetings are provided to GDRTA hubs, Greene CATS, and Miami County Transit offices. They are also distributed to the Latino Connection, a local Hispanic community-based outreach organization. Public notice newspaper ads are printed in both Spanish and English in La Jornada Latina, a free newspaper distributed throughout the region.

9.5 Identifying Environmental Justice Target Areas

MVRPC identified EJ target areas by examining the concentration of the EJ target populations at the TAZ level using Geographic Information Systems (GIS).

9.5.1 Population Thresholds

The target population thresholds were calculated for each population demographic variable under examination in order to locate the areas of high concentration. The TAZ population (e.g., elderly persons) was aggregated to the county level and a county average percentage for each target population was calculated. Using the county average percentage as a threshold, the areas of high concentration were identified. Target population averages were calculated individually for each county, as opposed to an MPO average, to reflect the unique nature of each county. The county thresholds for each target population are listed in Table 9.1.

- Minority Population — Montgomery County has the highest percentage of minorities in the Region. Over 26% of Montgomery County residents are minorities. On the other hand, only 5.6% of the Miami County residents are minorities.
- People in Poverty — In the Region, Montgomery County has the highest percentage of people in poverty (16.7%), compared to Greene, Miami, and Warren Counties with 13.5%, 12.2%, and 6.3%, respectively.
- Disabled Population — Montgomery County has the highest percentage of disabled population in the Region (18.4%), followed by Miami, Greene, and Warren Counties, at 15.5%, 14.1%, and 11.4%, respectively.
- Elderly Population — A higher percentage of elderly population lives in Miami and Montgomery counties (15.4% and 15.1%, respectively), compared to Greene and Warren Counties (13.6% and 10.8%, respectively).

[9] The full report can be viewed here: http://www.mvrpc.org/sites/default/files/LimitedEnglishProficiencyAnalysis.pdf

- Hispanic Population — A higher percentage of persons of Hispanic descent live in Montgomery and Warren Counties (2.3% each), followed closely by Greene County (2.1%) and Miami County with the least (1.3%).
- Zero-Car Households — Montgomery County has the highest percentage of households without access to cars. Almost one in ten households (9.5%) reported having no cars in the 2008-2012 data.

Table 9.1 — Target Population Thresholds

	County	Total	Threshold
People in Poverty	Greene	20,714	13.53%
	Miami	12,366	12.16%
	Montgomery	87,503	16.73%
	Warren	3,929	6.33%
Disabled Population	Greene	16,647	14.13%
	Miami	11,897	15.50%
	Montgomery	73,416	18.44%
	Warren	4,396	11.42%
Zero-Car Households	Greene	3,037	4.83%
	Miami	2,112	5.17%
	Montgomery	21,304	9.51%
	Warren	2,047	2.68%
Minority Population	Greene	21,903	13.56%
	Miami	5,784	5.64%
	Montgomery	139,881	26.14%
	Warren	20,262	9.53%
Hispanic Population	Greene	3,439	2.13%
	Miami	1,341	1.31%
	Montgomery	12,177	2.28%
	Warren	4,784	2.25%
Elderly Population	Greene	21,998	13.61%
	Miami	15,731	15.35%
	Montgomery	81,041	15.14%
	Warren	22,936	10.78%

Sources: 2010 Census and 2008-2012 American Community Survey

9.5.2 Distribution of Target Areas

Using the county's threshold for each target population, TAZs were examined and coded as either "Above County Average" or "Below County Average." It is important to note here that a specific TAZ could be a target area for several EJ population groups.

MVRPC used GIS to produce a series of maps showing the geographic distribution of target areas for each population group in the Region. The maps are shown in Figure 9.1.

- Minority Population Distribution — Minority areas are concentrated around urban areas or cities.
- Distribution of People in Poverty — The distribution of people in poverty revealed a high concentration in the central city areas of Montgomery County. Greene and Miami Counties also showed the highest concentrations in the central city areas, as well as selected rural areas.
- Disabled Population Distribution — The distribution of the disabled population showed no particular pattern. Disabled populations are spread throughout the entire Region.
- Elderly Population Distribution — No strong patterns were identified with the elderly population, aside from a slight but perceptible lack of concentration near urban centers. In general, the elderly population appears to be spread evenly over the Region.
- Hispanic Population Distribution — In contrast with the distribution patterns for the minority population and people in poverty, the Hispanic population in the Region appears to be located away from city centers and closer to rural areas and large employment centers, particularly Wright Patterson Air Force Base.
- Zero-Car Households Distribution — The distribution of households with no cars shows greater concentration patterns in city centers.

9.6 Community Impact Analysis

MVRPC conducted various technical analyses for the 2040 LRTP to address EJ issues, recognizing that no single measurement can determine whether disproportionate adverse impacts exist or not. Specifically, MVRPC analyzed: 1) Accessibility to Selected Major Facilities; 2) Home-Based-Work (HBW) Travel Times; and 3) Transit and Regional Bikeway Accessibility. The purpose of these analyses was to determine if target areas are adversely affected by the Plan, compared to non-target areas, for various population groups. The following sections provide information on each analysis's methodology.

9.6.1 Accessibility to Major Facilities

MVRPC conducted the accessibility analysis by measuring travel time from TAZs to major facilities. The facilities included were major hospitals, shopping centers, and universities located in the Region (see Table 9.2), using three different transportation networks – 2010 Base, 2040 E+C, and 2040 Plan – that were developed based on the congestion management project list as presented in Chapter 5. The locations of major facilities considered in the analysis can be seen in Figure 9.2.

MVRPC calculated the travel time from each TAZ to the closest facility using the Transportation Demand Forecasting Model (TDFM). TAZs were then grouped into target and non-target areas and the average travel time to the closest facility was calculated for the target versus non-target areas.

This process was repeated for all three scenarios: 2010 Base, 2040 E+C, and 2040 Plan. The summary of findings from the analysis is presented below.

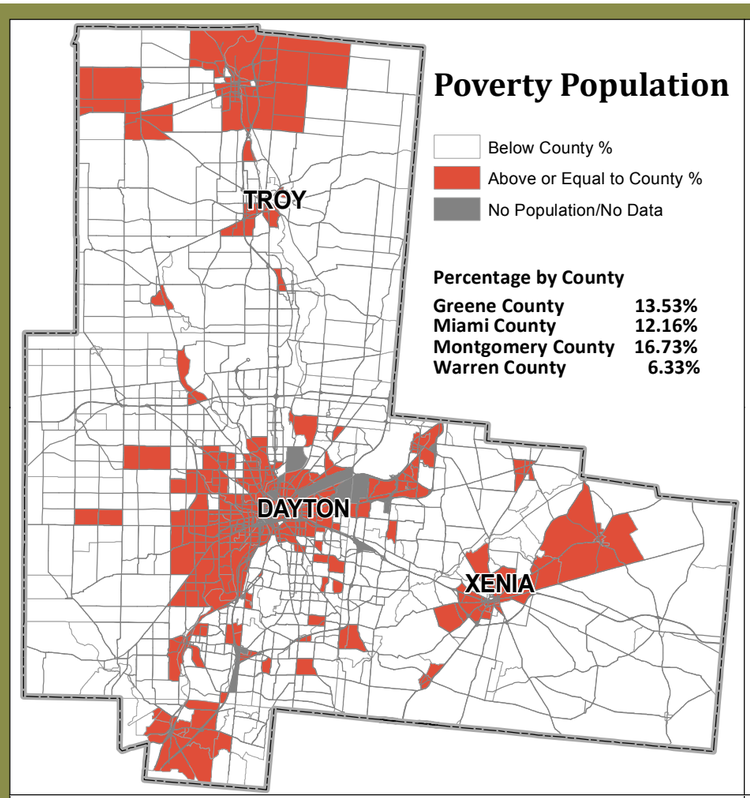
Table 9.2 — Average Travel Time to Major Facilities by EJ Status in Minutes

	2010			2040 - Existing + Committed			2040 - Plan		
	University	Hospital	Shopping Center	University	Hospital	Shopping Center	University	Hospital	Shopping Center
Poverty	**6.9**	**6.5**	**5.2**	**7.4**	**7.0**	**5.4**	**7.3**	**6.8**	**5.3**
Non-Poverty	13.0	10.6	7.1	14.2	11.7	7.8	13.9	11.4	7.7
Disabled	**8.8**	**7.6**	**5.6**	**9.5**	**8.1**	**5.9**	**9.3**	**8.0**	**5.8**
Non-Disabled	11.9	10.1	6.9	13.1	11.2	7.6	12.8	10.9	7.5
Zero Car	**7.1**	**6.6**	**5.1**	**7.7**	**7.0**	**5.4**	**7.5**	**6.9**	**5.3**
Non-Zero Car	12.9	10.7	7.2	14.2	11.7	7.8	13.8	11.5	7.7
Minority	**6.8**	**5.6**	**4.7**	**7.3**	**5.8**	**4.9**	**7.0**	**5.7**	**4.8**
Non-Minority	12.0	10.3	7.0	13.1	11.4	7.6	12.8	11.1	7.5
Hispanic	**8.1**	**7.3**	**4.9**	**8.9**	**7.8**	**5.1**	**8.6**	**7.6**	**5.0**
Non-Hispanic	11.3	9.5	6.9	12.3	10.4	7.5	12.0	10.2	7.4
Elderly	11.6	9.7	6.5	12.6	10.5	7.0	12.3	10.3	6.9
Non-Elderly	**9.3**	**8.1**	**6.2**	**10.2**	**8.9**	**6.6**	**9.9**	**8.7**	**6.5**

Source: MVRPC

MVRPC

Figure 9.1 Environmental Justice: Target Group Populations

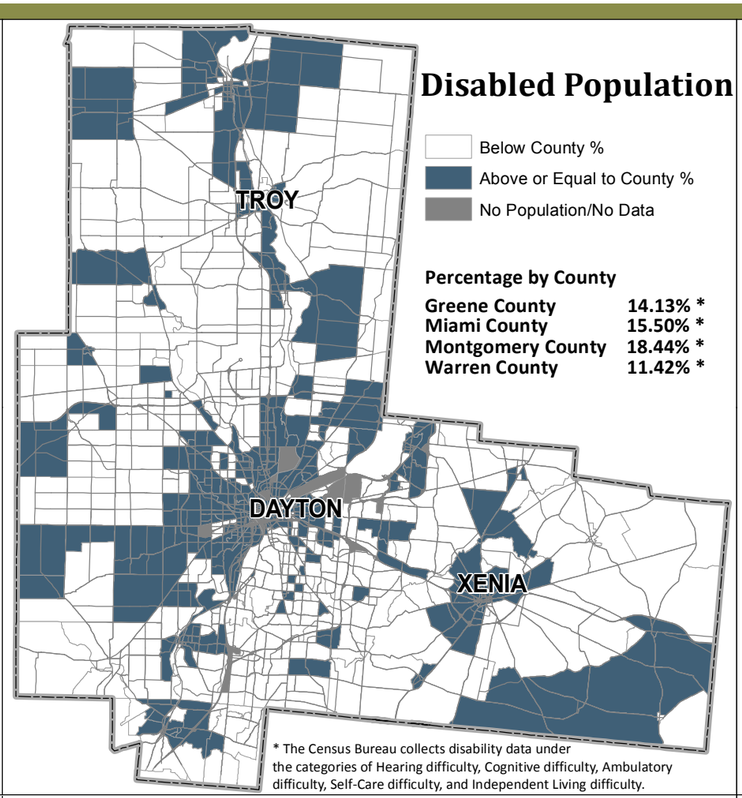


Poverty Population

Below County %
Above or Equal to County %
No Population/No Data

Percentage by County

Greene County	13.53%
Miami County	12.16%
Montgomery County	16.73%
Warren County	6.33%



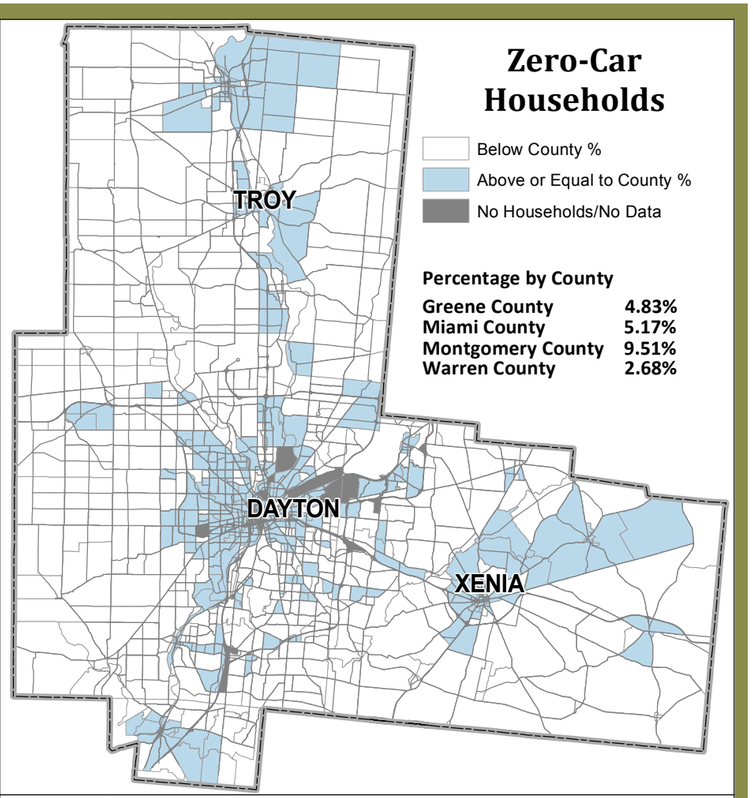
Disabled Population

Below County %
Above or Equal to County %
No Population/No Data

Percentage by County

Greene County	14.13% *
Miami County	15.50% *
Montgomery County	18.44% *
Warren County	11.42% *

* The Census Bureau collects disability data under the categories of Hearing difficulty, Cognitive difficulty, Ambulatory difficulty, Self-Care difficulty, and Independent Living difficulty.

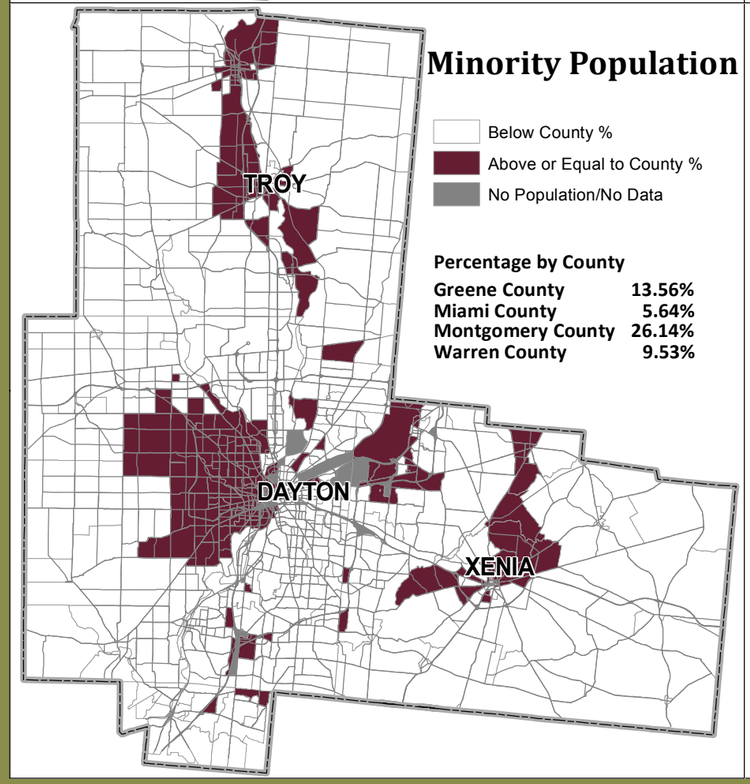


Zero-Car Households

Below County %
Above or Equal to County %
No Households/No Data

Percentage by County

Greene County	4.83%
Miami County	5.17%
Montgomery County	9.51%
Warren County	2.68%

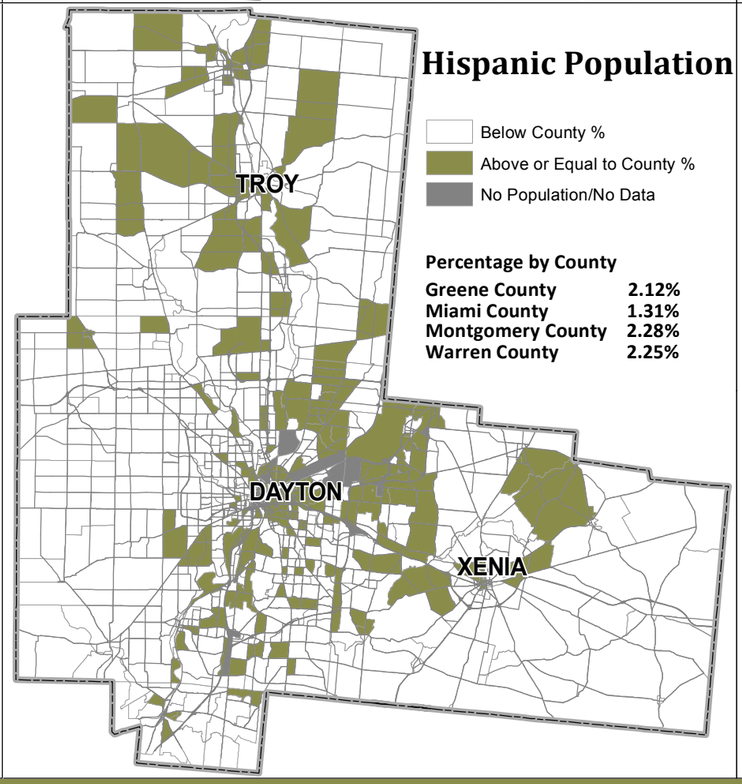


Minority Population

Below County %
Above or Equal to County %
No Population/No Data

Percentage by County

Greene County	13.56%
Miami County	5.64%
Montgomery County	26.14%
Warren County	9.53%

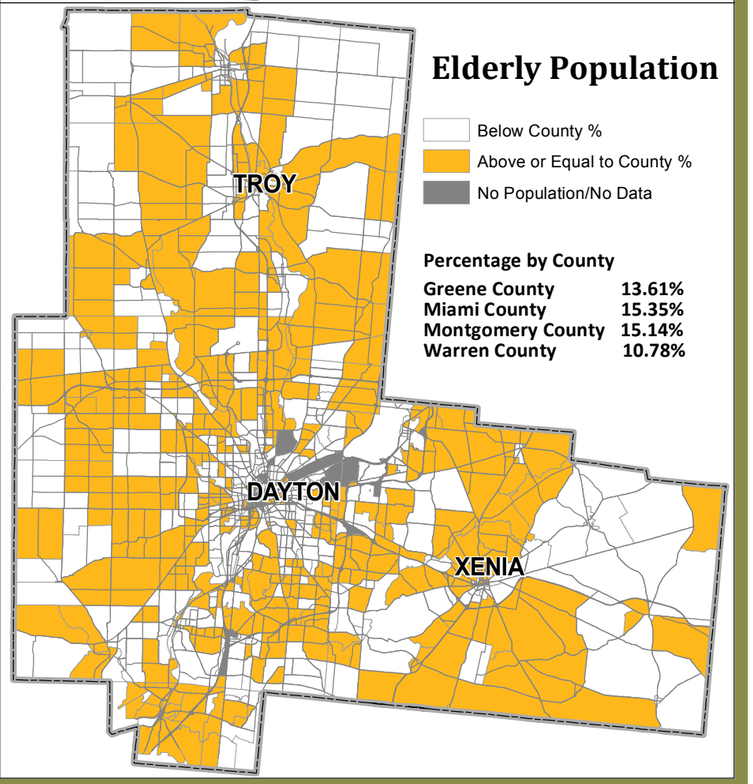


Hispanic Population

Below County %
Above or Equal to County %
No Population/No Data

Percentage by County

Greene County	2.12%
Miami County	1.31%
Montgomery County	2.28%
Warren County	2.25%



Elderly Population

Below County %
Above or Equal to County %
No Population/No Data

Percentage by County

Greene County	13.61%
Miami County	15.35%
Montgomery County	15.14%
Warren County	10.78%

N

0 2 4 6 8 Miles

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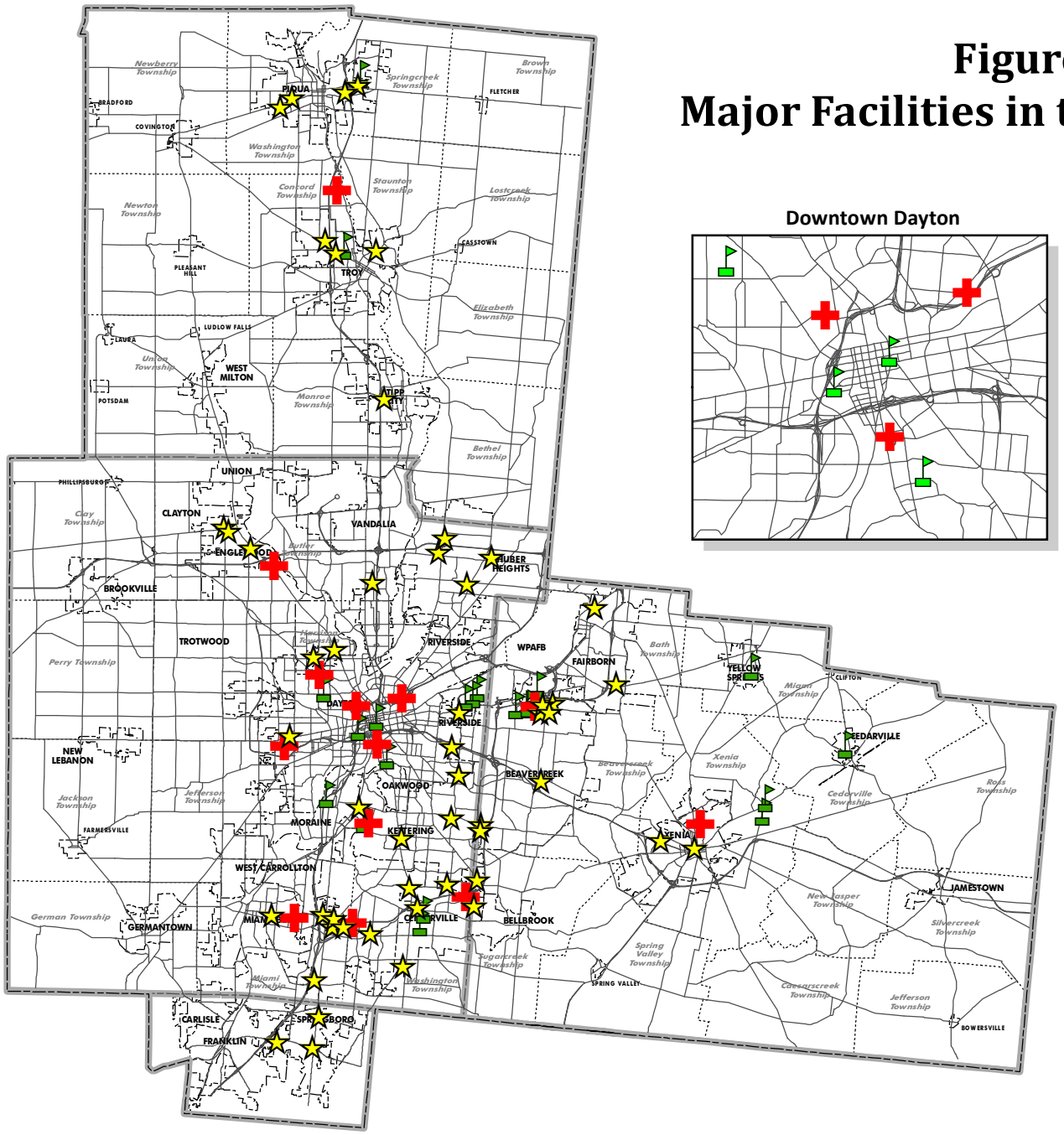
Figure 9.2
Major Facilities in the Dayton Region



Accessibility to Hospitals

The analysis indicates that the average travel time to the closest hospital is shorter from the target areas for all target population groups, except for the elderly population. This holds true for all three scenarios.

Accessibility to Shopping Centers

The average travel time to the closest shopping center for target areas is shorter than the travel time from the non-target areas for all target population groups in all three scenarios with the exception of the elderly population.

Accessibility to Universities

The analysis indicates that travel time to universities is shorter for target versus non-target areas in all three scenarios, excepting the elderly population.

The lack of concentration of elderly population near urban centers (where many of the Region's major facilities are located) is likely responsible for the longer travel times for that population revealed by the analysis. This presents a slight change from elderly population concentrations in 2000, and poses a new concern for the Region going forward. Access by the elderly to hospitals and shopping centers is important for their health and independence.

Overall, the accessibility analysis indicates that the average travel time of target versus non-target areas is not adversely affected by the 2040 LRTP projects. In fact, the analysis confirms that Plan projects will maintain or improve travel times to major facilities for all target areas and populations through 2040. In particular, reductions in travel times for the elderly population between 2040 E+C and the 2040 Plan scenarios are nearly identical to travel time reductions for the general population.

9.6.2 Travel Time to Work

MVRPC analyzed travel time to work (HBW Trips) as a second community impact evaluation of the 2040 LRTP. This evaluation identifies whether adverse impacts exist regarding the travel time to work between target areas and non-target areas, with respect to employment locations as a result of the Plan.

The average travel time to work for each TAZ was derived using MVRPC's TDFM for all three scenarios (2010 Base, 2040 E+C, and 2040 Plan). The average HBW travel time for each TAZ was calculated for target and non-target areas for all population groups. The results of the analysis can be seen in Table 9.3 below.

Table 9.3 — Average Travel Time to Work by EJ Status in Minutes

	2010			2040 - Existing + Committed			2040 - Plan		
	Peak	Off-Peak	All	Peak	Off-Peak	All	Peak	Off-Peak	All
Poverty	**14.4**	**12.1**	**13.5**	**15.1**	**12.4**	**14.0**	**15.0**	**12.5**	**14.0**
Non-Poverty	18.2	15.6	17.2	19.2	16.0	18.0	19.0	16.0	17.8
Disabled	**15.3**	**13.0**	**14.4**	**16.0**	**13.3**	**14.9**	**15.8**	**13.3**	**14.9**
Non-Disabled	17.9	15.2	16.8	18.9	15.6	17.6	18.6	15.6	17.5
Zero Car	**14.4**	**12.2**	**13.6**	**15.3**	**12.5**	**14.2**	**15.0**	**12.5**	**14.1**
Non-Zero Car	18.3	15.6	17.2	19.2	16.0	17.9	19.0	16.0	17.8
Minority	**13.7**	**11.9**	**13.0**	**14.1**	**12.1**	**13.3**	**14.0**	**12.2**	**13.3**
Non-Minority	17.9	15.1	16.8	19.0	15.5	17.6	18.7	15.5	17.5
Hispanic	**14.2**	**12.2**	**13.4**	**14.7**	**12.5**	**13.8**	**14.5**	**12.6**	**13.8**
Non-Hispanic	17.7	14.9	16.6	18.7	15.3	17.4	18.5	15.3	17.2
Elderly	17.5	14.8	16.5	18.6	15.2	17.3	18.4	15.2	17.1
Non-Elderly	**15.8**	**13.5**	**14.9**	**16.5**	**13.9**	**15.5**	**16.3**	**13.9**	**15.4**

Source: MVRPC

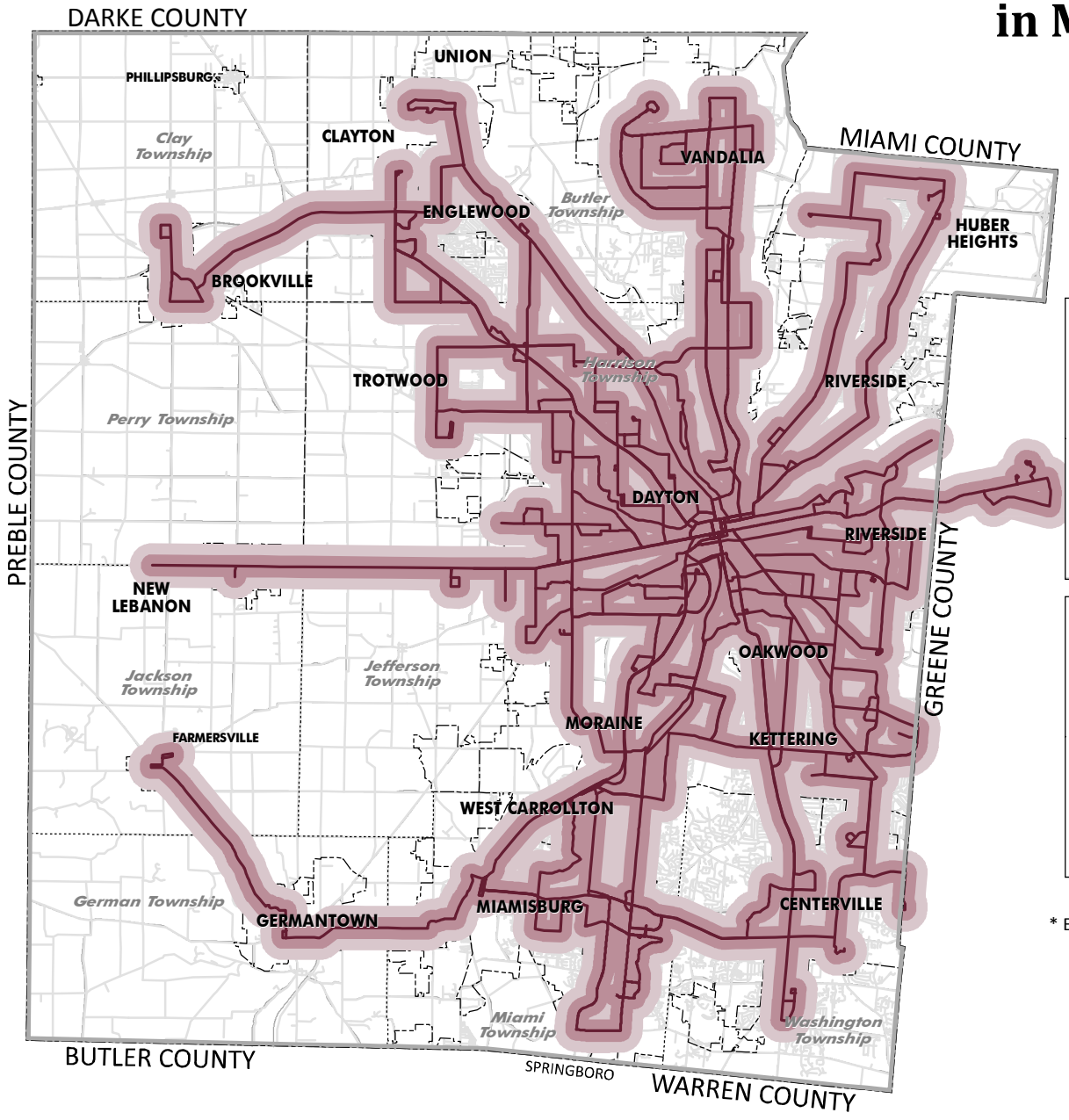
The differences between the target and non-target areas in the Region, with respect to HBW travel time, are consistent (less for target areas) for all population groups in each scenario, except for the elderly population. A comparison of HBW travel times between the 2040 E+C and 2040 Plan scenarios reveals that implementation of the 2040 LRTP will decrease HBW travel times from all target areas for all population groups during peak hours. Non-peak travel times stay about the same, even showing a few slight increases, perhaps due to altered travel patterns. Where these slight increases occur to target populations, travel times remain shorter for the target populations than for the general population.

The analysis of the average travel time to work in the Region indicates that target areas are favorably situated as compared to non-target areas in terms of travel time to work, aside from the elderly target areas. Further, the analysis shows that all target areas will benefit more than non-target areas as a result of the 2040 LRTP, again excepting areas with a high elderly population. Given that the elderly are less likely to work the more their age affects their mobility, HBW travel times are not likely to be seen as a concern by individuals (unlike, for example, access to shopping centers and hospitals discussed above). It is therefore fair to say that there are no significant adverse impacts on target areas compared to non-target areas.

9.6.3 Transit Accessibility Analysis

MVRPC conducted a Transit Accessibility Analysis as a third measure of community impact evaluation of the 2040 LRTP. The analysis was conducted using GIS to identify how much access each target population group has to public transit in the Region. Further, this analysis evaluates

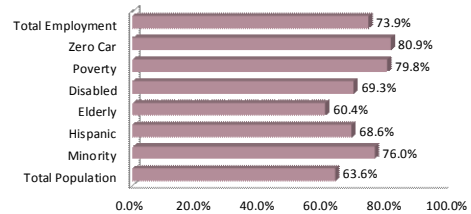
Figure 9.3
Transit Accessibility in Montgomery County



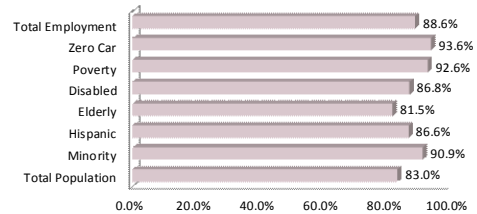
Service Areas

- GDRTA 2015 Transit Routes
- 1/4 Mile Buffer
- 1/2 Mile Buffer

Percentage of Population within 1/4-Mile of GDRTA Transit Route



Percentage of Population within 1/2-Mile of GDRTA Transit Route



* Express Routes and Local School Routes are not included.

Source: GDRTA, U.S. Census 2010, ACS 2008-2012 and MVRPC

Date: May 2016

N

0 2 4 6 8 Miles

how much transit access various target population groups have in comparison to the overall population.

With the exception of limited portions of Greene County (Wright Patterson Air Force Base and Wright State University), Montgomery County is the only County in the MPO area that is served by regularly scheduled fixed transit routes through the Greater Dayton Regional Transit Authority (GDRTA). Therefore, the analysis in this section focuses on Montgomery County (see Figure 9.3). Miami and Greene counties have demand-responsive transit services that are open to the general public.

Due to the close proximity of transit stop locations — less than ¼ mile apart on most routes (with the exception of express routes) — and relatively comprehensive time/location coverage (with the exception of local school routes), bus routes, not bus stops, were used as the basis for the analysis. The analysis utilized the updated 2015 GDRTA transit routes.

Transit route buffers were overlaid on TAZ and census block boundaries to determine the area covered by the buffer with respect to the overall population and target population groups. Using the assumptions that population is evenly spread throughout underlying census blocks and target population proportions are consistent within TAZs, the percentage of the general population and target population groups covered in the buffer was calculated.

The results of the analysis are presented in two charts in Figure 9.3. The first chart shows the percentage of the general population and target population groups within ¼ mile of a transit route. The second chart shows percentages within ½ mile.

The results reveal that 63.6% of the total population of Montgomery County lives within ¼ mile and 83.0% within ½ mile of a transit route. It was also revealed that high percentages of target populations are covered by public transportation. Further, the results show that target population groups, with the exception of the elderly, are better served than the overall population in both the ¼ mile and ½ mile buffer analyses. For example, 76.0% of minorities, 79.8% of persons living in poverty, 69.3% of persons with a disability, 68.6% of persons of Hispanic origin, and 80.9% of zero car households live within ¼ mile of a transit route, compared to 63.6% for the general population in the same area. The elderly population is slightly less served than the general population at 60.4%, but is a much more evenly spread demographic throughout the county.

The transit accessibility analysis indicates that, in general, target population groups have better accessibility to transit compared to the general population, which leads to the conclusion that there are no adverse impacts regarding target populations.

9.6.4 Regional Bikeway Accessibility Analysis

The importance of measuring the accessibility of the Region's bikeways for target population groups has become an important focus as investment in the system has increased over time. Unlike GDRTA's fixed route transit service, the regional bikeway network extends throughout the MPO Region and continues to grow as new sections are designed and constructed. Only existing regional bikeways — bike paths or bike routes — were included in the analysis.

Bike path facilities are typically grade separated, paved trails intended for non-motorized vehicles; while bike routes are designated portions of the surface roadway network that serve both motorized and non-motorized vehicles. Bike routes are typically identified through signs and/or pavement markings.

Currently there are roughly 250 miles of bikeways in the region with approximately 16.5 miles of bikeways added to the Region since 2012.

As in the transit analysis, regional bikeway buffers were overlaid on TAZ and census block boundaries to determine the area covered by the buffer with respect to overall population and target population groups. Using the assumptions that population is evenly spread throughout underlying census blocks and target population proportions are consistent within TAZs, the percentage of the general population and target population groups covered in the buffer was calculated.

The results of the analysis are presented in two charts in Figure 9.4. The first chart shows the percentage of the general population and target population groups within ¼ mile of a regional bikeway. The second chart shows percentages within ½ mile.

The analysis shows that only 14.4% and 30.3% of the general population live within ¼ and ½ mile of a regional bikeway, respectively. Though only a fraction live within ¼ mile of a regional bikeway, target populations experience slightly higher levels of accessibility to regional bikeways within ¼ mile as the general population. The same is true for target populations within ½ mile of a regional bikeway. All target populations have higher level accessibility rates than the general population. In fact, nearly 40% of both people in poverty and zero-car households are within ½ mile of a regional bikeway, more than any other target population groups or the general population. In addition, 45.5% of the Region's total employment exists within ½ mile of a regional bikeway.

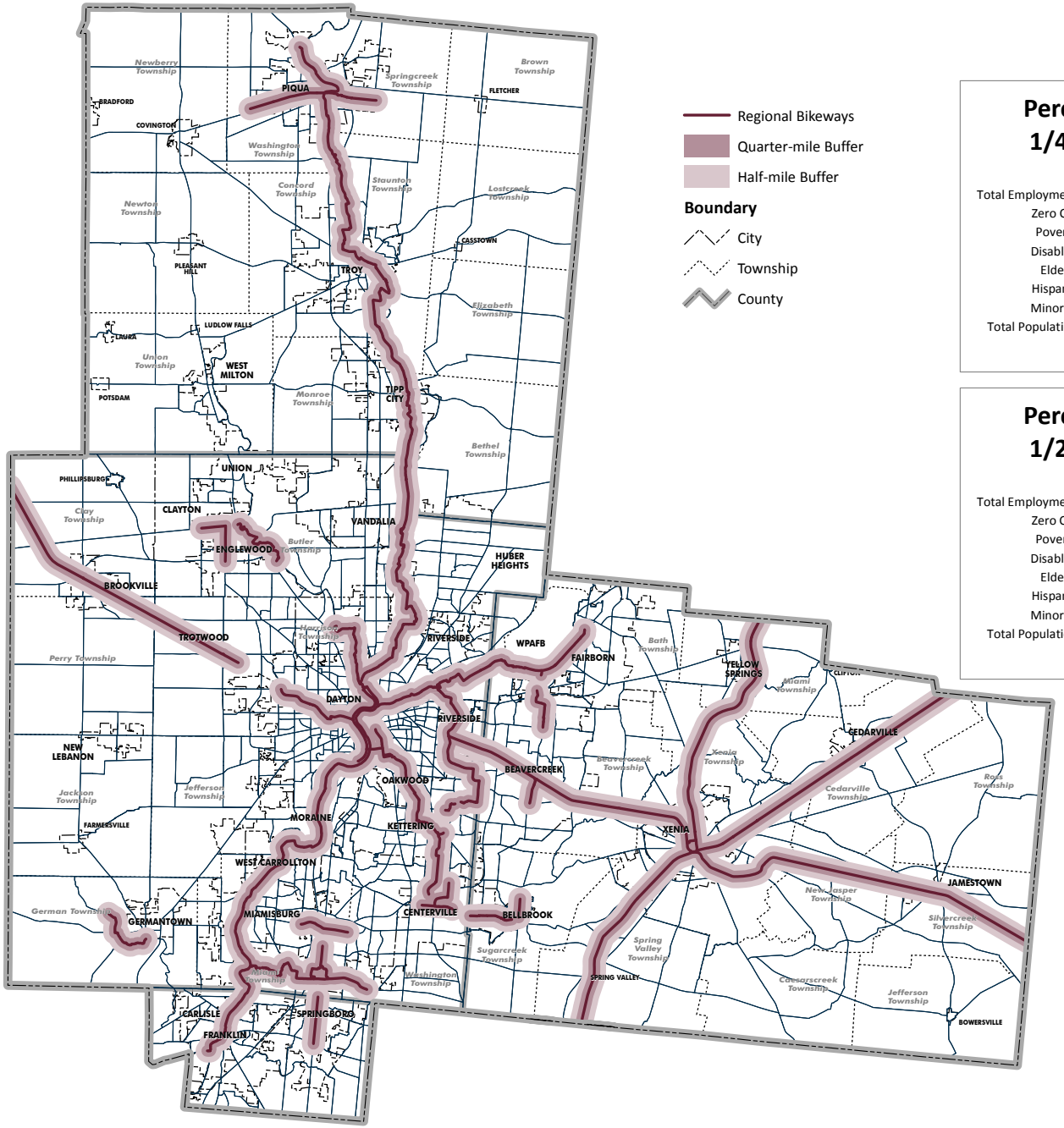
The Regional bikeway accessibility analysis indicates that, in general, target population groups have comparable or better accessibility to regional bikeway facilities as compared to the general population, which leads to the conclusion that there are no adverse impacts regarding target populations.

9.6.5 Pedestrian Accessibility Analysis

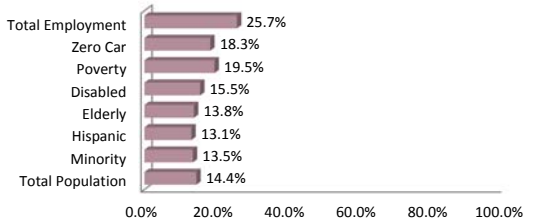
Pedestrian access is important for many members of the target Environmental Justice groups. Minority and Hispanic status often correlate with low-income status, and many people with low incomes are often unable to afford ownership and maintenance of automobiles, have fewer automobiles per household, or own automobiles which are frequently unreliable. Many members of the elderly and disabled populations have physical limitations preventing them from safely owning and operating a motor vehicle. Members of the zero-car group, either by choice or necessity, also are heavily reliant upon non-automobile means of transportation, such as walking, biking, or public transit. Since each transit trip begins and ends as a pedestrian trip, having a continuous network of sidewalks between bus stops and origins/destinations is also an important factor for transit accessibility.

MVRPC

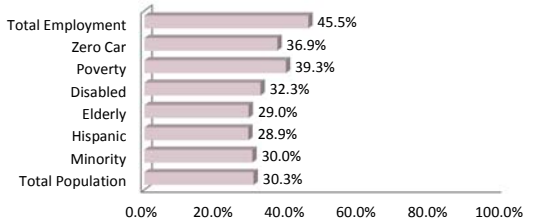
Figure 9.4
Regional Bikeway Accessibility



Percentage of Population within 1/4-Mile of a Regional Bikeway



Percentage of Population within 1/2-Mile of a Regional Bikeway



Source: GDRTA, U.S. Census 2010, ACS 2008-2012 and MVRPC

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Figures 9.5 and 9.6 help to show where improvements can be made in the pedestrian network. Gaps in the pedestrian network, particularly those near transit stops and activity centers and those within urbanized areas, offer opportunities and considerations for future projects. Accommodations for pedestrians and transit users can also have the benefits of improving public health, reducing pollution and emissions, and mitigating traffic congestion.

9.7 Environmental Justice and Public Participation

Refer to Chapter 10 — Public Participation and Consultation, for a discussion of additional public participation efforts to reach Environmental Justice populations.

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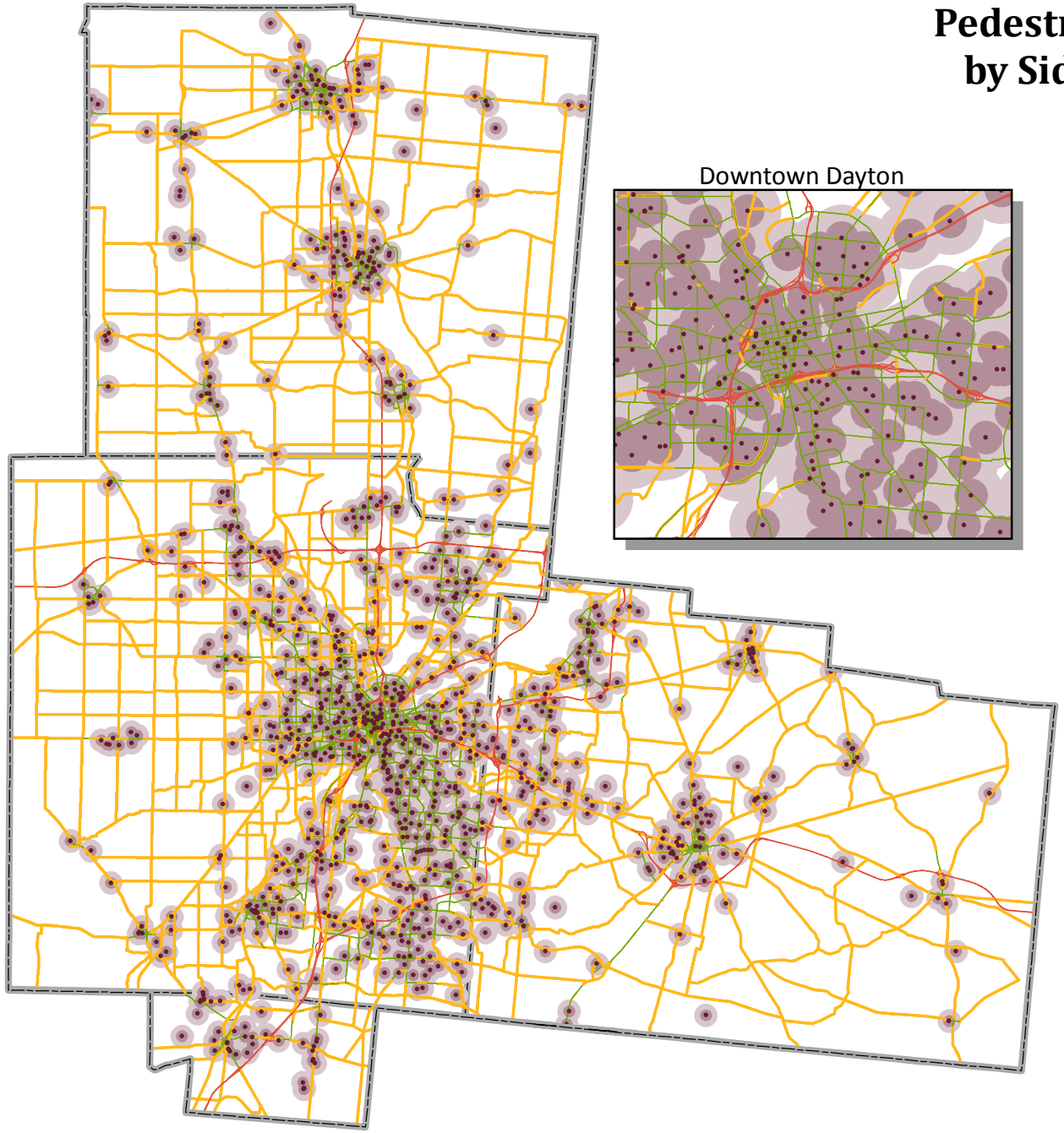
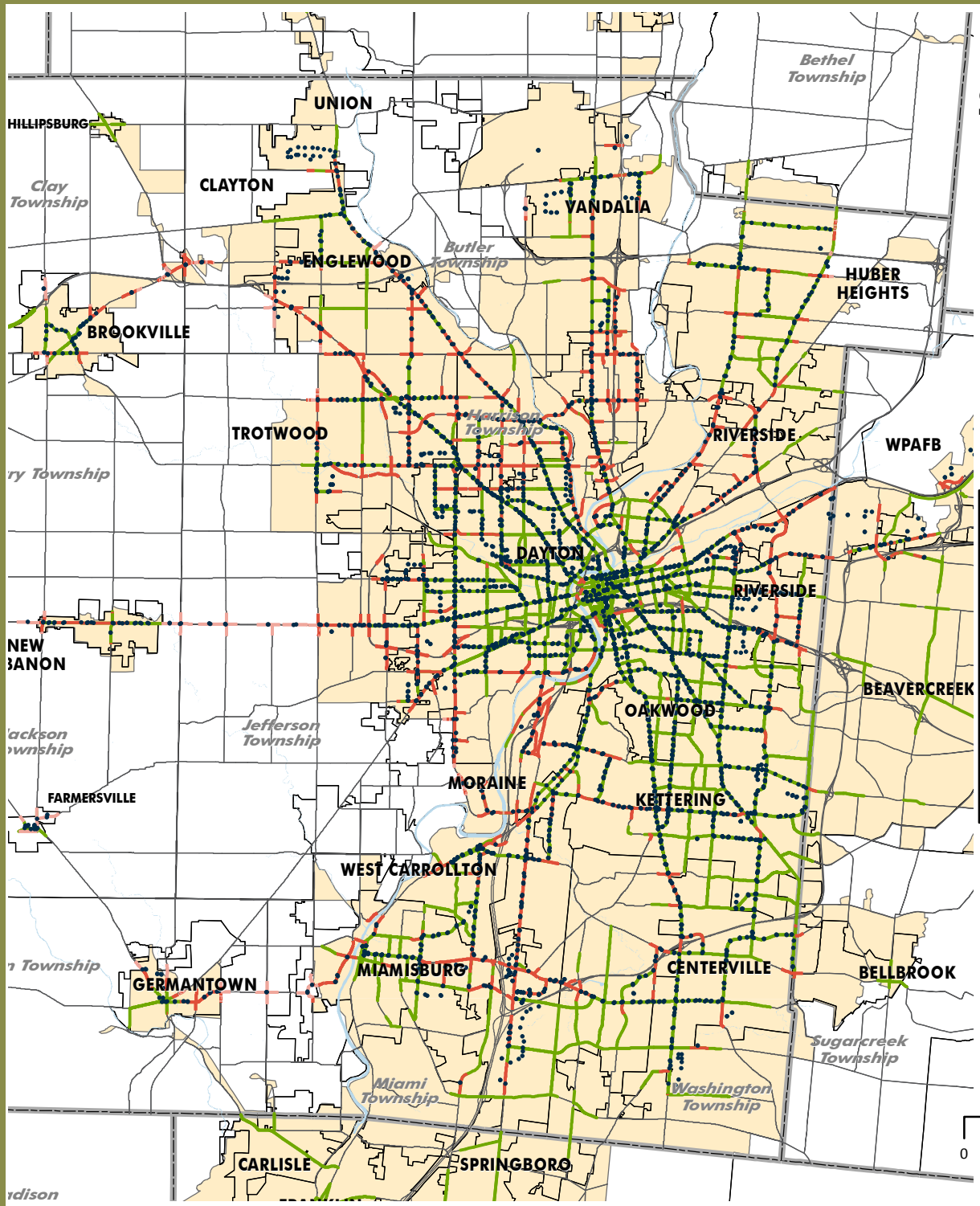
Figure 9.5
Pedestrian Activity Centers by Sidewalk Availability

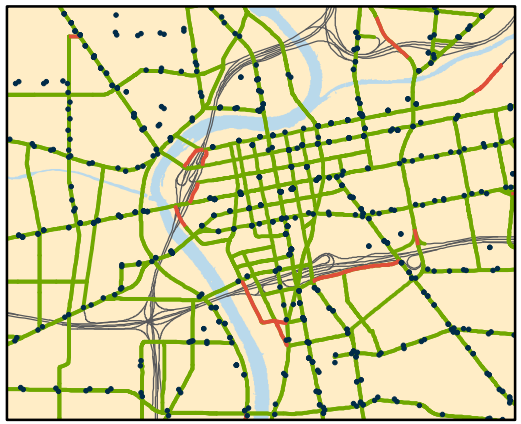


MVRPC

Figure 9.6
Sidewalk Gaps 1/4 Mile From GDRTA Stops



- GDRTA Bus Stop
- Gaps Outside Urbanized Area
- Gaps Within Urbanized Area
- Sidewalk Availability
- Census Designated Urbanized Area



Source: MVRPC

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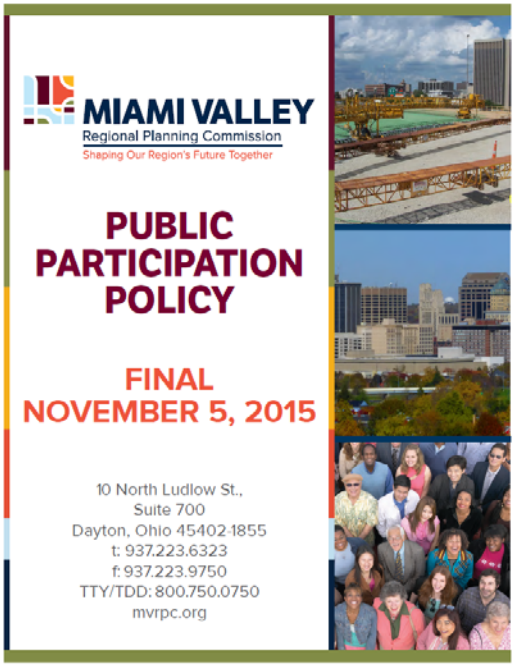
0 2 4 6 8 Miles

CHAPTER 10
PUBLIC PARTICIPATION AND CONSULTATION

10.1 Overview

MVRPC's integration of a more proactive approach in transportation planning is accomplished through the public participation process. The process is made up of multiple components, including consultation with the TAC and MVRPC Board of Directors, the LRTP Work Groups, and general outreach to the public. Additionally, community outreach efforts were expanded in an attempt to reach disadvantaged populations.

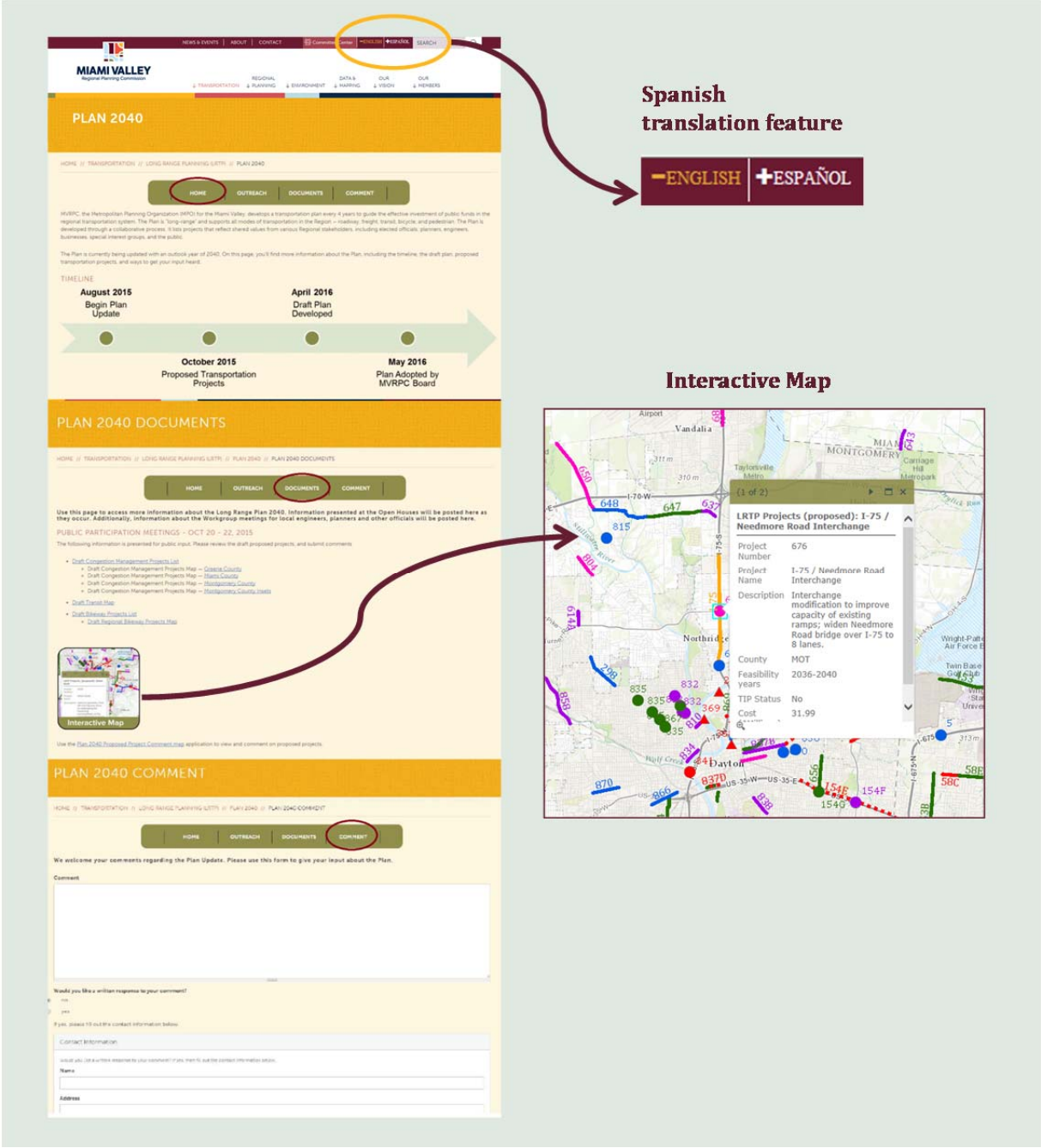


As per the FAST Act, a MPO needs to develop and use a documented public participation plan that defines a process for providing citizens, affected public agencies, representatives of public transportation employees, freight shippers, providers of freight transportation services, private providers of transportation, etc. with reasonable opportunities to be involved in the metropolitan transportation planning process. MVRPC last updated its *Public Participation Policy* in November 2015. The policy details the LRTP public participation requirements and complies with current planning regulations and the FAST Act Statutory Provisions. MVRPC made an extensive public outreach effort to solicit input from the general public and special interest groups in order to increase public participation in the 2040 LRTP update process. The policy's key items include an expanded public participation notification list, use of technology to enhance communication with the public (website applications and social media), and efforts to reach environmental justice populations.

10.2 Plan2040.mvrpc.org Webpage

For the May 2016 Update of the 2040 LRTP, MVRPC created a webpage solely dedicated to the update effort and promoted its use through public notices, advertising, and social media as a one stop shop for all items related to the Plan update. The webpage launched in August 2015 and was available throughout the update process and included the update timeline, information presented at various meetings, comment card, and an interactive map with the ability to comment on individual projects on the map. The website was also promoted by using an online photo contest. Figure 10.1 depicts the various webpage features including the ability to view website content in Spanish by using an online translator.

Figure 10.1 — Features and Content: plan2040.mvrpc.org



10.3 Public Participation Meetings

Beginning in August 2015, the public was involved in each step of 2040 LRTP update process through the use of various tools. Public participation meetings were held to present the latest information pertaining to the update and MVRPC staff was present at the meetings to answer questions. Comment cards were made available at the meetings to record residents' concerns and

comments. MVRPC's website was updated frequently to provide the latest information and an online version of the comment card was made available to receive comments 24/7 on any of the information provided. The same information was also made available at MVRPC's offices prior to each meeting.

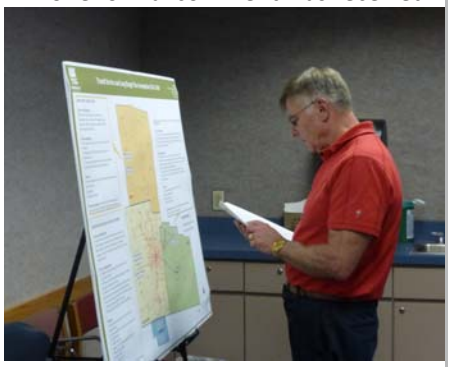
The first phase of the public participation process involved hosting an open house public participation meeting in August 2015 to provide transportation-related background information used in the development of the LRTP. The second phase included presenting the draft list of multimodal transportation projects in an open house format, at various locations throughout the Region in October 2015. In addition, on November 4, 2015 from 2 pm to 4 pm, MVRPC staff held a Twitter Chat Session to answer questions live on the Twitter Platform and give residents the opportunity to interact with staff without having to attend a physical meeting. Followers were asked to use the hashtag, #PlanMiamiValley to ask questions. During the 2 hour period, a total of 22 posts were made with facts related to the transportation system.

Finally, the last phase of public participation took place in April of 2016, through an open house format, to present the draft 2040 LRTP including the findings of various LRTP analyses. Comments received at each meeting were presented to the TAC and the Board of Directors prior to action on LRTP related items.

MVRPC's 2040 Long Range Transportation Plan – Public Participation Summary report provides comprehensive information and documentation regarding the public participation process, including all the public outreach materials used to promote the meetings, a listing of information presented at the meetings, and all the comments received. Table 10.1 provides a brief summary of each meeting.

Table 10.1 — Public Participation Meeting Summary

Outreach	Contents	Attendance/Comments
August 12, 2015 – 4 pm to 6 pm, MVRPC Offices		
• Printing public notices in the Dayton Daily News and La Jornada Latina (English and Spanish) • Printing ¼ page ad in the Dayton City Paper • Submitting press releases to all local newspapers, television, and radio stations (165) • Sending letters to individuals / agencies who have requested to be notified about public participation meetings (600) • Sending letters and promotional posters to all the public libraries in Montgomery, Greene, and Miami Counties • Displaying promotional posters in English and Spanish at all the GDRTA Hubs and E-mailing promotional posters to Miami County Transit and Greene CATS • E-mailing promotional posters (English and Spanish versions) to the Latino Connection • Announcing the meeting on MVRPC's website	• 2040 Long Range Transportation Plan Update Overview • 2040 Long Range Transportation Plan Projects • Safety and Congestion Conditions • Transportation System and Congestion Analysis • Alternative Transportation Modes (Passenger & Freight) • Land Use and Socioecenomic Projections • Community Impact	• 11 people attended the meeting; one formal comment was received 

Outreach	Contents	Attendance/Comments
and social media platforms	Assessment • Journey to Work Map	
October 20-22, 2015 – 4 pm to 6 pm, Miami, Montgomery, and Greene Counties		
• Printing public notices in the Dayton Daily News and La Jornada Latina (English and Spanish) • Submitting press releases to all local newspapers, television, and radio stations (165) • Sending letters to individuals / agencies who have requested to be notified about public participation meetings (600) • Sending letters and promotional posters to all the public libraries in Montgomery, Greene, and Miami Counties • Displaying promotional posters in English and Spanish at all the GDRTA Hubs and E-mailing promotional posters to Miami County Transit and Greene CATS • E-mailing promotional posters (English and Spanish versions) to the Latino Connection • Printing ¼ page ads in the Dayton Daily News, La Jornada Latina, and the Dayton City Paper • Purchasing banner ads on Dayton Daily News and Dayton.com websites directing people to plan2040.mvrpc.org • Announcing the meeting on MVRPC's website and social media platforms	• Draft Congestion Management Projects List and Maps • Transit Service Long Range Plan Assumptions 2016-2040 • Regional Bikeway & Pedestrian Network Project List and Map	**Miami Co. October 20, 2015** • 4 people attended the meeting; no formal comment was received  **Montgomery Co. October 21, 2015** • 11 people attended the meeting; no formal comment was received  **Greene Co. October 22, 2015** • 10 people attended the meeting; one formal comment was received  • 3 additional comments were received via postal service and the online-comment card

Outreach	Contents	Attendance/Comments
April 6, 2016 – 4 pm to 6 pm, MVRPC Offices		
• Printing public notices in the Dayton Daily News and La Jornada Latina (English and Spanish) • Printing ¼ page ad in the Dayton City Paper • Submitting press releases to all local newspapers, television, and radio stations (165) • Sending letters to individuals/ agencies who have requested to be notified about public participation meetings (600) • Sending letters and promotional posters to all the public libraries in Montgomery, Greene, and Miami Counties • Displaying promotional posters in English and Spanish at all the GDRTA Hubs and E-mailing promotional posters to Miami County Transit and Greene CATS • E-mailing promotional posters (English and Spanish versions) to the Latino Connection • Announcing the meeting on MVRPC's website and social media platforms	• 2040 Long Range Transportation Plan Update Overview • Air Quality Analysis • Fiscal Constraint Analyis • Safety and Performance Management • Transportation System and Congestion Analysis • Community Impact Assessment • Environmental Mitigation Analysis • Congestion Management Projects – Transit • Congestion Management Projects – Bikeway and Pedstrian • Congestion Management Projects - Roadway	• 8 people attended the meeting; no formal comments were received. 

10.4 Community Outreach and Public Participation

In accordance with Executive Order 12898 on Environmental Justice, MVRPC has expanded its public participation to incorporate the regulations required by this order (see Chapter 9). Although MVRPC has historically made efforts towards the requirements of Environmental Justice (EJ), a concerted effort was made to further seek input from traditionally disadvantaged populations and other EJ-target groups and to include them in the public participation process. These efforts included:

- Expanding the mailing list to include EJ-target populations (low-income, minority, elderly, and disabled);
- Offering free parking passes for meetings at MVRPC offices in Downtown Dayton;
- Adapting advertising for ease of understanding, including special articles and flyers;
- Adapting public meeting times and locations for accessibility;
- Advertising at GDRTA Hubs;

- Purchasing public notices in *La Jornada Latina*, an English/Spanish publication, and the *Dayton City Paper*, a free distribution newspaper;
- Offering an English-to-Spanish translator on MVRPC's website; and
- Posting information about upcoming meetings on social networking sites such as Twitter and Facebook.

10.5 Participation in Other Public Outreach Efforts

During the 2040 LRTP update cycle, MVRPC staff actively participated and/or attended numerous public participation meetings pertaining to studies and projects on progress throughout the Region. These meetings ranged from public participation meetings to public hearings related to various transportation studies, as well as Comprehensive and/or Land Use Plans being developed by member jurisdictions. By attending the meetings, staff members were able to gain a better understanding of the projects and studies and to listen to any concerns that the general public might have regarding the project or study. MVRPC staff were also able to answer any questions that arose in relation to MVRPC's planning activities and the 2040 LRTP.

The following is a partial list of public participation meetings/activities that MVRPC staff attended:

- I-75 Downtown Dayton Sub-Corridor Reconstruction;
- Corridor Upgrades — Montgomery County US 35 Corridor and Greene County US 35 Corridor;
- SR 444 Relocation;
- Comprehensive Bikeways Plan;
- Regional Land Use Initiative;
- GDRTA Strategic Plan;
- ODOT Access Ohio 2040;
- Statewide Managed Lanes Study;
- Various Transportation Safety Studies;
- Dayton Mall Area Master Plan;
- Greater Downtown Dayton Plan and Dayton Transportation Plan;
- Jefferson Township Future Land Use Strategic Planning; and
- Comprehensive Planning Efforts — City of Fairborn, City of Xenia, and Five Rivers MetroParks;

10.6 Consultation Requirements in the FAST Act

The FAST Act mandates that the MPO consult, as appropriate, with State and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation concerning the development of the transportation plan. MVRPC's Public Participation contact list has been expanded to include agencies with an interest in the areas of land use management, environmental resources, environmental protection, conservation, and historic preservation. As a result the list now includes nearly 600 agencies and individuals. A subset of these groups was also invited to the LRTP work group meetings (see Figure 5.2). All contacts are notified and given the opportunity to comment on any transportation program that requires action by the MVRPC Board of Directors, such as the Long Range Transportation Plan and the Transportation Improvement Program.

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