

CAMPO 2045

METROPOLITAN TRANSPORTATION PLAN



OCTOBER 2021

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ACKNOWLEDGEMENTS

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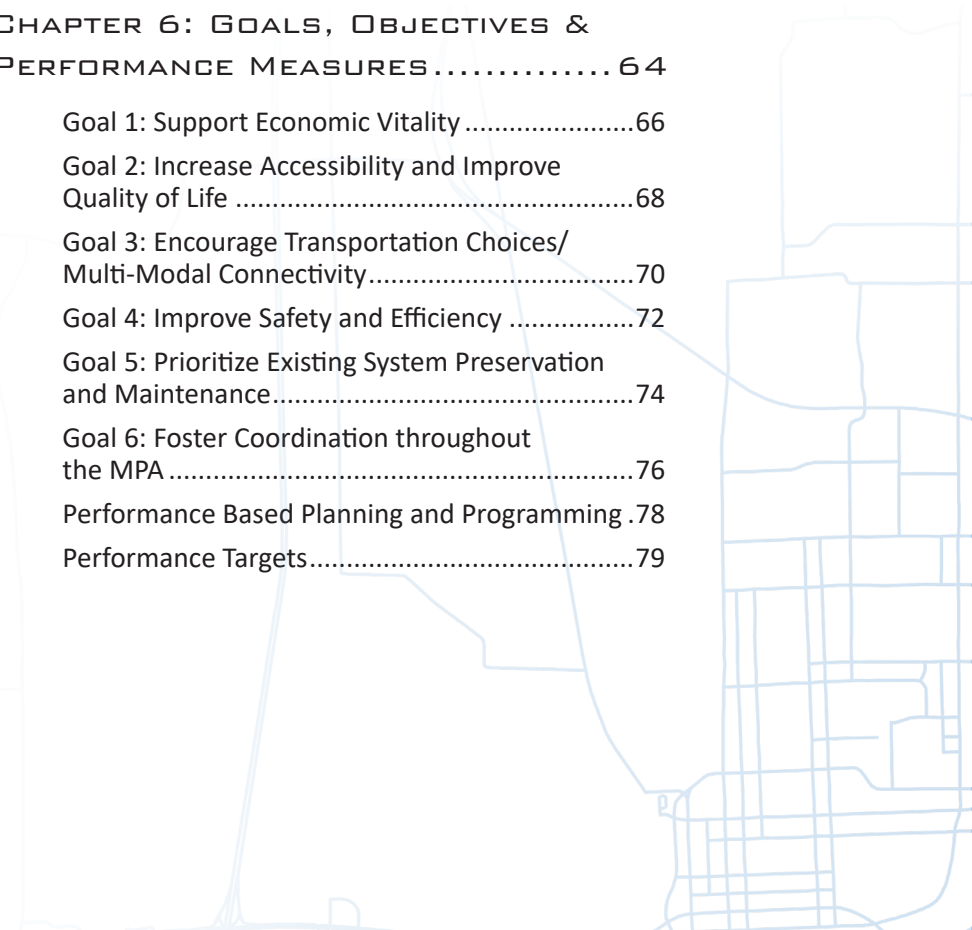
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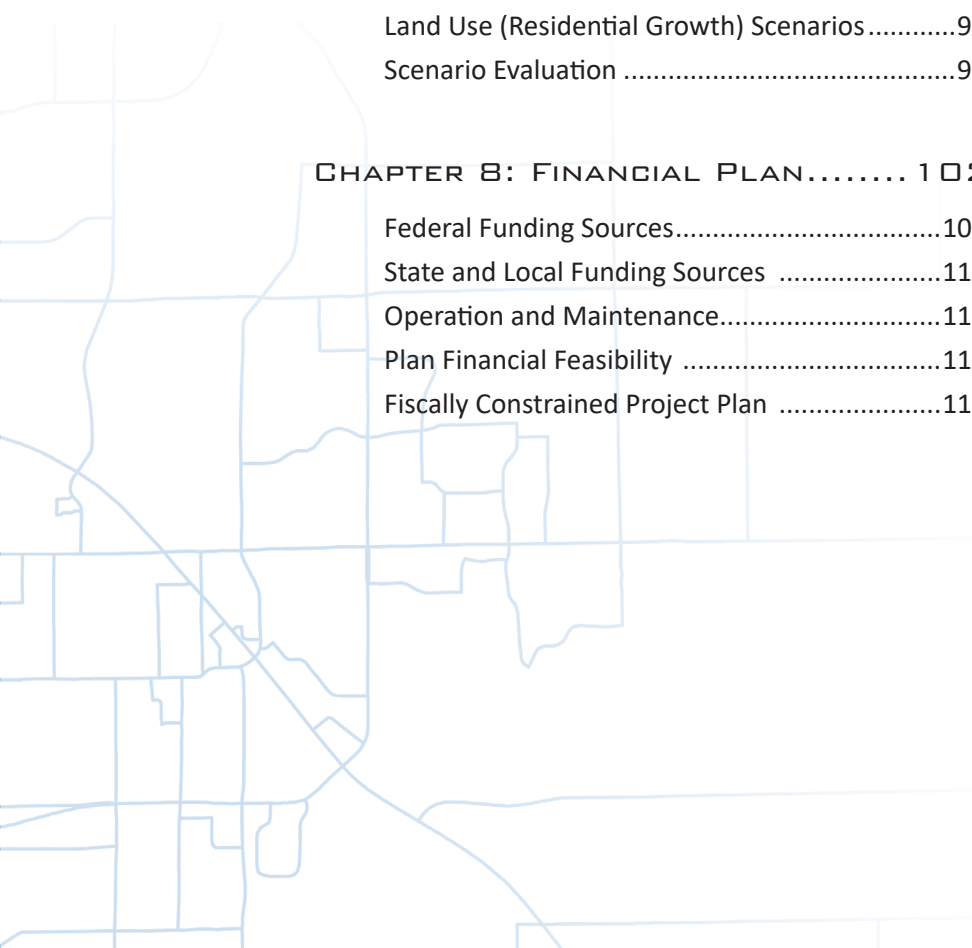
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INTRODUCTION

COLUMBUS AREA METROPOLITAN PLANNING ORGANIZATION

FEDERAL AND STATE TRANSPORTATION PLANNING REQUIREMENTS

METROPOLITAN TRANSPORTATION PLAN PROCESS



INTRODUCTION

Transportation infrastructure not only plays an integral role in supporting regional economic activities, but it is also essential to improving the quality of life for local residents. The transportation system includes roads, transit, non-motorized facilities, and inter-modal facilities.

An efficient transportation system saves time and money for individuals and businesses, promotes safety, serves a crucial role in the production and distribution of goods, and supports economic growth. In an effort to provide transportation improvements, the regional decision-makers face difficult challenges such as identification of system needs, prioritizing transportation investments, coordination among stakeholders, and funding.

The purpose of the Columbus Area Metropolitan Planning Organization's (CAMPO) Metropolitan Transportation Plan (MTP) is to assess existing transportation infrastructure in the Metropolitan Planning

What is a Metropolitan Transportation Plan?

The metropolitan transportation plan serves as a means to forecast future transportation needs and identify a plan to meet these needs over a 25-year plan horizon. The plan prioritizes a list of cost feasible multi-modal transportation projects needed to mitigate potential future congestion issues, safety concerns, and connectivity limitations.

Area (MPA) and develop a strategy to maintain and enhance the area's transportation assets through the plan horizon year of 2045.

With inputs from CAMPO staff, local stakeholders, and the general public, the plan identifies existing transportation needs, establishes a vision for the region's transportation system, and prioritizes investments to facilitate a safe, efficient, multi-modal, and sustainable transportation system. The MTP also evaluates the demographic profile of the area, documents the existing multi-modal transportation system, anticipates the impact of future socio-economic growth and land use changes on transportation,

and sets a plan to achieve the MPA's goals and objectives. The 2045 CAMPO MTP is an update to the 2040 LRTP, adopted in 2016. The five-year revision cycle ensures the MPO planning process reflects the ever-changing community conditions.



COLUMBUS AREA METROPOLITAN PLANNING ORGANIZATION

The framework for transportation planning in urbanized areas is governed by federal regulations. Federal law requires all urbanized areas with populations of 50,000 or more to establish a Metropolitan Planning Organization (MPO) with the responsibility of conducting a continuing, cooperative, and comprehensive transportation planning process. CAMPO is the MPO for the City of Columbus and Bartholomew County, designated by the Governor of Indiana on February 27, 2004. The City of Columbus, the 21st largest city in the state of Indiana, is centrally located between Indianapolis, Louisville, and Cincinnati. It is the region's hub for employment, shopping, art and architecture, active living, and healthcare services in south central Indiana.

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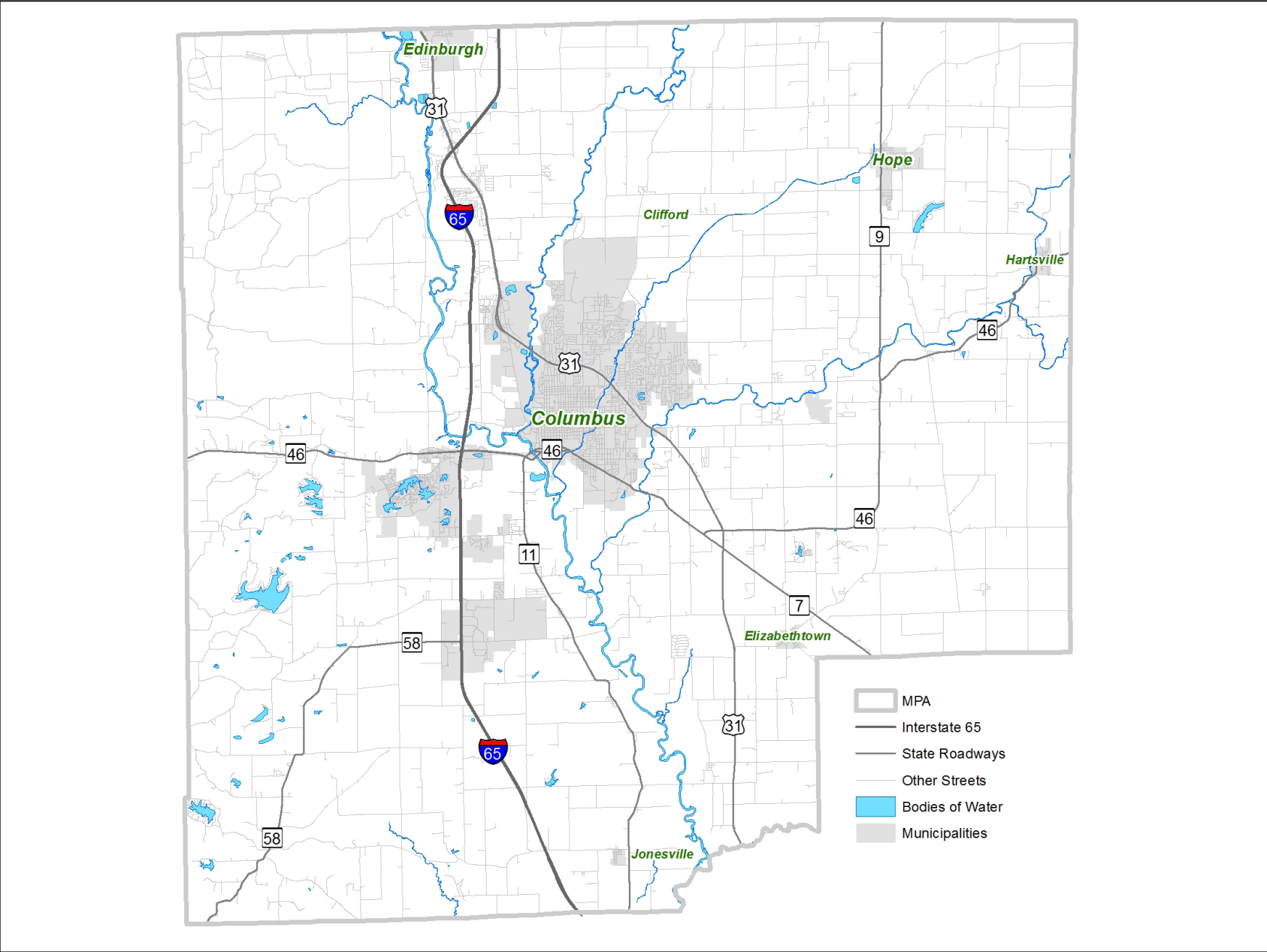
CAMPO is responsible for developing three main federally-mandated transportation planning documents: the LRTP, the Transportation Improvement Program (TIP) and the Unified Planning Work Program (UPWP). The TIP is a five-year program that describes the schedule of the committed federally-funded and high-priority projects in the near-term of the LRTP. The UPWP presents information on the transportation planning activities and the planning products developed by the MPO in the current and next fiscal year. CAMPO is further charged with the responsibility of planning activities, which promote an efficient and effective intermodal transportation system. These



planning considerations include transit, rail, highways, air quality, livable communities, and bicycle and pedestrian accommodations.

CAMPO is directed by a policy board and advised by a technical committee. The policy board is the decision-making body of the MPO, comprised of elected and appointed officials from the City of Columbus and Bartholomew County, as well as a representative from the Indiana Department of Transportation (INDOT) and Federal Highway Administration (FHWA). The CAMPO technical committee is the technical arm of the MPO, responsible for analyzing and reviewing transportation projects, commissioning reports, and making recommendations to the MPO Policy Board. A third component of CAMPO is the Citizen's Advisory Committee (CAC), which was established to promote public awareness of transportation plans and programs, and encourage public participation.

Figure 1: CAMPO Metropolitan Planning Area



FEDERAL AND STATE TRANSPORTATION PLANNING REQUIREMENTS

On December 4, 2015, President Obama signed into law the Fixing America's Surface Transportation Act (FAST Act). It is the first law in the past ten years that provides long-term funding for surface transportation, and removes the uncertainty of future federal funding for state and local highway and transit projects. Overall, the FAST Act maintains most of the program structures and funding shares between highways and transit established in the previous transportation authorization legislation, Moving Ahead for Progress in the 21st Century (MAP-21).

The Safe, Accountable, Flexible, Efficient, Transportation Equity Act (SAFETEA-LU), the federal surface transportation bill preceding MAP-21, established eight factors that must be considered as part of the MPO planning process. The planning factors were carried forward in both MAP-21 and the FAST Act and include:

- Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns;
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- Promote efficient system management and operation; and
- Emphasize the preservation of the existing transportation system.

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- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- Increase the safety of the transportation system for motorized and non-motorized users;
- Increase the security of all motorized and non-motorized users;
- Increase the accessibility and mobility of people and for freight;



The FAST Act added two additional planning factors to be considered in the regional planning process:

- Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts on surface transportation; and
- Enhance travel and tourism.

The Indiana Department of Transportation's (INDOT) long range transportation plan, Indiana's 2018-2045 Transportation Needs Report, is a non-project specific, broad-based policy, statewide transportation planning document that is updated periodically. The plan serves as a framework for addressing multimodal transportation issues, trends, needs, and innovation for the next 25 years. The plan provides specific strategic actions, targets, and performance measures to affect INDOT decision-making and accomplish desired results. INDOT's LRTP goals were selected to align with Indiana's transportation vision, "Be a leading innovator in transportation, with an exceptional workforce that is driven by connecting Hoosiers with the world." These goals include:

- *Safe and Secure Travel: Moving Indiana towards zero deaths and reduction of serious injuries by applying proven strategies and enhancing the safety and security of Indiana's transportation system for all users.*

- *System Preservation: Maintaining Indiana's multimodal transportation system and infrastructure in a good state of repair.*
- *Economic Competitiveness and Quality of Life: Strengthening the competitiveness of Indiana's economy as the "Crossroads of America" through strategic multimodal transportation investments, reducing transportation costs, and the safe and efficient movement of people and goods.*
- *Multimodal Mobility: Maximizing performance of Indiana's transportation system, ensuring efficient movement of people, goods, and regional connectivity by enhancing access to different modes of transportation.*
- *Environmental Responsibility: Minimizing the potential impacts of the transportation system on the natural and human environment.*
- *New Technology and Advancements: Developing and deploying advance transportation technologies and embrace a broad-based, comprehensive research program to plan for the future.*
- *Strategic Policy Actions: Addressing multiple goal areas through key policy initiatives.*

The vision, goals, objectives, and performance measures developed for the CAMPO MTP are the result of considering the 10 federal planning factors, INDOT's LRTP 2045 goals, various local planning studies, and input received from the public and steering committee members.

METROPOLITAN TRANSPORTATION PLAN PROCESS

The CAMPO long range planning process identifies the long-term vision of the MPA and provides the framework for future maintenance, operations, and construction or reconstruction of the transportation network through 2045. This federally-mandated plan requires 1) developing a technical model to project future travel demand, 2) identifying transportation needs, and 3) prioritizing transportation projects based on anticipated funding. The development of the CAMPO long range plan involved a public involvement process.

To aid the plan development process, a steering committee was formed comprised of representatives from INDOT, City and County Planning Commissions, Chamber of Commerce, Columbus Area Economic Development, Columbus Area Visitor Center, Healthy Communities, and Bartholomew Consolidated School Corporation. A Resource Group comprised of the City and the County Engineers, Columbus Fire Department Chief, Columbus Human Rights Director, Columbus Police Chief, Columbus Transit Coordinator and FHWA and FTA representatives also supported the MTP update process.

This chapter discusses the process and reasoning for decision-making throughout the LRTP's development. The outcomes of these decisions, in terms of identifying needs, analyzing scenarios, and selecting projects and programs, are discussed in subsequent chapters. Figure 2 presents the

steps involved in the long range planning process.

The plan commenced with an analysis of socio-economic conditions, a review of existing plans and policies, and an assessment of existing infrastructure. The second step of the planning process involved developing goals and objectives. A SWOT (Strengths, Weaknesses, Opportunities & Threats) exercise was performed with the CAMPO LRTP steering committee to highlight the local positive and negative factors impacting the area's transportation infrastructure. The goals and objectives were based on the SWOT analysis results (consistent with FAST Act priorities), INDOT transportation policy factors, local knowledge, and current local planning efforts. Subsequently, 11 land-use and transportation scenarios were developed to support these goals and objectives. As part of the public involvement process, these goals and objectives and scenarios were presented to the public. Visual techniques such as display boards, maps, and illustrations were utilized during workshops and presentations to facilitate dialogue with community members and gather public input.

The 11 scenarios were evaluated using a data-driven travel demand forecasting tool to support the performance-based approach adopted in the 2045 CAMPO long range plan. The model analysis uses a variety of performance measures to compare and



prioritize transportation projects, supporting adequate mobility and accessibility by identifying network deficiencies and future transportation demand. The model results were presented to the public to gather their input on prioritizing the land-use and transportation alternatives. The steering committee along with CAMPO staff reviewed the different improvements and identified a final list of transportation needs for the cost-feasible plan. Once the recommendations were developed, the transportation needs were prioritized based on financial feasibility and overall impact of the project on the multimodal transportation system in the MPA.

In addition to supporting goals and objectives dedicated to preserving the existing system, many of the recommendations in this plan included projects focused on improving the current system, and providing new connections to the existing multimodal system.

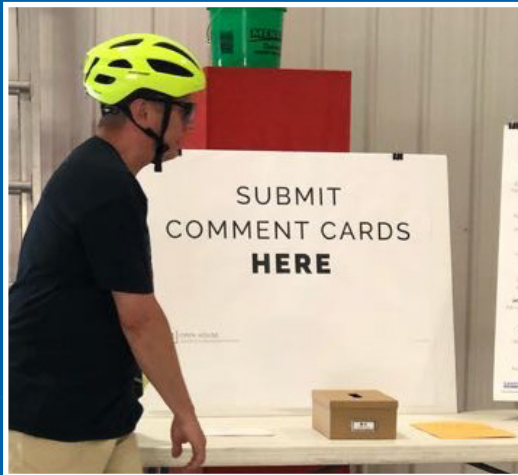


Figure 2: 2045 CAMPO Long Range Planning Process



2 AREA TRENDS

DEMOGRAPHICS

EMPLOYMENT CHARACTERISTICS

COMMUTE TO WORK PATTERNS



DEMOGRAPHICS

The CAMPO MPA is a vibrant and diverse area experiencing growth that is expected to continue for the foreseeable future. There is a strong relationship between regional demographics, socio-economic factors, land use, and transportation infrastructure. The distribution of population in the area; household characteristics such as age, income, and vehicle ownership; employment growth by sector; and commute-to-work patterns have a direct impact on the travel demand and dictate the future needs of the transportation system. This relationship between socio-economic characteristics and travel demand was used to develop a travel demand model for CAMPO, which has been used extensively in the long range planning process.

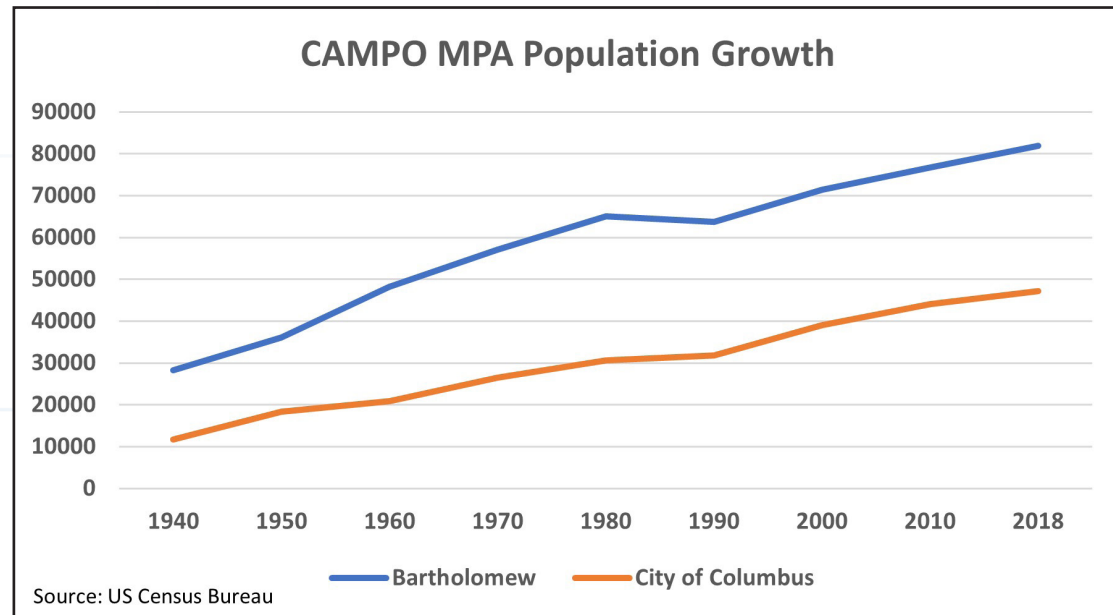
This chapter provides an overview of the regional socio-economic trends and land use information in the CAMPO MPA. Detailed tables supporting the analysis in this chapter are presented in Appendix B – CAMPO Demographics.

Population Characteristics

According to the US Census Bureau, the CAMPO MPA has an estimated population of 83,779 as of July, 2019. About 97.3% percent of the population in the MPA reside in 31,452 households, with an average household size of 2.59 persons. The remaining 2.7% percent of the population in the planning area reside in group quarters, which include correctional facilities, senior housing, college dormitories, and nursing homes.

The population forecasts for the long range plan horizon year of 2045 were generated using multiple sources including the historic growth trend lines from census data, STATS Indiana county population projections, Indiana Statewide Model (INSWM) county-level projections, and Woods & Poole (W&P) county population projections. The population in the CAMPO MPA is estimated to grow at 0.37% annual rate and by the year 2045 to a total population of 89,771. Figure 3 shows the historical growth of population in Bartholomew County and the City of Columbus over the past seven decades.

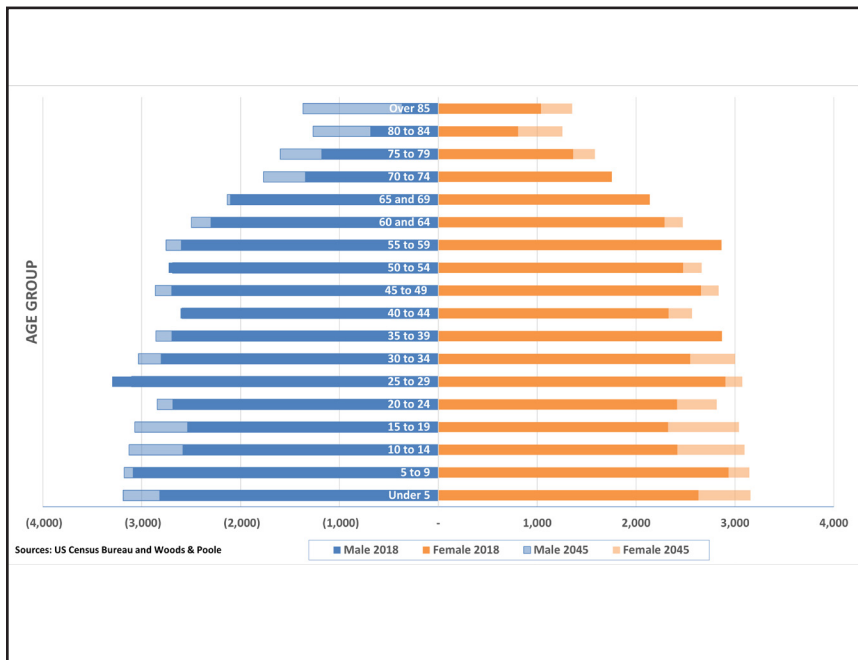
Figure 3: Historical Population Growth in the MPA



Age and Gender

The distribution of age in the area has significant impacts on housing needs and transportation planning. Older populations generally require different housing than younger populations, as well as more transit and medical facilities. Figure 4 presents the age and gender of the population in the MPA in the year 2018, and the forecasted distribution in the year 2045 based on Woods & Poole projections. Similar to other regions in the county, the elderly population is expected to rise significantly by 2045. The percent of persons age 65 and above in the MPA is forecasted to increase 2.8% between 2017 and 2045. The working population between ages 20 and 64 is forecasted to decrease by 1.5% by 2045. As the senior population in the community increases, the need for transit and other alternatives to single-occupancy vehicles becomes essential to ensure sufficient access for the aging population.

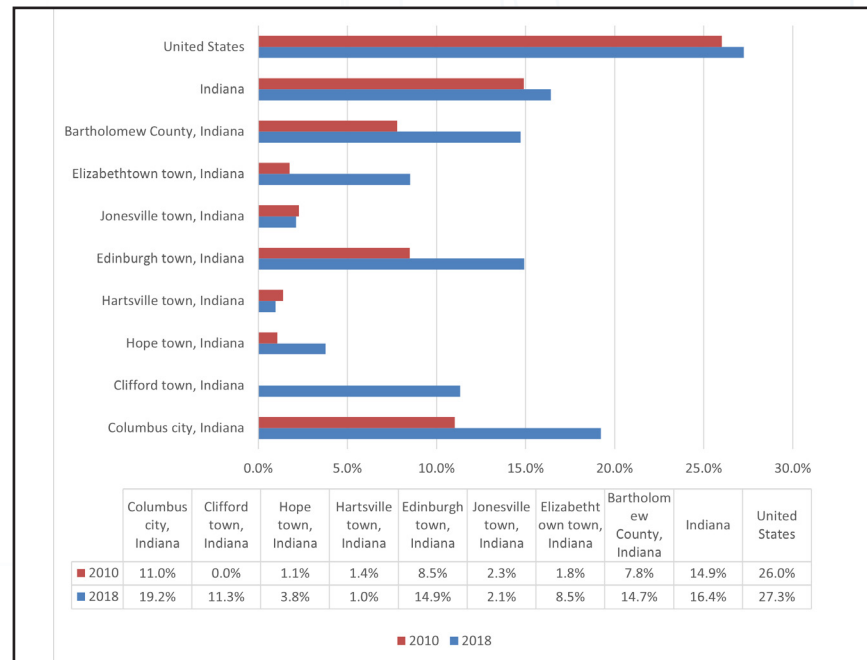
Figure 4: Pyramid Age and Gender



Race and Ethnicity

The ethnic makeup of the population in the CAMPO MPA is predominantly white. Based on the US Census estimates, the CAMPO MPA is less racially diverse than the average for the United States. The racial diversity is fairly consistent between 2010 and 2018, except for the Asian population, which increased more substantially relative to other races. The largest racial group in 2018 was white, at 85.3%, followed by Hispanic, Asian, and African American. Figure 5 shows percentages of minority population within the MPA and compares with the state of Indiana and the United States. As can be seen in Figure 5, percentage of minority population almost doubled between 2010 and 2018. Such trend would be expected to continue for horizon year 2045.

Figure 5: Non-White Populations

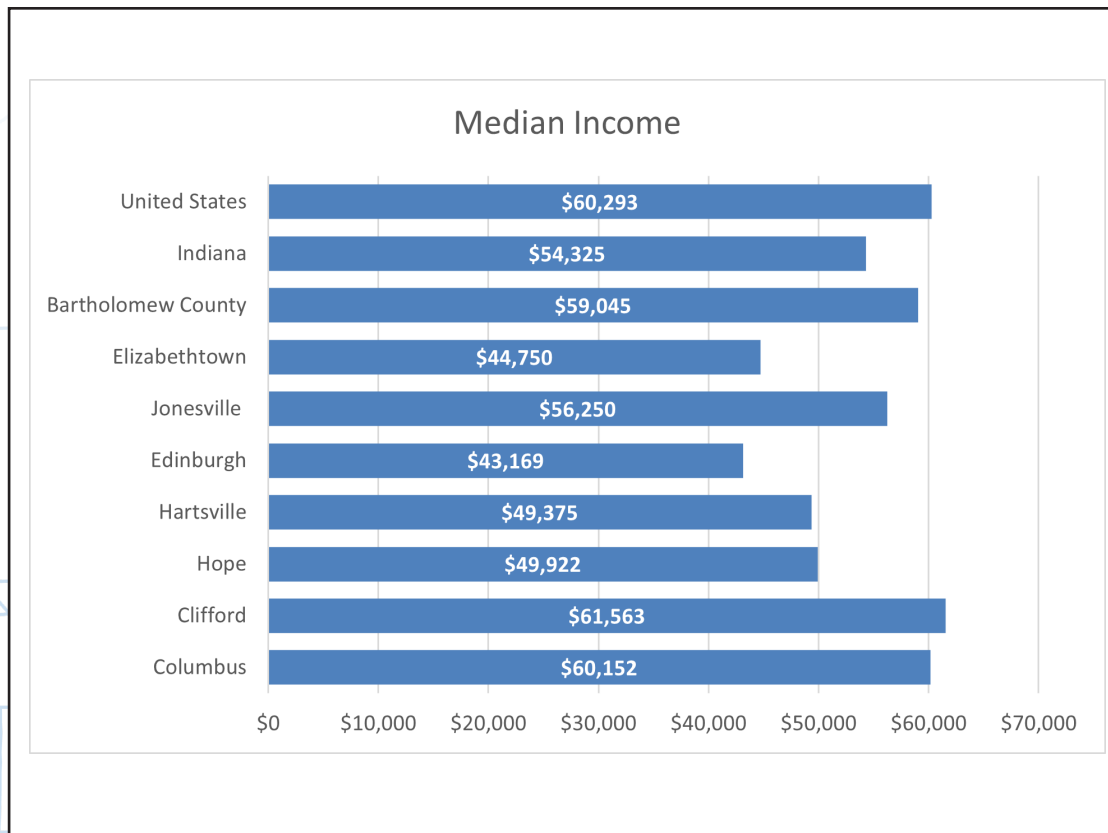


Households and Median Income

The location of households in the MPA and the household size are indicators of population distribution and density, which play an important role in regional transportation planning. According to the US Census, the total households in the CAMPO MPA increased 5.3% between 2010 and 2018. The average household size in the region remained consistent between 2010 and 2018 at approximately 2.5 person per household.

Household income has a direct impact on regional travel demand and is an important indicator for the needs of alternate transportation options. Lower-income households are more likely to be dependent on public transit as a primary mode of transportation. Alternatively, higher income households generate twice as many daily vehicle trips compared to low income households. The median household income in the planning area is \$59,045, comparable to the median household income in the United States at \$60,293. Figure 6 shows average household income for the MPA, the state of Indiana, and the United States.

Figure 6: Median Household Income



Education, Poverty, and Disability

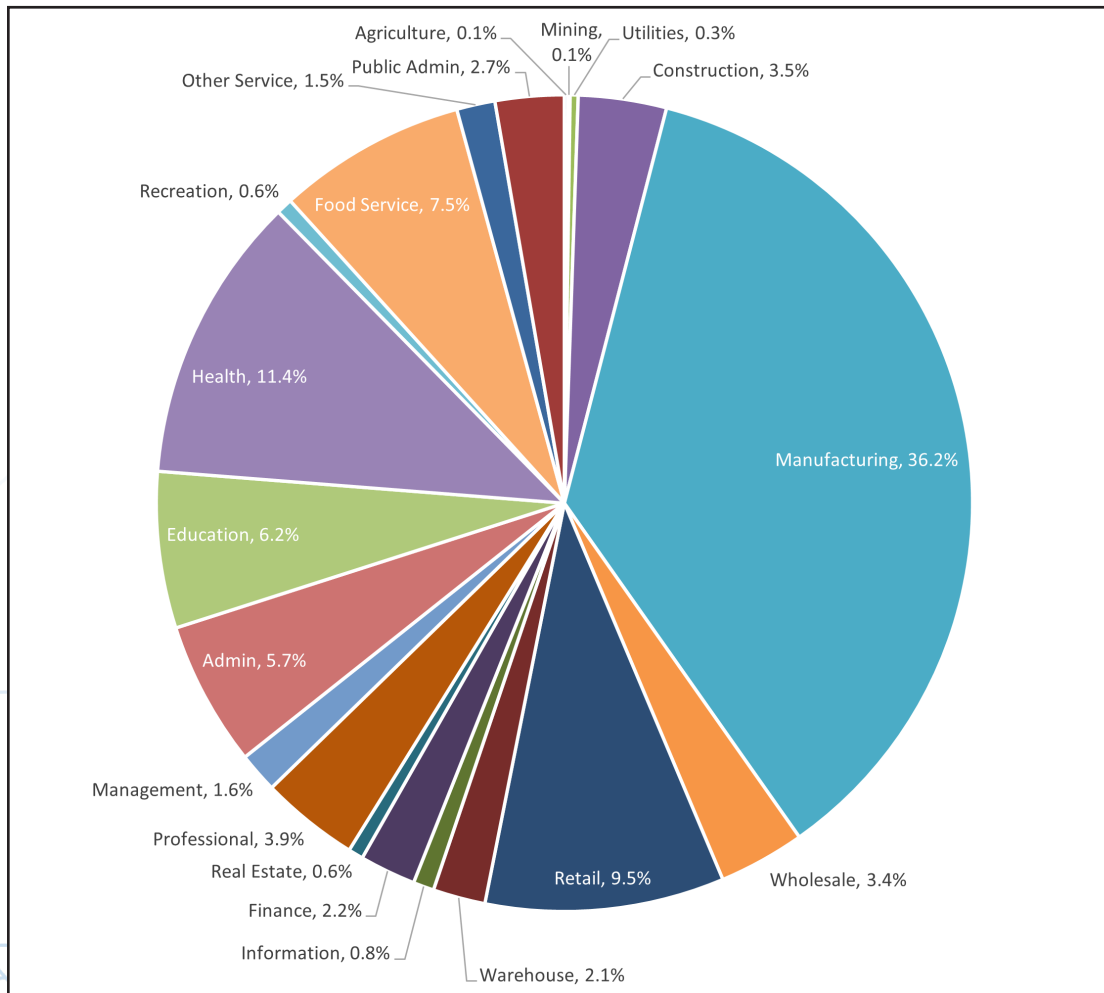
As part of the planning process, identifying targeted populations, such as the low-income population or the population with disabilities, is important to evaluate alternate transportation options in order to meet the mobility needs of these users that traditional transportation planning has underserved. As per 2018 US Census Bureau data, 11.2% of the region's population were identified to be under the poverty line, 5.9% qualify for disability status, and 16.5% are over the age of 65, making it imperative to address any potential transportation inequities in the regional transportation policy.

Based on 2010 US Census, 33.5% of the population 25 years and older in the Columbus MPA, have a bachelor's degree or higher. About 90% of the population (25 years and older) are high school graduates, indicating a well-educated population in the Columbus MPA compared to the national average.

Area Population & Household Characteristics

- The population in the CAMPO MPA is estimated to grow by just over 10.8% between year 2017 and 2045 to a total population of 89,771.
- The percent of persons age 65 and above in the MPA is forecasted to increase 2.8% between 2017 and 2045, while the working population (ages 20- 64) , is expected to decrease by 1.5%.
- Based on ACS 5-Year (2014-2018) estimates, the largest racial group in the CAMPO MPA was white, at 85.3%, followed by Hispanic, and Asian at 7.2% and 7%, respectively. The percentage of minority population almost doubled between 2010 and 2018.
- The median household income in the planning area is \$59,045, comparable to the median household income in the United States at \$60,293.
- As per ACS 5-Year (2014-2018) estimates, 11.2% of the population were identified to be under the poverty line, 5.9% qualify for disability status, and 16.5% are senior population over the age of 65.
- Eighty-four percent of commuters use a single-person vehicle to commute to work. Approximately 9.2% of commuters carpooled, 1.4% reported walking to work, and less than 1% use public transportation.

Figure 7: 2017 Employment by Sector in the CAMPO MPA



EMPLOYMENT CHARACTERISTICS

In 1970, over 50% of all jobs in the City of Columbus were in manufacturing. This percentage decreased to 43% by 1980, and stabilized at 33% percent through the year 2000. According to the Columbus Economic Development Board, currently more than 35% of the employment in the City of Columbus is in manufacturing, compared to 9% in the United States as a whole. With more than three times the national average, the manufacturing sector will continue to play a prominent role in transportation planning in the CAMPO MPA.

Figure 7 presents the 2017 employment sector breakdown for the CAMPO MPA. This data was obtained from US Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program. As can be seen in Figure 7, manufacturing is the largest industry in the region, followed by healthcare and retail.

Based on the current employment growth trend, INSWM employment projections, and Woods & Poole employment projections, the employment is expected to increase by 26.4% between 2017 and 2045.

COMMUTE TO WORK PATTERNS

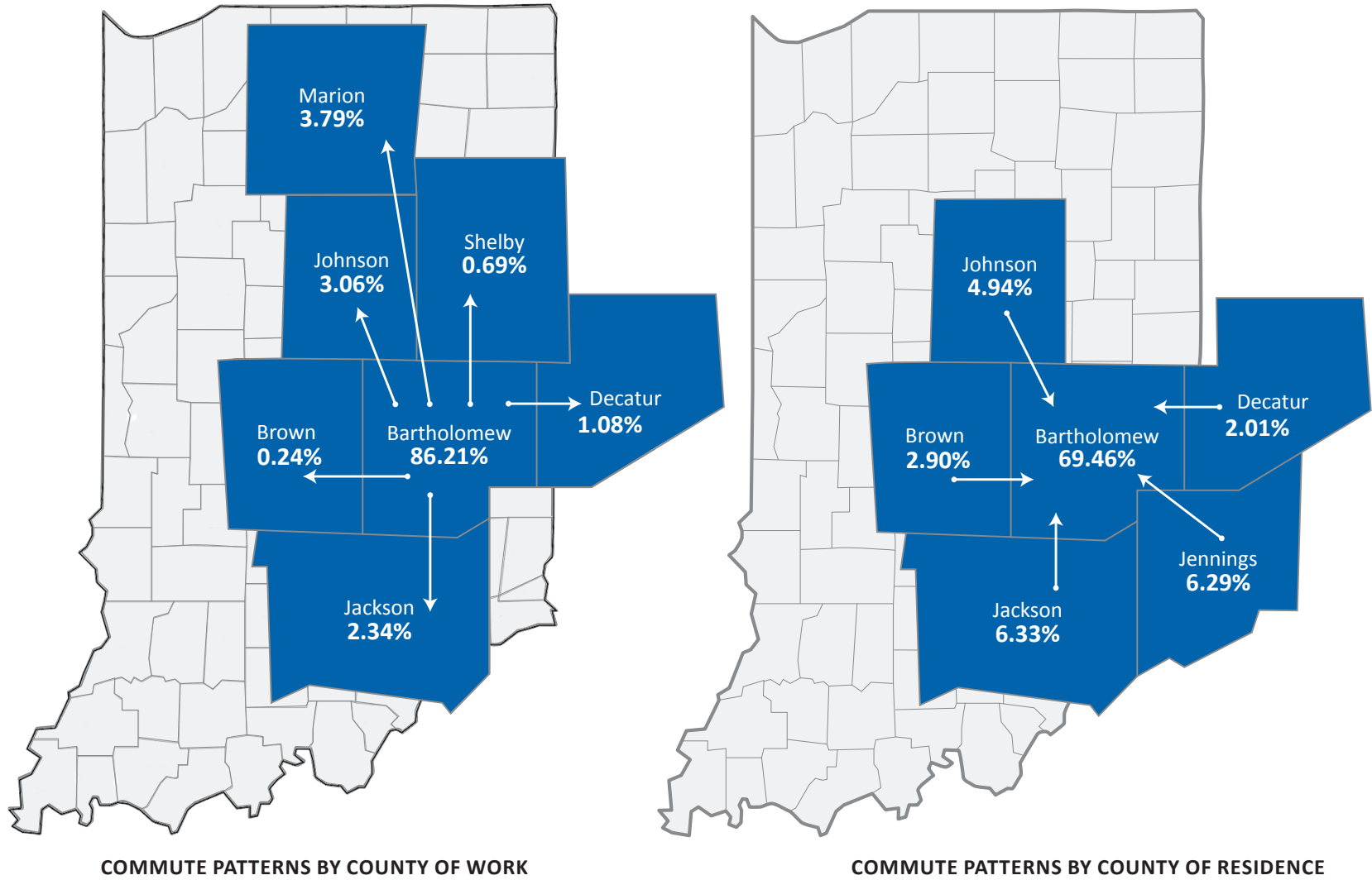
It is important to understand the regional commuting patterns as part of the regional planning process. Figure 8 presents the commuter patterns for Bartholomew County. About 32% of the Bartholomew County workers commute from outside the county, mainly from Jackson, Jennings and Johnson Counties. Approximately 15% of people residing in Bartholomew County commute to other counties for work. These patterns are evident due to the high availability of manufacturing and healthcare jobs in the region, and the influence of I-65 on commute times.

In addition to commuter patterns, mode of travel to work and vehicle ownership are important factors to understand the regional travel needs and to assess the availability of alternatives to automobiles in the MPA. About 3.7% of households in the CAMPO MPA do not own vehicles, compared 7% in the State of Indiana. The majority of the households in the region are two-vehicle households (39.1%), followed by one-vehicle households at 31.3%.

Consistent with travel patterns in the area, most people experience a relatively short commute to work. Over 39% of the Bartholomew County workers reported a commute time of less than 15 minutes with about 3.9 % of the workers experiencing a commute time of over an hour. Bartholomew County is predominantly automobile-oriented, with 84% of commuters using a single-person vehicle to commute to work. Approximately 1.4% reported walking to work and less than 1% use public transportation.



Figure 8: Commuter Patterns for Bartholomew County



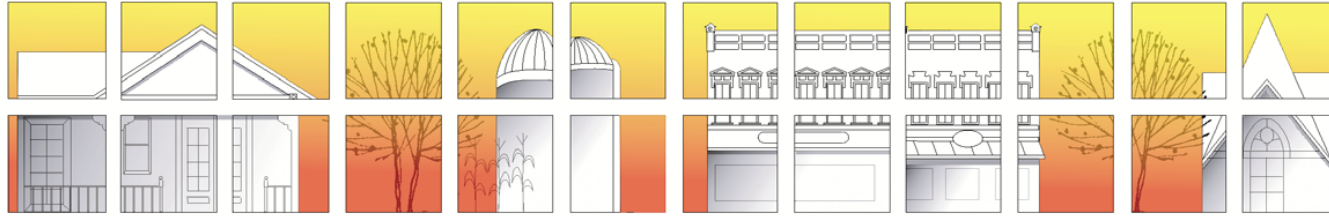
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LAND USE AND ENVIRONMENTAL CONSIDERATIONS

LAND USE

ENVIRONMENTAL CONSIDERATIONS





Designing Our Future: A Community Planning Process

Columbus/Bartholomew Planning Department • 123 Washington St., Suite 8 • Columbus, Indiana 47201 • 812-376-2550 • Fax 812-376-2643

LAND USE

There is a strong and fundamental relationship between land use planning and transportation planning. While transportation planning decisions affect land use development, land use conditions also have an impact on travel demand. In other words, development generates new trips, and the new trips generate the need for additional transportation infrastructure, which in turn increases accessibility and attracts further development.

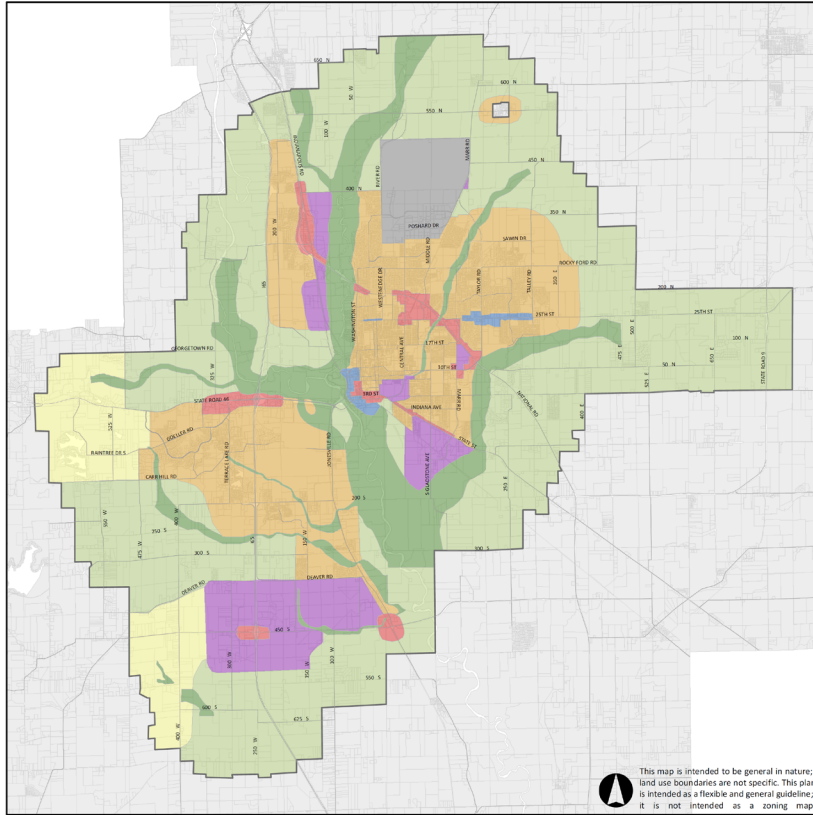
The transportation infrastructure, mobility needs and accessibility features differ by land use type. Manufacturing and industrial land uses require direct connections to interstates via wide roadways to support truck traffic. Residential and institutional land uses, such as schools, require calm traffic and quality bicycle and pedestrian facilities. Retail land uses need convenient accessibility and connections to residential land uses. Land use patterns are commonly impacted by factors such as population and economic growth, planning and zoning policies, housing cost, transit service,

individual needs, and geographic or topographic conditions. Land use planning in the CAMPO MPA is primarily the responsibility of the City of Columbus and Bartholomew County. Each jurisdiction's comprehensive plan addresses local land use and transportation issues and establishes a basis for future development, making them crucial inputs into the CAMPO long range planning process.

The City of Columbus Comprehensive Plan, which applies to the City of Columbus and its extraterritorial jurisdiction currently includes eight separate elements adopted over a period of several years beginning in 1999 with the Goals and Policies. Together with the Land Use Plan Element and the Thoroughfare Plan Element, this forms the basic components of the Comprehensive Plan. As the comprehensive plan has evolved, more detailed elements have been added for specific geographic areas and topics, such as the Columbus Central Neighborhood Plan (2018).

The Comprehensive Plan's various elements provide community goals, policies, and projects related to transportation for the City of Columbus. The current Bartholomew County Comprehensive Plan includes four Elements: the Goals and Policies Element, the Land Use Plan Element, the Thoroughfare Plan, and the Northern Gateway Plan. The Comprehensive Plan's various elements provide goals, policies, and projects related to transportation for Bartholomew County. Both jurisdiction's plans have been updated routinely and involve significant public input processes. Figure 9 and Figure 10 present the future land use maps for the City of Columbus and Bartholomew County, respectively.

Figure 9: City of Columbus Future Land Use Map

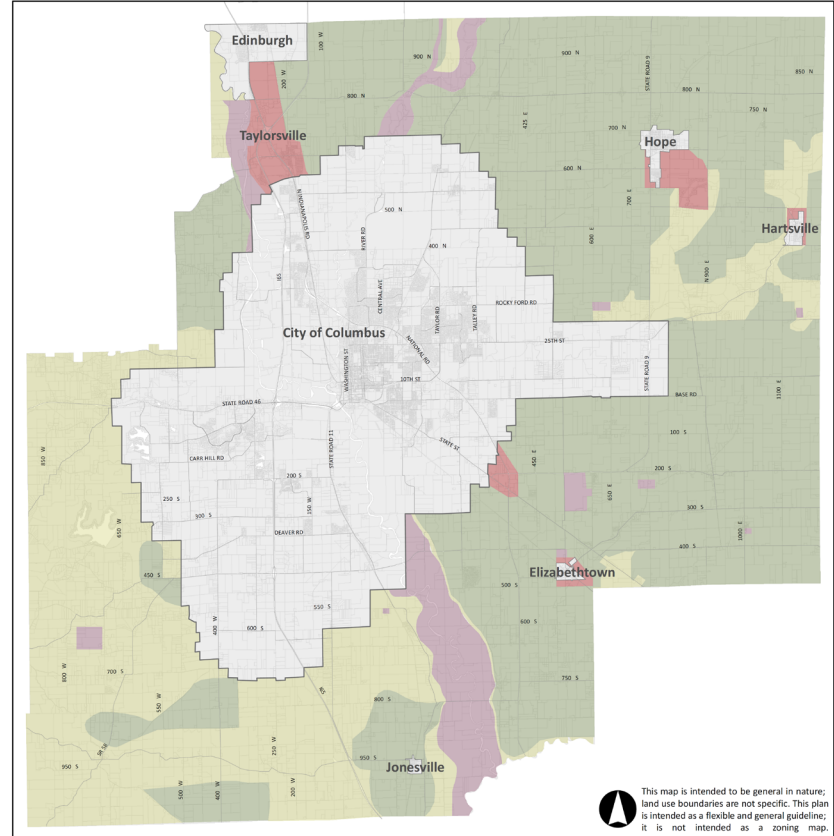


Source: City of Columbus Comprehensive Plan

Future Land Use Map
City of Columbus Comprehensive Plan

- Agriculture
- Commercial
- Estate/Cluster Residential
- Floodway/Sensitive Area
- Industrial
- Mixed Use
- Residential
- Special Use
- Columbus Jurisdiction

Figure 10: Bartholomew Future Land Use Map



Source: Bartholomew County Comprehensive Plan

Future Land Use Map
Bartholomew County Comprehensive Plan

- Agricultural Preferred District
- Development District
- General Rural District
- Natural Resource / Recreation District
- Other Jurisdiction

In addition to the Comprehensive Plan, the City of Columbus created the Columbus Strategic Growth Study to pro-actively prepare for and direct future outward industrial, commercial, and residential development. The study was completed by the City of Columbus – Bartholomew County Planning Department in February of 2016. This study is also intended to be used as a companion to the Columbus Infill Site Profiles. Land availability is limited within the existing corporate boundaries and infill development poses challenges, particularly for sizable industrial operations and residential development. The Strategic Growth Study identifies areas within Columbus’ two-mile planning jurisdiction, as well as undeveloped incorporated areas at the perimeter of the Columbus city limits, that have development potential due to a combination of factors, such as access to infrastructure and city services. The study highlights development constraints that the City can address in order to enable thoughtful, strategic growth. The Strategic Growth Study is intended to be used as a tool to discourage sprawl and lead growth towards areas where infrastructure is available or can be made available. The study includes summary maps for residential, commercial, and industrial development and identifies several areas that have a potential for development but may have infrastructure or transportation related constraints. Figure 11 on page 22 and Figure 12 on page 23 present the the residential profile map and industrial site profiles summary identified in the Strategic Growth Study.

The City of Columbus comprehensive plan and the Strategic Growth Study support the development of “infill” sites, as opposed to “greenfield” sites which could contribute to urban sprawl. The Infill Site Profiles were developed by the City of Columbus – Bartholomew County Planning Department in June of 2012 (and have been periodically updated) to assist in the consistent identification of infill sites in the community in response to ongoing inquiries from developers and a diversity of community groups. The potential infill development sites profiled in the document were identified by the Planning Department as meeting each of the following criteria:

- The property is undeveloped, vacant, or clearly underused.
- The property is either within the City limits or encompassed by the City.
- The property is not part of a project that is actively being developed as part of the outward growth of the City.
- The property is large enough to support a commercial use or development or multiple dwelling units.
- The property’s most likely future use is commercial or residential.

The pattern of development in the CAMPO MPA is significantly influenced by the regional topography. The portion of Bartholomew County to the east of Columbus is relatively flat and consists of agricultural lands. This area has been designated in the Bartholomew County comprehensive plan as the agriculture preferred, with the goal of maintaining this area primarily for farming. The southwest portion of the county consists of rolling hills which are not as conducive to crop production. This topography has resulted in substantial residential development west of the East Fork of the White River ranging from the planned development at Tipton Lakes to the subdivision of larger lots by individuals. The topology here will lead to continued development in the southwest portion of the county.

The City of Columbus has been strongly influenced by the rivers and creeks running through and adjacent to the urban core, as well as their associated floodplains. While the rivers and creeks add character to the City of Columbus, they limit the urban growth by creating natural barriers. These barriers have resulted in the growth of the city to the northeast as well as west of the East Fork of the White River in the Tipton Lakes and County Road 200 South area.

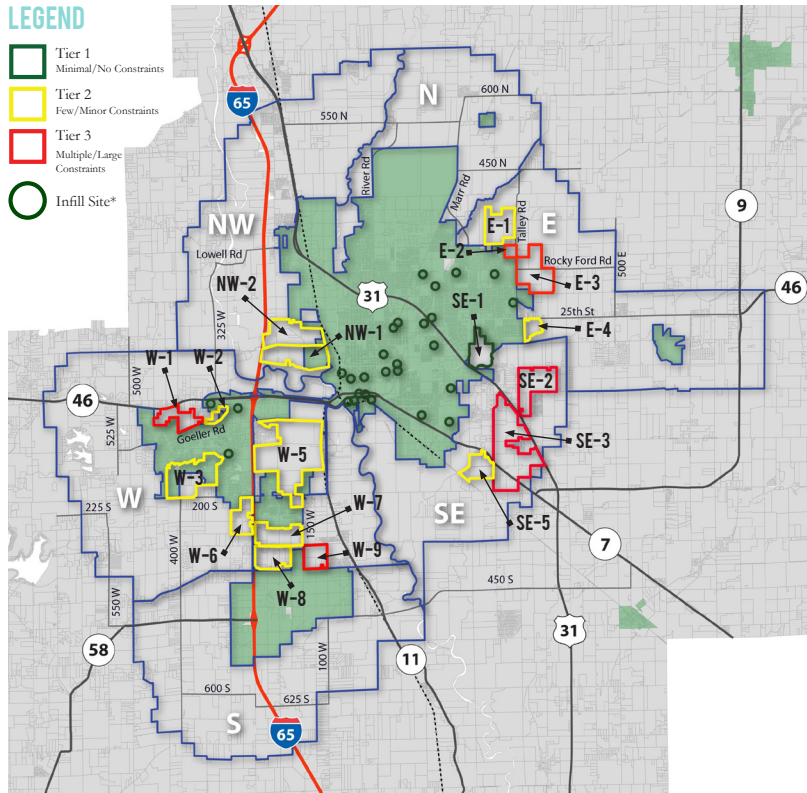
Figure 11: Residential Site Summary

RESIDENTIAL *Site Profile Summary*

PART 2.3

LEGEND

- Tier 1
Minimal/No Constraints
- Tier 2
Few/Minor Constraints
- Tier 3
Multiple/Large Constraints
- Infill Site*



SITE	ACREAGE	PRIMARY CONSTRAINT(S)	FOR MORE INFORMATION
E-1	262	Sewer Availability • Road Conditions	Page 53
E-2	40	Sewer Availability • Road Conditions	Page 53
E-3	331	Water Service Provider • Sewer Availability Road Conditions	Page 53
E-4	90	Water Service Provider	Page 53
SE-1	182	None	Page 56
SE-2	327	Water Service Provider • Sewer Availability Fire Protection • Road Conditions	Page 56
SE-3	716	Water Service Provider • Sewer Availability Fire Protection • Road Conditions	Page 56
SE-5	174	Water Service Provider • Sewer Availability	Page 57
W-9	157	Water Service Availability • Road Conditions	Page 65
W-8	224	Sewer Availability • Road Conditions	Page 65
W-7	263	Water and Sewer Availability • Road Conditions	Page 65
W-6	182	Sewer Availability	Page 65
W-5	968	Fire Protection	Page 65
W-3	418	Sewer Availability • Road Conditions	Page 64
W-2	55	Water and Sewer Availability • Road Conditions	Page 64
W-1	172	Water and Sewer Availability • Road Conditions Fire Protection	Page 64
NW-1	317	Water and Sewer Availability • Road Conditions	Page 68
NW-2	316	Water and Sewer Availability • Road Conditions	Page 68
INFILL SITES	351	None	Infill Site Profiles

* For more information about vacant residential sites within the Columbus city limits, see the Infill Site Profiles. Please note that land use recommendations for individual sites frequently included both residential and commercial land uses. Therefore several of the infill sites also appear in the Commercial Site Profile Summary.

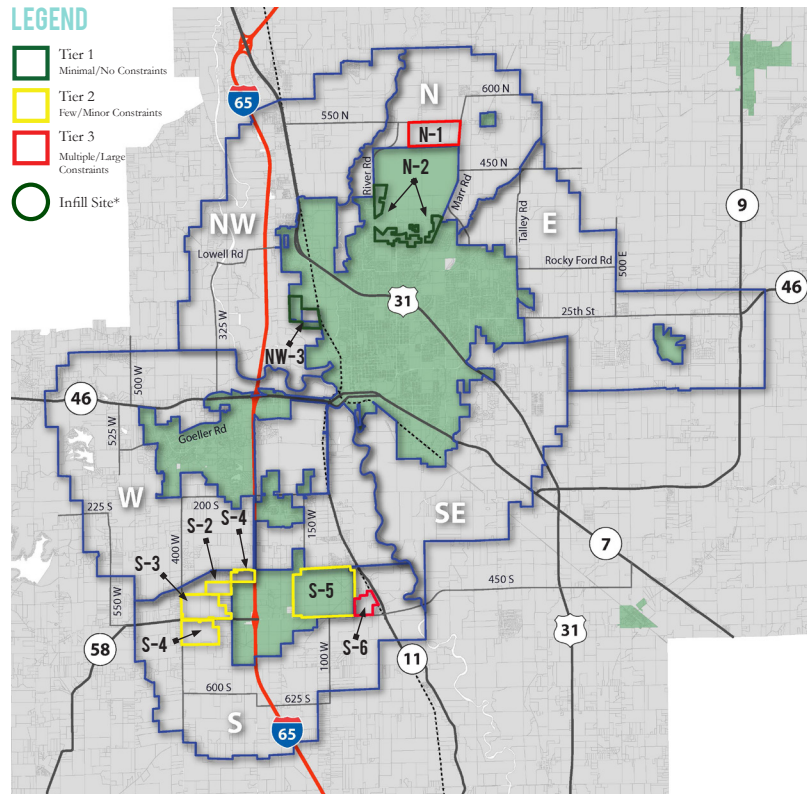
Figure 12: Industrial Site Summary

INDUSTRIAL *Site Profile Summary*

PART 2.5

LEGEND

- Tier 1
Minimal/No Constraints
- Tier 2
Few/Minor Constraints
- Tier 3
Multiple/Large Constraints
- Infill Site*



SITE	ACREAGE	PRIMARY CONSTRAINT(S)	FOR MORE INFORMATION
N-1	330	Water Service Provider • Sewer Availability	Page 71
N-2*	230	None	Page 71
NW-3	166	None	Page 68
S-4	91	Sewer Availability • Road Conditions	Page 60
S-2	80	Sewer Availability • Road Conditions	Page 60
S-3	266	Sewer Availability • Road Conditions	Page 60
S-4	232	Water and Sewer Availability	Page 61
S-5	785	Water and Sewer Availability • Road Conditions	Page 61
S-6	105	Water and Sewer Availability • Fire Protection Road Conditions	Page 61
INFILLSITES	0	N/A	N/A

* The land use recommendation for this site is commercial or industrial. Therefore, it is also shown in the Commercial Site Profile Summary.

The City of Columbus most recently updated its Infill Sites Profiles in 2017 which supports the City's Comprehensive Plan goal of developing "infill" sites as an alternative to the continued outward expansion of the City. This infill development aims to protect farmland, use infrastructure investments efficiently, spend tax-payer dollars wisely, manage long-term growth, and improve neighborhood quality.

Within the profiles, 27 infill sites are listed and described by their size, type (redevelopment or undeveloped), location, number of parcels, and zoning. The sites were evaluated based on their alignment with the comprehensive plan's future land use map, compatibility with surrounding land uses, access to public facilities, access to bicycle and pedestrian networks, road access, and street connectivity surrounding the site.

The City of Columbus completed a neighborhood level plan in 2018 for the Central Neighborhood to minimize land-use conflicts and better manage redevelopment. The Central Neighborhood area generally lacks amenities and neighborhood conveniences, but the community expects continued growth, in part due to its proximity to Downtown, concentration of walkable and bikeable blocks, access to parks, and various infill opportunities. The Plan's recommendations center around three geographically defined "focus areas" within the Central Neighborhood and five framework plans. Each focus area has a corresponding set of recommendations tailored to the intended purpose and vision for that area. The focus areas are shown in Figure 13.

The framework plans include recommendations for aspects of planning and development including land use, truck connectivity, bike connectivity, pedestrian connectivity, and complete streets. Seven principles guide all recommendations:

1. Support the neighborhoods industrial core
2. Rehabilitate renter and owner-occupied housing in the historic neighborhoods surrounding the industrial core
3. Create identifiable mixed-use centers and nodes
4. Incorporate an appropriate mix of residential types
5. Strengthen building frontage
6. Complete streets for all users
7. Celebrate industrial character

All recommendations are aggregated in the implementation section and assigned to one of three tiers. Most projects include streetscape improvements or multi-modal infrastructure investments. Figure 14 shows the Central Neighborhood recommendations.



Figure 13: Central Neighborhood Focus Areas

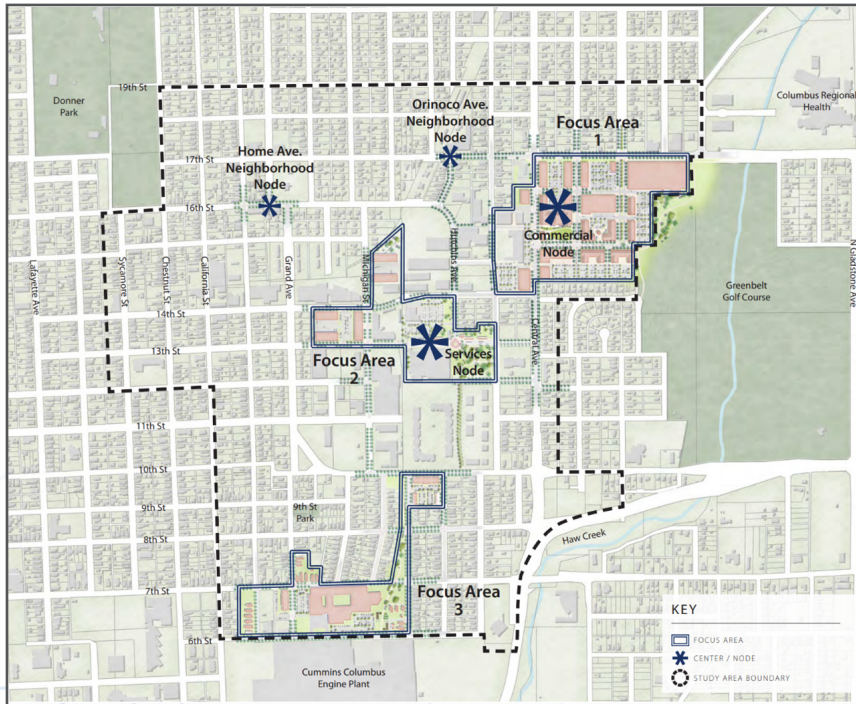
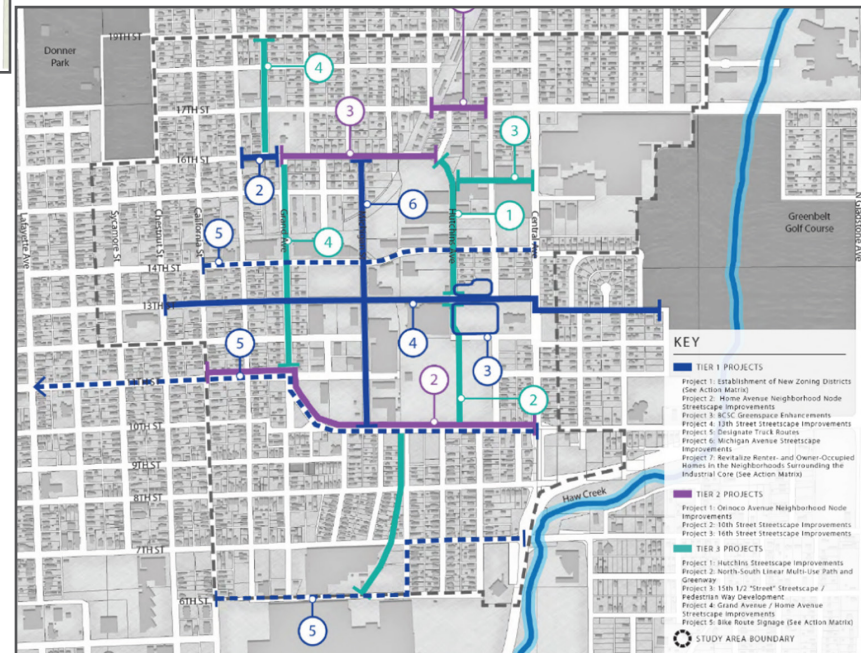


Figure 14: Redevelopment Plan Recommendations



3 LAND USE AND ENVIRONMENTAL CONSIDERATIONS

The City of Columbus completed the Envision Columbus: Downtown Strategic Development Plan in 2019 for achieving a more vibrant, active, sustainable, and creative downtown. This plan centers around three principals: Economic Strength and Diversification, Quality of Life, and Vibrant Downtown Core. Along with these three principals, the Plan was guided by three overarching goals:

- Achieve a mix of viable programs within various opportunity zones – areas of the downtown described not only by proximity but by common character and potential.
- Establish a flexible strategy for implementation and offer a vision for the future of Downtown Columbus.
- Build upon previous plans and studies completed to date, using them as a foundation and point from which to launch.

The planning process involved inventorying existing conditions, gathering information and insight from the public, and performing a market analysis on the Downtown area. From this foundation of information, design ideas, strategies, and projects were explored and assessed. Finally, a cost and implementation plan for the final strategies and projects was developed.

Strategies and projects fall within 4 categories: Residential opportunities; Commercial opportunities; Mobility/connectivity system strategies; and Park system strategies. The proposed projects and strategies by category are shown in Figure 15 on the following page.

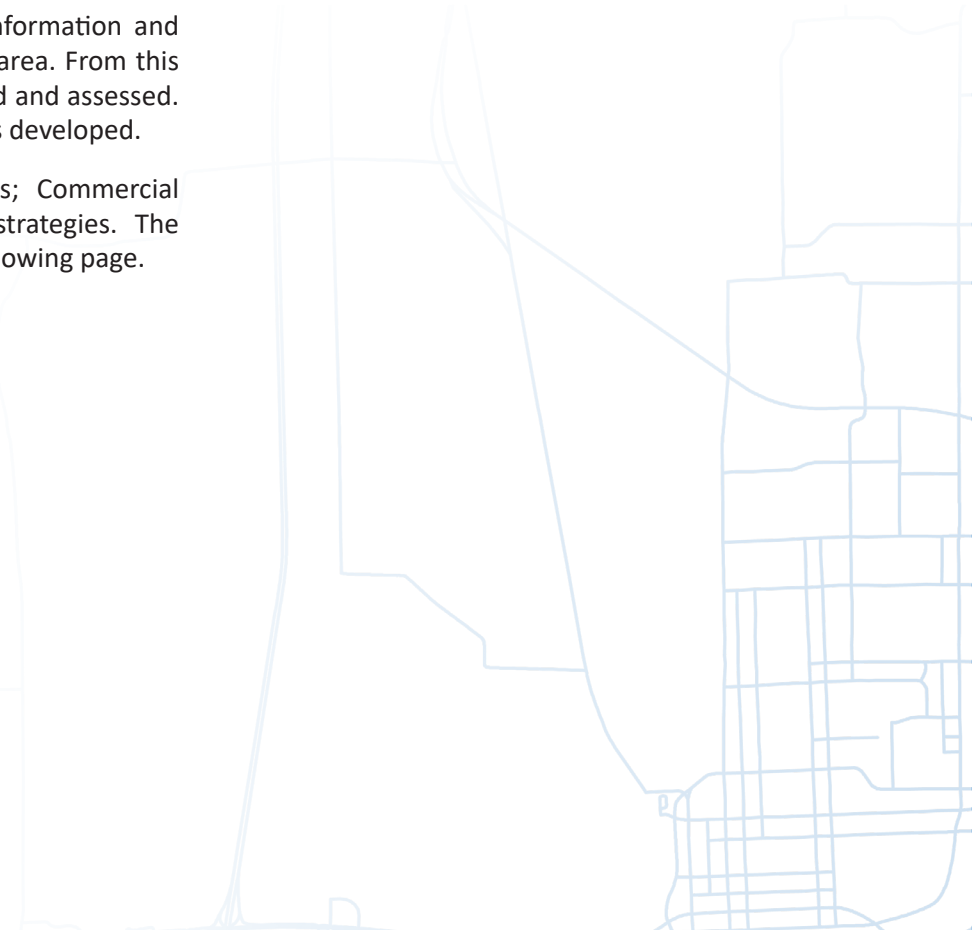
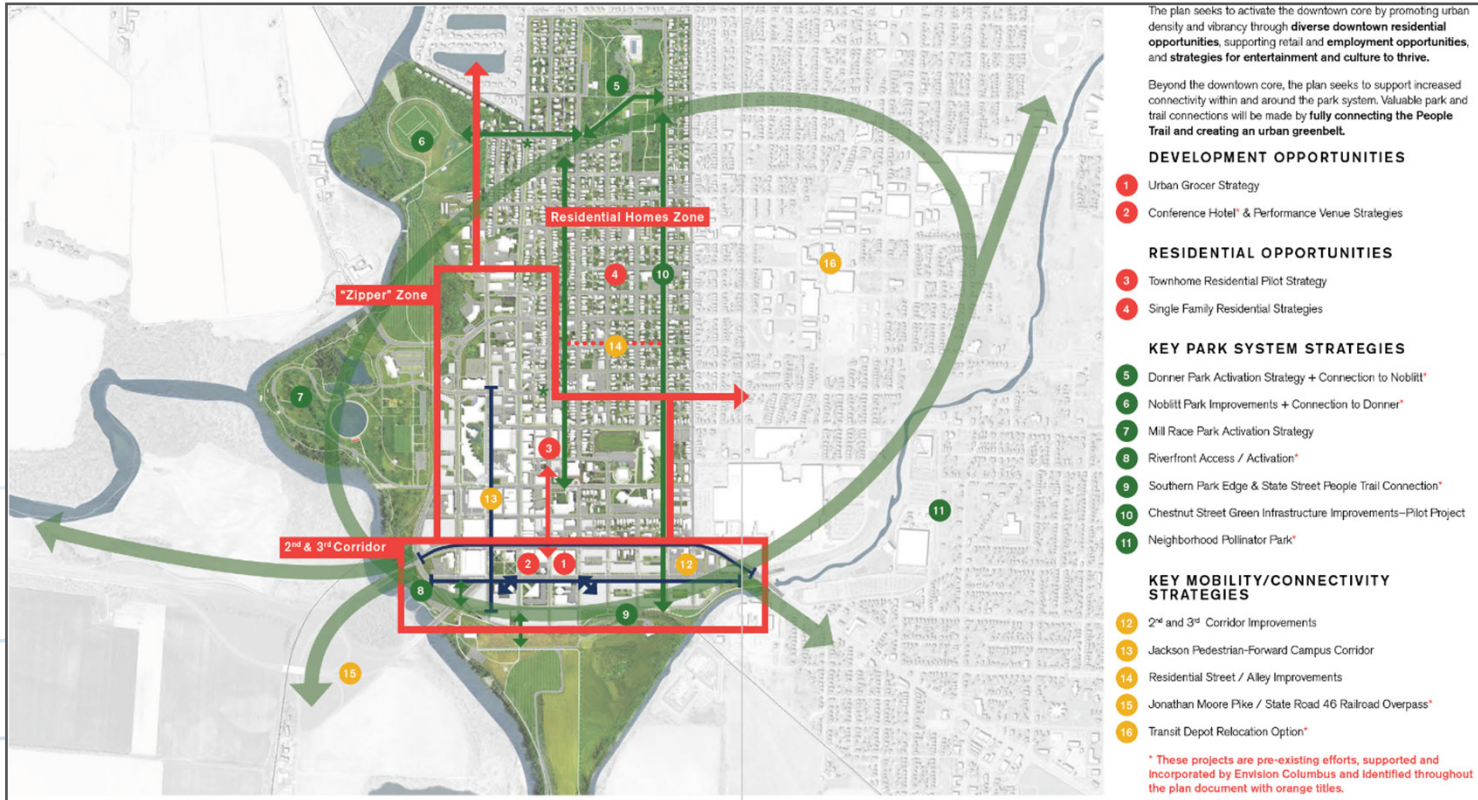


Figure 15: Downtown Strategic Development Plan



ENVIRONMENTAL CONSIDERATIONS

Preserving and enhancing the natural environment should be one of the primary regional goals when considering transportation investments. As part of the long-range planning process, it is crucial to identify the impact of transportation projects on environmental resources; ideally by making planning decisions that preserve and enhance these natural systems. Additionally, all transportation projects that include federal funding are subject to federal environmental regulations. These regulations include provisions for the protection of wetlands, floodplains, endangered species, historic structures and any other significant environmental effects, as well as the project's effect on air quality.

Figure 16 on page 29 and Figure 17 on page 30 present the wetland features and floodplains in the CAMPO MPA, respectively. In addition to natural resources, cultural and historic resources should also be considered, and steps should be taken to minimize damage, destruction, or removal of these features. Figure 18 on page 31 presents locations of structures and sites that are on the National Register of Historic Places.

The 1990 Federal Clean Air Act Amendments (CAAA) require MPOs within air quality “non-attainment” or “maintenance” areas to perform air quality conformity determinations prior to approving major transportation investments in their long range plans. A conformity determination demonstrates that the transportation program and projects are consistent with the State Implementation Plan (SIP) for attaining National Ambient Air Quality Standards (NAAQS). Bartholomew County currently meets federal air quality standards and the region is in “attainment” for each of the six airborne pollutants; carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), ozone (O₃), and sulfur dioxide (SO₂).

In addition to the required federal standards, transportation projects should also be in compliance with the Columbus Flood Risk Management Plan, adopted in June of 2013. This plan follows the Respond-Recover-Mitigate-Prepare framework and identifies several important routes through the City of Columbus that will be necessary for efficient evacuation and emergency response plans in the event of a major flood event. The identified routes include: US 31, SR 46, and SR 11 as primary routes; Indianapolis Road as a secondary priority; and 10th Street, 25th Street, and Rocky Ford Road as low priority flood safe routes. As improvements are made to these corridors, consideration should be given to incorporating flood-resistant infrastructure, including extra bridge capacity and raised bridge approaches.



Figure 16: Wetland Features in CAMPO MPA

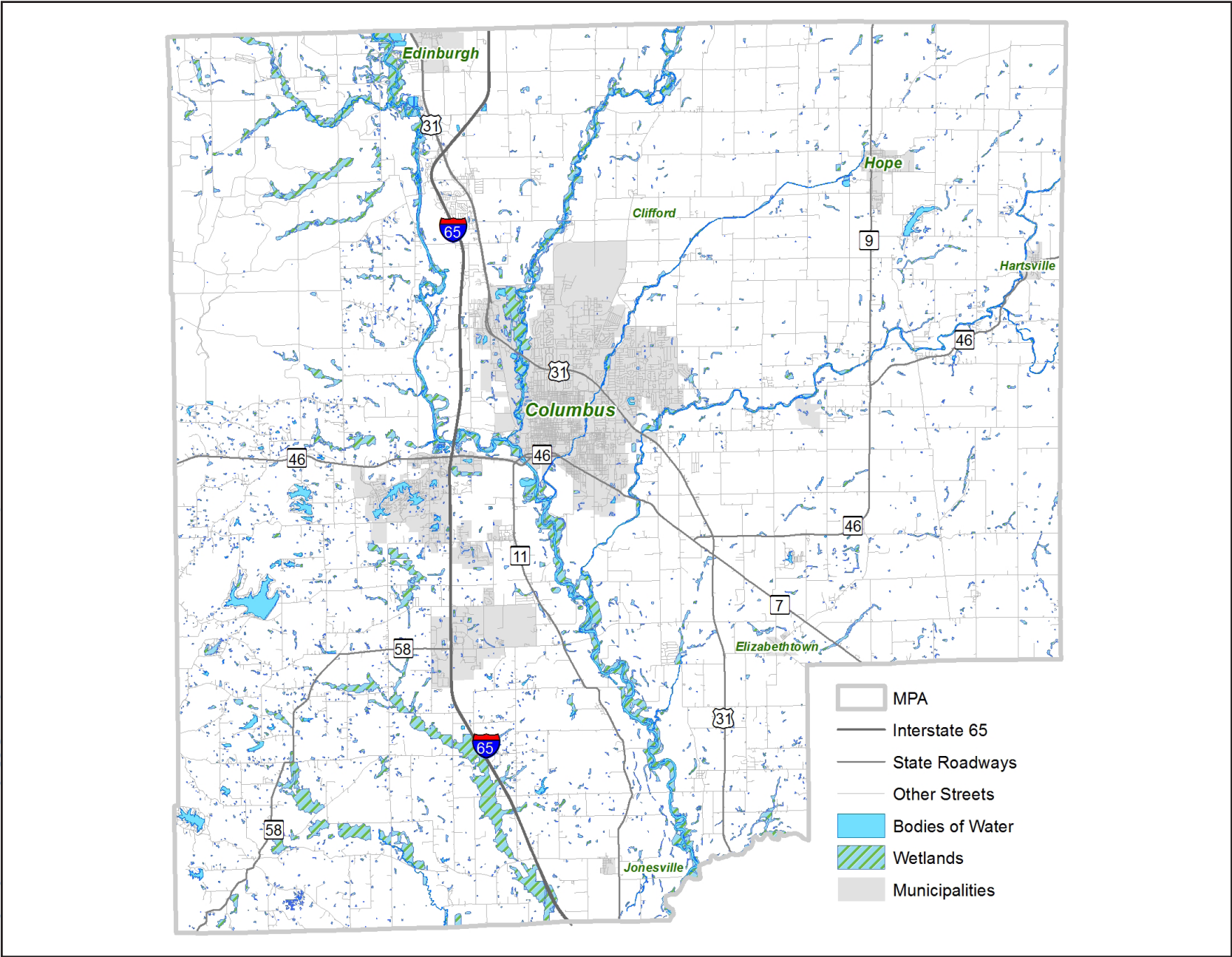


Figure 17: Floodplains in CAMPO MPA

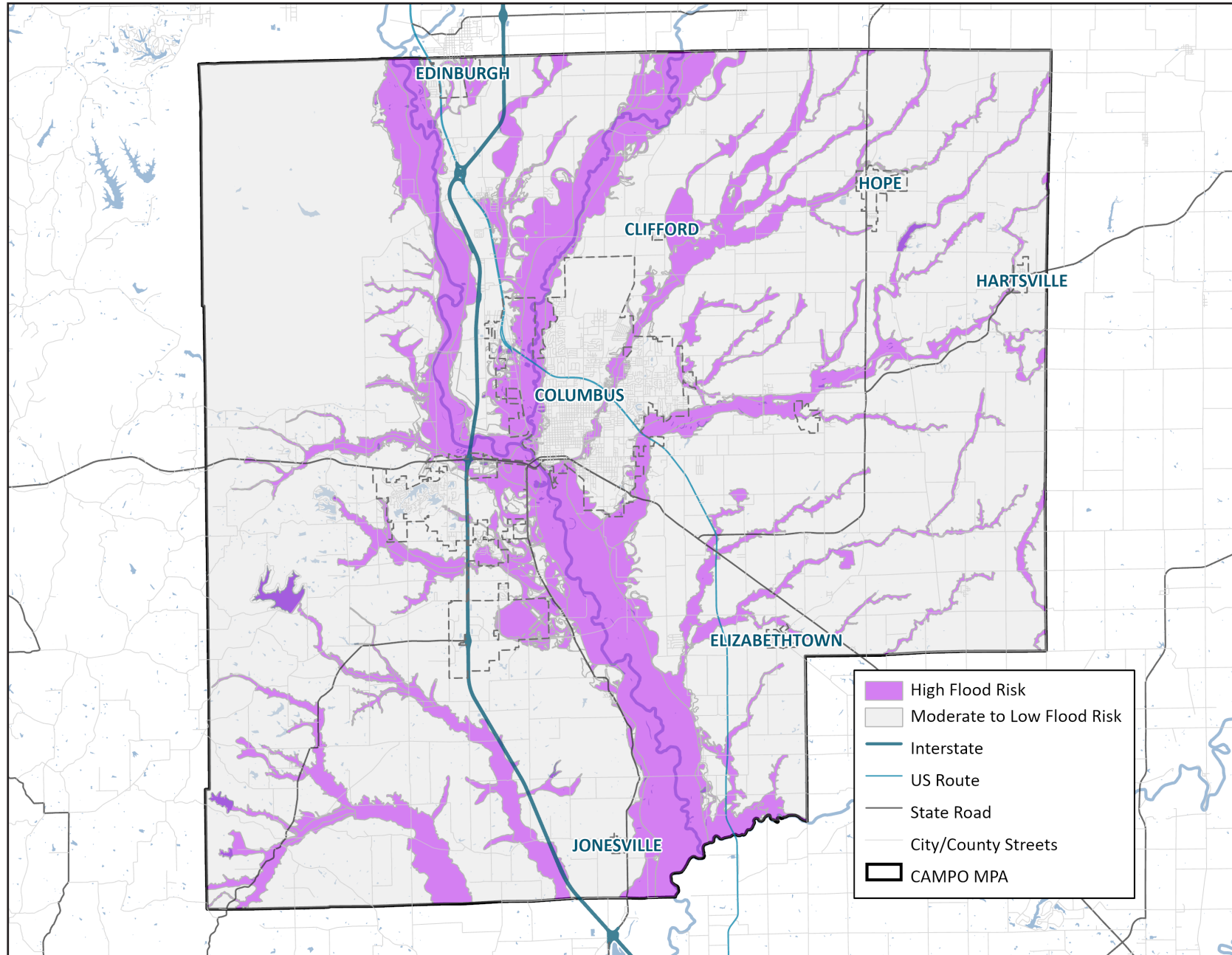
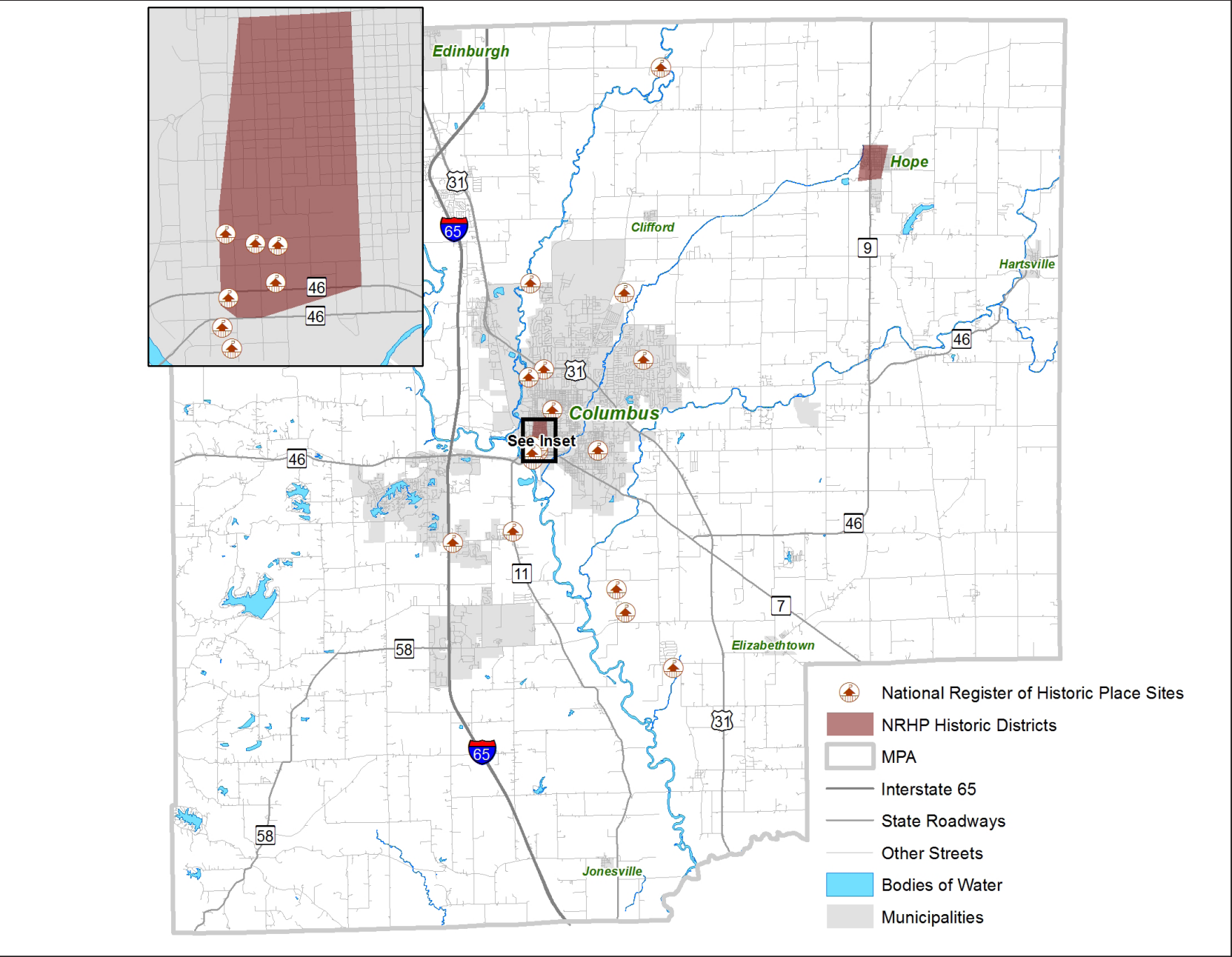


Figure 18: National Register of Historic Places Sites in CAMPO MPA



4

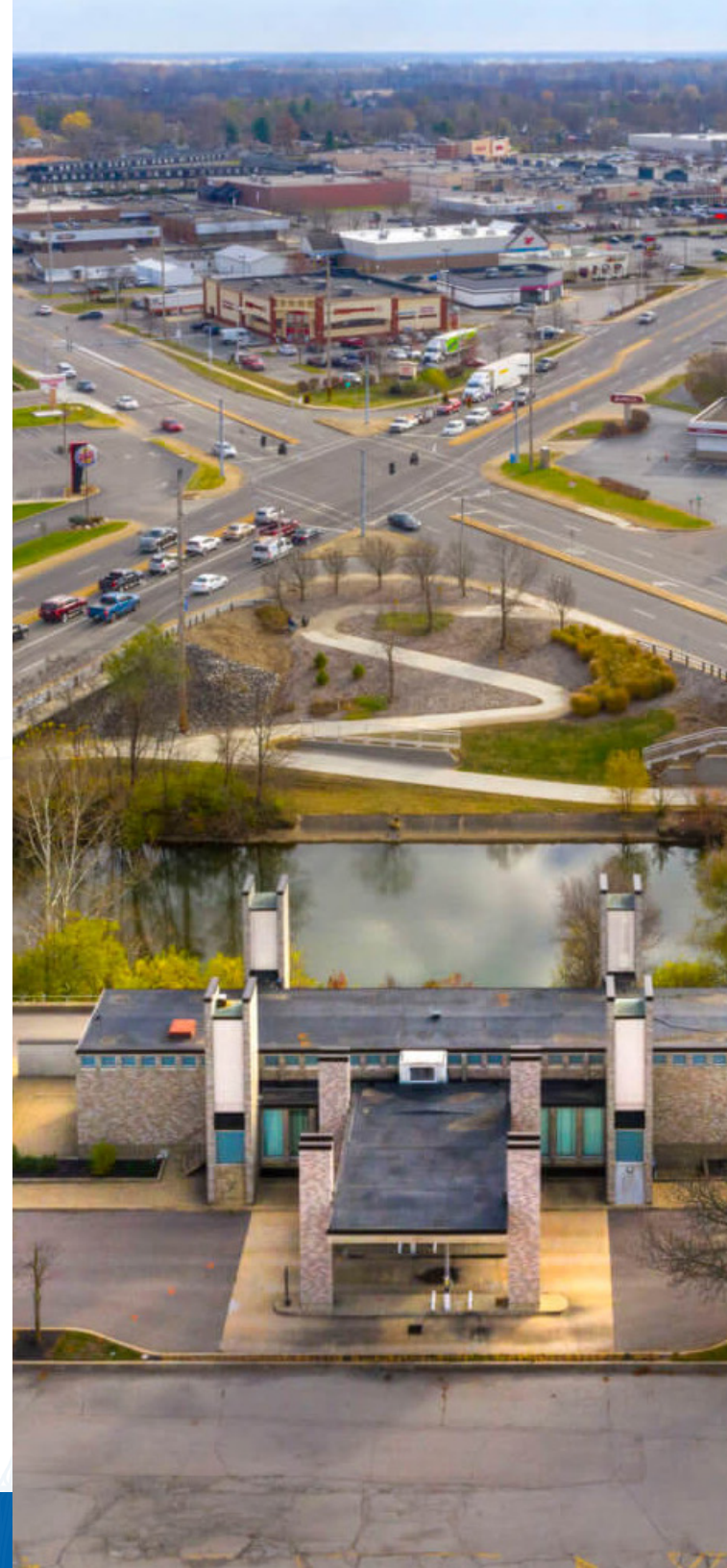
TRANSPORTATION INFRASTRUCTURE

ROADWAY INFRASTRUCTURE

FREIGHT INFRASTRUCTURE

PUBLIC TRANSPORTATION

NON-MOTORIZED TRANSPORTATION



Fostering and investing in a safe and efficient multi-modal transportation system is essential to improving economic conditions in an increasingly competitive economy, and at the same time enhancing accessibility and quality of life for residents. Unsafe, unreliable, and inefficient transportation systems can have a significant economic cost, such as reduced or missed economic opportunities and a lower quality of life. A well-maintained transportation network encouraging active transportation options is important for developing healthy neighborhoods, emergency services, increased freight movement and recreational opportunities.

Columbus is located about 40 miles south of Indianapolis along I-65, which puts the community in an advantageous position with easy access to regional and national transportation infrastructure. An hour to the north, Interstate 65 connects to major roadways of I-74, I-69, and I-70, providing north-south as well as east-west national connections. One hour south of Columbus, I-65 connects to I-64 and I-71. This chapter of the long range transportation plan details the infrastructure, land use, and multi-modal options in the CAMPO MPA. The following sections describe the existing transportation network in the region as well as traffic/ridership conditions.

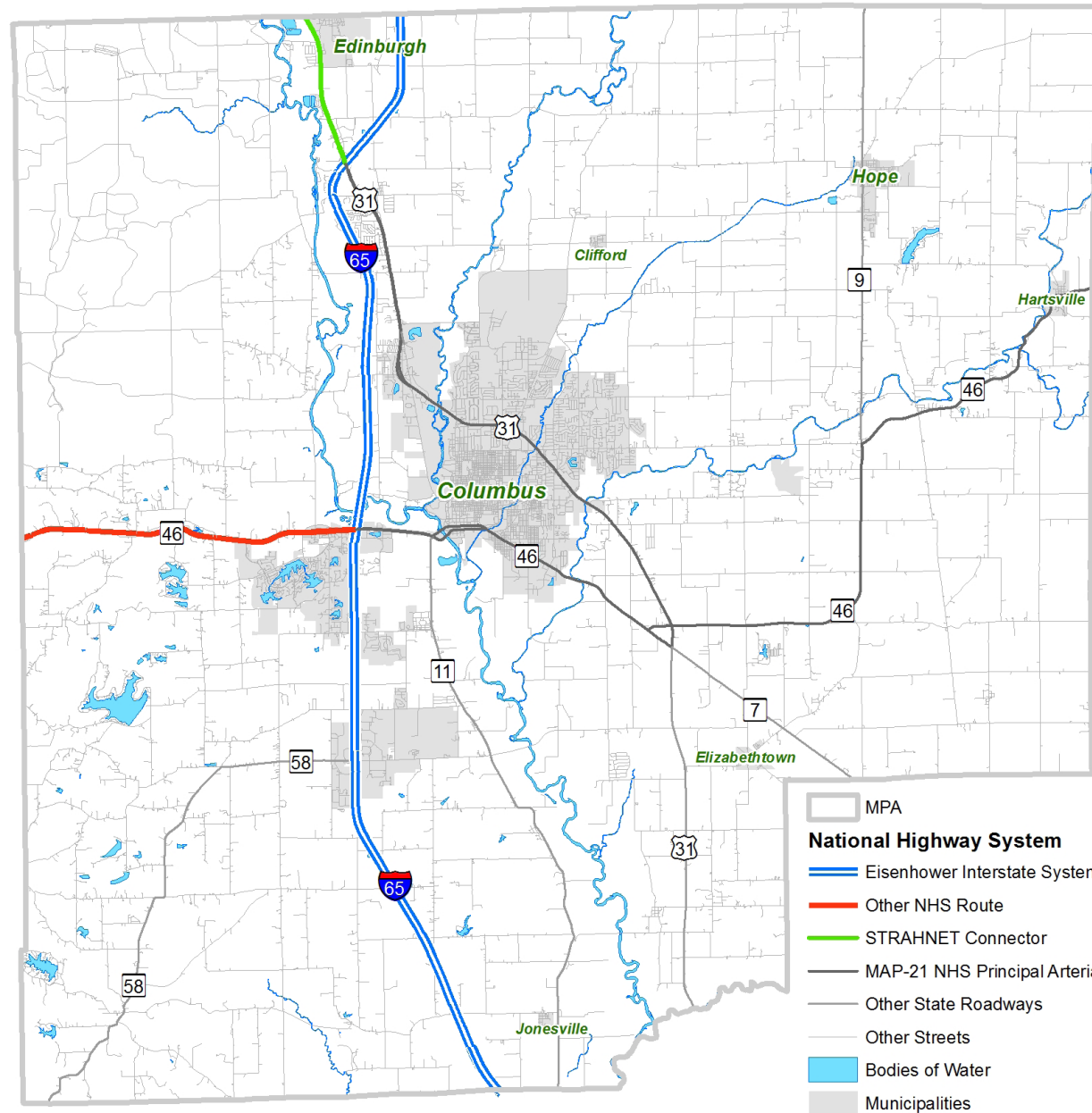
ROADWAY INFRASTRUCTURE

The MPA is served by a roadway network consisting of everything from local roadways to major state and interstate highway routes, including roadways which are part of the National Highway System (NHS). The NHS includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. The NHS was developed by the United States Department of Transportation (USDOT) in cooperation with the states, local officials, and metropolitan planning organizations (MPOs). As shown in Figure 19 on page 34, I-65, US 31, SR 46, SR 9, and SR 7 in Columbus are designated as part of the NHS.

US 31 and SR 46 also function as major north-south and east-west principal arterials in the region, with additional state routes and county roads providing east-west connectivity. These corridors are supplemented by a large network of two-lane rural highways and urban grids. The spacing and placement of the urban grid in Columbus provides a high degree of connectivity and capacity, enabling all residences and businesses to be within a short driving distance to a collector or arterial.

While the northeast portion of Columbus is characterized by a connected, high-capacity and low-congestion roadway system, the southwest part of the City lacks the same degree of connectivity. The East Fork of the White River and its floodplain create a natural barrier separating the residential areas of Tipton Lakes and the CR 200 South area from the rest of the City. SR 46 is the primary route connecting southwest residential and commercial areas to the rest of Columbus. CR 325 West and Lowell Rd. provide access to the north part of the City; however, they are not designed to accommodate large volumes of traffic.

Figure 19: National Highway System Facilities



FHWA Functional Classification and Access Management

FHWA recommends grouping the roadway network into a hierarchical functional classification system based on the characteristics of the roadway, as well as the service the roadway is intended to provide. The transportation system is classified into freeways/interstates, arterials, collectors, and local roadways. Figure 20 shows the relationship between land access and mobility for the different roadway categories. For example, I-65 represents the highest degree of mobility and very limited access to land uses, promoting long distance travel with minimum disruption to traffic. On the other hand, local streets support short-distance, low-speed traffic representing the lowest degree of mobility but highest degree of access to land uses. The process for assigning a functional classification to a roadway is relatively standardized and consistent across the nation, and is the responsibility of INDOT in cooperation with local agencies, the MPO and FHWA. Federal highway recommends seven basic functional classifications, six of which are present in the CAMPO MPA. Table 1 below gives a brief definition of the functional classifications, and how many miles of each classification are present in the MPA (Source: INDOT).

Figure 20: Functional Classification Mobility/Access

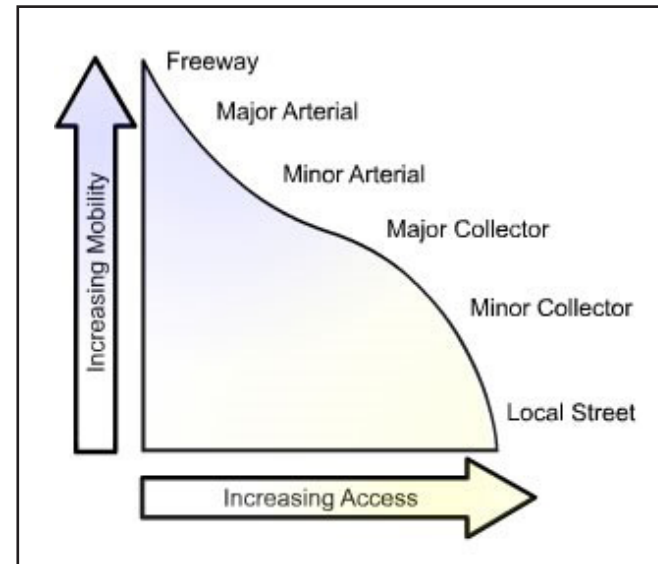
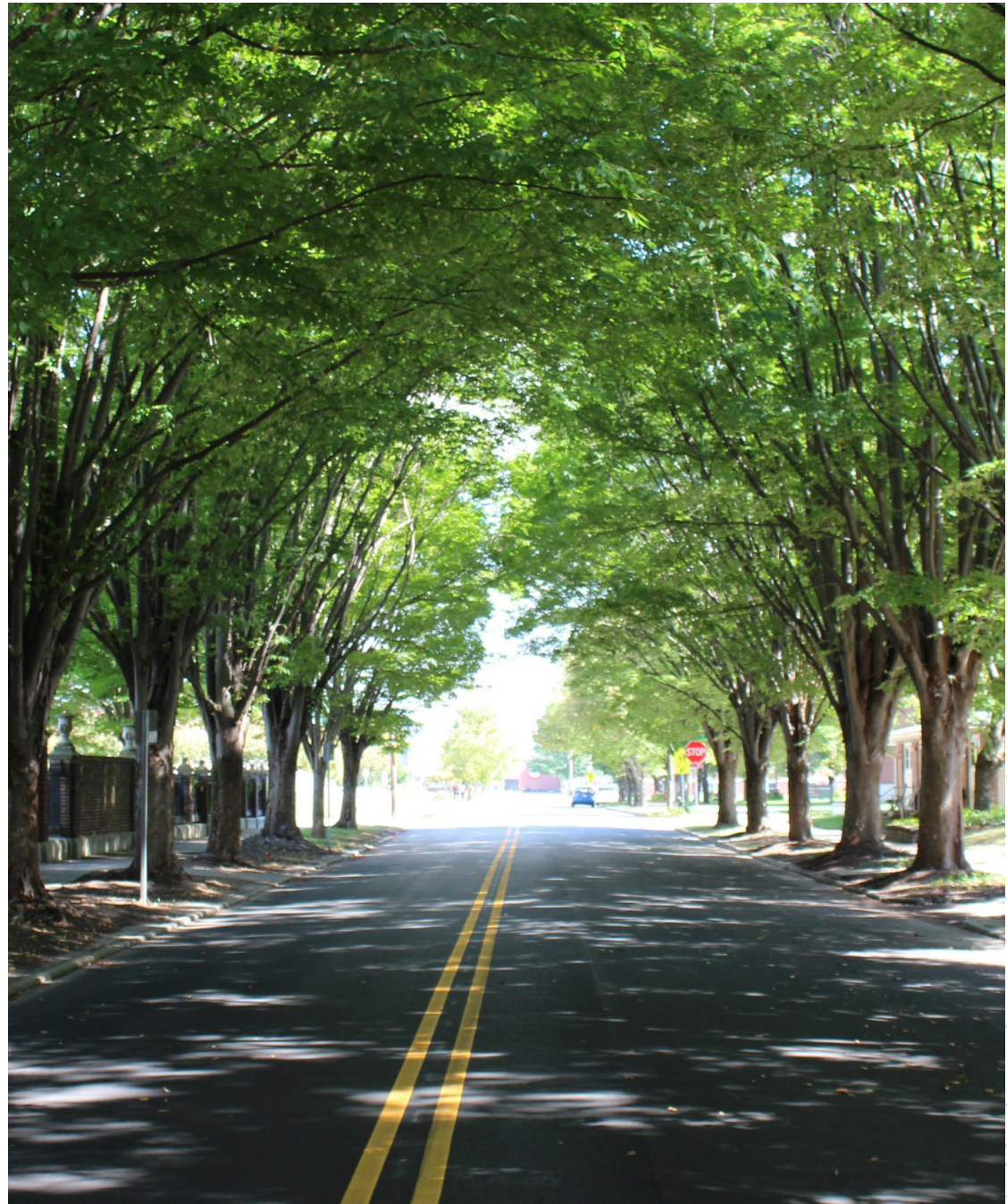


Table 1: Functional Classification Breakdown in CAMPO MPA (2019)

FUNCTIONAL CLASSIFICATION	MILES	% OF TOTAL	SERVICES PROVIDED
Interstate	28.5	2.6%	Full access control, high speed travel
Other Freeways & Expressways	0	0%	Similar to Interstate, full access control, high speed travel
Principal Arterials	44.9	4.1%	High speeds and long, uninterrupted travel
Minor Arterials	59.8	5.46%	Slower speeds than a principal arterial, often provide connections between principal arterials
Major Collectors	154	14.1%	Collects traffic from local roads, distributes to arterials
Minor Collectors	95.3	8.7%	Collects traffic from local roads, distributes to arterials
Local Road or Street	712.6	65%	Provides access to land, little or no through traffic

Maintaining proper connections between the roadways is important for efficient flow of traffic in the regional transportation system. Ideally, driveways should connect to local roads and collectors and not to arterial roadways. Land access should be provided across low-speed, low-volume roads rather than high-speed corridors. The higher the functional classification, the fewer the number of access points that should be allowed. Proper access management can help improve the flow of traffic, increase safety, and reduce the number of conflict points for all roadway users.

The City of Columbus and Bartholomew County use the FHWA functional classification terminology to develop thoroughfare plans to identify the function of each roadway as part of the transportation system in the CAMPO MPA. The Thoroughfare Plans are synchronized with the FHWA functional classification to the highest degree possible. Several factors are considered when establishing functional classification. These factors include traffic volumes, trip lengths, and type of use (short or long distance travel). Figure 21 on page 38 illustrates the distribution of functional classification categories in the MPA.



Vehicular Traffic

The traffic volume on the transportation system varies based on the functional classification of the roadway. For example, I-65 moves a large amount of traffic compared to collector or local streets. The Average Daily Traffic (ADT) in the CAMPO MPA is continually collected from various sources including the Indiana Department of Transportation (INDOT) and count programs sponsored by City of Columbus and Bartholomew County. Figure 22 on page 39 presents the ADT for interstate, arterials, and collectors in the MPA.

The heaviest traveled roadway in CAMPO MPA is Interstate 65 with an ADT of 40,000 – 60,000 in Bartholomew County. In the local system, the highest traffic volumes are observed along SR 46, between I-65 and SR 11 with an ADT of approximately 30,000, followed by the two bridges on SR 46 that cross the East Fork of the White River (approximately 24,000 ADT each). These roadways carry heavy commuter traffic between I-65, the newer residential areas west of the river, and central Columbus. There is also a significant amount of retail along SR 46 between I-65 and SR 11, which contributes to higher traffic volumes outside of typical commuting hours. The next busiest surface streets are US 31 west of Haw Creek (22,000 – 26,000), US 31 on the east side of Columbus (21,000 – 26,000 ADT) and Central Avenue (17,000 – 20,000 ADT).

The usage of the roadway network in the region is commonly measured using Vehicles Miles of Travel (VMT). VMT is defined as the distance traveled by all vehicles in a given area over a specific period of time. Historically, the daily VMT in the Columbus area has increased about 18% between 2006 and 2019. The historical increase in VMT can be attributed to several factors, including increasing household incomes, low-density fringe development and more fuel-efficient private vehicles. The majority of the population in the CAMPO MPA uses a personal vehicle as their primary mode of transportation. The impact of rising VMT in the region includes an increase in traffic congestion, additional safety concerns, and the need for additional investment in infrastructure as well as increased operation and maintenance needs for existing infrastructure.



Figure 21: Functional Classification Designations in the CAMPO MPA

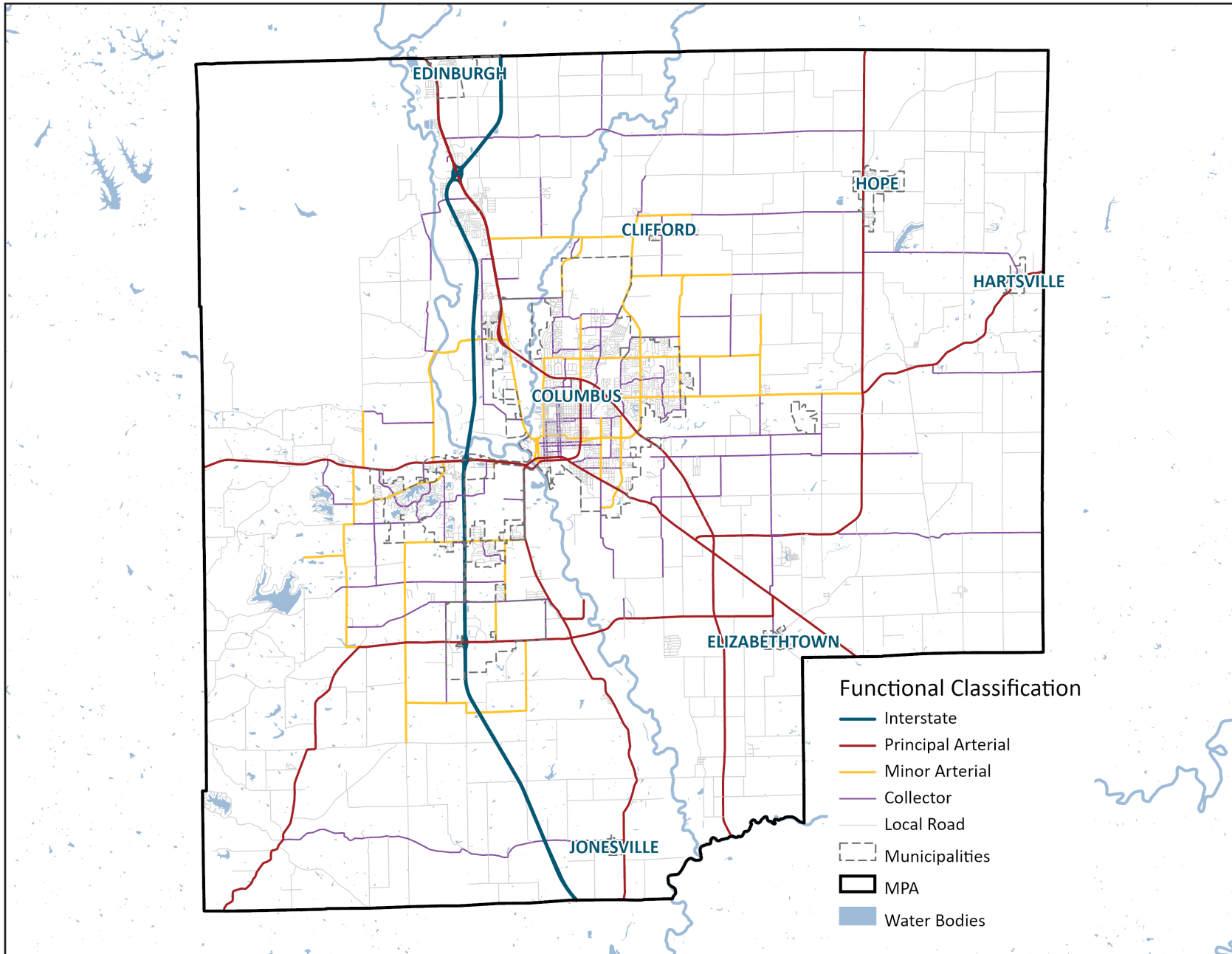
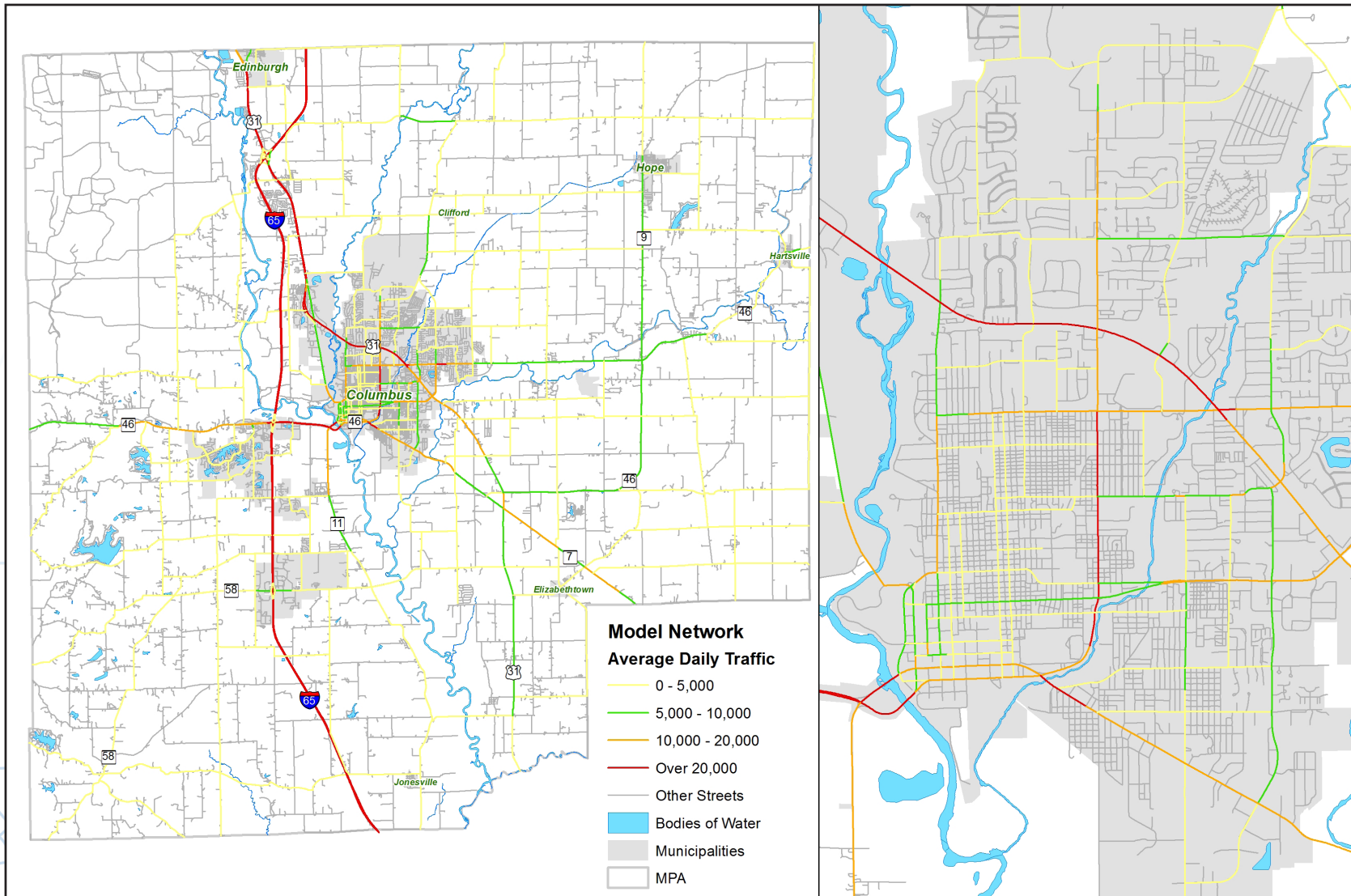


Figure 22: 2017 Modeled Average Daily Traffic (ADT)



FREIGHT INFRASTRUCTURE

The freight network is an important piece of the overall transportation infrastructure, especially as the freight transportation and logistics fields are projected to grow quickly over the coming years. Access to I-65, railroads and the Columbus Municipal Airport are vital for the Columbus area to compete with other regional centers in terms of economic development. The freight transportation and logistics field depend on connections to global supply chains and the total distribution costs of the goods. A small change to the cost of distribution can have a significant effect on the location of the mode of transportation used by business (e.g., distribution centers, manufacturing plants). The CAMPO MPA is suitably located with respect to freight at the connection of several facilities on the NHS and rail lines. Potential projects, such as I-65 interchange at Lowell Road and a railroad spur to the Woodside Industrial Park, are expected to have a positive impact on economic development in the CAMPO MPA, and create connections that would improve the flow of freight traffic.

Commercial Trucks

The CAMPO MPA is home to various industries and manufacturing firms that ship and receive freight at regional and national levels via commercial trucks. Strong growth in the region's freight and distribution industry means there will be continued growth in truck traffic in the region. With national freight movement expected to increase significantly over the next 25 years, system preservation and improvement are a major concern. Major truck exits to Columbus include Exit 64 at Woodside Industrial Area, Exit 68 to downtown Columbus, and Exit 76 at Taylorsville. Figure 23 on page 41 provides the average daily truck traffic (ADTT) in the MPA.

Commercial Air

The Columbus Municipal Airport sits on 2,000 acres in north Columbus and has an annual economic impact of over \$650 million to the City. With more than 43,000 takeoff and landings each year, the Airport boasts the fourth busiest tower and more military traffic than any other airport in Indiana. While no commercial flights operate today, substantial infrastructure

exists with capabilities to easily handle MD80, Boeing 737, and DC8 aircraft and military capabilities up to the C-5 Galaxy.

Freight Rail

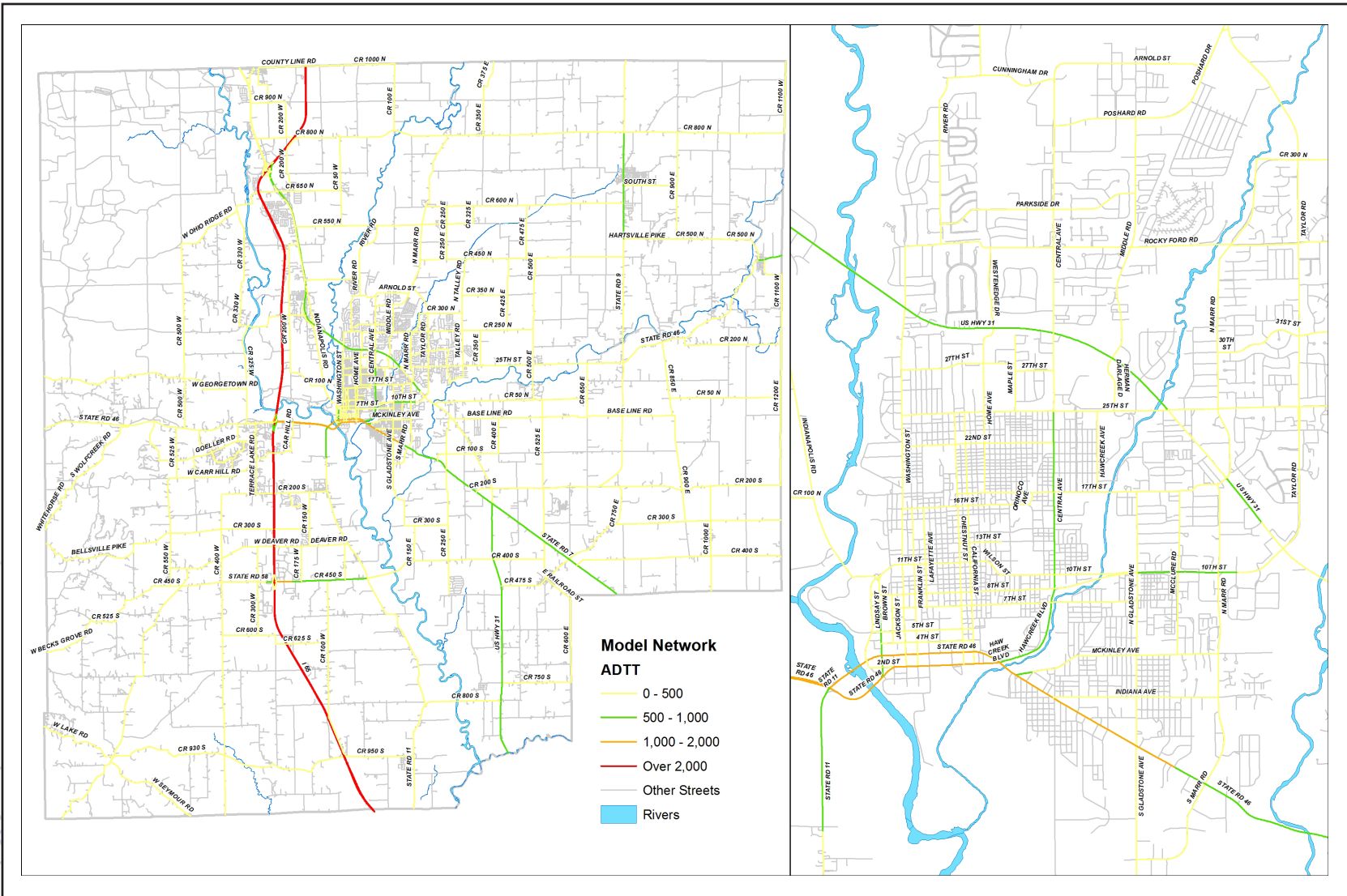
The freight rail in the Columbus area is operated by Jeffersonville, Indiana based Louisville and Indiana Railroad Company (L&I). The L&I is a short line railroad operating approximately 106 miles of rail line that runs north-south between Indianapolis and Louisville. The L&I connects to other Class I and Class II railroads including CSX Transportation (CSXT), Indiana Railroad (INRD), Norfolk Southern (NS), and Paducah and Louisville Railway (PAL). The L&I has 11 locomotives and annual volume is 20,000 carloads (Source: The L&I website).

Within the CAMPO MPA, significant areas of activity for the L&I include the industrial area north of the Outlet Mall in Taylorsville, the rail yard to the west of Commerce Drive, the South Mapleton Industrial Park, and Camp Atterbury. Camp Atterbury Joint Maneuver Training Center is partially located in Bartholomew County, in the northwest corner, and is accessed off US 31 in Johnson County.

In 2011, CSX Transportation (CSXT) announced a partnership with the L&I for funding approximately \$100 million in infrastructure improvements for supporting increased train traffic from both railroads over the L&I line. In 2015, the Federal Surface Transportation Board approved the proposed operational changes on L&I railroad. As part of the operational changes, from September, 2016 there were increases in train traffic on the L&I line and train speeds would increase to a maximum of 49 mph from the previous speed limit of 25 mph. The frequency of CSXT trains would also increase from three to four trains per day to approximately 10 trains per day between Louisville, KY and Seymour, IN. Train length would also increase up to 14,000 feet long.

Increases in frequency and length of freight train contributed to higher traffic related delays for the SR 46 corridor. INDOT completed an overpass project at SR 46 and it was officially opened on June 26, 2020. The overpass helped reducing significant traffic delays along SR 46 which is a major east-west arterial in Columbus MPA.

Figure 23: 2017 Modeled Average Daily Truck Traffic (ADTT)



PUBLIC TRANSPORTATION

Public transportation is crucial to providing personal mobility and an inexpensive option for traveling for residents in the CAMPO MPA. Buses accommodate more people than personal vehicles and can potentially help reduce the VMT, thereby positively impacting the amount of funds required for maintenance and improvement of transportation infrastructure. Public transportation also provides access opportunities to residents without access to a personal vehicle and persons with disabilities.

Bus Transit

ColumBUS Transit provides transit services throughout the City of Columbus. The system includes both fixed-route and demand response services. The service provides mobility to residents who cannot drive or choose not to drive, including 3.7% of the MPA's residents who do not own a personal vehicle. ColumBUS operates five fixed-route bus lines as shown in Figure 24. Each of these routes has 14 trips per day. These lines have one-hour headways and all depart from the Mill Race Transit Center at five minutes after the hour as a timed-transfer point. Four of the five bus routes have a second timed-transfer point at the Target Store in the Columbus Shopping Center.

In addition to the fixed-route bus lines, ColumBUS operates paratransit ("curb-to-curb") service within Columbus city limits which is branded as "Call-a-Bus". This service is provided to persons who, because of disability, age or injury are unable to use the ColumBUS fixed-route buses. Both the fixed-route and paratransit services are provided Monday – Friday, 6:00am –

8:00pm and Saturday, 6:00am – 6:00pm. While signs are posted throughout each of the five fixed routes, the bus currently will stop for riders at any intersection on the route, providing it is safe for the driver to make a stop.

Through the transit agency's "Rack & Roll" program, bicycle racks have been added to all of the buses on the fixed-route lines to address the first-mile/last-mile issue encountered by transit riders. All buses are wheelchair accessible. ColumBUS transit's fleet inventory consist of nine 29-foot buses. Average age of the fleet is 8 years.

ColumBUS routinely evaluates small changes to the existing bus routes to provide better service within the city limits, as well as reevaluate stop locations with regards to the safety and convenience of transit riders.

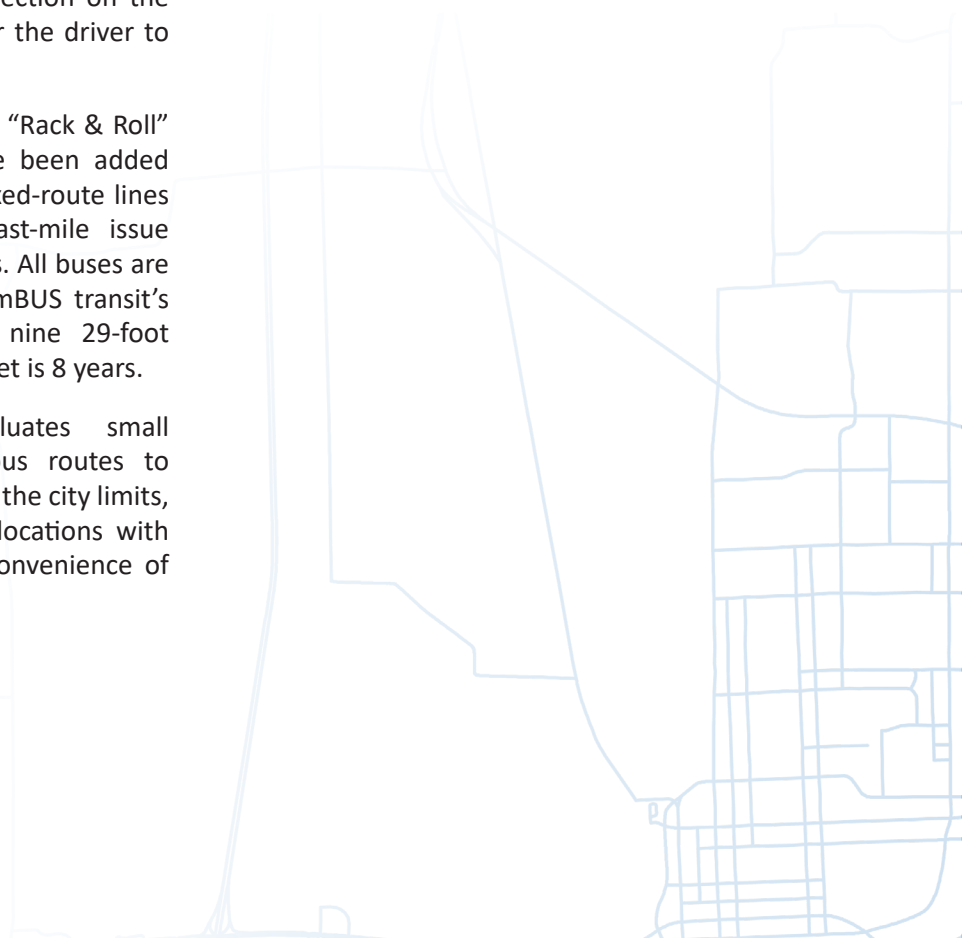
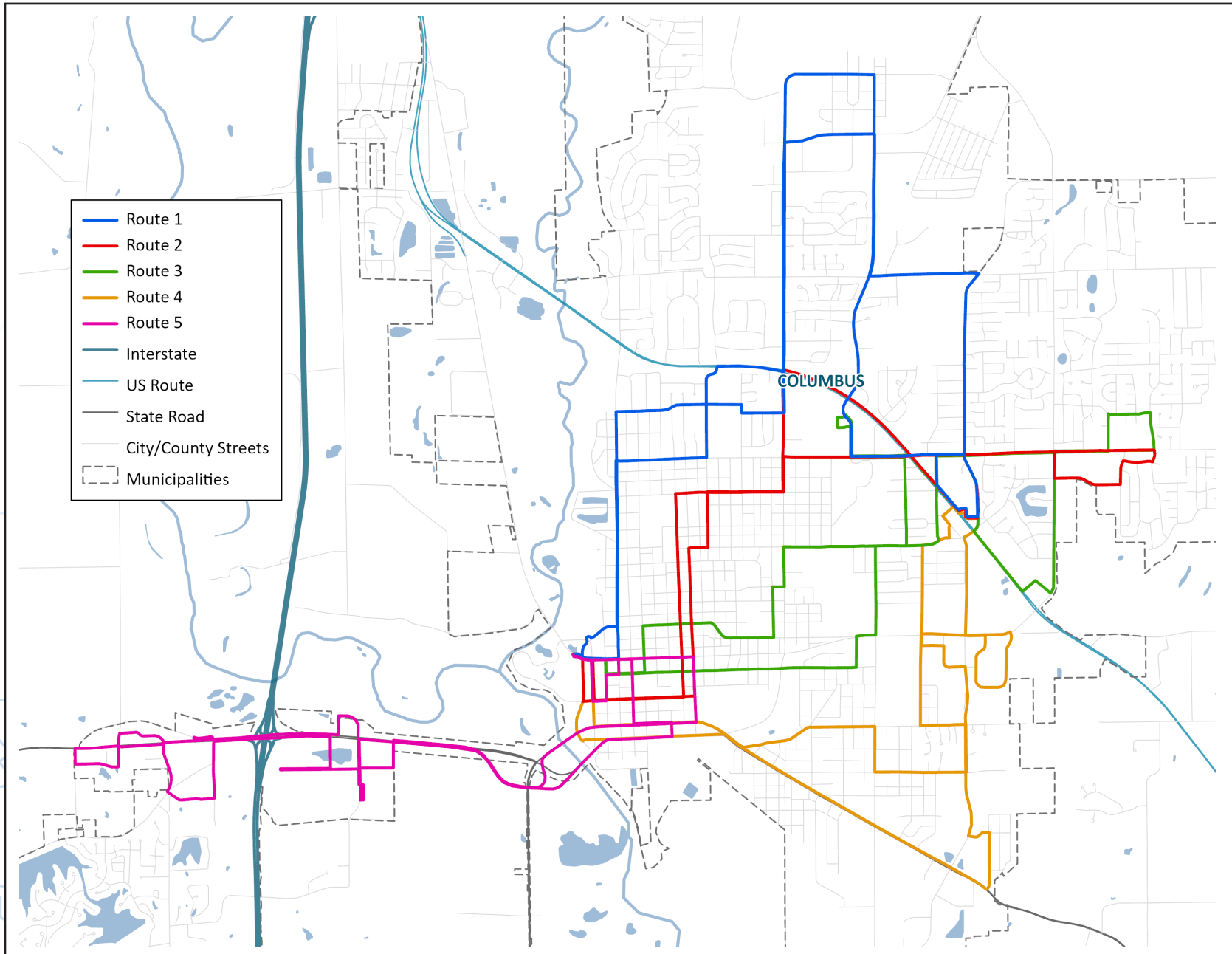


Figure 24: Existing ColumBUS Routes



Passenger Facilities

Completed in 2011, the Mill Race Transit Center is the largest passenger facility on the ColumBUS system. It was built at a cost of just under \$900,000 of federal funds from the American Recovery and Reinvestment Act (ARRA) and includes five covered bus bays, as well as a small indoor area where passengers can buy passes. The Mill Race Transit Center is the centerpiece of the bus system, as all five buses arrive and depart from the center every hour, creating a timed transfer point between routes.

In addition to the Mill Race Transit Center, there is another timed transfer point at the Target store in the Columbus Center shopping center. Four of the five bus routes stop at this location on the half hour to foster transfers between routes on the east side of the city. While Target provides an adequate stop for the bus routes, it is not a permanent bus facility and provides no amenities for riders. A permanent location either centrally located or on the northeast side of the city is being pursued to allow for more flexibility with route timing and bus flows.

Transit Fares & Ridership

Call-a-Bus service is \$0.50 per one-way trip and is scheduled over the phone. Fixed-route service costs \$0.25 per one-way ride, payable upon boarding the buses. If riders wish to make a transfer to another bus route, they must pay an additional \$0.25. Fixed-route passes can be purchased for \$5.00 that are good for 25 rides, and can be purchased from the Mill Race Transit Center.

Children up to the age of 18 are eligible to ride the bus for free with the 'Easy Rider Pass', which is free at the transit center. Additionally, half price fare (\$0.10) is available for senior citizens (age 60 and older), disabled individuals who qualify, and Medicare cardholders. These passes can also be obtained from the transit center.

Ridership has been declining since 2016. in the ColumBUS system over recent years . Table 2 shows ridership from 2015 through 2019.

Table 2: ColumBUS Transit Annual Ridership

YEAR	ANNUAL RIDERSHIP
2015	254,534
2016	261,774
2017	244,101
2018	244,054
2019	228,818

Passenger Rail

Since the discontinuation of the Kentucky Cardinal Service in 2003, there has not been any passenger rail service in the CAMPO MPA.

However, the Midwest High Speed Rail Association is laying out a vision that could connect Columbus to a robust network of rail projects throughout the Midwest. In addition to the Midwest High Speed Rail Association, the Midwestern Regional Rail Initiative has produced a similar plan to connect the Midwest with rail projects focused on a hub in Chicago. The Midwestern Regional Rail Initiative is a collaborative of nine Midwestern State Departments of Transportation. Their plan would upgrade 3,000 miles of existing rail right-of-way to 110-mph service, the fastest allowed by the Federal Railroad Administration (FRA) without total grade separation. While Columbus is not expected to be directly connected to the rail network, it is anticipated to be connected to the network in Indianapolis via a bus feeder route. Both Midwest rail plans are provided in Figure 25.

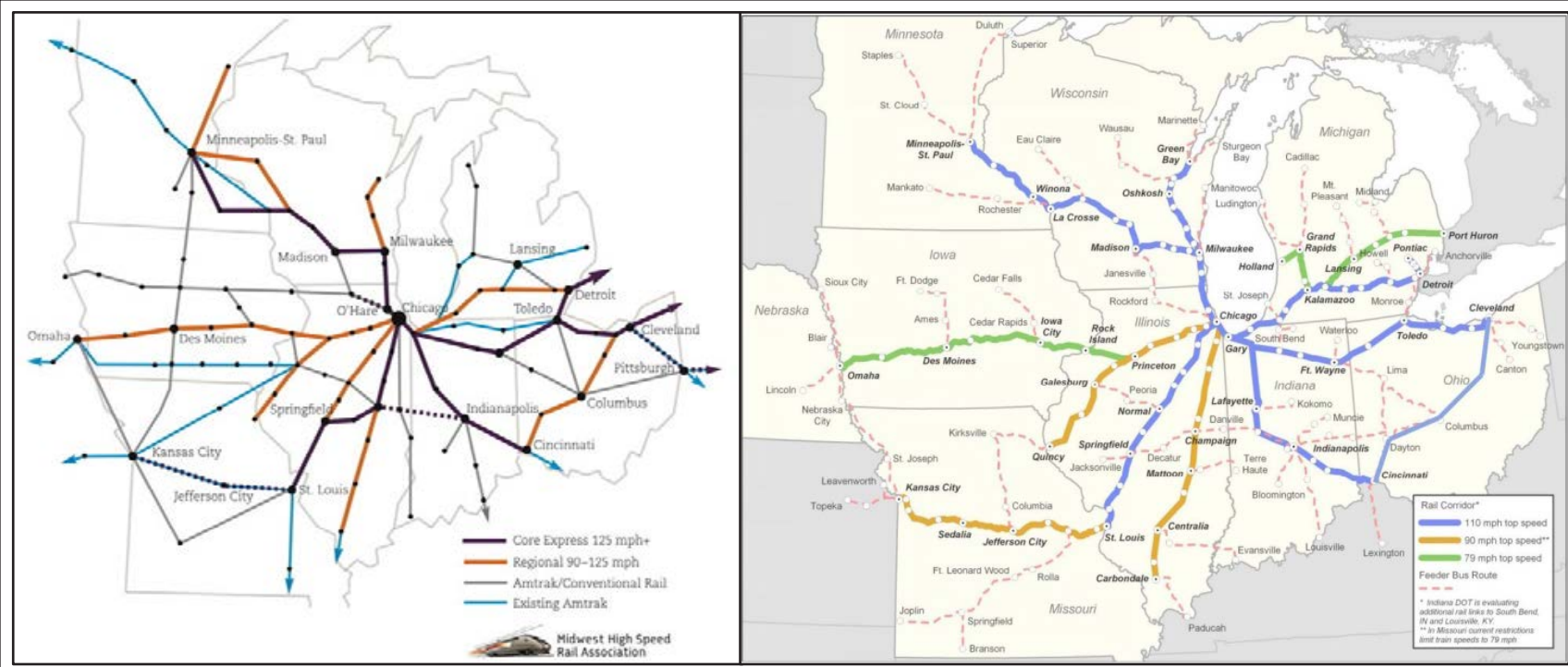
Intercity Bus

There is currently no intercity bus service in the MPA, however Columbus' location on Interstate 65 provides an opportunity for future service on routes traveling between Indianapolis and Louisville.

Passenger Air

There is currently no passenger air service to CAMPO MPA.

Figure 25: Midwest Passenger Rail Plans



NON-MOTORIZED TRANSPORTATION

Bicycling and walking are integral components of a balanced, sustainable and efficient multi-modal transportation system. Area sidewalks and designated bicycle lanes increase mobility and access to jobs and recreational opportunities. Whether for short trips to nearby destinations or for longer, recreational trips to regional parks and open spaces throughout the region, non-motorized transportation can play an important role in several areas:

- Reducing vehicle miles traveled,
- Minimizing wear and tear on vital transportation infrastructure,
- Increasing physical activity,
- Lowering individual's transportation costs,
- Supporting local economic vitality, and
- Improving quality of life.

As the MPA continues to grow, incorporating non-motorized transportation into future roadway projects will ensure that people of all ages and abilities have the opportunity to travel about their community, regardless of their mode of choice. FHWA has stated that it is federal transportation policy to promote the increased use and safety of bicycling and walking as transportation modes. All on-street facilities must be included in the fiscally constrained short-term Transportation Improvement Program (TIP). If an off-street trail is expected to be funded through programs requiring FHWA or FTA approval, it should also be included in the TIP.



The Columbus People Trail System

The City of Columbus has constructed 17 miles of multi-use paths, or “People Trails” to date. This effort began in 1985, and has been very successful at obtaining private and corporate donations and state and federal grants for trail expansion, greatly reducing the need for local funds for the system.

The City has conducted a number of surveys throughout recent decades that show there is overwhelming support from the public to continue to expand and improve the People Trail system. Additionally, the People Trails provide the benefits of multi-modal infrastructure to public health, to business-owners who encourage employees to commute via alternate modes of transportation, to retailers located along their facilities, and to the region from additional tourism and recreational opportunities. Attributing to the success of People Trail Project within the City of Columbus, it should be expanded beyond city limits to connect Columbus with some of the outlying municipalities and population centers throughout the MPA. Abandoned railway rights-of-way and utility corridors can provide relatively inexpensive and direct connections between communities within the MPA.

The City of Columbus is currently completing an update to its 2010 Bicycle and Pedestrian Plan. Figure 26 on page 48 shows the existing People Trail System and future trail extensions, and Figure 27 on page 49 shows existing and planned bicycle and pedestrian facilities, both from the 2010 plan. As can be seen, efforts are in place to create a connected bicycle infrastructure for the MPA.



Figure 26: People Trail System

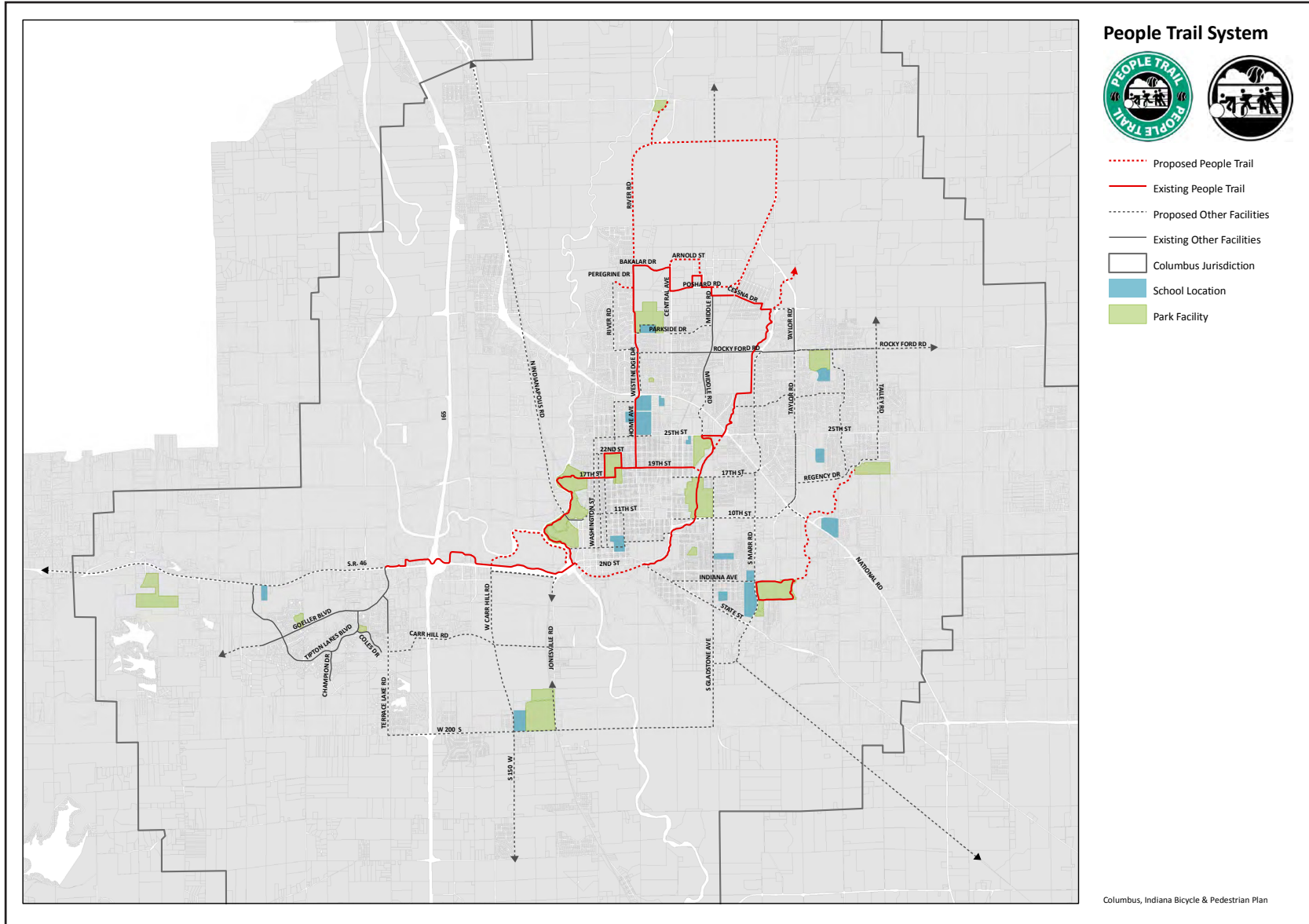
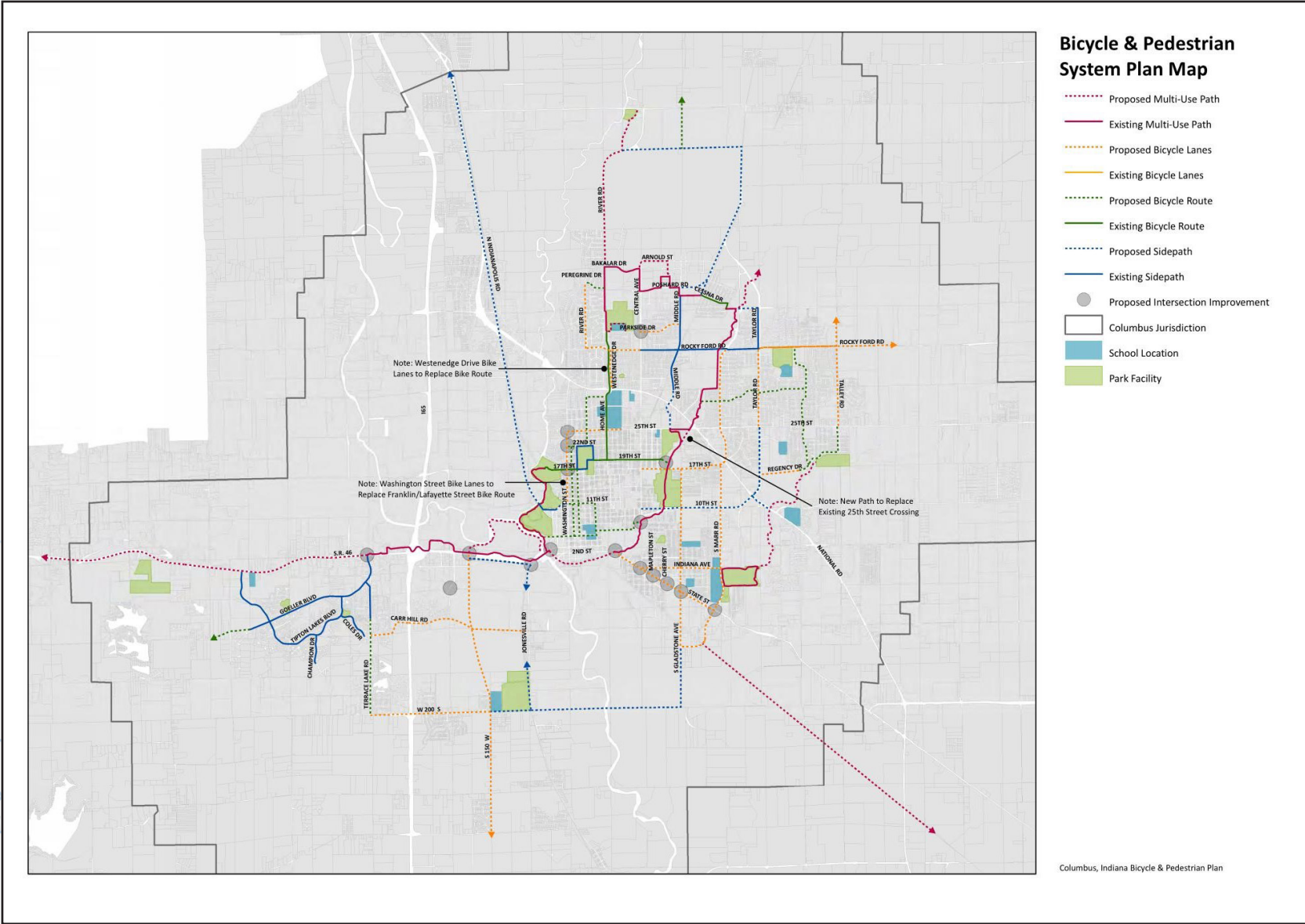


Figure 27: Bicycle and Pedestrian System Plan

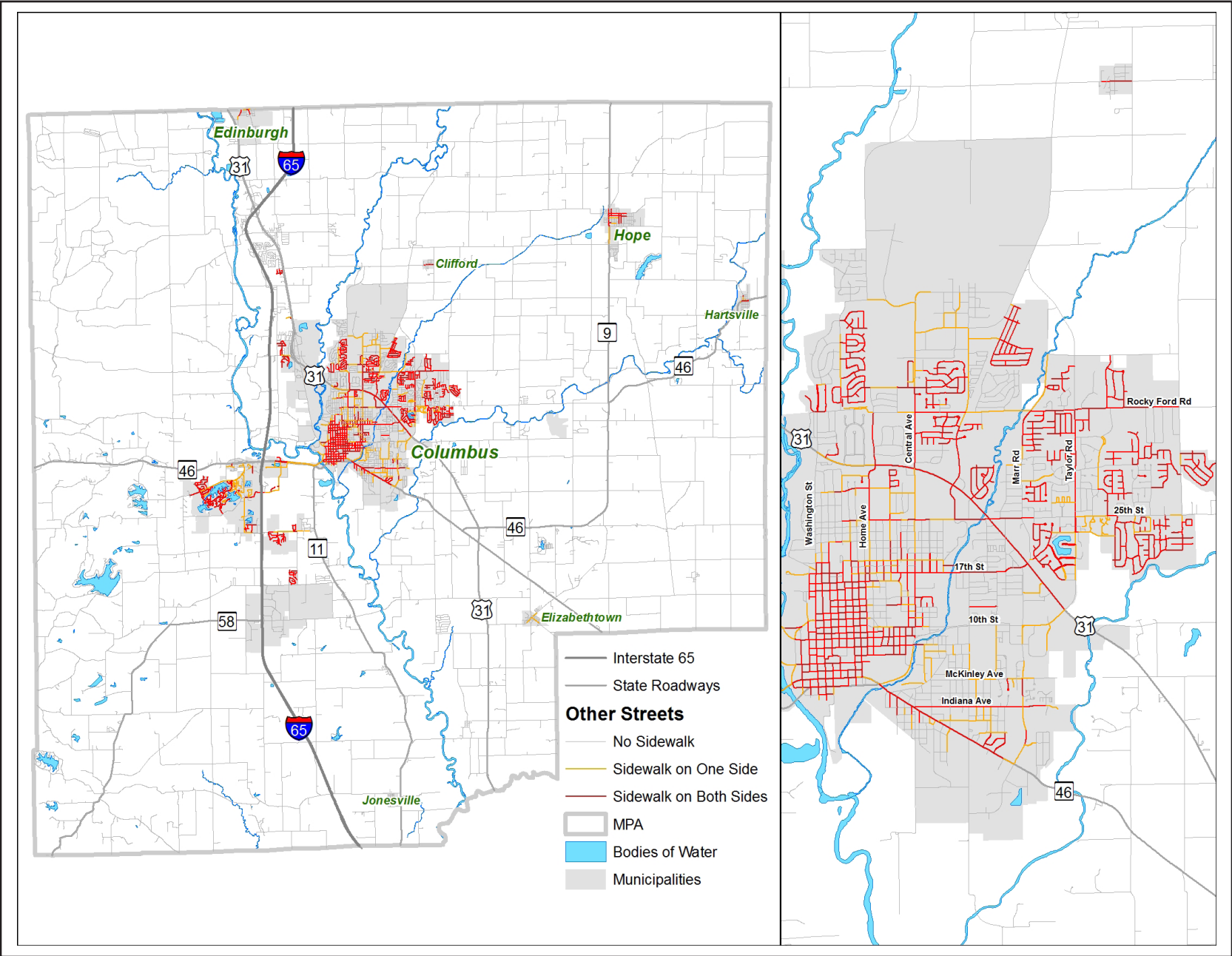


As one would expect, the majority of the pedestrian network is within the City of Columbus and the other municipalities within the MPA. However, as areas were developed in the mid to late 20th Century, sidewalks were not viewed as a priority and were constructed more and more infrequently.

Currently, the City of Columbus requires that sidewalks are constructed with housing developments, and is working toward constructing sidewalks along collector and arterial roadways. The City of Columbus has addressed most of the sidewalk gaps around the downtown area. There are still some gaps in the sidewalk coverage between the historic city center and the new subdivisions on the periphery of the urbanized area. In addition, some sidewalks in Columbus' older neighborhoods have, due to age and root upheaval, fallen into disrepair and no longer comply with ADA standards. CAMPO continues to prioritize addressing these gaps in the sidewalk network in order to make walking a safe and viable mode of transportation throughout the MPA.



Figure 28: Sidewalk Coverage in City of Columbus



5

SAFETY IN THE MPA

TIME AND DAY FACTORS

COLLISION TYPES

DRIVER CONDITIONS AND ATTRIBUTES

BICYCLE AND PEDESTRIAN CRASHES

CORRIDOR AND INTERSECTION ANALYSIS



Reducing crashes and increasing transportation safety is a priority at the local, state, and national level. Regional multi-modal safety is an important part of the long range planning process, with several safety-related objectives identified for the regional transportation system. The first step towards mitigating traffic crashes is to analyze the existing traffic crash patterns and understand the underlying factors that contribute to traffic crash incidents. This chapter of the long range plan details the analysis of traffic crash patterns in The CAMPO MPA. In addition to the area-wide trends, information on collision types, driver conditions, bike/pedestrian crashes, as well as corridor and intersection crashes are also presented. Additional tables and figures supporting the analysis in this chapter are presented in Appendix C – “CAMPO Crash Analysis”. The crash analysis was based on traffic crashes in Bartholomew County between 2015 and 2019.

Figure 29 on page 54 and Figure 30 on page 55 illustrate the location of fatal and incapacitating crashes in the CAMPO MPA over the five-year period between 2015 and 2019. A majority of the fatal crashes occurred outside the urbanized area, in rural parts of Bartholomew County. Apart from I-65, a large portion of the incapacitating crashes were on major corridors in the MPA including US 31, SR 46, 25th Street, and SR 11. This is expected due to high volume on these corridors (ADT), compared to local roads in Columbus.

CAMPO CRASH STATISTICS

- There were 10,420 crashes involving vehicles between 2015 and 2019. Injury crashes accounted for 27 percent of these crashes (2,796), while fatal crashes (70) accounted for less than 1 percent of these overall crashes.
- About 49 percent of the injury crashes were incapacitating crashes. Incapacitating crashes are crashes involving evident injury including lumps on head, abrasions, bruises and minor lacerations or claims of injuries that are not evident.
- Crashes involving pedestrians and bicyclist accounted for 1.5 percent of the total crashes in the CAMPO MPA.
- There was an average (2015-2019) of 1.26 fatal injuries per 100 million Vehicles Miles Travelled (VMT) in CAMPO compared to a target of 1.087 fatal injuries per 100 million VMT set by INDOT.
- Crash frequency was the highest for age groups between 15- 25, which accounted for about 14 percent of total crashes.
- The most common crash types between 2015-2019 were rear end, running off road, and right-angle crashes. Backing and head on crashes decreased in occurrence from previous years.

Figure 29: 2015-2019 Fatal Crashes in Columbus MPO

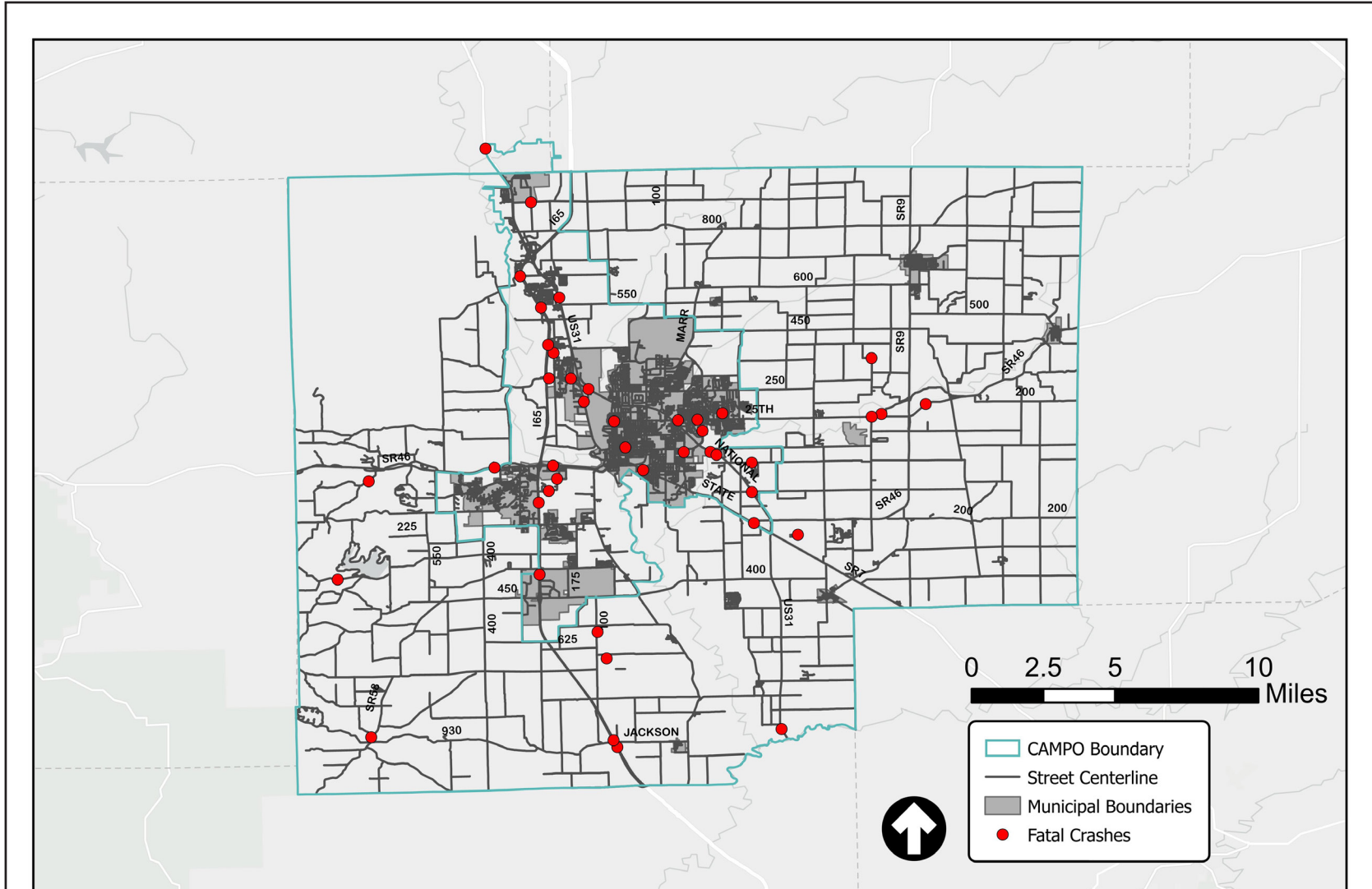
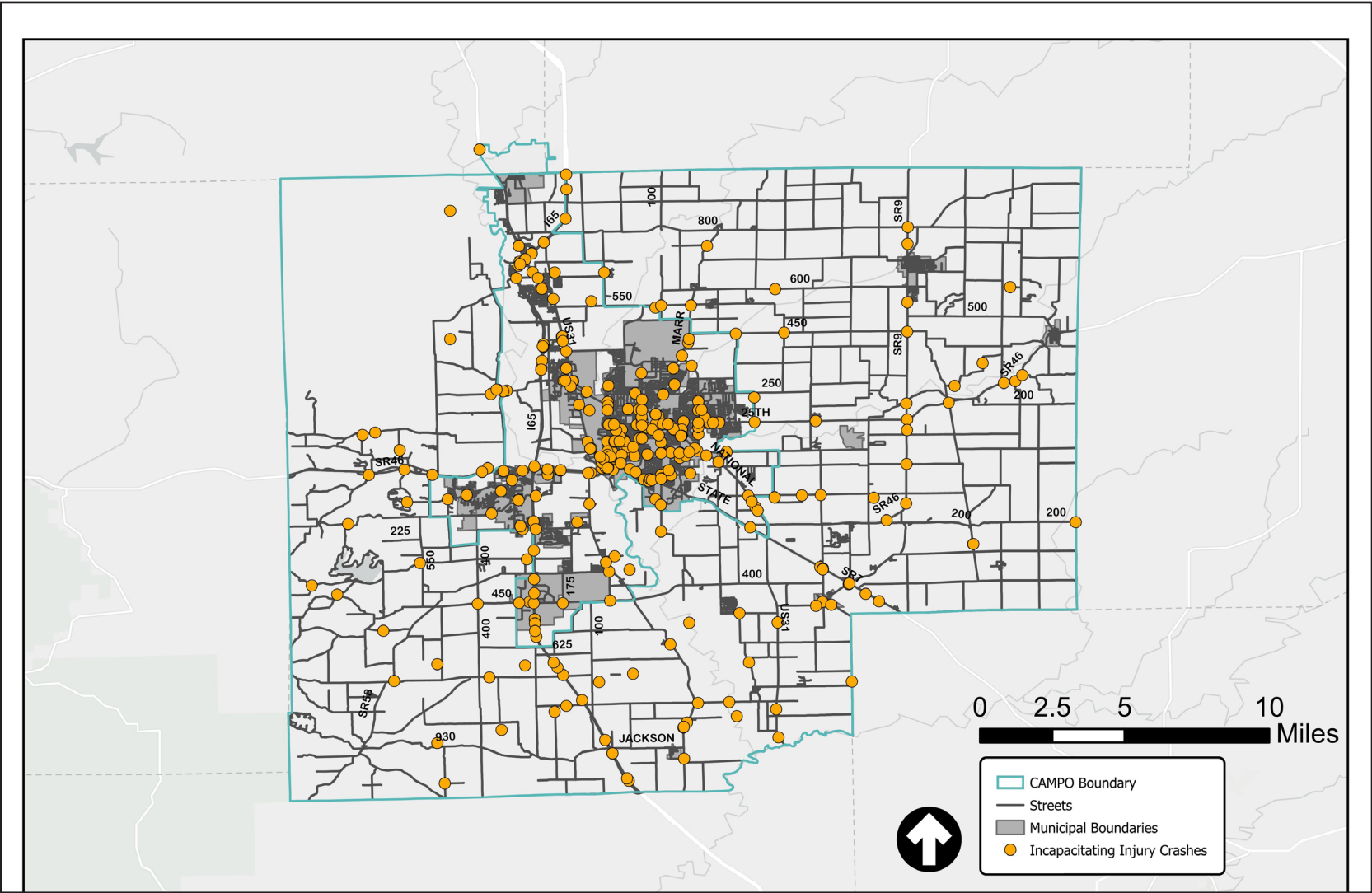


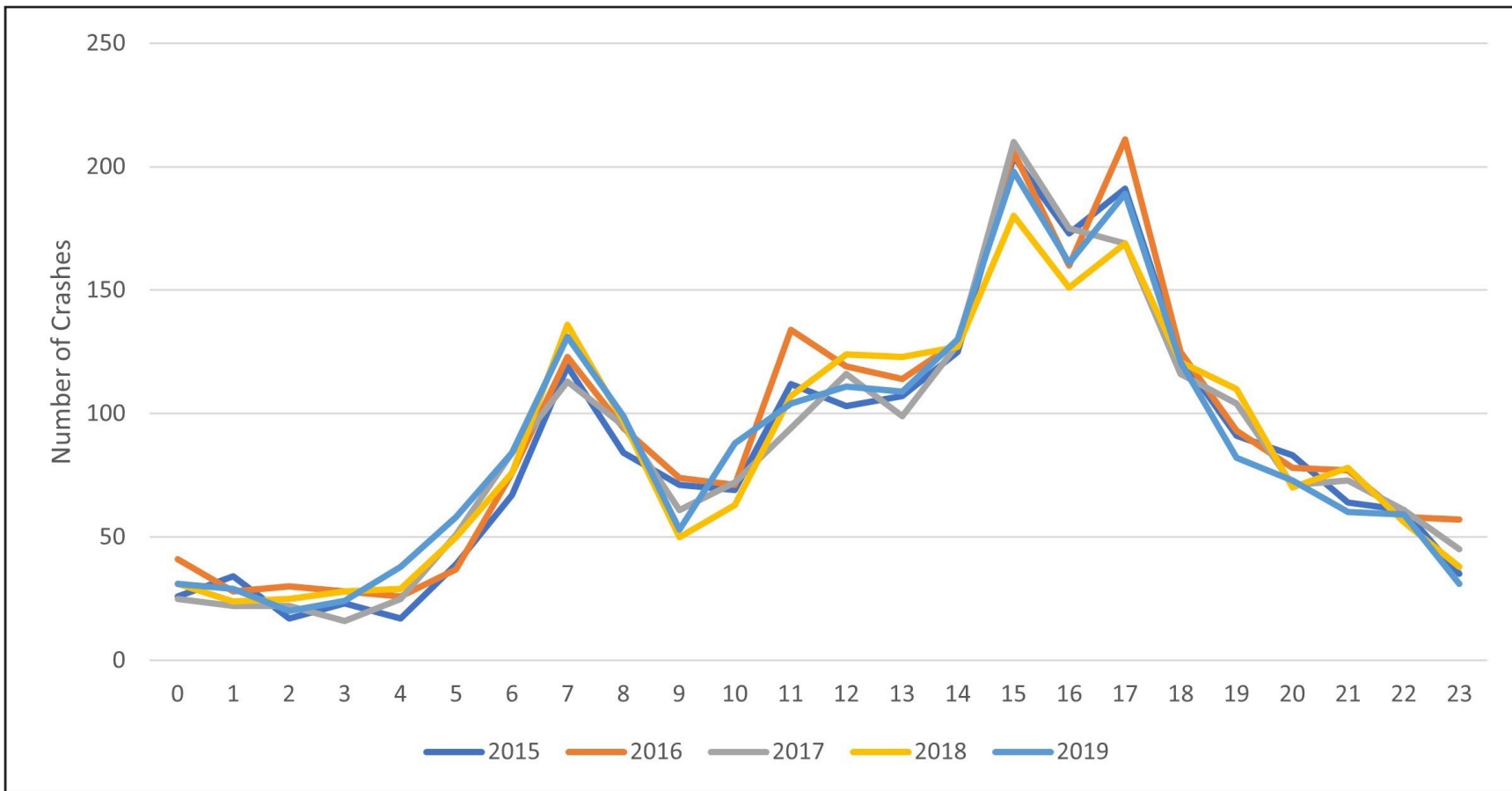
Figure 30: 2015-2019 Incapacitating Injury Crashes



TIME AND DAY FACTORS

Over the five-year analysis period, the number of crashes were highest during AM peak period (7 AM – 9 AM) and PM peak period (3 PM – 6 PM), with the highest number of crashes between 3 – 4 PM and between 5 - 6 PM. Figure 31 presents the crash trends in the area by time of day. The crashes were highest on Friday and remained relatively low on the weekends. The crash frequency remained constant on other days of the week.

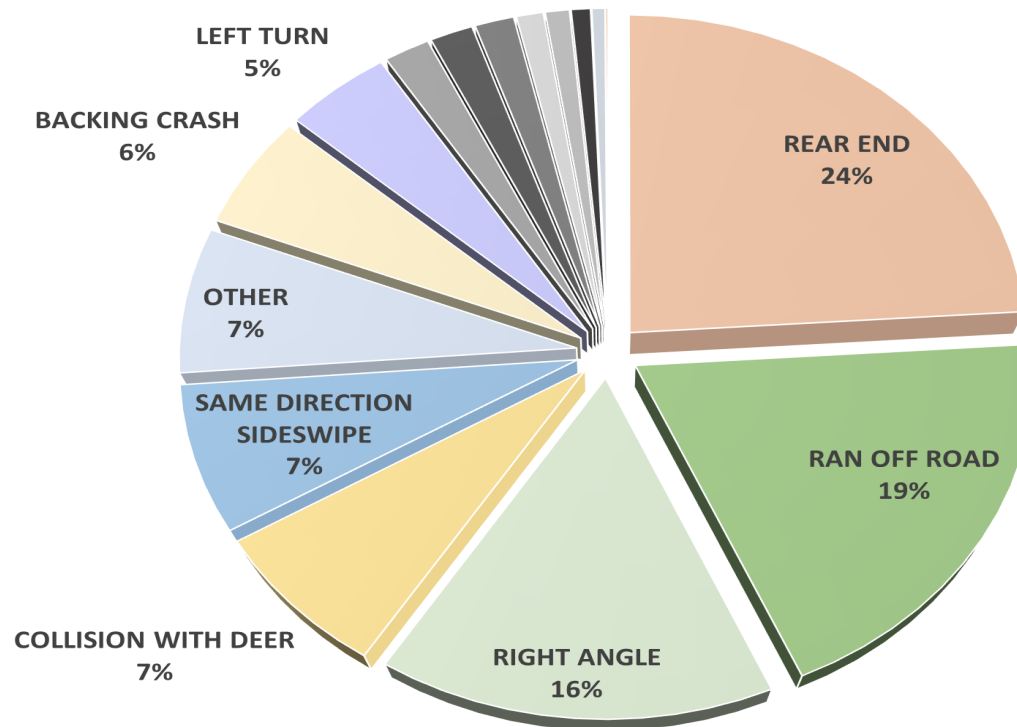
Figure 31: Area Traffic Crashes by Time of Day



COLLISION TYPES

Figure 32 presents the total crashes in CAMPO MPA by major collision types. Rear-end crashes are the most common collision type contributing to more than a quarter (24 percent) of the total crashes. Running off road is the second most prevalent collision type in the CAMPO MPA at 19 percent of total crashes. Right angle crashes is the third most prevalent crash type at 16 percent of total crashes. The rear end and right angle crashes commonly occur at intersections and along congested corridors.

Figure 32: Crashes by Collision Type

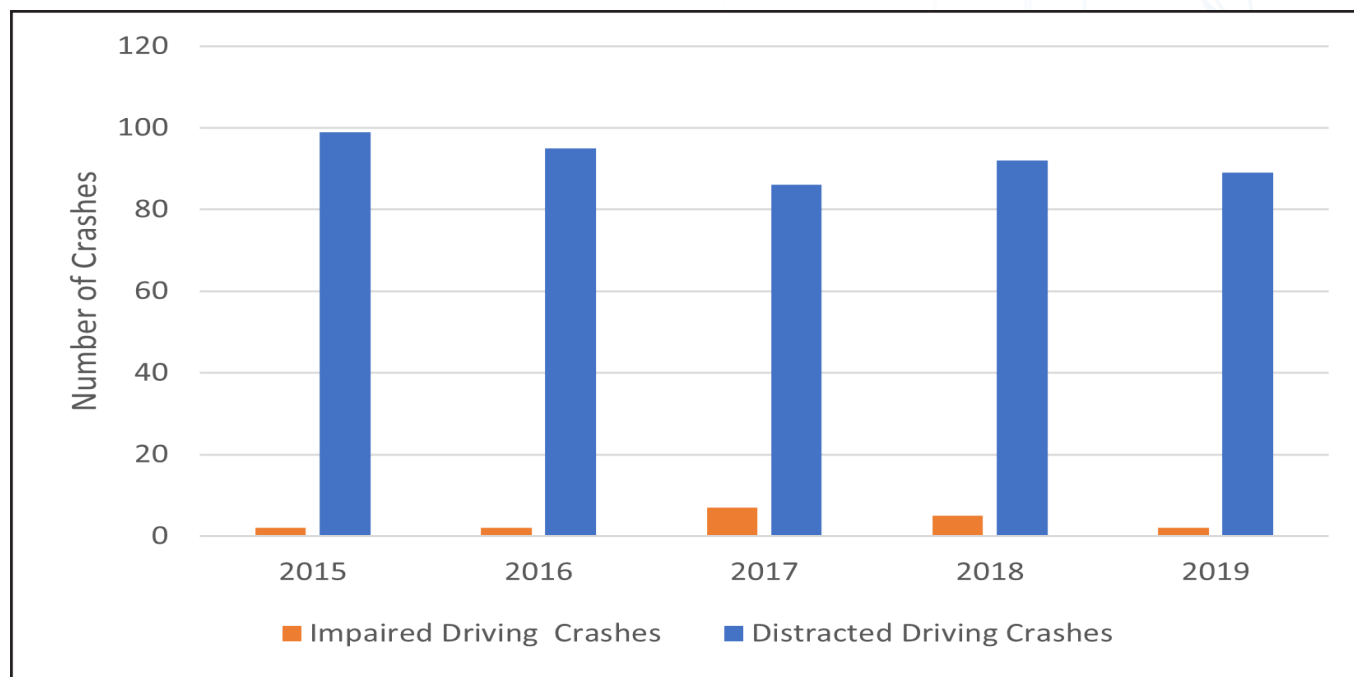


DRIVER CONDITIONS AND ATTRIBUTES

The condition of the driver is often an important factor contributing to a crash. Alcohol/drug impaired and distracted driving related crashes account for 4.6 percent of total crashes in the CAMPO MPA. Distracted driver crashes include fatigued, illness/medicated, prescription drugs, asleep, inattentiveness, etc.

- Impaired driving accounted for 0.2 percent of total crashes in MPA, while distracted driving accounted for 4.4 percent.
- The impaired driving crashes remained constant over the five-year analysis period, peaking in 2015 and 2017.
- Less than one percent of the impaired and distracted driving crashes resulted in fatalities, while 5.0 percent resulted in injuries.

Figure 33: 2015-2019 Incapacitated Driver Crashes



BICYCLE AND PEDESTRIAN CRASHES

Promoting livable communities that support multi-modal transportation choices is a priority in Columbus. Bicycle and pedestrian safety is a critical factor to encourage biking, walking and to develop a quality multi-modal system in the region. Figure 34 on page 60 and Figure 35 on page 61 present the location of bicycle and pedestrian crashes in the region as well as the severity type. A majority of the bicycle and pedestrian crashes in the urbanized area occurred along major corridors in the region. While high speed travel is desired along these roadways, vehicular traffic must be balanced with safe conditions for non-motorized travel. It is not only important to develop systems in areas where walking and biking are already prevalent, it is equally important to foster an atmosphere in other parts of the city that allow users to feel safer, which, in turn, increases walking and biking. The 2045 CAMPO long range plan recognizes and prioritizes the need for non-motorized infrastructure in the community, including sidewalk and bicycle facilities.



Figure 34: 2015-2019 Pedestrian-Involved Crashes by Severity

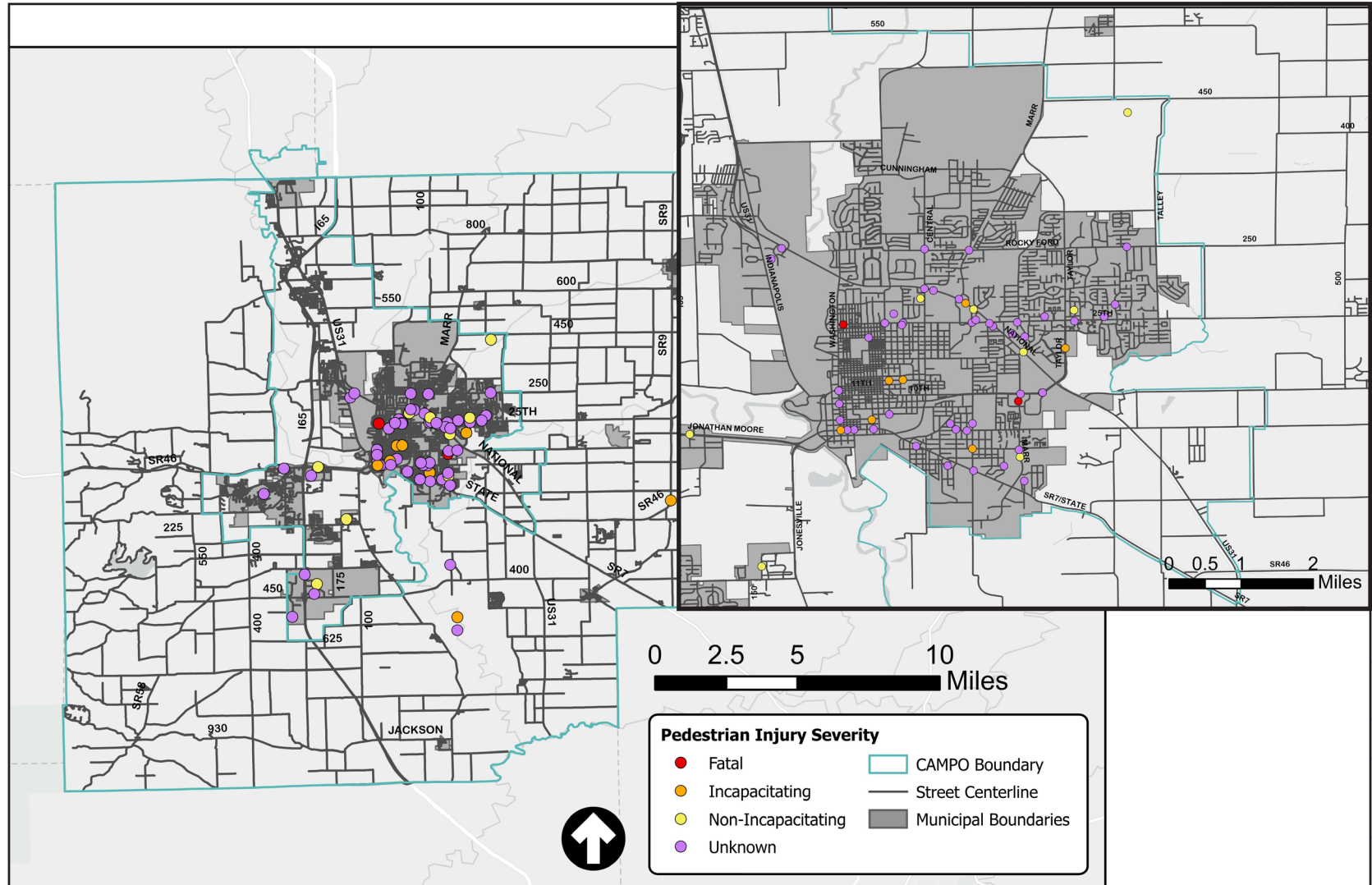
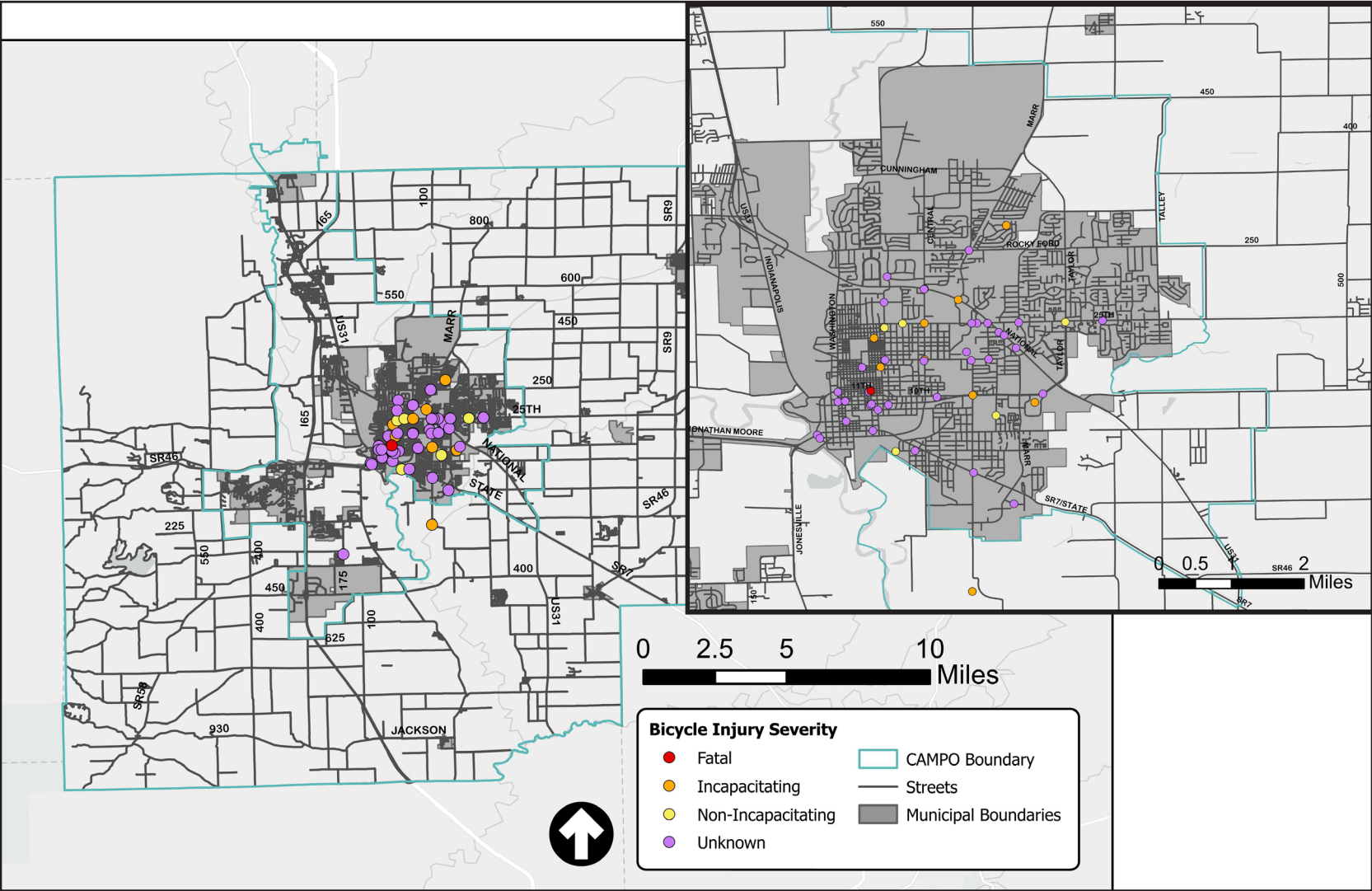


Figure 35: 2015-2019 Bicycle Crashes by Severity



CORRIDOR AND INTERSECTION ANALYSIS

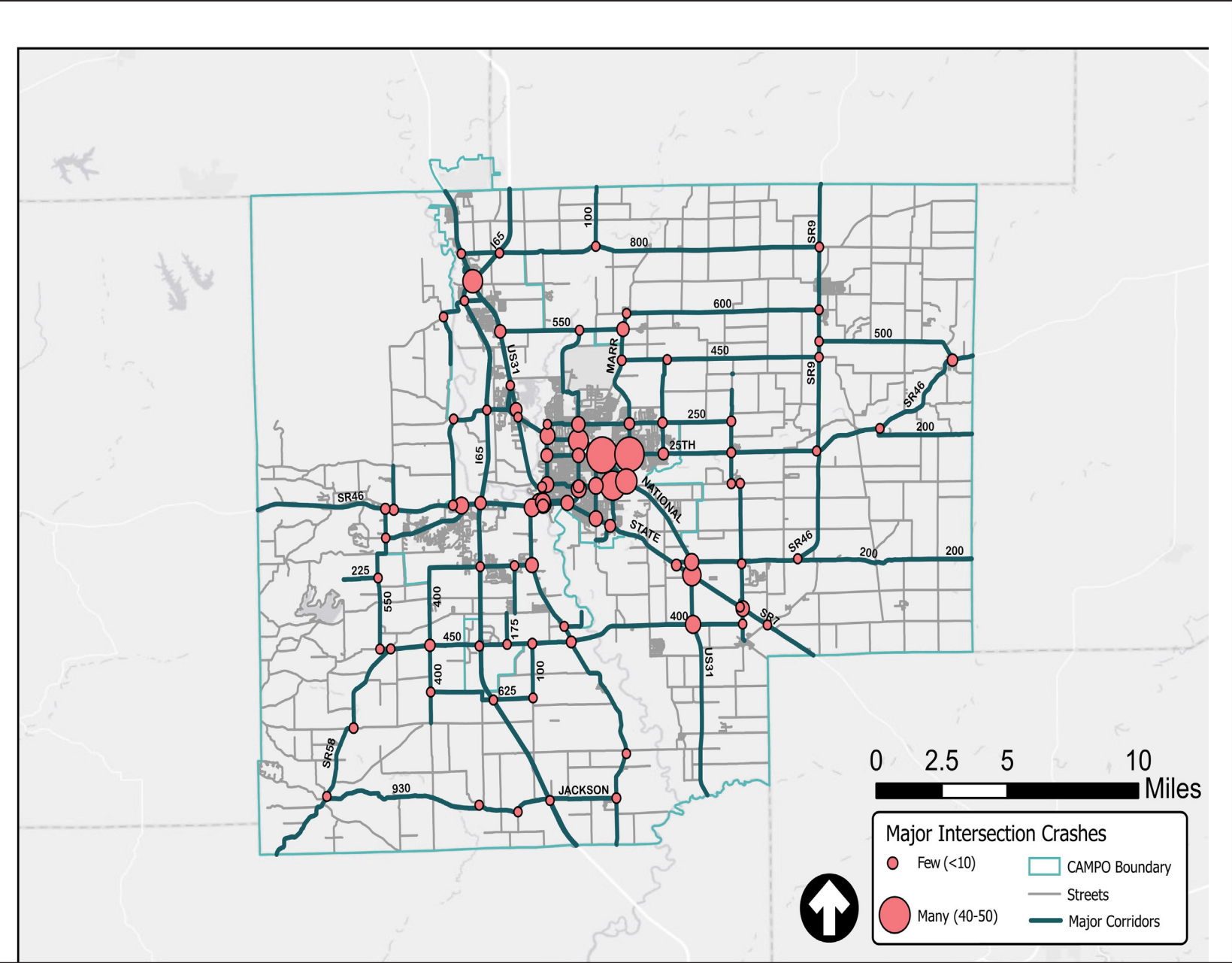
This section of the report presents analyses on the crash patterns along major corridors and intersections in the CAMPO MPA. About 41 percent of traffic crashes occur along major corridors and intersections with high average daily traffic volumes (ADT). Table 3 presents the mid-block crash data for the major corridors in the region. I-65, US 31, and SR 46 are the highest crash frequency corridors in the region.

Figure 36 on page 63 presents the major crash intersection locations in the MPA. The intersection of 25th Street and US 31 recorded the highest number of crashes over the five year period. Other high crash frequency intersections included 25th and Taylor Road, 10th and Marr Road, and 10th and National Road.

Table 3: Mid-Block Crash Data for the Major Corridors

CORRIDORS	CRASHES	INJURIES		
		FATALITIES	INCAPACITATING	NON- INCAPACITATING
I-65	1,073	14	54	24
US 31	782	7	63	64
SR 46	606	9	41	45
25th St.	270	3	17	23
SR 11 /Jonesville Rd.	265	1	18	16
SR 7	205	0	16	9
Central Ave.	166	0	13	15
CR 450 South	138	0	8	11
SR 58	123	1	8	7
Marr Rd.	93	2	16	10

Figure 36: 2015-2019 Major Intersection Crashes



6

GOALS, OBJECTIVES & PERFORMANCE MEASURES

GOAL 1: SUPPORT ECONOMIC VITALITY

GOAL 2: INCREASE ACCESSIBILITY AND IMPROVE QUALITY OF LIFE

GOAL 3: ENCOURAGE TRANSPORTATION CHOICES/MULTI-MODAL CONNECTIVITY

GOAL 4: IMPROVE SAFETY AND EFFICIENCY

GOAL 5: PRIORITIZE EXISTING SYSTEM PRESERVATION AND MAINTENANCE

GOAL 6: FOSTER COORDINATION THROUGHOUT THE MPA

PERFORMANCE BASED PLANNING AND PROGRAMMING

PERFORMANCE TARGETS



The development of goals and objectives for the transportation system in the CAMPO MPA helps align specific transportation projects with the overarching aims of the region. The goals and objectives provide guidance in the planning process and help determine the direction of the planning efforts. Goals are defined as the large, all-encompassing values that the region is working toward supporting using the transportation system as a tool. Objectives are specific methods of achieving those overarching goals that provide more tangible steps that CAMPO can take in support of the goals.

MAP-21 introduced and FAST Act continues the focus of performance-based planning for statewide and metropolitan transportation planning. This approach to planning applies to the development, application and monitoring of performance data to guide transportation funding and improvements. Performance measures are measures of effectiveness that determine the success or failure of specific implemented transportation projects.

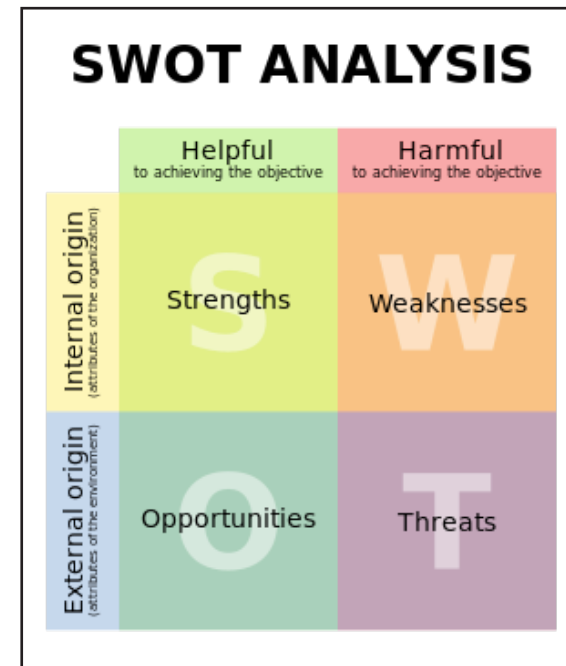
A well-rounded public outreach effort is an important element of the long range planning process. The goals and objectives for CAMPO were developed based on regional FAST Act priorities, INDOT transportation policy factors, local knowledge, current local planning efforts, extensive stakeholder engagement and input received during public meetings. A SWOT (Strengths, Weaknesses, Opportunities and Threats) exercise was

performed with the CAMPO LRTP steering committee members to help highlight the positive or negative factors impacting the existing and future transportation infrastructure in the region. The four elements explored as part of the SWOT analysis include:

- **Strengths:**
Characteristics of the CAMPO MPA that give it an advantage over other, similarly sized regions in the country.
- **Weaknesses:**
Characteristics of the CAMPO MPA that put it at a disadvantage relative to other similarly sized regions in the country.
- **Opportunities:**
Either elements of the CAMPO MPA which can be exploited to be an advantage for the area, or elements that are currently underutilized within the area.
- **Threats:**
Elements of the transportation system or growth trends that could potentially cause problems for the CAMPO MPA over the next 25 years.

This analysis was the foundation upon which the goals and objectives for transportation in the CAMPO MPA were developed. The following sections describe the six goals identified as part of the CAMPO long range planning process. Each goal is linked to transportation objectives, performance measures, and strategies to help CAMPO work towards measuring and achieving select performance targets. The steering committee member comments gathered as part of the SWOT analysis are presented in Appendix D – CAMPO Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis.

Figure 37: SWOT Analysis



GOAL 1: SUPPORT ECONOMIC VITALITY

The regional transportation system is a valuable asset contributing to the economic vitality in Columbus and Bartholomew County. CAMPO should make transportation decisions that support this contribution and enhance its benefits. Promoting projects that support business, increase the movement of goods, and allow the population to get to and from work easily is critical to a thriving region. Of particular importance locally are (1) the need to expand transportation options connecting potential employees with employers and (2) the use of targeted infrastructure improvements to remove barriers to safe, orderly growth and development and expand the supply of developable land.

Congestion along state routes and at-grade rail crossings is an obstacle to economic growth in the MPA. Improving transit service and providing access to employment centers and metro areas was recognized to positively impact employment growth in Columbus. Supporting economic vitality is consistent with a FAST Act national goal to “Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency”.



OBJECTIVE	PERFORMANCE MEASURE	STRATEGIES
1.1 Assess the efficiency and safety of freight movement and identify and implement any needed improvements	<ul style="list-style-type: none"> Columbus & Bartholomew County Freight Plan completed 	1.1A Complete a regional freight plan for the MPA consistent with state and national strategies
1.2 Reduce the impact of freight on other modes of travel	<ul style="list-style-type: none"> Number of freight safety or efficiency projects implemented 	1.2A Identify intersections impacted most by freight movements (truck and rail traffic) 1.2B Coordinate non-motorized facility planning with truck route planning to support safety and efficiency for all travel modes and eliminate conflicts where possible
1.3 Support transit and bicycle/ pedestrian improvements that increase access to local and regional employment centers	<ul style="list-style-type: none"> Number of jobs within ¼ mile of a transit line and/or dedicated bicycle facility High density residential areas lacking transit service and/or dedicated bicycle facilities 	1.3A Evaluate the existing transit lines and bicycle facilities to ensure they are adequately serving employment centers 1.3B Assess the viability of new transit lines and/or bicycle facilities that improve connections to employment centers 1.3C Identify business and industry partners to support provision of transit and additional bicycle facilities 1.3D Encourage INDOT to apply context sensitive design principles and accommodate pedestrians on and crossing its highways in urban and suburban locations
1.4 Encourage transportation projects that maintain or enhance the economic vitality of Columbus and Bartholomew County	<ul style="list-style-type: none"> System congestion and delay Enhanced county-wide connectivity 	1.4A Provide additional east-west connectivity 1.4B Support transportation improvements that serve to expand the supply of developable land (consistent with the Columbus and Bartholomew County Comprehensive Plans) 1.4C Support projects that improve intersection efficiency and reduce congestion, particularly near industrial centers 1.4D Use the Columbus Strategic Growth Study to coordinate transportation infrastructure improvements with other infrastructure and services in support of community improvements growth planning and to maximize the economic impact of those improvements
1.5 Improve connectivity across railroads, streams, and other barriers to growth	<ul style="list-style-type: none"> Congestion and delay at railroad and river crossings 	1.5A Pursue funding to grade separate railroad crossings on major roadways 1.5B Pursue transportation projects promoting east-west connectivity 1.5C Maintain and improve flood-free routes that connect the portions of the area as a whole and the City of Columbus in particular that are separated during a flood event 1.5D Encourage INDOT to apply context sensitive design principles and accommodate pedestrians on and crossing its highways in urban and suburban locations
1.6 Support emerging modes of mobility, including ride sharing services, alternative power vehicles, and autonomous vehicles to ensure that area infrastructure remains globally competitive and complete	<ul style="list-style-type: none"> Number of projects using latest technologies (e.g., CAVs, Charging Stations, Smart Corridors) to improve system efficiency and safety 	1.6A Conduct studies to evaluate potential locations for charging stations 1.6B Coordinate with freight industry to promote automation of freight movement 1.6C Support studies to evaluate impact of CAVs on regional transportation network 1.6D Conduct study to evaluate feasibility of Mobility-as-a-Service within the Metropolitan Planning Area

GOAL 2: INCREASE ACCESSIBILITY AND IMPROVE QUALITY OF LIFE

All transportation projects that support other goals should be balanced with those that increase accessibility and quality of life for all citizens in Columbus and Bartholomew County, including maintaining an environmentally sustainable system that does not affect the area's natural assets and supports easy access to healthcare. A balanced, multi-modal transportation system will help improve the health and appeal of Columbus and Bartholomew County. The City of Columbus in particular has emphasized bicycle and pedestrian travel and made significant investments in support of expanding recreational amenities, expanding transportation options, reducing congestion, and improving public health. Future transportation improvements should support the continued evolution of bicycle and pedestrian travel in both Columbus and Bartholomew County.

Transportation infrastructure needs to be designed to address the different urban, suburban, and rural contexts in the Columbus and Bartholomew County area. Beyond that, infrastructure design needs to be responsive to specific needs, such as those of suburban residential neighborhoods, the perpetuation of Columbus' architecturally significant structures and overall tradition of quality design, and the modern farming operations found throughout the rural portions of the county.

Increasing accessibility and improving quality of life in the region supports the following national planning goals:

- Increasing accessibility and mobility of people and freight
- Promote efficient system management and operation



OBJECTIVE	PERFORMANCE MEASURE	STRATEGIES
<p>2.1 Encourage continued infill and mixed-use development in areas with existing infrastructure and mixed-use development</p>	<ul style="list-style-type: none"> Average population density in the urbanized area 	<p>2.1A Provide education to the public and local decision makers the benefits of infill and mixed-use development</p> <p>2.1B Use transportation funds to upgrade existing infrastructure where needed to support infill development</p> <p>2.1C Encourage contextually-appropriate transportation infrastructure that supports all modes of transportation and in particular accommodates comfortable, safe bicycle and pedestrian travel in potentially mixed-use areas</p>
<p>2.2 Improve system reliability and reduce congestion</p>	<ul style="list-style-type: none"> Average delay per vehicle at select intersections Travel time during AM and PM peak hours 	<p>2.2A Identify crucial routes and intersections that serve commuter traffic, school traffic, and/or are critical for bicycle and pedestrian connections</p> <p>2.2B Provide alternate routes to major attractions in the MPA</p> <p>2.2C Improve traffic signal coordination throughout the area</p>
<p>2.3 Increase the supply of affordable housing with multi-modal access to employment centers</p>	<ul style="list-style-type: none"> Number of affordable units within ¼ mile of a transit line or dedicated bicycle facility 	<p>2.3A Prioritize projects that improve multi-modal access, especially for low-income populations</p> <p>2.3B Evaluate the relationship between transit lines and bicycle facilities and existing affordable housing to see if adjustments to the routes should be implemented</p>
<p>2.4 Improve transportation network connectivity in CAMPO MPA</p>	<ul style="list-style-type: none"> Connectivity Index score 	<p>2.4A Create a “Connectivity Index” based on intersections per square mile or some other metric.</p> <p>2.4B Avoid dead-end roads</p> <p>2.4C Improve east-west connections</p> <p>2.4D Address multi-modal regional mobility issues (intercity bus)</p>
<p>2.5 Encourage transportation infrastructure that both supports and contributes to the architecturally significant buildings and overall high level of design in Columbus</p>	<ul style="list-style-type: none"> Recognition of design excellence through awards, articles, and similar acknowledgements 	<p>2.5A Explore options for significant transportation projects to include architectural and engineering designs that continue the Columbus design tradition.</p> <p>2.5B Utilize Context Sensitive Design for transportation projects and make appropriate accommodations for existing architectural buildings, other design assets and their context and accessibility</p> <p>2.5C Support public involvement and utilize context sensitive design where transportation projects have the potential to impact neighborhoods</p>
<p>2.6 Encourage the recognition of streets as public spaces that work in concert with the adjacent properties to establish a character for neighborhoods, business areas, the Columbus downtown, and the community as a whole.</p>	<ul style="list-style-type: none"> Percent of households within 0.25 miles of accessible sidewalks meeting current standards and in good repair 	<p>2.6A Establish public engagement processes and community driven visioning exercises including web-based tools to establish each community’s long-term vision for its identity.</p> <p>2.6B Emphasize streetscape design elements to make streets vibrant places in the community, as well as foster active transportation.</p> <p>2.6C Develop multi-modal plans to facilitate those connections between residential areas and activity centers.</p>

GOAL 3: ENCOURAGE TRANSPORTATION CHOICES/ MULTI-MODAL CONNECTIVITY

Reversing the trend of automobile reliance has been, and will continue to be, a priority at both the national and regional level. The Columbus People Trails and other bicycle and pedestrian infrastructure have provided a new level of non-motorized connectivity, and the Mill Race Transit Center has made access to all five bus routes convenient and pleasant. A transportation system that provides alternatives to an automobile will open up employment, education, recreational and entertainment options to populations that have historically been unconnected. It also increases the safety of all modes of the transportation system, reduces maintenance and operational costs, and preserves the natural environment. It is a priority of Columbus and Bartholomew County to enhance and expand the transportation offerings for all segments of the population, including both those with and without the economic means to have transportation choices.

While some areas of the City of Columbus have high quality non-motorized transportation options and access to transit, there are parts of the City and the remainder of Bartholomew County that do not have those same amenities.

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This CAMPO goal encompasses the national planning goals to:

- Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns, and
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.



OBJECTIVE	PERFORMANCE MEASURE	STRATEGIES
3.1 Provide transportation choices to mobility-limited persons, low-income households and senior citizens	<ul style="list-style-type: none"> Percent of senior population and low income neighborhoods served by transit 	3.1A Identify and ensure transit service to environmental justice areas 3.1B Encourage the expansion of local taxi services and introduction of ridesharing services
3.2 Expand ColumBUS service to increase transit access	<ul style="list-style-type: none"> Percentage of population and employment within ¼ mile of a transit line Transit ridership Miles of fixed-route service Reduction in VMT per capita 	3.2A Regularly re-evaluate bus routes to ensure they are adequately serving destinations within the City 3.2B Identify funding to extend existing bus lines or add new lines 3.2C Expand ColumBUS transit services to key locations in the city limits, prioritizing those that make more employment opportunities, services, or amenities available to local residents; and coordinate with other service providers who are able to operate outside the City to facilitate broader regional connections 3.2D Identify business and industry partners to support provision of transit
3.3 Promote transportation projects that support multi-modal access, particularly between residential areas, local businesses, and centers of public activity	<ul style="list-style-type: none"> Number of activity centers within ¼ mile of a transit line or dedicated bicycle facility Number of dedicated bicycle facilities intersecting with transit routes. 	3.3A Support continued implementation of Columbus' complete streets policy (the Columbus Thoroughfare Plan) 3.3B Include bicycle, pedestrian and transit infrastructure with the development of new civic projects 3.3C Maintain up-to-date bicycle and pedestrian plans
3.4 Strengthen the relationship between land use development and the transportation system	<ul style="list-style-type: none"> Number of walkable mixed-use areas in the community Maintain or improve roadway Level of Service (LOS) Residential density within ¼ mile of transit routes, dedicated bicycle facilities, and collector and arterial streets in comparison with the community average density 	3.4A Create a methodology for evaluating development proposal's relationship with the transportation system 3.4B Encourage neighborhood scale businesses and the provisions of goods and services within walking distance of residential neighborhoods
3.5 Increase sidewalk and pedestrian coverage, especially in residential areas	<ul style="list-style-type: none"> Mileage of new or added sidewalks in residential areas Number of multi-modal connections to open spaces, schools, shopping centers, and other services and amenities 	3.5A Expand bicycle and pedestrian infrastructure consistent with the Columbus Bicycle & Pedestrian Plan 3.5B Support the development of a Bartholomew County Bicycle & Pedestrian Plan 3.5C Encourage INDOT to apply context sensitive design principles and accommodate pedestrians on and crossing its highways in urban and suburban locations

GOAL 4: IMPROVE SAFETY AND EFFICIENCY

Reducing crashes that result in severe and fatal injuries is a priority at the local, state and national level. It is important to bring together engineering, law enforcement, education and emergency response representatives to develop a safety program that utilizes the benefits of each.

By targeting spot locations that have a history of traffic crashes, implementing system-wide improvements that have been proven to increase safety, and considering pedestrians and cyclists in safety planning, great strides can be made in improving the CAMPO area's transportation safety. Of particular importance is careful consideration of potential conflicts between the various transportation modes found in the area, including rail, freight, other motorized vehicles, bicycles, and pedestrians. This regional goal satisfies the national goal of increasing the safety of the transportation system for motorized and non-motorized users.

The steering committee and public input placed a heavy emphasis on safety improvements in the MPA. One in three public survey respondents identified safety as a key issue for regional transportation system. Fatal crashes per 100 million VMT in Columbus MPA is slightly higher than the target fatality rate selected by CAMPO.

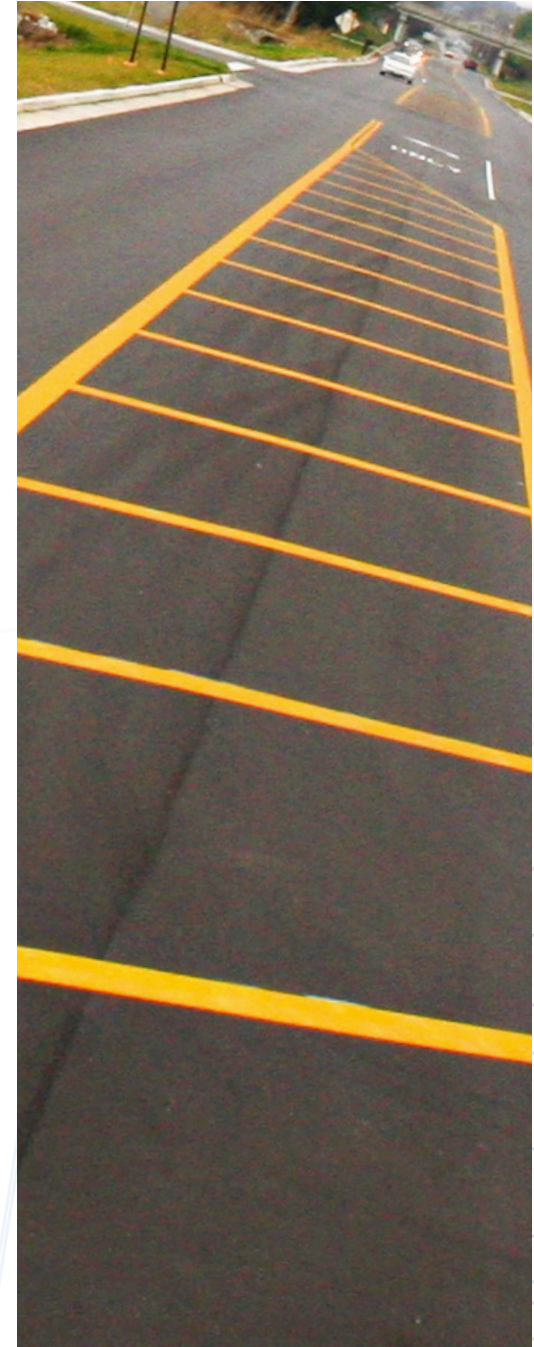


OBJECTIVE	PERFORMANCE MEASURE	STRATEGIES
4.1 Reduce the number of both total and fatal/severe injury crashes in the MPA	<ul style="list-style-type: none"> Crashes within the MPA Fatal and severe injury crashes within the MPA 	<p>4.1A Maximize funding for safety enhancements</p> <p>4.1B Analyze crash trends and address safety issues in the MPA</p> <p>4.1C Develop a traffic safety education program with health and education advocates</p>
4.2 Improve safety on pedestrian and bicycle facilities	<ul style="list-style-type: none"> Pedestrian and bicycle crashes within the MPA Bartholomew County Bicycle Plan adopted 	<p>4.2A Expand the sidewalk network</p> <p>4.2B Provide high-visibility pedestrian crossings at major intersections</p> <p>4.2C Enhance the sidewalk network, concentrating on areas that are in poor condition or where there are gaps in the system</p> <p>4.2D Support the establishment of a Bartholomew County Bicycle Plan</p> <p>4.2E Support drug and alcohol prevention and treatment programs to help improve the overall safety of the driving and walking public</p>
4.3 Improve safety related to rail crossings	<ul style="list-style-type: none"> Number of crashes at at-grade rail crossings 	<p>4.3A Provide grade-separated rail crossings where feasible</p> <p>4.3B Provide adequate signage and signal control at all at-grade rail crossings</p>
4.4 Improve safety within the vicinity of schools	<ul style="list-style-type: none"> Number of crashes during arrival and dismissal periods within the vicinity of schools 	<p>4.4A Provide extensive sidewalk facilities between schools and residential areas</p> <p>4.4B Provide multiple entrance and exit options to reduce congestion</p> <p>4.4C Support the implementation of the Bartholomew Consolidated School Corporation Safe Routes to School Plan</p>
4.5 Promote transportation projects that enhance safety for all modes of travel	<ul style="list-style-type: none"> Number of crashes by mode of travel 	<p>4.5A Support updates to the Bartholomew County Thoroughfare Plan to incorporate appropriate street design components for the diverse agricultural areas, suburban subdivisions, rural villages, and commercial corridors in the County</p> <p>4.5B Provide best practice designed intersections between modes (roundabouts and other non-standard intersection designs, complete streets, etc.)</p> <p>4.5C Support public awareness campaigns to educate the driving public on sharing transportation facilities</p>
4.6 Improve signal coordination and maintenance to increase efficiency and safety	<ul style="list-style-type: none"> Average vehicle delay on the classified roadway system 	<p>4.6A Perform signal timing projects on all major corridors and update that timing regularly</p> <p>4.6B Upgrade signal equipment as needed to integrate new technology to control signal timing and adaptability</p> <p>4.6C Enhance pedestrian safety with signalization, signage and pavement markings, e.g. Pedestrian HAWK signals</p>
4.7 Improve emergency preparedness and emergency response in the MPA	<ul style="list-style-type: none"> Average emergency response times 	<p>4.7A Implement vehicle pre-emption for emergency response vehicles</p> <p>4.7B Provide alternate routes for at-grade rail and river crossings</p> <p>4.7C Provide quality regional and local connections to health care providers.</p>

GOAL 5: PRIORITIZE EXISTING SYSTEM PRESERVATION AND MAINTENANCE

As the region's transportation system continues to age, maintenance and preservation become increasingly important, and increasingly difficult. It is important to balance the needs of expanding the system with the requirements of maintaining the system. While bridge structures and pavement conditions are vital, considerations should also be made to preserve satisfactory sidewalk conditions and public transportation bus fleets.

Maintaining the existing transportation infrastructure at an acceptable condition was the biggest concern from the general public identified through the public survey. Maintaining the current multi-modal transportation system at an acceptable condition will take up the majority of the transportation funding going forward to the plan's horizon year. This CAMPO long range plan goal is in line with the national planning factor emphasizing the preservation of the existing transportation system and promoting efficient system management and operation.

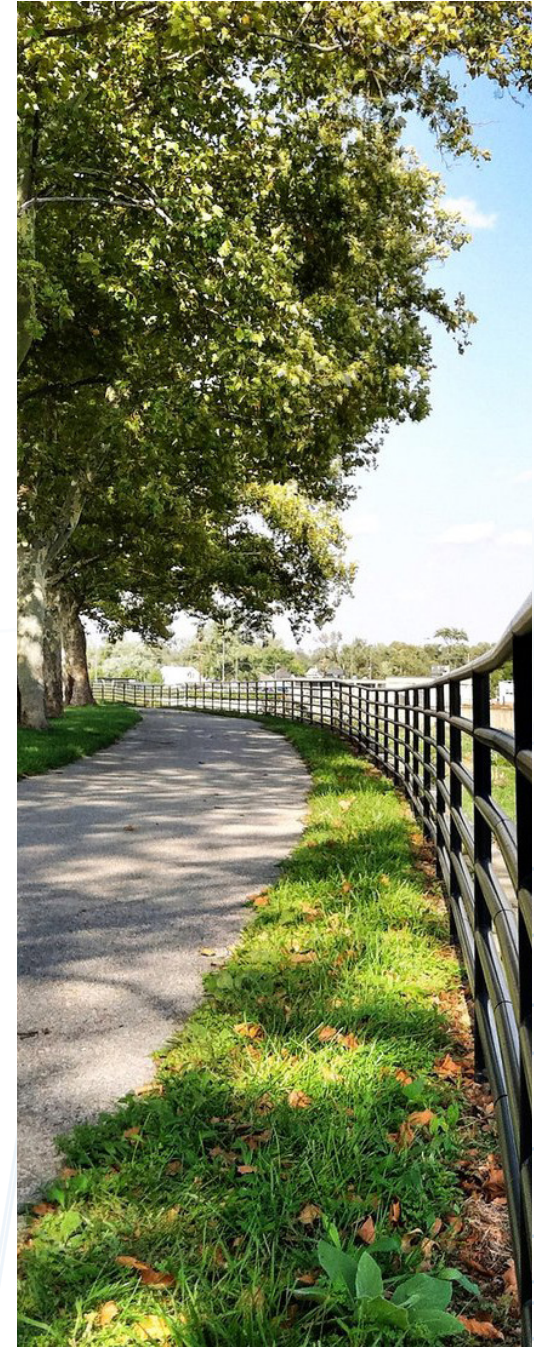


OBJECTIVE	PERFORMANCE MEASURE	STRATEGIES
<p>5.1 Increase the resilience of critical transportation infrastructure against the effects of climate, disasters, and other incidents.</p>	<ul style="list-style-type: none"> Structurally deficient bridges in the MPA # of hazmat related incidents in the regional transportation network 	<p>5.1A Maximize funding for bridge replacements 5.1B Prioritize bridge programs 5.1C Evaluate the regional transportation network for safe passage of hazmat and designate the most appropriate routes for hazmat transportation</p>
<p>5.2 Maintain satisfactory pavement conditions</p>	<ul style="list-style-type: none"> Miles of roadway with an acceptable International Roughness Index (IRI) / Pavement Condition Index (PCI) rating 	<p>5.2A Perform a pavement condition inventory 5.2B Develop a prioritized list of maintenance projects in the MPA 5.2C Enhance condition of roads on the perimeter of the City of Columbus to serve existing and future development</p>
<p>5.3 Maintain satisfactory sidewalk conditions</p>	<ul style="list-style-type: none"> Miles of sidewalk with an acceptable rating 	<p>5.3A Update the sidewalk inventory to include the entire MPA and condition scoring 5.3B Utilize federal funding (SRTS, etc.) as often as possible for sidewalk upgrades 5.3C Enhance the sidewalk network, concentrating on areas that are in poor condition or where there are gaps in the system</p>
<p>5.4 Maintain a satisfactory bus fleet</p>	<ul style="list-style-type: none"> Number of buses in use beyond their FTA-recognized usable life 	<p>5.4A Maintain a fiscally-constrained capital replacement program to replace vehicles at appropriate intervals</p>
<p>5.5 Support environmentally sustainable transportation solutions that preserve significant environmental assets and minimize negative impacts on natural systems and stormwater management</p>	<ul style="list-style-type: none"> Number of major road closures due to flooding 	<p>5.5A Promote environmental and historical assets as an item of consideration for all planning and design efforts 5.5B Incorporate storm water improvements within each transportation improvement project 5.5C Design transportation projects, especially bridges, to reduce flood impacts to the local community 5.5D Maintain and improve flood-free routes that connect the portions of the area as a whole and the City of Columbus in particular that are separated during a flood event</p>
<p>5.6 Use latest technologies and state-of-the-art practices to improve the system capacity and reliability</p>	<ul style="list-style-type: none"> Number of projects using latest technologies (Intelligent Transportation Systems) to improve system capacity and efficiency 	<p>5.6A Implement Automatic Passenger Counters (APCs), Automatic Vehicle Locators (AVLs) and updated fare collection on ColumBUS routes to increase the usability of the bus system 5.6B Update signal equipment to improve the efficiency of traffic signals 5.6C Evaluate alternative intersection configurations and travel demand management practices to reduce the need for major capacity upgrades 5.6D Identify and address congestion and safety concerns in the vicinity of local schools using latest technologies, e.g. HAWK signals, pedestrian detection, etc.</p>

GOAL 6: FOSTER COORDINATION THROUGHOUT THE MPA

While the City of Columbus contains the majority of the population and employment within the MPA, it is important to ensure that Bartholomew County and INDOT, as well as local business and industry partners, are engaged in all facets of transportation planning and stakeholder engagement. Transportation and mobility issues do not stop at any city's corporate boundary; they are interrelated throughout the entire region.

Extensive cooperation among the agencies involved in transportation policy, planning, and construction would help achieve implementation of MTP goals and objectives and help deliver projects on time and save valuable resources for the local and state transportation agencies. A new objective under Goal 6 was added to encourage regional cooperation for promoting transportation projects for increasing and encouraging access to tourist destinations and encouraging recreational activities. The addition of this objective keeps CAMPO long range planning goals in line with the newly added planning factor in the FAST Act for enhancing travel and tourism.



OBJECTIVE	PERFORMANCE MEASURE	STRATEGIES
<p>6.1 Increase coordination between key stakeholders to maximize the strengths of the region</p>	<ul style="list-style-type: none"> • Number of planning meetings involving local businesses and industry partners 	<p>6.1A Institute periodic meetings with local businesses and industry partners to promote opportunities to improve the transportation network</p> <p>6.1B Engage agency partners on a consistent basis in order to maximize opportunities for the region, especially related to identifying funding opportunities for transportation</p>
<p>6.2 Educate and inform the general public on transportation and land use planning</p>	<ul style="list-style-type: none"> • Number of public meetings 	<p>6.2A Support local, state, and national public awareness campaigns</p>
<p>6.3 Provide transportation options consistent with the plans of local governments and the public</p>	<ul style="list-style-type: none"> • Number of studies/plans consistent with the LRTP 	<p>6.3A CAMPO, as part of the City of Columbus - Bartholomew County Planning Department, will serve as a repository for all planning studies and will facilitate a coordinated implementation approach</p>
<p>6.4 Encourage strong community engagement in the planning process</p>	<ul style="list-style-type: none"> • Number of public meetings 	<p>6.4A Periodically review and update the CAMPO Public Involvement Plan identifying best practices for engaging the public</p>
<p>6.5 Foster regional cooperation for promoting transportation projects that increase and encourage access to tourist destinations and encourages recreational activities</p>	<ul style="list-style-type: none"> • Number of parks, recreational areas, and tourist attractions accessible by pedestrian and bicycle infrastructure 	<p>6.5A Include tourism promoters and representatives of significant venues and areas of attractions in the transportation planning process and the design review of potentially impactful transportation improvement projects</p>

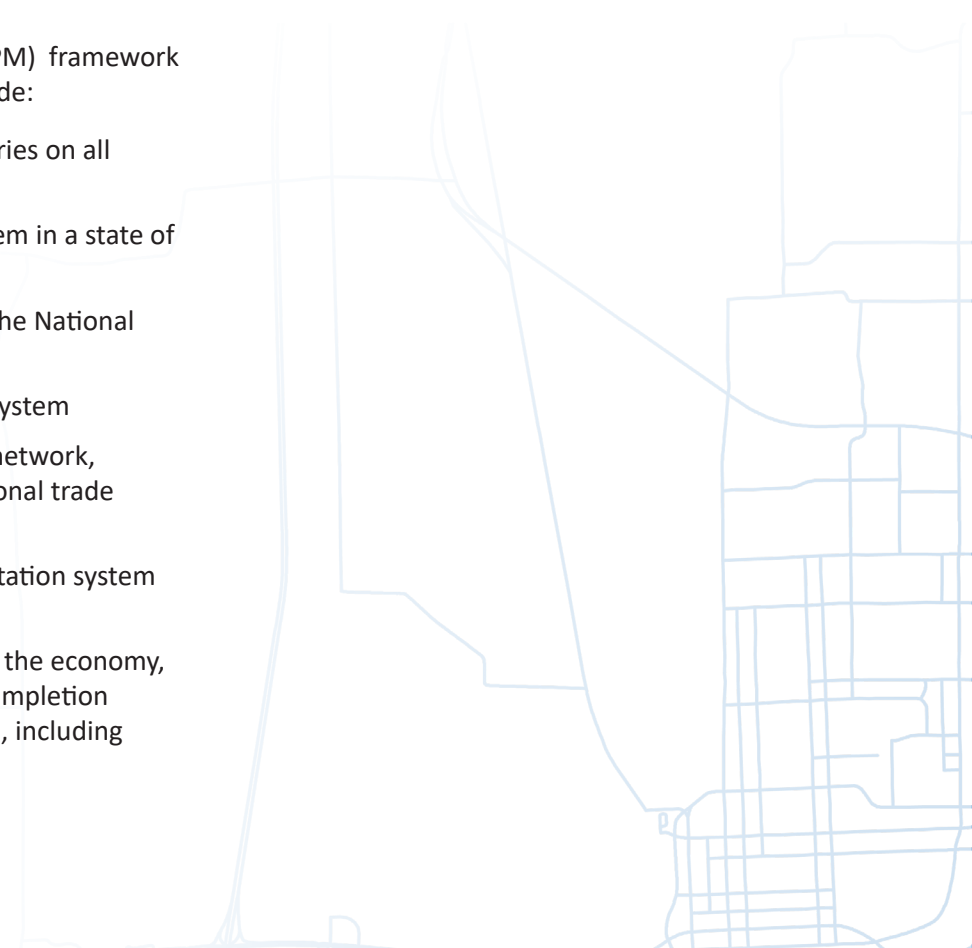
PERFORMANCE BASED PLANNING AND PROGRAMMING

Previous sections of this chapter showed performance measures associated with the MTP Goals Objectives. As per MAP-21 and FAST Act requirements INDOT, CAMPO, and ColumBUS shall conduct **Performance Based Planning and Programming (PBPP)** by completing the following tasks:

- Tracking performance measures
- Setting data-driven targets for the measures
- Selecting projects to help meet those targets
- Developing plans
- Monitoring, evaluating, and reporting progress

FHWA and FTA established a Transportation Performance Management (TPM) framework which includes seven national goals (**Source: 23USC§150(b)**). These goals include:

- **Safety:** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure Condition:** To maintain the highway infrastructure asset system in a state of good repair
- **Congestion Reduction:** To achieve a significant reduction in congestion on the National Highway System.
- **System Reliability:** To improve the efficiency of the surface transportation system
- **Freight Movement and Economic Vitality:** To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **Environmental Sustainability:** To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced Project Delivery Delay:** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.



PERFORMANCE TARGETS

INDOT established targets for the national performance goals stated above for 2019, 2020, and 2021. CAMPO decided to support INDOT targets for the CAMPO MPA instead of setting its own targets. Table 4 shows INDOT’s Performance Measures targets and funding allocated in CAMPO’s TIP (2022-2026) for each focus areas.

Table 4: INDOT Performance Measures and Targets

FOCUS AREA	PERFORMANCE MEASURE	YEAR			BASELINE	2-YEAR TARGET	4-YEAR TARGET
		2019	2020	2021			
Safety	Number of fatalities	889.6	907.7	817.3			
	Rate of fatalities (per 100 million VMT)	1.087	1.1	1.006			
	Number of serious injuries	3501.9	3467.4	3311.4			
	Rate of serious injuries (per 100 million VMT)	4.234	4.178	4.088			
	Number of non-motorized fatalities and serious injuries	393.6	405.9	393.6			
Pavement	Interstate System-% of pavement in good condition				N/A	N/A	50%
	Interstate System-% of pavement in poor condition				N/A	N/A	0.80%
	Non-Interstate NHS System - % of pavement in good condition				68.30%	78.70%	40%
	Non-Interstate NHS System - % of pavement in poor condition				5.30%	3.10%	3.10%
Bridge	% of NHS Bridges, by deck area in good condition				50%	48.30%	47.20%
	% of NHS Bridges, by deck area in poor condition				2.30%	2.60%	3.10%
System Performance and Freight	Interstate System - % of person-miles traveled that are reliable Level of Travel Time Reliability (LOTTR)				93.80%	90.50%	92.80%
	Non-Interstate System -% of person-miles traveled that are reliable Level of Travel Time Reliability (LOTTR)				N/A	N/A	89.80%
	Interstate System - Level of truck travel time reliability (TTTR)				1.23	1.27	1.3
CMAQ: Emissions Reduction (kg/day)	Cumulative reductions - Particulate Matter (PM 2.5)				179.17	20.00	30.00
	Cumulative reductions - Particulate Matter (PM 10)				4.07	0.30	0.50
	Cumulative reductions - Nitrogen Oxide (Nox)				4,576.37	1,600.00	2,200.00
	Cumulative reductions - Volatile Organic Compound (VOC)				13,939.45	200.00	400.00
Transit Asset Management	Rolling Stock (buses) - % of revenue vehicles that have met or exceeded their Useful Life Benchmark (ULB)	33%	12%	12%			
	Rolling Stock (cutaways) - % of revenue vehicles that have met or exceeded their Useful Life Benchmark (ULB)	40%	40%	40%			
	Equipment - % of equipment that has exceeded ULB or with a condition rating below 3.0 on FTA’s (TERM) Scale	100%	100%	100%			
	Facilities - % of facilities with a condition rating below 3.0 on FTA’s (TERM) Scale	80%	80%	80%			

**6 GOALS, OBJECTIVES
& PERFORMANCE MEASURES**

Table 5 shows safety performance targets and actual rates for CAMPO MPA (Rolling average from 2015-2019). As can be seen in Table 5, both fatal and severe injury rates in the CAMPO MPA were higher than the target rates.

Table 5: Safety Performance Target and Actual

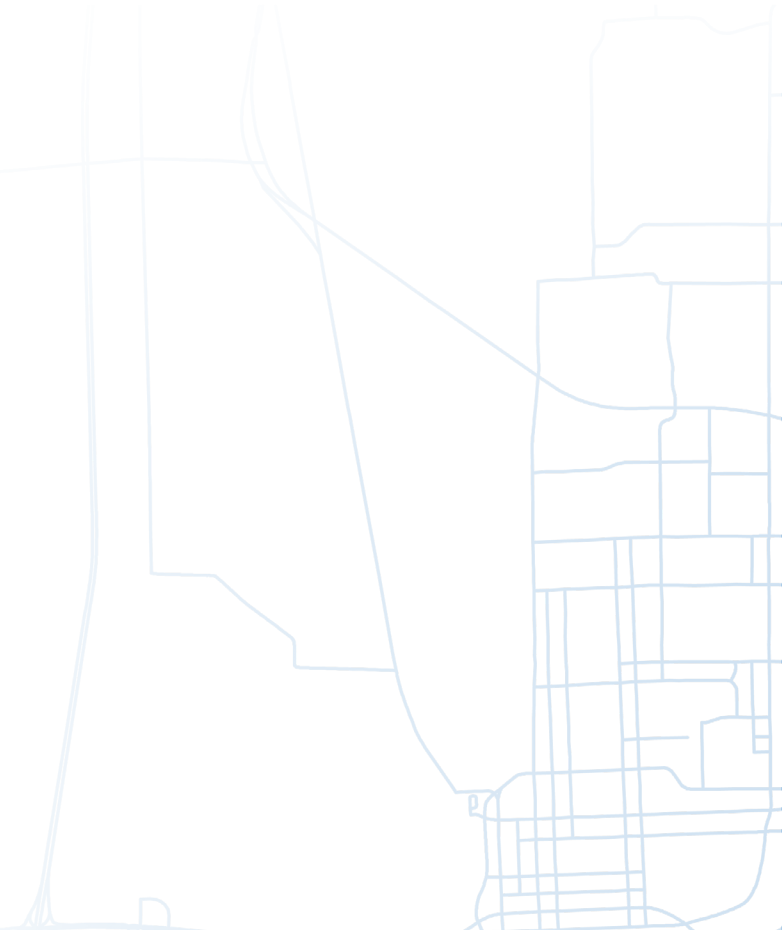
FOCUS AREA	PERFORMANCE MEASURE	2019 TARGET	2020 ACTUAL
Safety	Number of fatalities	1.087	1.26
	Rate of fatalities (per 100 million VMT)	4.234	8.75

Table 6 shows bridge condition performance measure targets and CAMPO MPA's values (2020). As can be seen in Table 6, the percentage of bridge decks in poor condition in the Columbus MPA was slightly higher than the target.

Table 6: Bridge Performance Target and Actual

FOCUS AREA	PERFORMANCE MEASURE	2-YEAR TARGET	2020 ACTUAL
Bridge	% of NHS Bridges, by deck area in good condition	48.30%	41.90%
	% of NHS Bridges, by deck area in poor condition	2.60%	3.10%

CAMPO TIP (2022-2026) allocated \$9 million for safety improvement projects and \$21.4 million for bridge repair/construction projects. These projects would be helpful in meeting the CAMPO's performance goals.



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7

FUTURE TRANSPORTATION NEEDS - 2045

ROADWAY INFRASTRUCTURE NEEDS

NON-MOTORIZED NEEDS

TRANSIT SERVICE NEEDS

FUTURE LAND USE FORECASTS

MODEL SCENARIO DEVELOPMENT

LAND USE (RESIDENTIAL GROWTH) SCENARIOS

SCENARIO EVALUATION



The fundamental relationship between land use planning and transportation planning is undeniable. While transportation planning decisions affect land use development, land use conditions shape the future infrastructure. In order to identify future transportation needs, future travel patterns are forecasted, programmed transportation infrastructure improvements are identified, and the adequacy of the transportation infrastructure is evaluated to determine if any significant deficiencies exist. The transportation improvement projects and policy changes are then identified to reduce or eliminate identified deficiencies and improve the overall performance of the network. The CAMPO long-range plan takes a scenario-based approach to identify the programs and policies necessary to address the transportation needs of the CAMPO MPA.

The plan adopts a multi-modal approach, identifying needs for all travel modes to make strategic investments to the transportation system. This chapter analyzes various components of the transportation system, their capacity, serviceability, and current and projected use and summarizes the region's future transportation requirements.

ROADWAY INFRASTRUCTURE NEEDS

Personal automobiles are the primary mode of transportation in the MPA and this trend is expected to continue through the horizon year of this plan. Columbus has a good mix of north-south as well as east-west arterials, and a grid system in the core of the city, providing a high degree of connectivity and capacity. While most of Columbus is well connected, residential and commercial areas west of the East Fork of the White River are disconnected by railroads and natural barriers. SR 46 is the main corridor connecting the west part of the city to downtown.

While much of the new development in Columbus has been on the west side (along CR 200 South and in Tipton Lakes), most of the schools, hospital, employment centers and governmental facilities are east of the river. INDOT, in partnership with the City and other local entities, constructed a new grade separated interchange at SR 46 and SR 11 and addressed the excessive travel delays along SR 46. For the 2045 baseline condition, some sections of SR 46 are expected to approach unacceptable levels of service including some ramps of the newly constructed SR 46/SR 11 interchange. North-south movements from the CR 200 South residential areas are also limited to Jonesville Road, Carr Hill Road, and Terrace Lake Road. This use of Jonesville Road by newer residential developments further burdens SR 46 and the already poor connectivity to the Woodside industrial area. With continued growth on the west side of Columbus during the long-range planning period, it is important to enhance the east-west connections to support future transportation needs. Some segments of SR 11 face significant flooding issues and there is a need for evaluating an alternative north-south route of SR 11 to address the flooding issues. County roads on the perimeter of the City also should be evaluated for potential capacity and safety concerns due to continued growth and development in the fringe of Columbus. Improvements to these roadways include capacity enhancements and implementation of complete streets to enable safe access to all users.

While emphasizing the roadway connectivity in the region is a priority, this long-range plan needs to also address the maintenance and rehabilitation of the existing transportation system and promote multi-modal travel. Without regular maintenance of the existing roadways, the addition of any new roadway would only provide localized improvement rather than improving the overall transportation system.

The plan also seeks to improve safety along the CAMPO MPAs roadway system for all modes.

In the chapter “Safety in the MPA”, the historic crashes in the region over the past five years were analyzed to identify potential mitigation measures at high crash frequency locations. The number of fatal and injury crashes along some of the regional corridors including SR 46 and 25th Street showed increasing trends. The safety concerns can be addressed at individual locations, or they can be addressed in the MPA through policy changes such as roundabouts and road diets/ complete streets.

It will also continue to be important to monitor traffic movements on major routes, particularly on roadways with at-grade railroad crossings in order to maintain and improve the efficiency of the transportation system

transportation options available in the community, increasing opportunities for bicyclists and pedestrians to safely and efficiently commute, improving the community’s health and wellness, establishing regional bicycle connections, and providing environmentally-friendly, sustainable transportation options in the region, among other goals. In 2011, the Bartholomew Consolidated School Corporation (BCSC) Safe Routes to School (SRTS) plan was developed to improve conditions for walking and biking around schools and generate ideas to encourage students to use active transportation for school trips.

As part of the implementation of the Bicycle and Pedestrian Plan, The City evaluated sidewalk conditions in several neighborhoods, concluding that sidewalks in most areas are in need of maintenance and repair.

The City of Columbus is actively addressing sidewalk gap and condition issues. But, still there are residential areas without sidewalks and other locations with poor sidewalk conditions and gaps in sidewalk coverage. It is crucial to maintain the existing sidewalks and bike facilities. Additionally, public comments emphasized the need for sidewalk and bicycle infrastructure improvements within CAMPO MPA. Other challenges for bicycle and pedestrian travelers include gaps between sidewalks and the shared use path network, and incomplete bicycle infrastructure. These deficits represent a lack of transportation

options for some, safety issues for those who have to walk along streets with no sidewalks, and problems for bus riders walking to their stops. While the Columbus Bicycle and Pedestrian Plan proposes several bike/pedestrian facilities during the plan period, educational and promotional activities should be considered to encourage full and safe use of these facilities.

TRANSIT SERVICE NEEDS

Providing a balanced transportation system is a crucial part of the solution to regional mobility, economy and environmental justice challenges. Public transit service is the primary mode of transportation for those who do not have access to, or the ability to use, a personal vehicle including the elderly, persons with disabilities, as well as those who cannot own and operate a personal vehicle. It is therefore important to consider transit in the development of recommended plans, programs and policies. ColumBUS currently operates five fixed routes as well as demand response service. The transit services are currently operated within the corporate limits of the City of Columbus.

The fifth route was added in the spring of 2015 to provide access to the west side of Columbus. Overall daily transit ridership in Columbus showed a declining trend since 2016. In 2019, a comprehensive fixed route study was completed for the ColumBUS transit agency. The study identified that most transit routes operate largely in a one-way fashion with limited hours of service

NON-MOTORIZED NEEDS

Bicycle and pedestrian facilities are essential to developing an active and livable community as well as increasing mobility and access. Columbus currently has a well-developed sidewalk, trail and bicycle network. This network includes a variety of multi-modal facility types including multi-use paths, sidewalks, on-street bike facilities and high-visibility crosswalks. In 2010, the City of Columbus completed a Bicycle and Pedestrian Plan that lays out a vision for future bicycle improvements throughout the city. The City of Columbus is currently updating the Bicycle and Pedestrian Plan and hopes to complete the plan later in 2021. The plan aims at expanding the

and with average headway of 60 minutes. Such operation would be difficult to fulfill needs of the riders who need to take the bus for work, school, or other trip purposes. Also, there are needs for transit service to various high-density residential areas, employment centers, schools, recreational hubs and shopping centers.

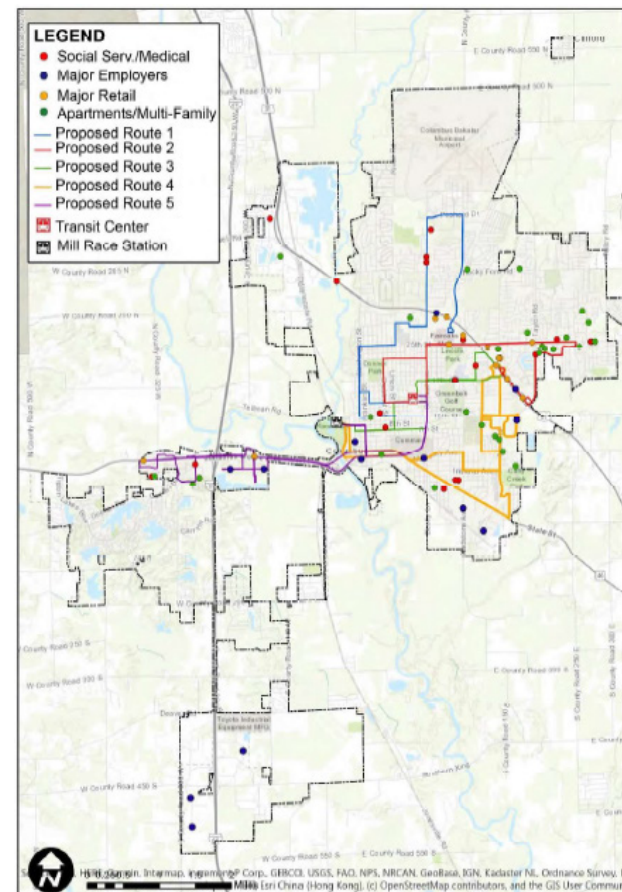
The Mill Race Transit Center is the hub of the transit system, with all five buses arriving and departing from the center every hour. In addition to the Mill Race Transit Center, there is another timed transfer point at the Target store in the Columbus Center shopping center. The location of Mill Race Transit Center separated from the core of downtown and on the west side of the railroad tracks prevents buses from running anything other than hour-long headways, and does not provide an opportunity for express routes. The fixed route study recommended to establish a new transit center at 13th/Hutchins and proposed updated transit routes. Figure 38 shows the proposed transit routes for the Columbus transit service area.

In addition to transit service needs at various locations in the City of Columbus, several residents noted that rural transit is a significant unmet need in the MPA, especially for elderly people and persons with disabilities. Improving the accessibility of bus stops and the surrounding pedestrian infrastructure is a key strategy for enabling people to use the transit service. It is important to focus on transit agencies' accessibility improvements as

well as extending accessibility beyond the actual stop to the pathways that connect to the stop. Transit service would also benefit from partnerships with developers, neighborhood groups, and local industries to continually invest in transit infrastructure.

FUTURE LAND USE

Figure 38: Proposed Fixed Routes



FORECASTS

Future land use forecasts are crucial to estimating the future travel demands and identifying the needs of the transportation system through the plan period. The 2045 land use information is used as an input into the travel demand model to recognize any deficiencies in the local roadway infrastructure. A description of the CAMPO travel demand model is provided in Appendix F. In order to forecast the future land use information, the CAMPO MPA was divided into traffic analysis zones (TAZs) to factor in the spatial component of the land use data. The model base year (2017) land use information was derived from the 2010 U.S. Decennial Census, ACS 5-Year estimates, US Census Bureau's LEHD data, Columbus and Bartholomew County comprehensive plans, and information obtained from CAMPO staff. This land use information was subsequently forecasted to the plan horizon year of 2045. The socioeconomic forecast process was based on a top-down approach, where county-wide control totals are obtained and then disaggregated to TAZs. The forecasts were further adjusted for local conditions based on comments from CAMPO staff and the steering committee.

Population Projections

The 2045 population control totals for Bartholomew County were developed based on averaging forecasts from the following sources:

- Historic growth trend lines;
- 2016 CAMPO LRTP projections
- STATS Indiana projections
- Proprietary county population projections from Woods & Poole (W&P); and
- The 2019-2020 Indiana Statewide Travel Model (INSWM)

Table 4 shows population forecast trends for Bartholomew County from different sources. Average projected annual population growth rate from STATS Indiana, Woods & Poole, INSWM, and CAMPO LRTP 2016 is 0.43%, which is very close to INSWM's annual growth rate of 0.41%. INDOT's modeling staff also recommended that the county level control totals should be consistent with INDOT's socioeconomic projections. Based on detailed evaluation of growth rates shown Table 7, INSWM's projected population for Bartholomew County for 2045 was taken as the control total for CAMPO TDM 2045 baseline scenario.

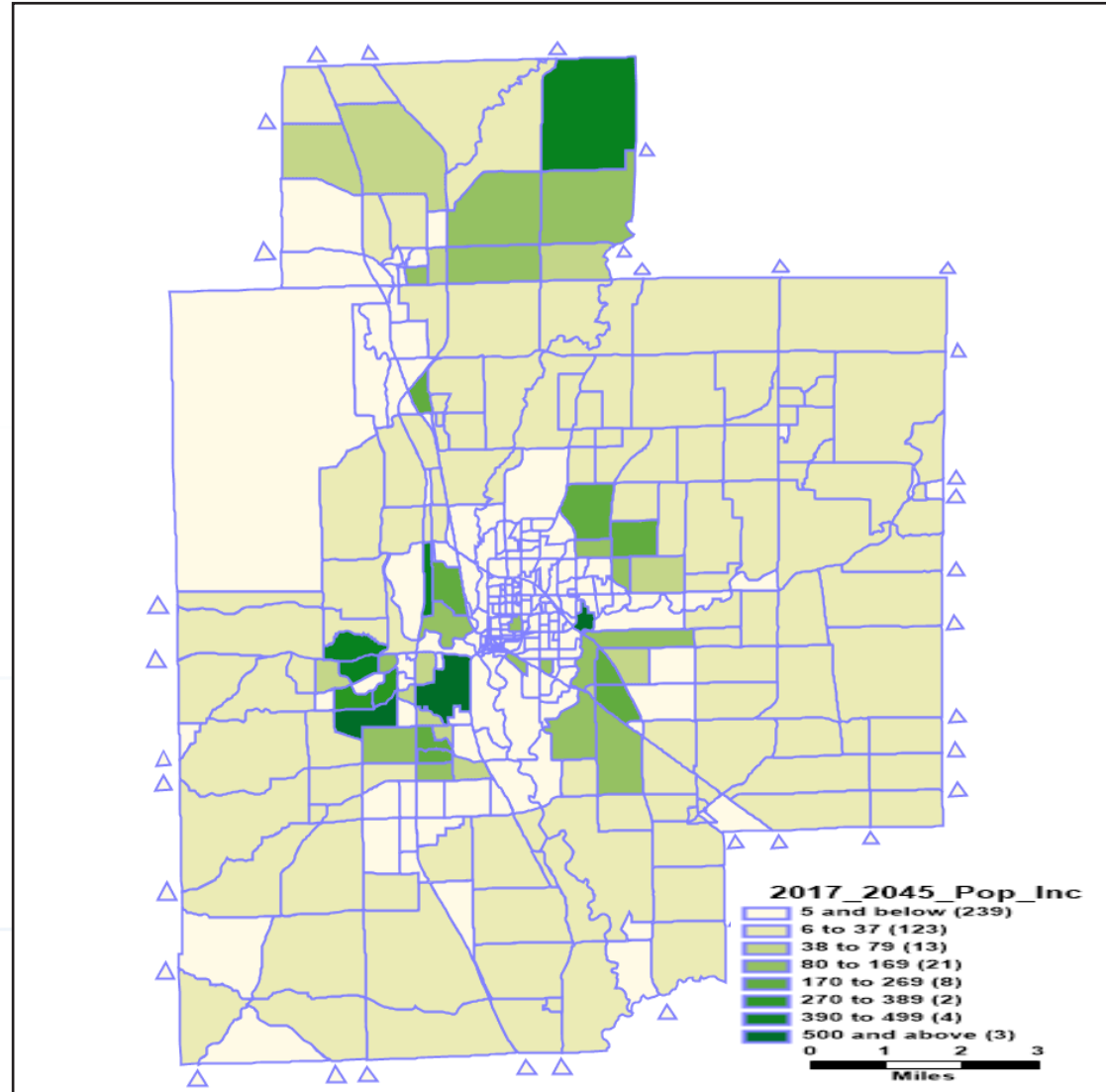
Table 7: Bartholomew County Population Growth Rates by Source

SOURCE	YEAR									GROWTH RATE (%)
	2000	2010	2015	2017	2025	2030	2035	2040	2045	
US Census	71,763	76,794		81,024						0.72%
STATS Indiana		76,794				84,496				0.48%
Woods & Poole		76,845			83,580	84,535	85,035	85,030	83,850	0.25%
INSWM			79,460		82,890		86,339		89,771	0.41%
CAMPO LRTP 2016		76,794			84,982			91,384		0.58%

Once the county control totals were established, the population growth in Bartholomew County was allocated to the traffic analysis zone (TAZ) layer through consultation with the CAMPO staff.

The TAZ population growth distribution is provided in Figure 39. 22 TAZs in the CAMPO TDM are located to the north of the Bartholomew County boundary. These TAZs are in Johnson and Shelby Counties. Population and employment growth projections for these TAZs were obtained from the Indiana Statewide Model.

Figure 39: 2017-2045 Urban Population Growth Distribution



Employment Projections

The 2017 TAZ level employment information was derived using the 2017 Census Longitudinal Employer-Household Dynamics (LEHD) data. Employment projections for 2045 were developed using the current employment growth trends, Woods & Poole county-wide forecasts, and INSWM forecasts. Table 8 shows projected employments for Bartholomew County from different sources including historic trends, CAMPO LRTP 2016, INSWM, and Woods & Poole. For 2045 baseline employment control total for Bartholomew County, INSWM’s control total was selected as per INDOT’s recommendation and careful review of growth rates from other sources and with due consideration of current economic conditions of the county.

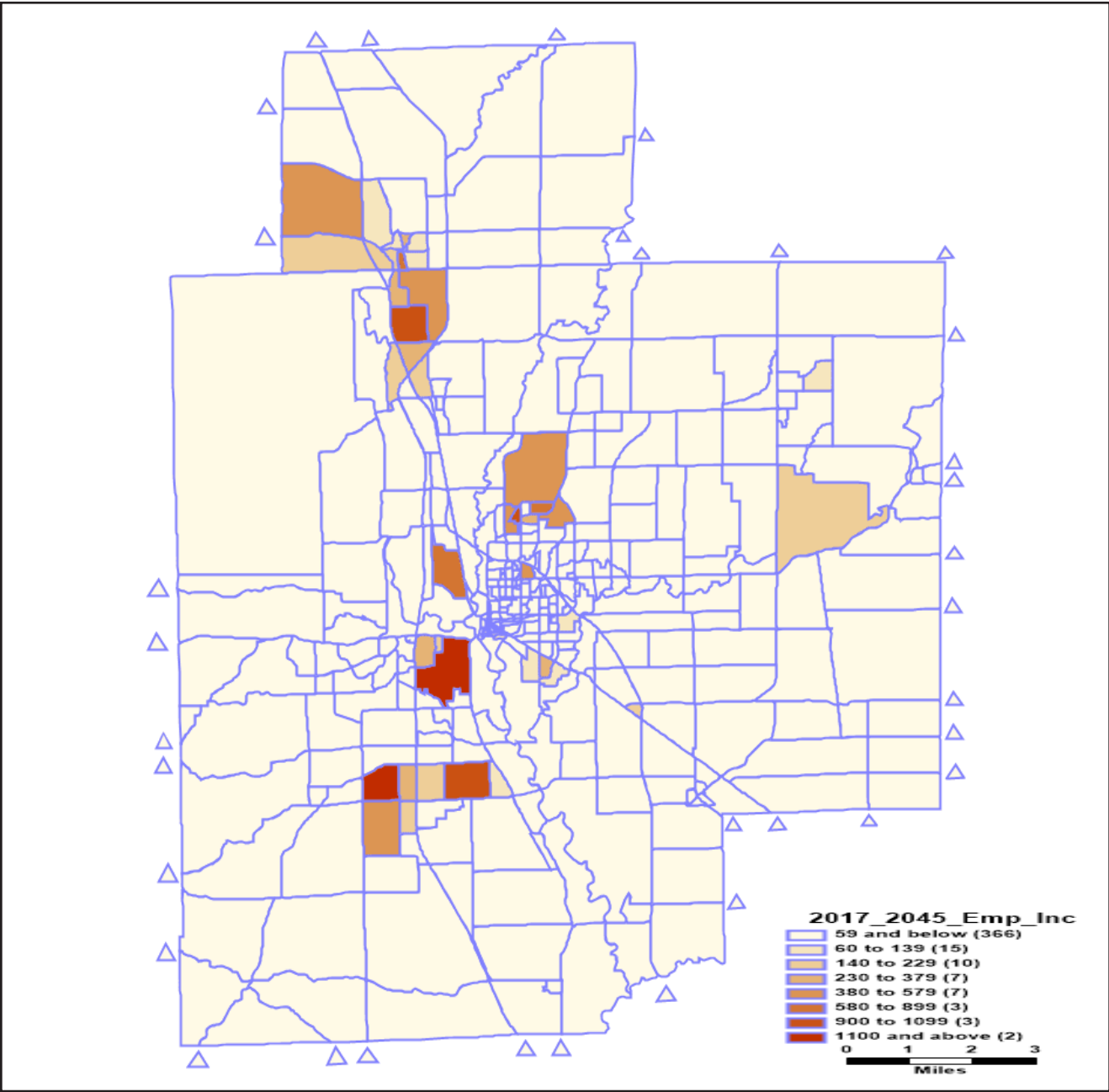
Once the county control totals were established, employment growth was then sub-allocated to the TAZs based on recommendations from the CAMPO staff. Figure 40 illustrates the geographic distribution of employment growth between 2017 and 2045.

Table 8: Bartholomew County Employment Projections by Source

SOURCE									GROWTH RATE (%)
	2010	2015	2017	2025	2030	2035	2040	2045	
US Census (LEHD)	38,629		50,500						3.90%
Woods & Poole	50,892			67,758	70,611	73,269	75,735	78,115	1.23%
INSWM		48,580		55,607		60,345		63,836	0.91%
CAMPO LRTP 2016	41,879			64,493			68,767		1.67%



Figure 40: 2017-2045 Employment Growth



MODEL SCENARIO DEVELOPMENT

A vital part of the long-range transportation plan is the quantitative evaluation of various transportation scenarios and their effects on the transportation system. The scenario analysis helps the agencies test possible approaches to meeting future needs and identifying the effect of policies on the transportation system. Scenario development for the CAMPO long-range transportation plan was performed through detailed collaboration with the CAMPO staff. The scenarios developed for the LRTP reflected regional transportation needs, goals and objectives of the CAMPO LRTP, and planning elements identified in the City of Columbus Comprehensive Plan.

A series of transportation and land use scenarios were developed and evaluated using the updated CAMPO TDM. Transportation network change scenarios were developed to evaluate impacts on regional transportation for a north-south alternative of SR 11, recommended transportation network related improvements specified in the Envision Columbus Plan, implementation of pedestrian and bicycle plan facilities close to downtown, and east-west extension of CR 200. Land-use related scenarios were focused on shifting future residential developments from the south-east to and north-east of Columbus to the west side. Land use and network information was coded in the travel demand model for each scenario to evaluate them objectively and quantitatively. The performance measure outputs obtained from the travel demand model were used to compare alternatives to help select strategies for making informed decisions among different investment options.

A total of eleven scenario alternatives were evaluated using the CAMPO travel model. Tables 9 and 10 provide a description of these scenario alternatives. A transit scenario was not included in this MTP because a transit enhancement scenario was evaluated in the 2015 MTP. For more information on the 2015 MTP transit enhancement scenario and evaluation, please see Appendix H. In order to compare and evaluate scenarios, it was important to establish a baseline that serves as a hypothetical point of reference to impacts of various transportation and policy strategies. This “Baseline 2045 Scenario” is a current trend scenario that would occur without the long range planning process. The following sections discuss the scenarios evaluated as part of the CAMPO long-range planning process.

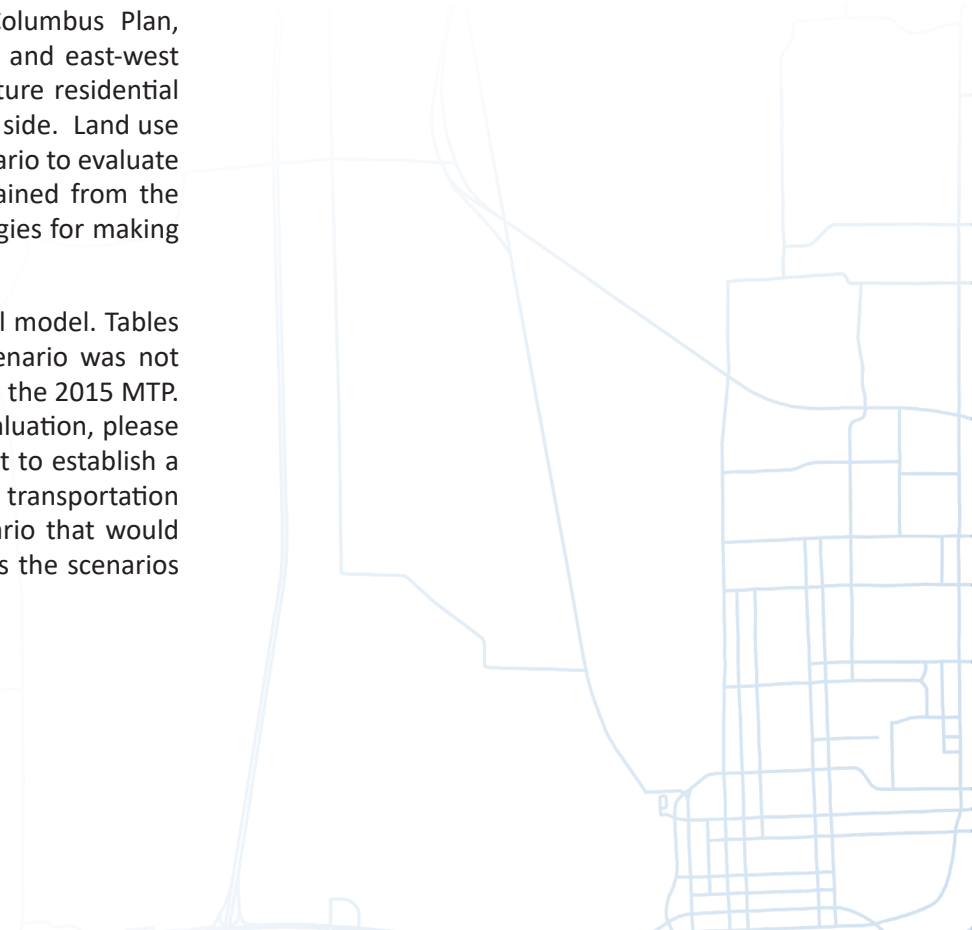


Table 9: Scenario Descriptions

SCENARIO	DESCRIPTION
Scenario 1	SR 11 alternative between SR 46 and 450 S. New roadway will include one lane in each direction, on-street bicycle track and a shared use path off street.
Scenario 2A	<p>Complete implementation of the Envision Columbus Plan recommendations. Specifically,</p> <ul style="list-style-type: none"> • 2nd and 3rd St one-way to two-way conversion • Chestnut and California one-way to two-way conversion • Washington St Road-Diet with bike lanes • Brown and Lindsey St road diets and bike lanes • Jackson St “Pedestrian-forward” campus street changes • Shared use path between Noblitt and Lincoln Parks • Shared use path along the riverfront and 1st St between Mill Race Park and current terminus of the Haw Creek Trail.
Scenario 2Aa	<p>All the proposed changes for Scenario 2A except:</p> <ul style="list-style-type: none"> • 2nd and 3rd St will operate as one-way street
Scenario 2Ab	<p>All the proposed changes for Scenario 2A except</p> <ul style="list-style-type: none"> • Chestnut and California as a one-way pair and adding one-way bicycle track to each (between 3rd and 19th St)
Scenario 2B	<p>Substantial implementation of the draft Bicycle and Pedestrian Plan Update in the Downtown Area. Major changes include:</p> <ul style="list-style-type: none"> • Keeping Chestnut and California as a one-way pair and adding one-way bicycle track to each (between 3rd and 19th St) • Bicycle track to Jackson St between 11th and 1st St • Shared use path along Washington St between 11th and Rocky Ford Rd • Bicycle track on 3rd St between White River and Central Ave • Shared use path between Noblitt and Lincoln Parks • Shared use path along the riverfront and 1st St between Mill Race Park and current terminus of the Haw Creek Trail.
Scenario 2Ba	<p>Proposed changes identified in Scenario 2B and</p> <ul style="list-style-type: none"> • 2nd and 3rd St one-way to two-way conversion

Table 10: Scenario Descriptions (cont.)

SCENARIO	DESCRIPTION
Scenario 2Bb	Proposed changes described in Scenario 2B and <ul style="list-style-type: none"> • 2nd and 3rd St two-way conversion • 200 S of Gladstone Ave bridge and road extension discussed in MTP 2040
Scenario 2Bc	Proposed changes identified in Scenario 2B and <ul style="list-style-type: none"> • Shared use path along Indianapolis Road and 100 N/200 W between Lowell Road and the Mill Race-Noblitt Trail
Scenario 3	Shifting future residential developments from the south-east and north-east of Columbus to west side
Scenario 3A	Scenario 3 with roadway network from Scenario 1.
Scenario 3B	Scenario 3 with some land use changes around Otter Creek Golf Course

BASELINE 2045 SCENARIO

This scenario represents the CAMPO area baseline scenario, which was estimated using past performance data, county-level forecasts and an analysis of the land use and transportation plans currently in place. The roadway network for the base year scenario was developed by incorporating projects identified in the current CAMPO TIP (2022-2025) and bicycle and pedestrian infrastructure projects expected to be completed using local funds. Many projects identified in the TIP are extraneous to the travel model as they do not affect roadway capacities (storm water improvement projects, roadway resurfacing projects, bridge reconstruction/re-decking projects, etc.), and were disregarded. The projects that were included in the 2045 network are provided in Figure 41. Figures 42 and 43 shown the baseline level of service and average daily traffic volumes.

Table 11: Transportation Projects Included in the 2045 Baseline Scenario

NUMBER	PROJECT NAME	LOCATION	DESCRIPTION
1	I-65	SR-58 to SR-46	Lane Addition
2	Goeller Road	Tipton Lakes Boulevard to Tipton Lakes Boulevard	Street Improvements
3	350W	Goeller Road to SR-46	Street Improvements
4	SR-46	Brown Street to Jackson Street	Eastbound Lane Addition
5	1821 Trail	Jackson Street to Lafayette Avenue	Multi-Use Path
6	People Trail	Noblitt Park to Lincoln Park	Multi-Use Path
7	Taylor Road	25th Street to Rocky Ford Road	Street Improvements
8	Talley Road	25th Street to Rocky Ford Road	Street Improvements
9	Lowell Road	N CR-250 to Indianapolis Road	Street Improvements
10	SR-9/SR-46	SR-9 and SR-45 Intersection	Roundabout

Figure 41: Transportation Projects Included in the 2045 Baseline Scenario

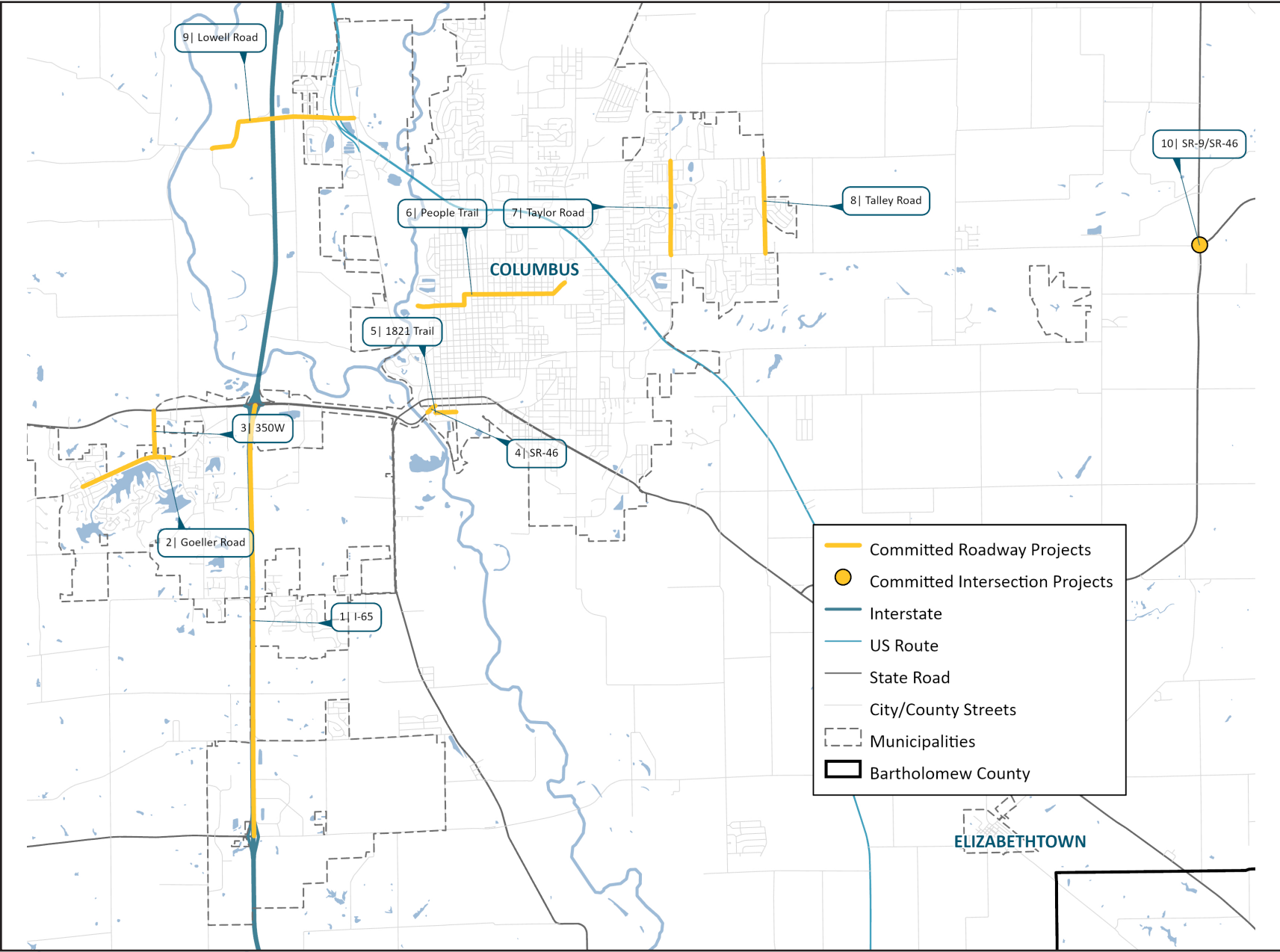


Figure 42: 2045 Baseline Level Of Service

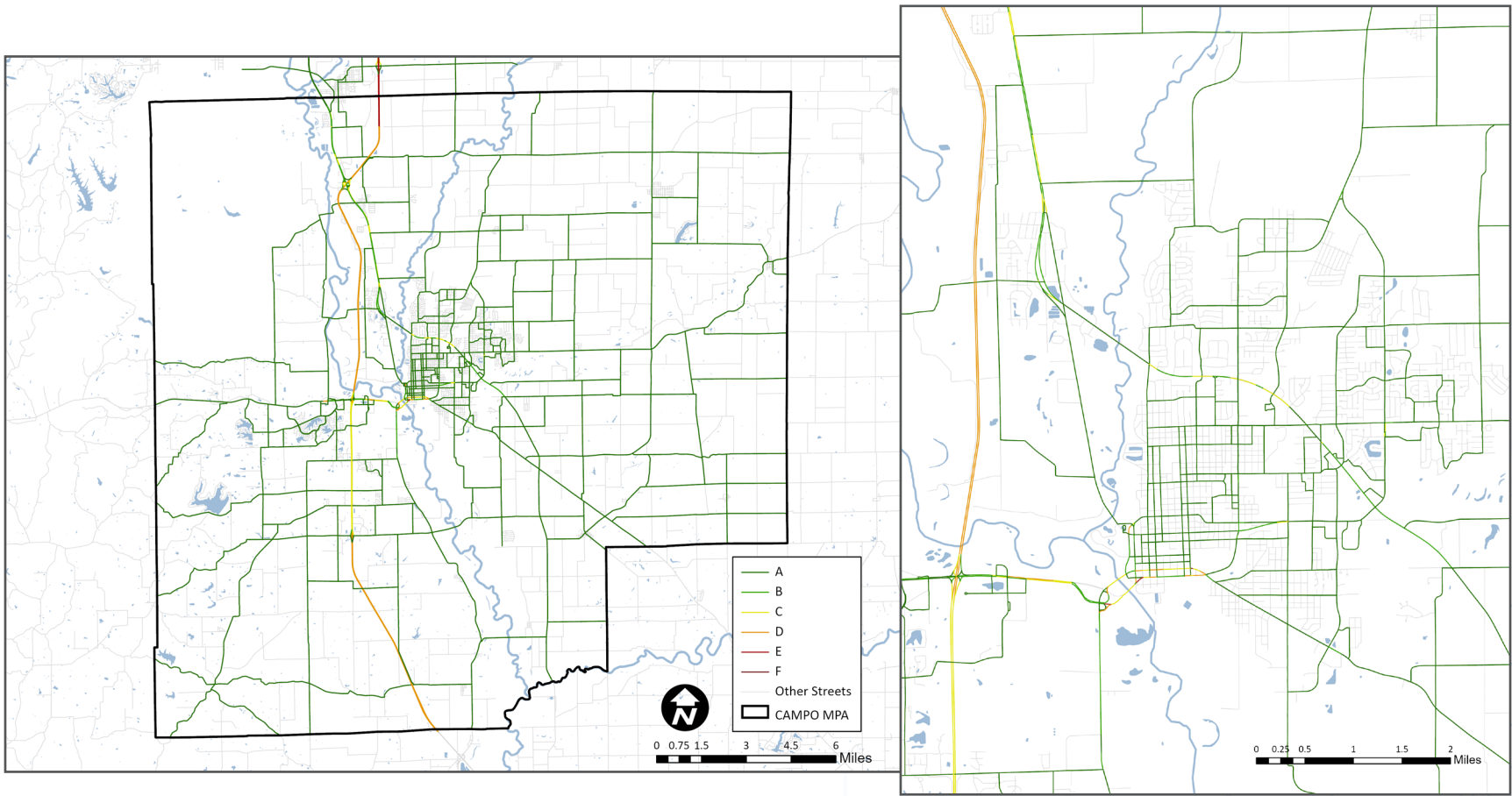
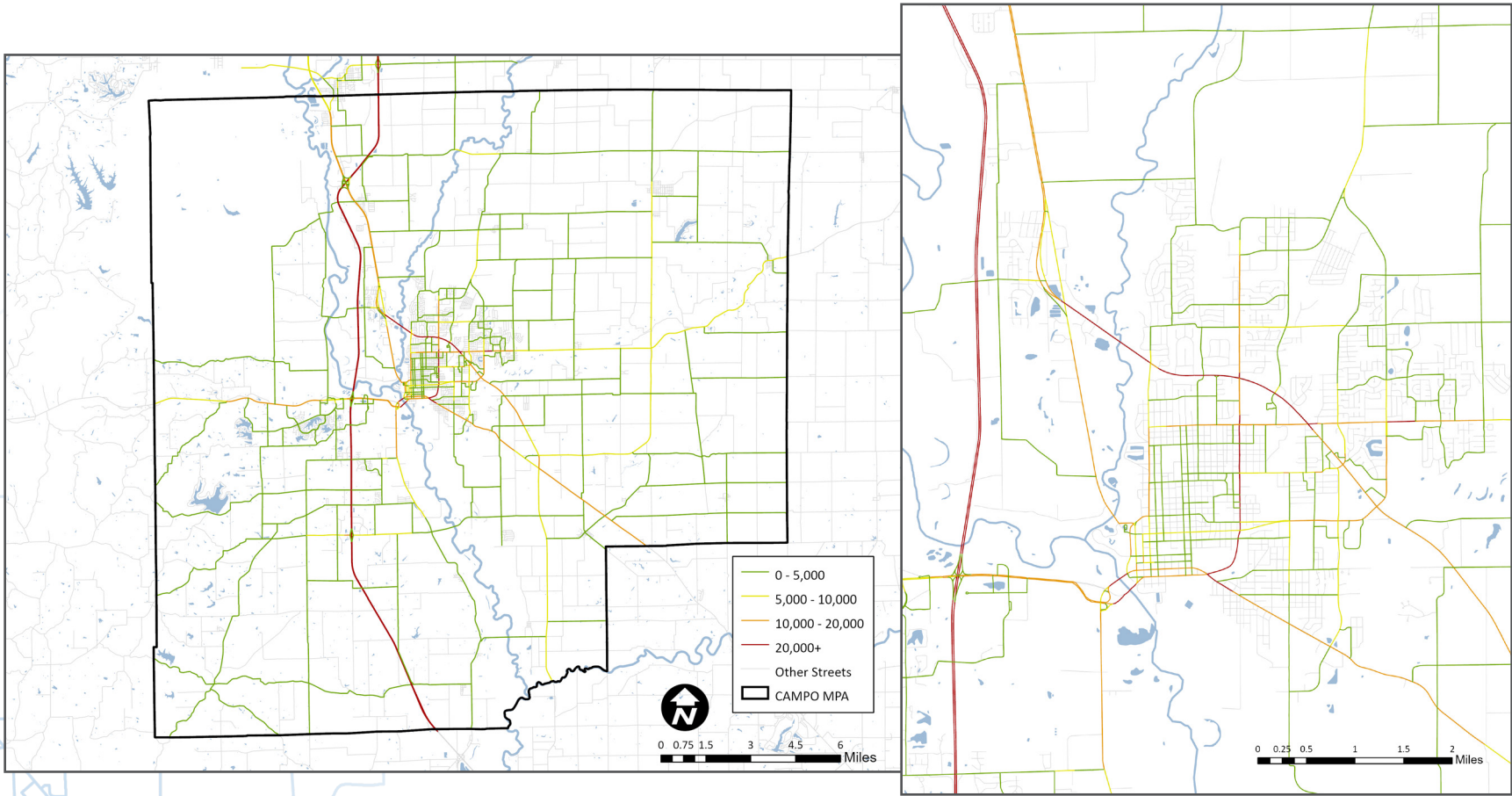


Figure 43: 2045 Baseline Average Daily Traffic (ADT)



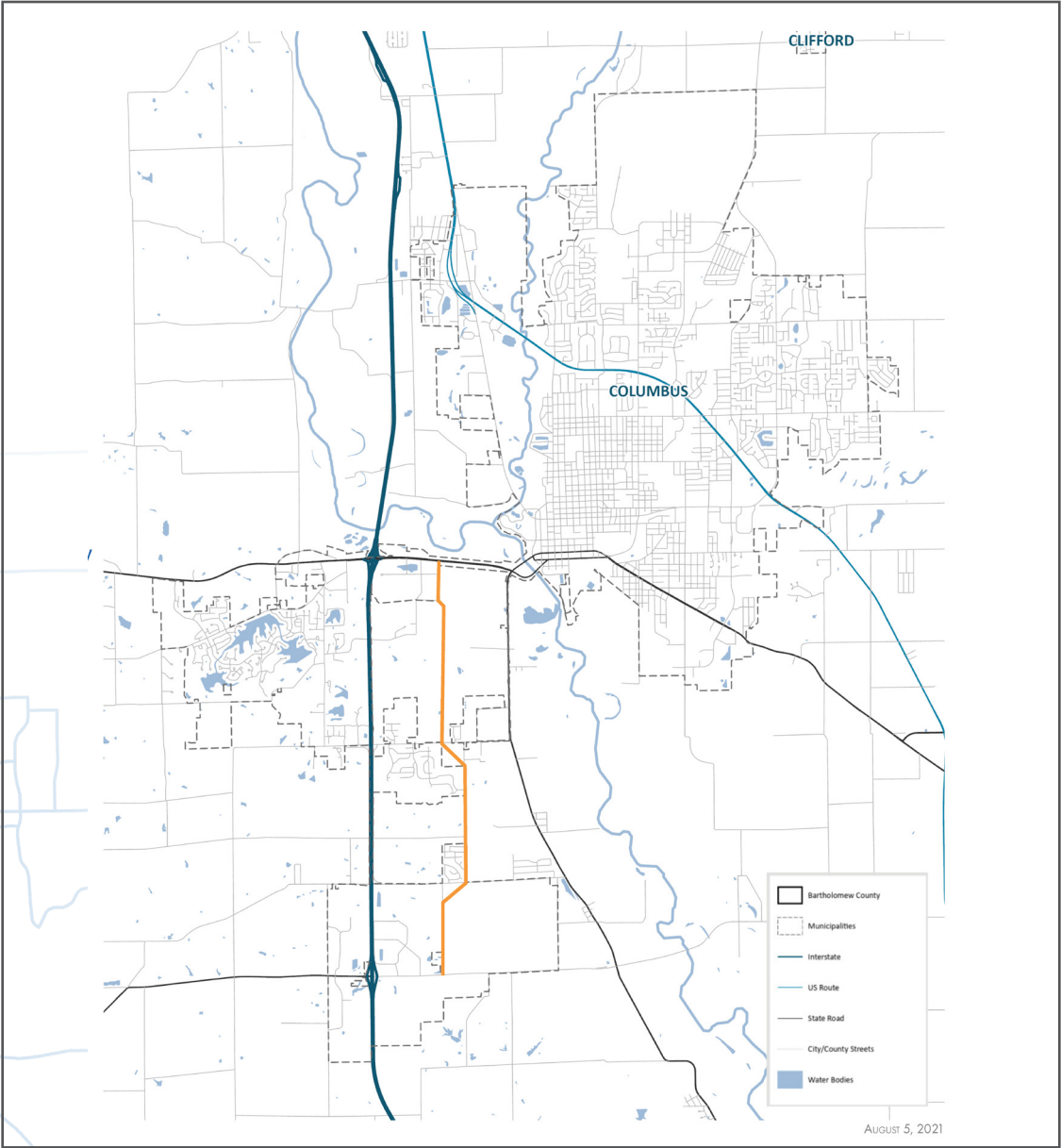
SCENARIO 1: NORTH-SOUTH ALTERNATIVE

Scenario 1 was developed to evaluate impacts of a north-south alternative route to SR 11 between SR 46 and 450 S. Frequent flooding issues along SR 11 south of SR 46 were identified during existing conditions evaluation and through input from CAMPO staff, Steering Committee members, and the general public as a serious safety and reliability issue for the regional transportation network. This scenario considered a two-lane, two-way roadway with on-street bicycle track and shared use path off street east of SR 11 between SR 46 and 450 S.



Figure 44 shows the SR 11 alternative roadway evaluated in Scenario 1.

Figure 44: Scenario 1



SCENARIO 2B: PEDESTRIAN AND BICYCLE SCENARIO

The City of Columbus is completing an update to the City's Bicycle and Pedestrian Plan. Scenario 2B was developed by adding the draft recommendations from the ongoing bicycle and pedestrian plan update for the downtown area.

Three additional scenarios: Scenario 2Ba, 2Bb, and 2Bc were also developed by combining the bicycle and pedestrian plan's draft recommendations with other proposed transportation projects described in Scenario 2A and a proposed east-west extension of 200S. Figure 46, Figure 47, Figure 48, and Figure 49 show proposed transportation project Scenarios 2B, 2Ba, 2Bb, and 2Bc respectively.

Figure 46: Scenario 2B

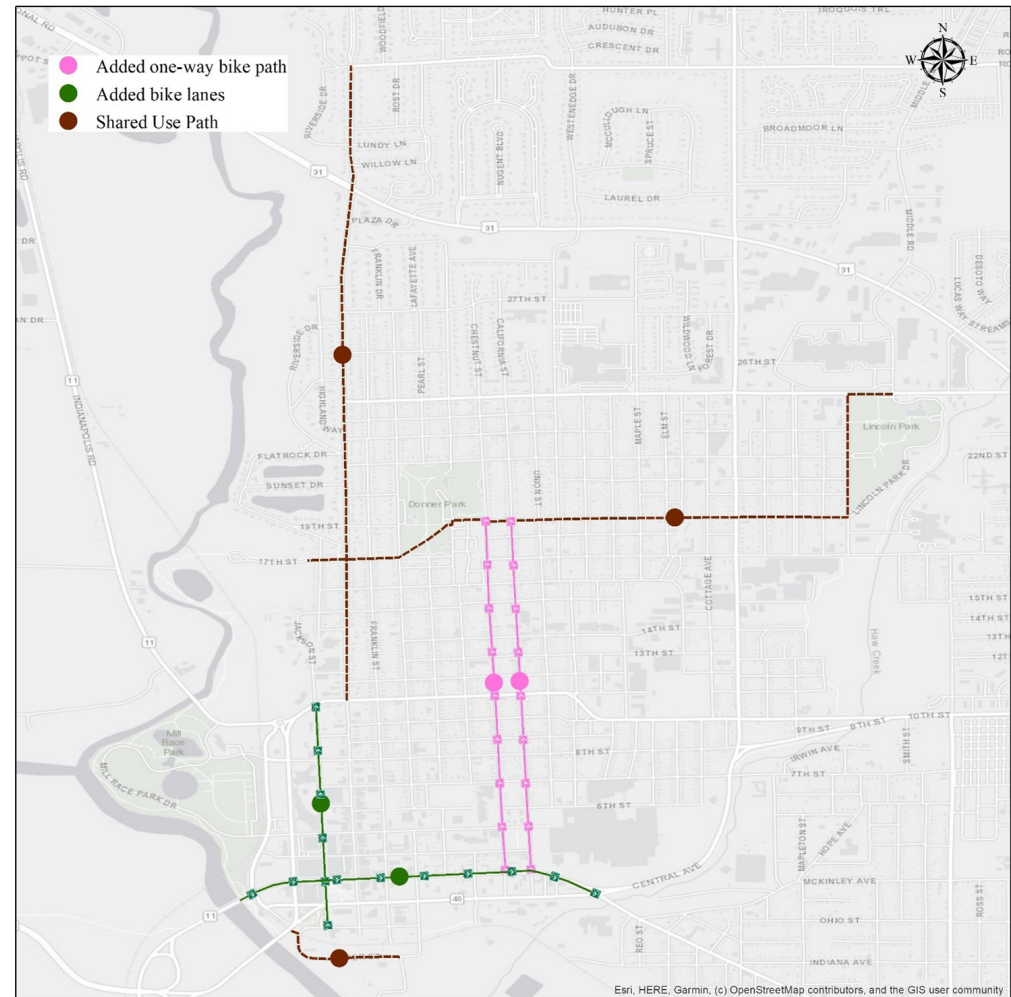


Figure 47: Scenario 2Ba

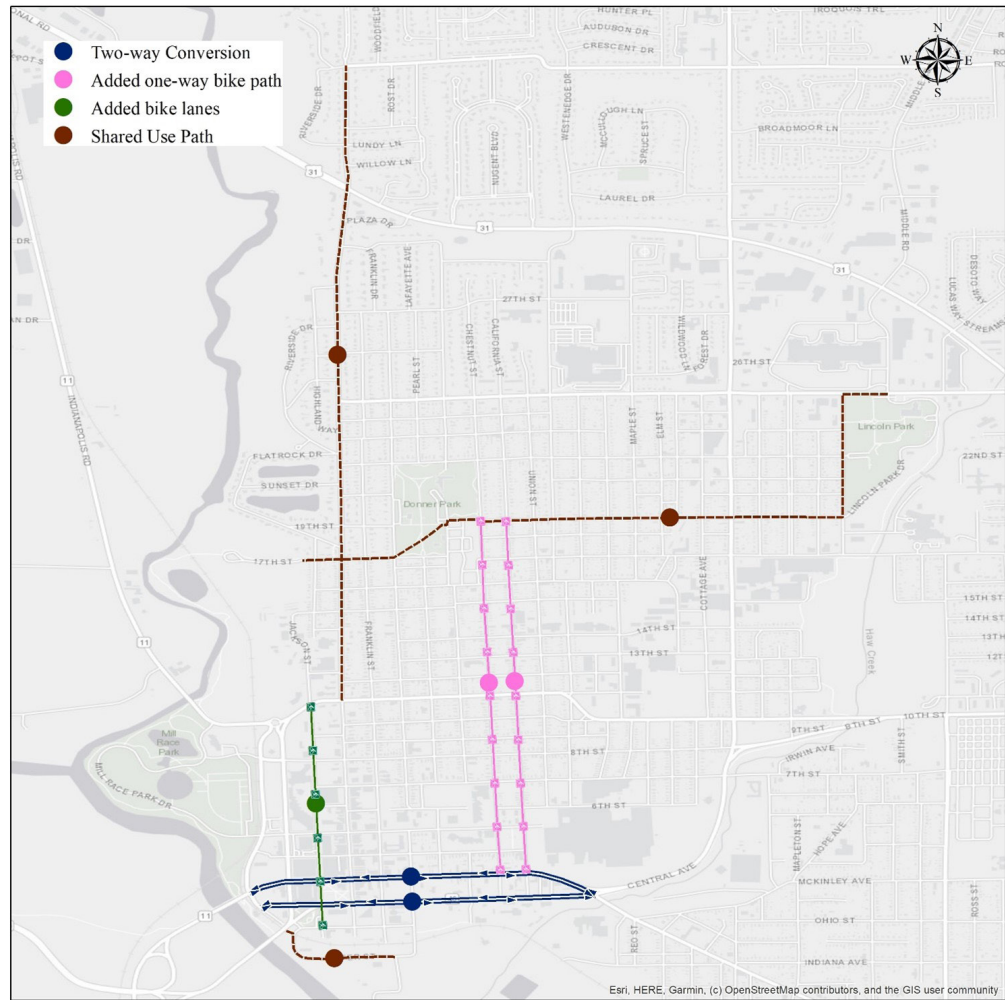


Figure 48: Scenario 2Bb

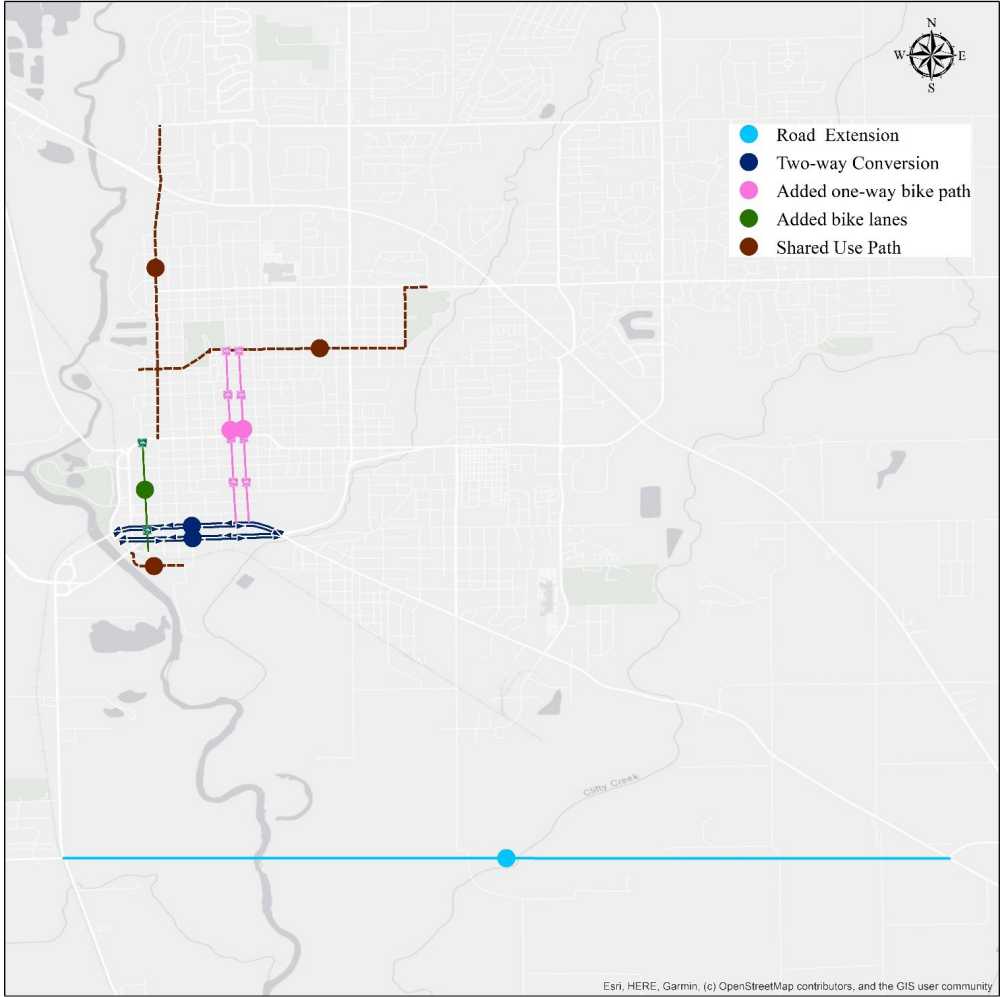
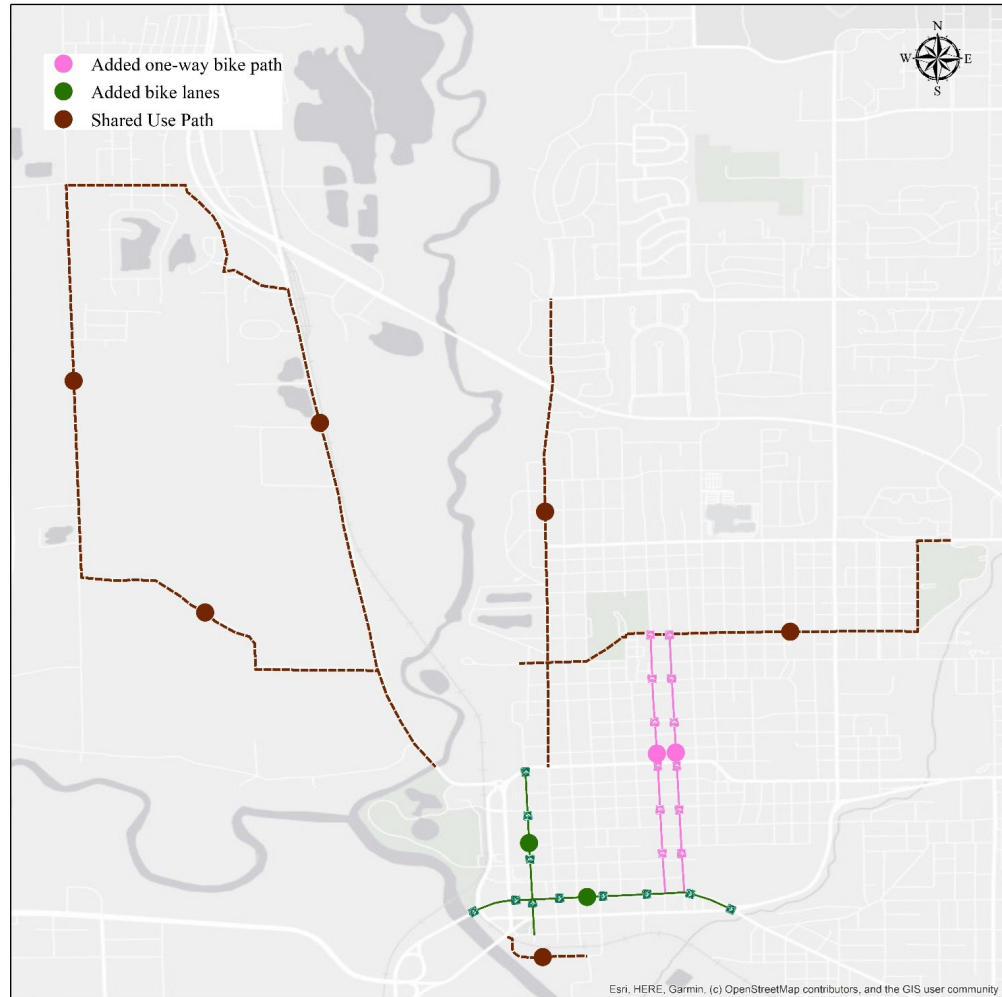
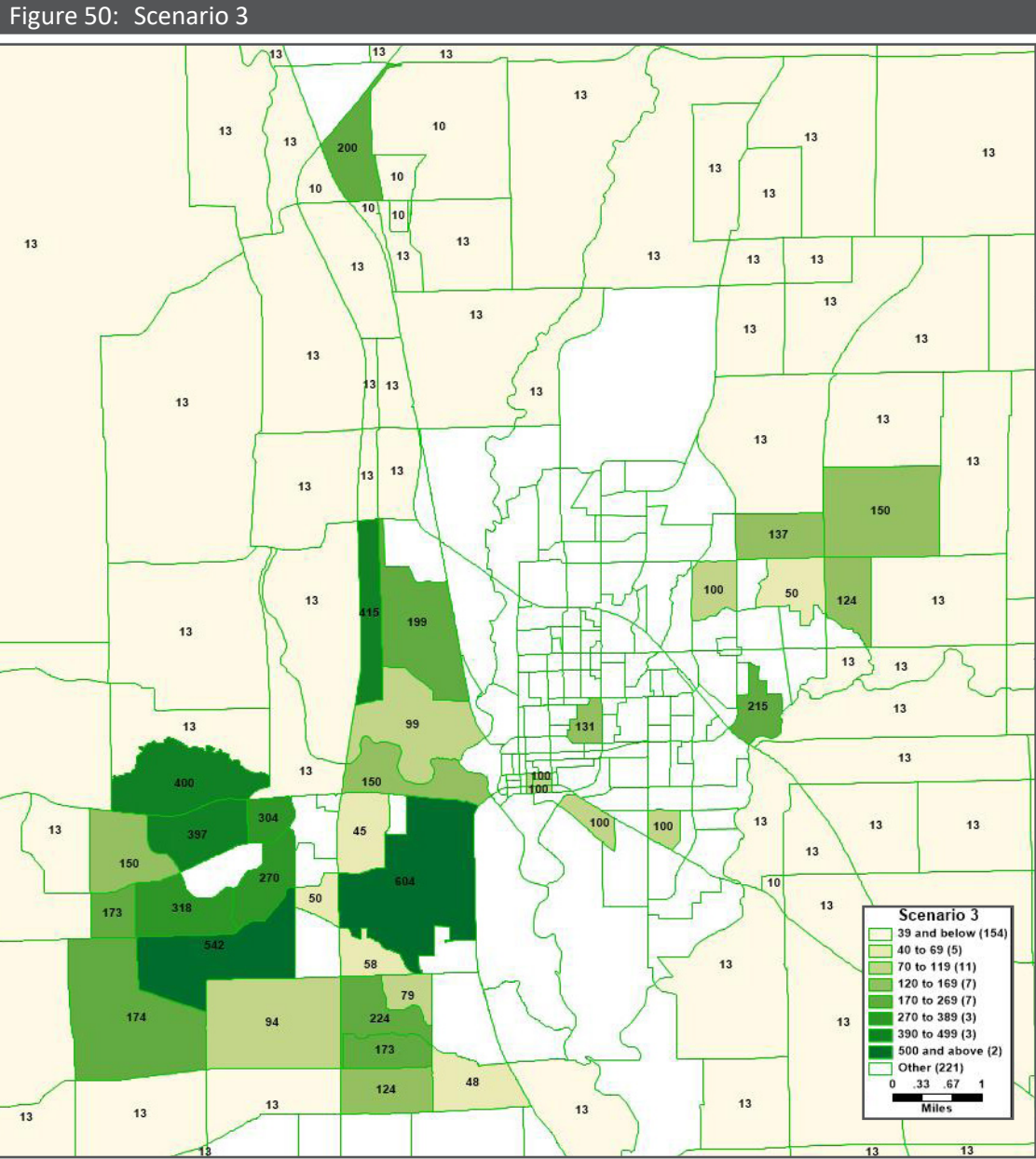


Figure 49: Scenario 2Bc



SCENARIO 3: LAND-USE ALTERNATIVE SCENARIO

This scenario was developed by redistributing proposed future residential developments from the south-east and north-east of Columbus to the west side. There are two additional alternative scenarios: Scenario 3A and 3B which were developed combining the land-use redistribution of Scenario 3 with Scenario 1 and some additional residential redistribution around the Otter Creek Golf Course area. Figure 50 shows population redistributions for Scenario 3.



SCENARIO EVALUATION

Scenario analysis is a key analytical and public involvement technique in the long-range plan development process. The travel demand model was used to conduct deficiency analyses and support the identification of transportation needs, as well as suitable strategies to mitigate concerns. Given the regional needs and limited financial resources, it is important to prioritize the multi-modal transportation investment strategies. The model evaluates the impact of future transportation projects and “what-if” land use and transportation scenarios through an integrated demand-capacity analysis.

Each model scenario was assessed using the CAMPO Travel Demand Model (TDM) to provide a quantitative analysis of how each alternative performs. All of the land use and transportation scenarios were compared to the “baseline 2045 scenario” in order to evaluate the impact of each scenario on the transportation system and regional travel demand. The TDM outputs include forecasted traffic volumes and other metrics (i.e., travel speeds, travel time, congestion levels, etc.) on the transportation network. These metrics can be used to help identify existing and future transportation system deficiencies. Two key outputs from the TDM were utilized to evaluate impacts of the 11 alternative scenarios for the Columbus MPA. These key metrics include Vehicle Miles Traveled (VMT) and total daily travel delay. Increases in VMT typically results from longer trips

and often causes additional delay and the transportation network becomes congested and less reliable. Table 12 shows daily VMT and daily changes in VMT and travel delays (hours) compared to Baseline 2045 condition for the Columbus MPA for each of the alternatives.

Table 12: Scenario Changes in VMT and Travel Delay

CAMPO LRTP 2045 SCENARIO	DAILY VMT	CHANGES IN DAILY VMT	CHANGES IN TOTAL DAILY DELAY (HRS)
Baseline 2045	3,343,681		
Scenario 1	3,342,398	-1,283	-19
Scenario 2A	3,341,401	-2,280	-574
Scenario 2Aa	3,343,303	-378	-111
Scenario 2Ab	3,341,707	-1,974	-578
Scenario 2B	3,334,885	-8,796	-73
Scenario 2Ba	3,333,243	-10,438	-560
Scenario 2Bb	3,331,700	-11,981	-685
Scenario 2Bc	3,331,700	-11,981	-685
Scenario 3	3,343,425	-256	7
Scenario 3A	3,342,053	-1,628	-12
Scenario 3B	3,343,437	-244	4

As can be seen in Table 12, all the alternatives would contribute to at least some amount of reduction of VMT. But, in most cases % reduction in VMT would be very small. Table 13 shows annual travel time delay increase/reductions in hours for each of the alternatives and projected annual travel cost increase/savings for the residents of Columbus MPA. Cost estimations were based on \$12.5/hour of average travel time cost (Source: FHWA).

As can be seen in Table 13, Scenario 2Bb and 2Bc would provide the highest reduction in travel delay and would help reduce annual travel time costs for the Columbus MPA travelers by approximately \$3.1 million. Scenarios 2Bb and 2Bc combined proposed draft recommendations from the ongoing bicycle and pedestrian plan with the mobility/connectivity system strategy recommendations specified in the Columbus Downtown Strategic Development Plan.

The Scenario 2B family of alternatives would contribute to overall increase in walking/biking trips as shown in the TDM results. However, the TDM often time underestimate shorter walking/biking trips (within the same TAZs or between adjacent TAZs), recreational walking/biking trips, walking/biking trips by children, and non-work walking/biking trips.

PREFERRED SCENARIO

Detailed analysis of the 11 alternative scenarios for the Columbus MPA showed combination of the proposed mobility/connectivity system strategies and draft bicycle and pedestrian plan recommendations would help to fulfill the Goals and Objectives set by the Columbus MTP. Based on scenario evaluation results, and to mitigate the negative impacts on the regional transportation network due to flooding along SR 11, the “Preferred Scenario” for the Columbus MPA was identified. Figure 51 and Table 14 detail the proposed projects included in the preferred scenario.

Appendix H presents detailed output from TDM for each of the alternatives.

Table 13: Scenario Changes in Delay and Travel Time Savings

CAMPO LRTP 2045 SCENARIO	CHANGE IN TOTAL DAILY DELAY (HRS)	CHANGE IN TOTAL ANNUAL DELAY (HRS)	ANNUAL TOTAL TRAVEL TIME SAVINGS
Scenario 1	-19	-6,935	\$86,688
Scenario 2A	-574	-209,510	\$2,618,875
Scenario 2Aa	-111	-40,515	\$506,438
Scenario 2Ab	-578	-210,970	\$2,637,125
Scenario 2B	-73	-26,645	\$333,063
Scenario 2Ba	-560	-204,400	\$2,555,000
Scenario 2Bb	-685	-250,025	\$3,125,313
Scenario 2Bc	-685	-250,025	\$3,125,313
Scenario 3	7	2,555	\$-31,938
Scenario 3A	-12	-4,380	\$54,750
Scenario 3B	4	1,460	\$-18,250

Figure 51: Preferred Scenario Projects

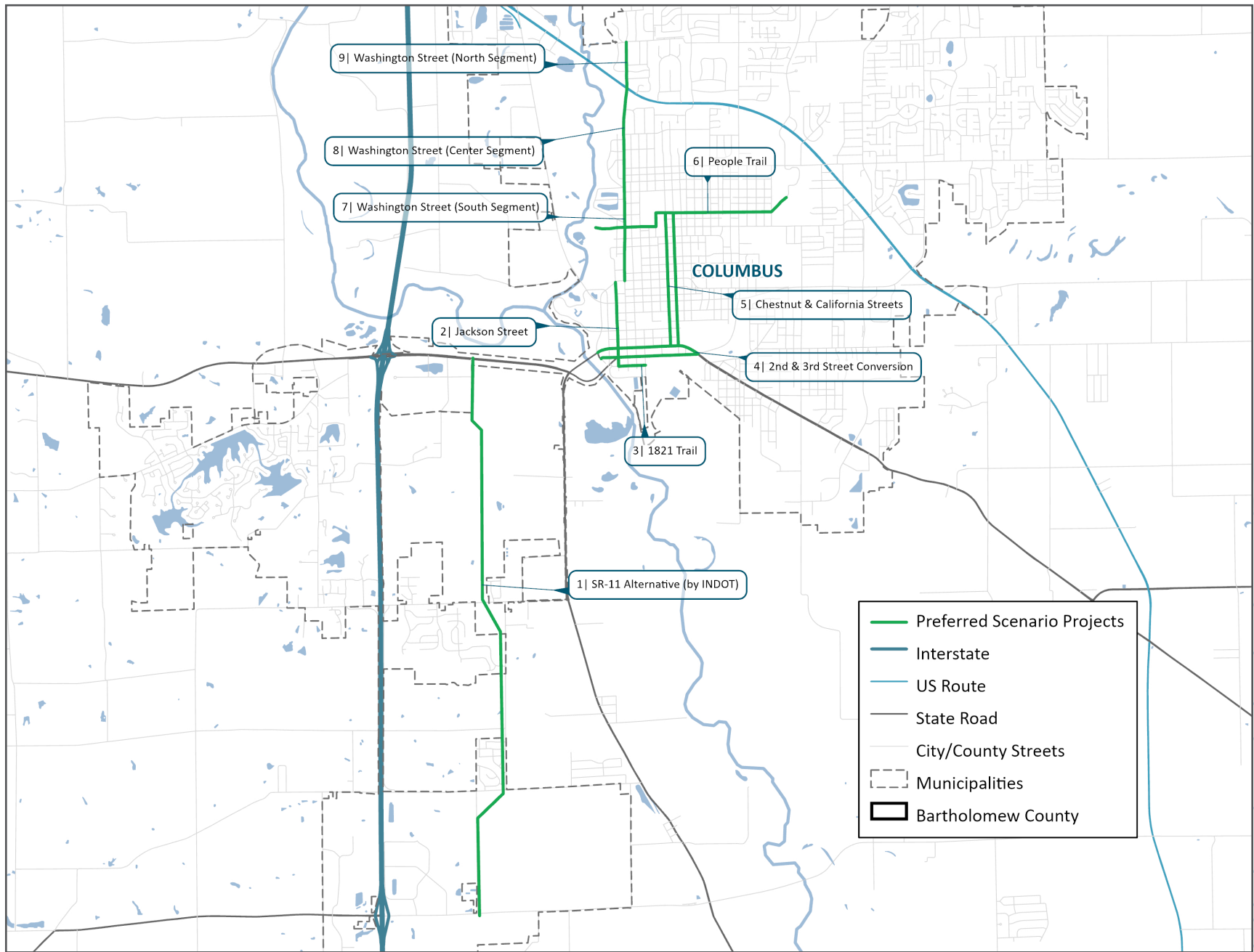


Table 14: Preferred Scenario Projects

NUMBER	PROJECT NAME	LOCATION	DESCRIPTION
1	SR-11 Alternative (by INDOT)	SR-46 to CR-450 South (via new terrain/150W/175W)	New Road Including Bike/Ped Facilities
2	Jackson Street	1st Street to 11th Street	Bike/Ped Improvements (Cycle Track)
3	1821 Trail	Jackson Street to Lafayette Avenue	Multi-Use Path
4	2nd & 3rd Street Conversion	Between Lindsey and Central Avenue	Conversion from One-Way Pair to Two-Way
5	Chestnut & California Streets	Between 3rd and 19th Streets	Bike/Ped Improvements (One-Way Cycle Track on Each Street)
6	People Trail	Noblitt Park to Lincoln Park	Multi-Use Path
7	Washington Street (South Segment)	11th Street to 25th Street	Street & Bike/Ped Improvements
8	Washington Street (Center Segment)	25th Street to US-31	Street & Bike/Ped Improvements
9	Washington Street (North Segment)	US-31 to Rocky Ford Road	Street & Bike/Ped Improvements

8

FINANCIAL PLAN

FEDERAL FUNDING SOURCES

STATE AND LOCAL FUNDING SOURCES

OPERATION AND MAINTENANCE

PLAN FINANCIAL FEASIBILITY

FISCALLY CONSTRAINED PROJECT PLAN



The Intermodal Surface Transportation Efficiency Act (ISTEA), passed in 1991, changed the long-range planning process from a need-based analysis with little consideration to transportation revenue to a more financially constrained program planning method. Subsequent reauthorization bills, TEA-21 in 1998, SAFETEA-LU in 2005, MAP-21 in 2012, and, Fixing America's Surface Transportation (FAST) Act, adopted in 2015, all require that MPOs ensure the long-range plan is "fiscally constrained", i.e. that the projects programmed do not exceed the amount of revenue reasonably expected to be available for transportation improvements over the 25-year plan period. It is important to prioritize transportation investments to maximize the return on those investments.

The financial element summarizes the analysis of potential transportation investments identified through scenario analysis, Steering Committee input, and CAMPO staff. This chapter identifies the estimated revenue from existing and proposed funding sources over the plan period and compares it against estimated projected costs of constructing, maintaining, and operating the existing and planned transportation system through 2045.

FEDERAL FUNDING SOURCES

This section provides an overview of funding sources that are used, or potentially available for use, to support CAMPO's transportation infrastructure improvements over the plan period.

Roadway Funding

The primary source of federal funding is the Highway Trust Fund (HTF), which is funded by federally assessed gasoline taxes, aviation fuel, and landing fees. The FAST Act authorizes a total combined amount (\$39.7 billion in FY 2016, \$40.5 billion in FY 2017, \$41.4 billion in FY 2018, \$42.4 billion in FY 2019, and \$43.4 billion in FY 2020) in contract authority to fund six formula programs¹:

- National Highway Performance Program (NHPP);
- Surface Transportation Block Grant Program (STBG);
- Highway Safety Improvement Program (HSIP);
- Railway-Highway Crossings Program (Section 130);
- Congestion Mitigation and Air Quality Improvement (CMAQ);
- Metropolitan Planning; and
- The new National Highway Freight Program (NHFP).

Federal funds are apportioned among the states, and then each state's apportionment is divided among the individual apportioned programs on a formula basis. The state share is equal to the state's share of the fiscal year's apportionments and adjusted, if necessary, to ensure that the total funds received by each State is at least 95 percent of the dollar amount of its contributions to the Highway Account, which funds surface transportation projects, of the Highway Trust Fund. Most federal transportation grants require a 10-20 percent match from state, local or other funding sources. Table 15 presents the estimated apportionments for the state of Indiana for FY 2017-2020, under the FAST Act. Figure 52 presents the federal-aid highway program apportionment percent for the State of Indiana for FY 2016.

1 FAST Act Funding Apportionment: <http://www.fhwa.dot.gov/fastact/factsheets/apportionments.cfm>

Figure 52: FY 2016 Indiana Apportionment of Federal Funds

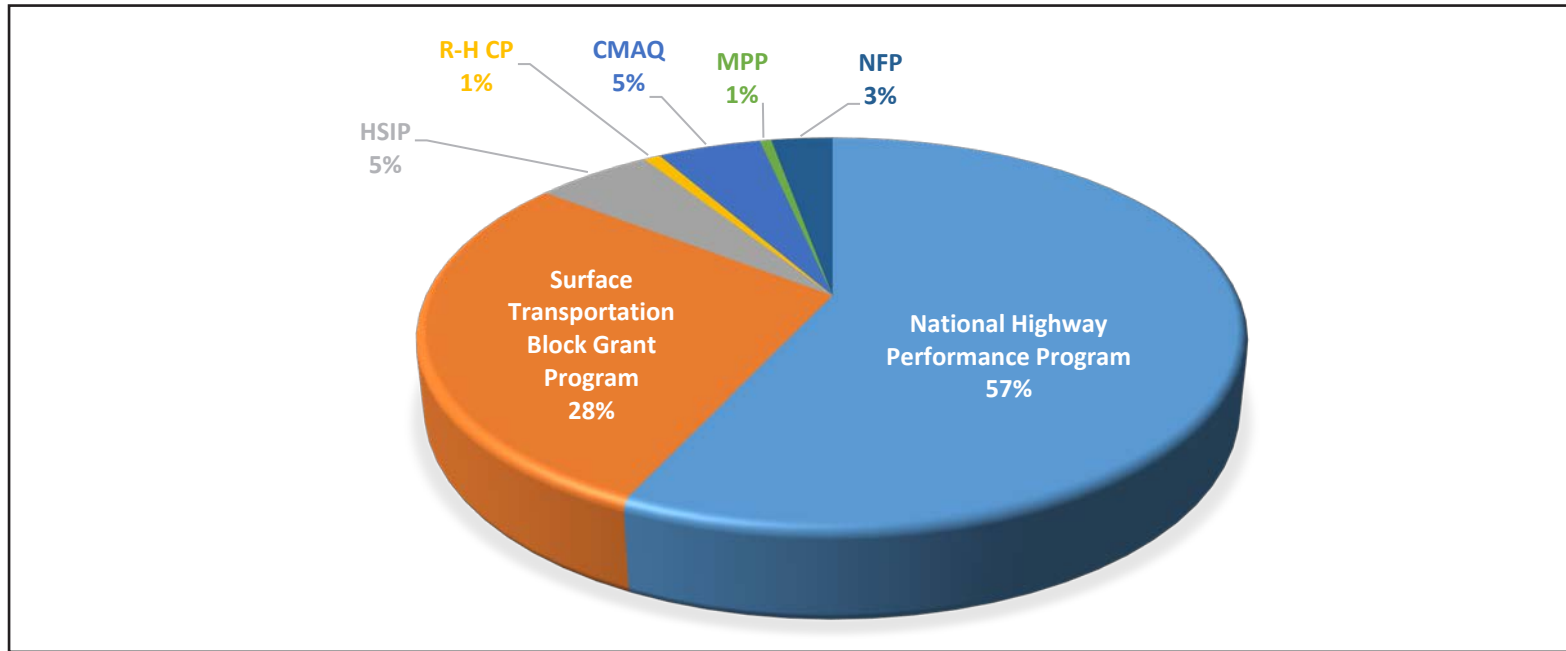


Table 15: Projected FY 16 - FY 20 Indiana Apportionment of Federal Funds

FUNDING PROGRAM	FY 16	FY 17	FY 18	FY 19	FY 20
National Highway Performance Program	\$550,991,617	\$563,220,536	\$573,929,689	\$585,739,987	\$594,777,804
Surface Transportation Block Grant Program	\$275,103,943	\$281,552,802	\$287,542,523	\$292,683,458	\$297,524,632
Highway Safety Improvement Program	\$52,999,254	\$54,177,250	\$55,188,237	\$56,176,926	\$57,135,272
Railway-Highway Crossings Program	\$7,462,921	\$7,628,763	\$7,794,606	\$7,960,449	\$7,961,587
CMAQ Program	\$46,932,909	\$47,974,557	\$48,886,752	\$49,781,663	\$50,525,029
Metropolitan Planning	\$5,212,406	\$5,317,955	\$5,429,686	\$5,546,264	\$5,645,449
National Freight Program	\$27,826,482	\$26,616,635	\$29,036,329	\$32,665,871	\$36,104,102
Apportioned Total	\$966,529,532	\$986,488,498	\$1,007,807,822	\$1,030,554,618	\$1,049,673,875

National Highway Performance Program (NHPP) Funds

The NHPP funding, established under MAP-21, supports the construction and maintenance projects on the National Highway System (NHS) within the region. The National Highway System is the network of about 220,000 miles of the nation's most important highways, including the Interstate and US Highway systems that are essential to the nation's economy, mobility, and security. The NHPP is the largest federal highway program, at 56 percent of the total Highway Trust Fund. Two percent of the NTPP funding is to be set aside for State Planning and Research (SPR) funds. States are permitted to transfer up to 50 percent of the NHPP dollars to other programs, including the Surface Transportation Program (STP), Highway Safety Improvement Program (HSIP), and the Congestion Mitigation and Air Quality Improvement program (CMAQ).

Surface Transportation Block Grant Program (STBG) Funds

The FAST Act changed the Surface Transportation Program (STP) into the Surface Transportation Block Grant Program. This program is the most flexible federal-aid highway program providing financial support to state and local agencies for construction, reconstruction, rehabilitation, resurfacing, operational improvements to federal-aid highways, transit capital projects, and replacement and rehabilitation of bridges on public roads. Fifty percent of the STBG funding is obligated to MPOs and rural areas based on the relative share of the State's population. The percentage of STBG funding grows by 1 percent every year over the period of the FAST Act (51 percent in FY 16; 52 percent in FY 17; 53 percent in FY 18; 54 percent in FY 19; 55 percent in FY 20). Two percent of the STBG funding is to be set aside for State Planning and Research (SPR) funds. The remaining STBG funding may be used in any other area of the state. For off-system (not on federal-aid system) bridges, an amount not less than 15 percent of the State's FY 2009 Highway Bridge Program apportionment is set aside. The STBG covers 80 percent of the total cost of a project, with the rest covered by states, local, or other funding sources.

Congestion Mitigation and Air Quality (CMAQ)

The CMAQ program provides funding for projects aimed at relieving congestion and reducing air pollution levels to satisfy the federal air quality standards. The funding is available for areas that do not meet the National Ambient Air Quality Standards ("non-attainment areas") and for former non-attainment areas that are now in compliance (maintenance areas), to fund Travel Demand Management (TDM) projects. States without a non-attainment or maintenance area have the flexibility of using the CMAQ funds for STBG projects. However, the program cannot be used to fund projects that increase vehicular travel, such as capacity expansion/construction of new travel lanes. CAMPO continues to be an attainment area, and is not expected to reach non-attainment standards in the near future.





Highway Safety Improvement Program (HSIP)

Highway Safety Improvement Program (HSIP) funds are intended to significantly reduce traffic fatalities and serious injuries on the regional roadways, as well as publicly owned bicycle and pedestrian pathways or trails. HSIP requires a data-driven, strategic approach to improving highway safety on all public roads. Two percent of the HSIP funding is set aside for State Planning and Research (SPR) funds. Eligible projects include, but are not limited to, intersection improvements, traffic calming, rural corridor improvements, and bicycle and pedestrian safety projects. The federal share of this program is 90 percent.

Railway-Highway Crossing Program

The Railway-Highway Crossing program provides funds for safety improvements to reduce the number of fatalities, injuries, and crashes at public railway-highway grade crossings. The program is funded via a set-aside from state's HSIP apportionment. The FAST Act authorized \$350 million to be set aside from the Highway Safety Improvement Program (HSIP) for FY 2016. The federal share for this program is 90 percent.

National Highway Freight Program (NHFP)

The NHFP is a new program established under the FAST Act to improve the efficient movement of freight on the National Highway Freight Network (NHFN) and support the following goals:

- Investing in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity;
- Improving the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;
- Improving the state of good repair of the NHFN;
- Using innovation and advanced technology to improve NHFN safety, efficiency, and reliability;
- Improving the efficiency and productivity of the NHFN;
- Improving State flexibility to support multi-State corridor planning and address highway freight connectivity; and
- Reducing the environmental impacts of freight movement on the NHFN.

Transit Funding

The Federal Transit Administration (FTA) is the primary federal funding source for public transportation. FTA programs are established, modified, or eliminated through authorization legislation, such as the FAST Act passed by Congress in December 2015. This act provides five years of predictable formula funding that enables transit agencies to better manage long-term assets and operational needs. Major federal transit grant programs include:

- The Urban Formula Program (Section 5307)
- New Starts (Section 5309)
- Elderly Individuals and Individuals with Disabilities Program (Section 5310)
- Rural Formula Program (Section 5311)
- State of Good Repair Program (Section 5337)

In addition, the FAST Act includes funding for new competitive grant programs for buses and bus facilities, innovative transportation coordination, workforce training, and public transportation research activities. FAST ACT authorized up to \$11.8 billion for various public transit programs in FY 16. Major grant programs pertaining to Columbus public transportation are detailed below.

Urbanized Area Formula Program (Section 5307)

Section 5307 is the primary Federal funding source to support public transportation. Funding is awarded directly to the designated recipient in each urbanized area over 200,000 in population. For urbanized areas with populations between 50,000 and 200,000, funds are apportioned to the Governor of each state or his designee. Urban Formula Program funds may be used to support public transportation capital projects, operating assistance, job access and reverse commute projects, and for transportation-related planning. For areas of 50,000 to 199,999 in population, the formula is based on population and population density. The Metropolitan Planning Organization (MPO) is responsible for designating the recipients of FTA Urbanized Formula funds. CAMPO has designated the ColumBUS Transit to be the recipient of Section 5307 funds.

Elderly Individuals and Individuals with Disabilities Program (Section 5310)

This program addresses the special transit needs of elderly individuals and individuals with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting their needs. At least 55 percent of Section 5310 funds must be spent on “traditional” projects, or capital projects, such as buses and vans, wheelchair lifts, ramps and securement devices, and transit-related information technology systems. The remaining 45 percent is for other “non-traditional” projects such as:

- Travel training;
- Volunteer driver programs;
- Building an accessible path to a bus stop, including curb-cuts, sidewalks, accessible pedestrian signals or other accessible features; or
- Improving signage, or way-finding technology.

The small urbanized area apportionment is provided to the state for distribution to eligible recipients. MPOs must compete with other small urbanized areas (UZAs) for these funds. Under the FAST Act, a state or local governmental entity that operates a public transportation service that is eligible to receive direct grants under Section 5311 or 5307 is now an eligible direct recipient for Section 5310 funds.

The federal share of Section 5307 and 5310 grants is not to exceed 80 percent of the net project cost for capital expenditures. The federal share may be 90 percent for the cost of vehicle-related equipment attributable to compliance with the Americans with Disabilities Act and the Clean Air Act. The federal share may not exceed 50 percent of the net project cost of operating assistance.

Bus and Bus Facilities Program (Section 5339)

MAP-21 established, and the FAST Act maintains, the Section 5339 Bus and Bus Facilities Program, changing the program from discretionary-based to formula-based. For the small urbanized areas, Section 5339 funds are apportioned to the states; the individual states are then responsible for determining the sub-allocation process and amounts that eligible small urbanized areas will receive. States will apply directly to FTA for funding on behalf of small urbanized area sub-recipients. Thus, the MPO must compete for funding with other small urban transit systems in Indiana for funding. The Federal share of project costs is 80 percent. Like all other FTA capital programs, certain capital projects (Clean Air Act, bicycle-related, and ADA projects) may be funded at higher ratios.

STATE AND LOCAL FUNDING SOURCES

State highway funds are generated from fuel taxes (gasoline and diesel) and vehicle registration fees (registration, title, and license fees). Local funding for transportation projects is primarily through state allocations, block grants, municipal and county budgets, public transit fares, local park district budgets (for greenways and trails projects) and private donations. Additional revenue can be obtained from property taxes, sales taxes, and special assessments. This funding is crucial to provide the local match for state and federally funded projects. Local agencies can also work with developers and business associations to obtain private funding through impact fees, right-of-way contributions, and cost sharing.

The City Engineer's office has an annual Thoroughfare Fund budget which can be used to partially or fully fund projects in the Thoroughfare Plan. It can be used to match projects in the TIP, pay for the utility phase, or fully fund a small project. Columbus and Bartholomew County both have Tax Increment Financing (TIF) districts. In the past, TIF funds have supported some transportation-related projects in Columbus, including downtown parking garages and Woodside Industrial Park infrastructure. TIF funds have also been used for transportation studies in Columbus. While these funds could potentially be used for transportation-related projects in the future, this is not a predictable revenue stream.

About 3 percent of the transit annual operating expense is recovered by fare revenue in the MPA, with the remaining expenses covered by local, state and federal funding. The State of Indiana provides Public Mass Transportation Funds (PMTF) to regional transit agencies to promote and develop transportation in Indiana. The funds are allocated to public transit systems on a performance-based formula. The PMTF operating project and capital project grants are restricted to a dollar for dollar match with locally derived income. Through PMTF, ColumBUS transit received approximately \$290,000/year from 2015 to 2019. The local match for the state and federal grants is provided using City of Columbus general revenue funds. Table 16 presents the operation expense and revenue for ColumBUS Transit for FY 2015 to FY 2019.

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Table 16: ColumBUS Transit FY 2015-2019 Expenses and Revenue

	COST	YEAR				
		2015	2016	2017	2018	2019
OPERATING EXPENSE SUMMARY	Fixed Route Expenses	\$1,217,147	\$1,366,614	\$1,338,425	\$1,328,579	\$1,372,520
	Demand Response Services	\$485,157	\$480,162	\$436,399	\$428,800	\$505,250
	Total Expense	\$1,702,304	\$1,846,776	\$1,774,824	\$1,757,379	\$1,877,770
REVENUE SUMMARY	Fare Revenue	\$44,635	\$50,813	\$46,547	\$46,616	\$47,807
	Contract/Other	\$0	\$0	\$0	\$0	\$0
	Local Assistance	\$547,650	\$637,721	\$832,481	\$570,493	\$619,837
	State Assistance	\$281,135	\$287,135	\$288,718	\$297,376	\$295,144
	Federal Assistance	\$828,784	\$869,107	\$607,078	\$842,894	\$914,982
	Total Revenue	\$1,702,204	\$1,844,776	\$1,774,824	\$1,757,379	\$1,877,770

OPERATION AND MAINTENANCE

In addition to the capacity improvement projects programmed in the LRTP, the operation and maintenance of the existing transportation system is important to preserve the past investments and maximize the safety, efficiency and reliability of the existing system. The operational costs include snow and ice removal, street lighting, traffic signal maintenance, drainage work, equipment purchases, administration, and other related costs. Maintenance costs include the cost associated with maintaining the existing federal-aid roadway infrastructure, including pavement and bridge resurfacing and replacement, and right-of-way upkeep.

INDOT's role includes the day-to-day operation and maintenance of the federal-aid eligible highway system in the state. The agency commits state dollars for general operations and maintenance of the roadway system. Bartholomew County and the City of Columbus use local revenue to maintain and preserve the local transportation system in addition to providing local matches to federally funded/subsidized projects. Local revenue also supports part of the regional transit operation and maintenance costs, including repair, rehabilitation and restoration of existing transit facilities and fleets, and driver wages. Table 17 presents estimated breakdown of operation and maintenance costs incurred by the Bartholomew County and the City of Columbus from 2021 to 2025. Table 18 shows estimated operation and maintenance costs for INDOT in Columbus MPA from 2021 to 2025.

Table 17: Operation and Maintenance Costs

JURISDICTION	COSTS	2021	2022	2023	2024	2025
Bartholomew County	Operation	\$3,700,400	\$3,700,400	\$3,700,400	\$3,700,400	\$3,700,400
	Maintenance	\$4,800,900	\$4,800,900	\$4,800,900	\$4,800,900	\$4,800,900
City of Columbus	Operation	\$870,900	\$870,900	\$870,900	\$870,900	\$870,900
	Maintenance	\$3,200,600	\$3,200,600	\$3,200,600	\$3,200,600	\$3,200,600
	Total	\$12,572,800	\$12,572,800	\$12,572,800	\$12,572,800	\$12,572,800

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Table 18: Estimated Operations and Maintenance Costs for INDOT in Columbus MPA (2021-2025)

COSTS TYPE	2021	2022	2023	2024	2025
Operation and Maintenance	\$694,200	\$694,200	\$694,200	\$694,200	\$694,200

PLAN FINANCIAL FEASIBILITY

The FAST Act is the first transportation bill in over a decade to provide long-term funding for surface transportation infrastructure. The FAST Act authorizes \$305 billion over fiscal years 2016 through 2020 for highway projects and public transportation. While state and local agencies are assured federal assistance for the next several years, the Highway Trust Fund revenue crisis remains a concern. Motor fuel tax (MFT) provides most of the funding at the state and federal levels. The federal motor fuel tax of \$0.184/gallon has not been increased to keep up with inflation since 1993. A relatively slower increase of VMT nationally, and the increase in fuel efficient vehicles has resulted in a gradual decrease of motor fuel tax revenue. Various alternatives have been proposed to replace the motor fuel tax including mileage-based user fees, supplementing the MFT with other revenue sources such as public-private partnerships, and federal discretionary grants. While these alternatives are being tested, it is unknown if, or when, these additional/ alternate revenue sources will be implemented.

Since federal, state, or local sources do not guarantee the same level of funding every year, estimating revenue for the 25-year planning period can be complex and difficult to predict. Federal regulations require the financial plan to determine that “all cost and revenue projections shall be based on the data reflecting the existing situation and historical trends.” The revenue for the first four fiscal years of the plan period is obtained from the FY 2022-2026 Transportation Improvement Program (TIP). The revenue projections for the remaining 19 years of the plan are ideally estimated based on the funding received historically. The federal funding is divided into two main revenue sources, STBG and non-STBG. STBG is guaranteed, and is administered to MPOs by INDOT based on population. Non-STBG funding, which includes all other federal revenue (NHPP, HSIP, & NHFP), is grant- based and varies year-to-year. Based on historical funding, CAMPO is typically apportioned \$1,876,500 of STP (STBG starting FY 22) funding annually by INDOT. In addition, CAMPO has received \$263,726 annually, on average for HSIP projects over the last five years (FY 2016- FY 2021). Any additional federal funding received as part of the non-STBG grant based programs can be used to fund illustrative projects if, and when, this funding becomes available.

The federal funding for the 2045 CAMPO long-range transportation plan is estimated based on the following assumptions:



- All the projects listed in FY 2022-2026 TIP are assumed to be fiscally constrained. Table 20-21 on the following page shows the projects listed in the FY 2022-2026 TIP.
- The federal revenue for the next 21 years (FY 2027 – FY 2046) was calculated based on the average STP and HSIP funding allocated to CAMPO each year (typically \$1,876,500), with an annual inflation rate of 2 percent. The estimated federal revenue for the remaining 19-year period of the long range plan period is calculated to be \$50,811,054.

Local agencies are expected to contribute to the required local share of the transportation projects programmed in the TIP and the long-range plan. Local revenue sources may include municipal and county budgets, state allocations, and special assessments. Local agencies continue to seek financial participation from private developers, whose projects necessitate transportation improvements.

- A total of \$2,235,555 in local funding is allocated for transportation projects in FY 2022-2026 TIP.
- Assuming a 20 percent local match for the federally subsidized projects over the next 19 year period of the long range plan, the local contribution is estimated to be \$10,357,208.

The total federal and local transportation funding for the 19 year long-range planning

period (FY 2027 – FY 2045) is estimated to be \$41,428,834. Table 19 shows federal and matching local funds estimations for CAMPO.

The federal, state, and local funding allotted for transit operations for the first five fiscal years of the long-range planning period is calculated from the FY 2022-2026 TIP to be \$7,926,000. Based on local, state and federal appropriations between FY 2022 - FY 2026, annual transit funding is expected to be \$1,585,200. The total revenue for ColumBUS transit operations and maintenance for the remaining 19 years of the plan period (FY 2027 - FY 2045) at 0 percent inflation is estimated to be \$30,118,800.

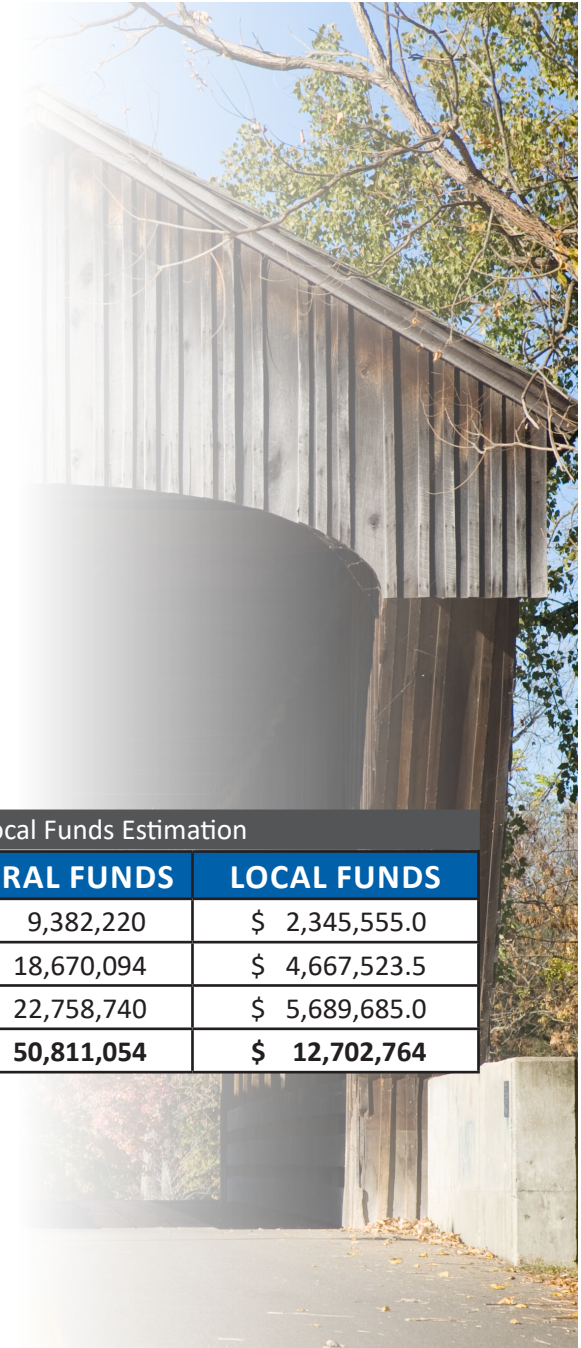


Table 19: Federal and Local Funds Estimation

YEARS	FEDERAL FUNDS	LOCAL FUNDS
2022-2026	\$ 9,382,220	\$ 2,345,555.0
2027-2035	\$ 18,670,094	\$ 4,667,523.5
2036-2045	\$ 22,758,740	\$ 5,689,685.0
Total	\$ 50,811,054	\$ 12,702,764

Table 20: CAMPO TIP Projects

DES#	PROJECT	SPONSOR	WORK TYPE	LOCATION	TOTAL COST	PBPP, PM*
1700732	Lowell Rd ph 1	Bartholomew County	Road Reconstruction (3R/4R Standards)	Lowell Road between CR 325 W to City limits	\$200,000	Pavement Condition
1701325	Lowell Rd ph 2	Columbus	Road Reconstruction (3R/4R Standards)	Lowell Road between City limits and US 31	\$250,000	Pavement Condition
1701325	Lowell Rd ph 2	Columbus	Road Reconstruction (3R/4R Standards)	Lowell Road between City limits and US 31	\$2,986,812	Pavement Condition
1701325	Lowell Rd ph 2	Columbus	Road Reconstruction (3R/4R Standards)	Lowell Road between City limits and US 31	\$244,011	Pavement Condition
1701323	Talley Rd	Columbus	Road Reconstruction (3R/4R Standards)	Talley Rd between 25th St and Rocky Ford Rd	\$200,000	Pavement Condition
1701323	Talley Rd	Columbus	Road Reconstruction (3R/4R Standards)	Talley Rd between 25th St and Rocky Ford Rd	\$2,272,000	Pavement Condition
1701323	Talley Rd	Columbus	Road Reconstruction (3R/4R Standards)	Talley Rd between 25th St and Rocky Ford Rd	\$300,000	Pavement Condition
1800008	Bridge #103	Columbus	Bridge Replacement	Bridge #103 (Talley)	\$2,100,000	Bridge Condition
1800008	Bridge #103	Columbus	Bridge Replacement	Bridge #103 (Talley)	\$300,000	Bridge Condition
1900614	Transit	Columbus	Transit Operating	Columbus Transit Operating 2022	\$1,585,170	Transit
1900615	Transit	Columbus	Transit Operating	Columbus Transit Operating 2023	\$1,585,170	Transit
1900617	Transit	Columbus	Transit Operating	Columbus Transit Operating 2024	\$1,585,170	Transit
1900640	I 65	INDOT	Repair Or Replace Joints	NB over Driftwood River	\$512,389	Safety
1701168	I 65	INDOT	Replace Superstructure	00.72 mile S of US 31 at CR 650N/Tannehill Rd	\$1,708,439	Bridge Condition
2000505	I 65	INDOT	Rest Area Modernization	Taylorville Truck Parking Conversion	\$5,750,000	Freight Reliability
2000505	I 65	INDOT	Rest Area Modernization	Taylorville Truck Parking Conversion	\$575,000	Freight Reliability
2000291	US 31	INDOT	Bridge Deck Overlay	NB over Conrail, Indpls & Ser Rd, 04.75 S I-65	\$5,613,580	Bridge Condition
2001780	US 31	INDOT	Drainage Ditch Correction	US 31 from US 50 to I-65	\$1,055,832	Safety
2001780	US 31	INDOT	Drainage Ditch Correction	US 31 from US 50 to I-65	\$160,000	Safety
1900688	US 31	INDOT	HMA Overlay, Preventive Maintenance	"2.11 miles N of SR 46 (Base Rd) to 5.76 miles S of I-65 (Washington St)"	\$3,163,435	Pavement Condition
1600829	US 31	INDOT	Other Intersection Improvement	Tannehill Road to I-65 S	\$1,735,199	Safety
1600503	SR 58	INDOT	Bridge Replacement	3.35 miles W of I-65 over E Fork White Creek	\$4,264,639	Bridge Condition
1600503	SR 58	INDOT	Bridge Replacement	3.35 miles W of I-65 over E Fork White Creek	\$365,000	Bridge Condition
2001966	SR 58	INDOT	Small Structure Replacement	00.30 W of I-65	\$50,000	Bridge Condition
1800088	SR 46	INDOT	Added Travel Lanes	EB from Brown Street to Jackson Street in Columbus	\$495,282	Safety, System Performance
1800088	SR 46	INDOT	Added Travel Lanes	EB from Brown Street to Jackson Street in Columbus	\$50,000	Safety, System Performance

*Performance-Based Planning and Programming, Performance Management

Table 21: CAMPO TIP Projects Continued

DES#	PROJECT	SPONSOR	WORK TYPE	LOCATION	TOTAL COST	PBPP, PM*
2100055	SR 46	INDOT	ADA Sidewalk Ramp Construction	Johnson Blvd & Carr Hill Rd intersections, approx 0.39 and 0.55 miles E of I-65	\$183,240	Safety
1900686	SR 46	INDOT	HMA Overlay, Preventive Maintenance	SR 7 to 0.21 miles E of SR 9	\$5,559,560	Pavement Condition
1900116	SR 46	INDOT	Intersect. Improv. w/ New Signals	At Two Mile House Road	\$20,000	Safety
1900116	SR 46	INDOT	Intersect. Improv. w/ New Signals	At Two Mile House Road	\$269,628	Safety
2002302	SR 46	INDOT	Small Structure Replacement	SR 9, 4.4 mi N of SR 46	\$175,000	Bridge Condition
2002302	SR 46	INDOT	Small Structure Replacement	SR 9, 4.4 mi N of SR 46	\$268,513	Bridge Condition
2002302	SR 46	INDOT	Small Structure Replacement	SR 9, 4.4 mi N of SR 46	\$10,000	Bridge Condition
2000508	SR 11	INDOT	Bridge Painting	Bridge over Opossum Creek, 2.04 mi S of SR 46	\$184,406	Bridge Condition
2000239	SR 11	INDOT	Curve Correction	(0.9 mile N of Jonesville)	\$777,698	Safety
2001898	SR 11	INDOT	HMA Overlay, Preventive Maintenance	"0.24 miles N of I 65 to 4.84 miles S of SR 46 (Southern Crossing)"	\$125,000	Pavement Condition
1802997	SR 11	INDOT	Replace Superstructure	03.17 miles S of SR 46 @ Denios Creek	\$161,000	Bridge Condition
1802997	SR 11	INDOT	Replace Superstructure	03.17 miles S of SR 46 @ Denios Creek	\$7,044,827	Bridge Condition
1802997	SR 11	INDOT	Replace Superstructure	03.17 miles S of SR 46 @ Denios Creek	\$210,000	Bridge Condition
1802997	SR 11	INDOT	Replace Superstructure	03.17 miles S of SR 46 @ Denios Creek	\$300,000	Bridge Condition
1802997	SR 11	INDOT	Replace Superstructure	03.17 miles S of SR 46 @ Denios Creek	\$60,000	Bridge Condition
2000067	SR 9	INDOT	Bridge Painting	"Bridge over Clifty Creek, 00.53 mi N of SR 46"	\$406,013	Bridge Condition
1902887	SR 9	INDOT	Intersection Improvement, Roundabout	Intersection of SR 9 & SR 46	\$1,920,000	Safety
1902890	VA VARI	INDOT	District Wide Bridge Maintenance	IDIQ, various locations	\$1,000,000	Bridge Condition
1801356	VA VARI	INDOT	ITS Devices Maintenance Contracts	ITS & Signal Maintenance Contract	\$208,654	Safety, CMAQ
1801358	VA VARI	INDOT	ITS Devices Maintenance Contracts	ITS & Signal Maintenance Contract	\$212,654	Safety, CMAQ
0204056	VA VARI	INDOT	ITS Devices Maintenance Contracts	ITS & Signal Maintenance Contract	\$204,056	Safety, CMAQ
1902026	VA VARI	INDOT	Raised Pavement Markings, Refurbished	RPM's at various non- interstate locations	\$450,000	Safety
1902018	VA VARI	INDOT	Raised Pavement Markings, Refurbished	Various interstate locations	\$450,000	Safety
1901714	VA VARI	INDOT	Traffic Signal, New or Modernized	"SR 11 & CR 200 S (Columbus); SR 67 & Centerton Rd (Martinsville)"	\$60,000	Safety
1901701	VA VARI	INDOT	Guardrail Improvement Project	Various locations	\$1,465,000	Safety

*Performance-Based Planning and Programming, Performance Management

FISCALLY CONSTRAINED PROJECT PLAN

Roadway Projects

Future projects for the Columbus MPA were identified based on scenario analyses, Steering Committee input, public involvement, and inputs from CAMPO staff to address the existing and projected transportation needs through the long-range plan period. The cost of the planned projects are compared against the estimated revenue to ensure the projects are fiscally constrained. The transportation projects are divided into short-term and long-term planning horizons. The short-term projects include all federally funded projects programmed in the fiscally constrained CAMPO FY 2022-2026 TIP. The long-term projects include projects that are anticipated to be completed within the CAMPO MPA with the estimated federal revenue between FY 2027 – FY 2045.

Figures 53 and 54 present the long-term projects identified as part of the long-range plan to fulfill CAMPO's 6 LTRP goals. The projects are categorized A, B, and Illustrative based on priority. The long-term project costs were estimated in Year of Expenditure (YOE) dollars and are adjusted based on a 2 percent annual inflation rate. The planning level project costs were estimated based on the estimated costs in the City of Columbus thoroughfare plan, average planning level costs for roadway and bike/pedestrian infrastructure, inputs from City and County staff, and engineering judgement. The cost of construction and the other costs involved in the major projects can fluctuate over a period of time. However, by averaging the costs incurred over a substantial time period, a reasonable estimate can be developed.

Between FY 2027 - 2045, \$41,428,834 in federal revenue with a state/ local match of \$10,357,208 for a total of \$51,786,043 is expected to be available. The priority A projects identified in the plan are expected to cost \$23,159,300 and priority B projects are expected to cost \$20,611,100 for a total of \$43,770,400. The anticipated revenue for the 19-year period between FY 2027 – 2045 is expected to cover all priority A and priority B projects presented in Tables 22 and 23. Even though the priority A and priority B projects identified in the long-range plan are considered fiscally constrained based on reasonable revenue projections, the projects will be only be implemented if federal and state funding becomes available, and require close planning and coordination among federal, state, and local agencies.

Other significant projects planned in the CAMPO planning area through FY 2045 which do not have dedicated funding are listed as illustrative projects in the plan. Tables 24 and 25 present the illustrative projects identified in the CAMPO MPA, should funding become available. These projects are eligible for several non-STBG funding sources, including HSIP and NHPP. If, and when, the additional funding becomes available for illustrative projects, those projects may be included in subsequent CAMPO TIPs.

Figure 53: Long-Term (Priority A) Transportation Projects for FY 2026-2045

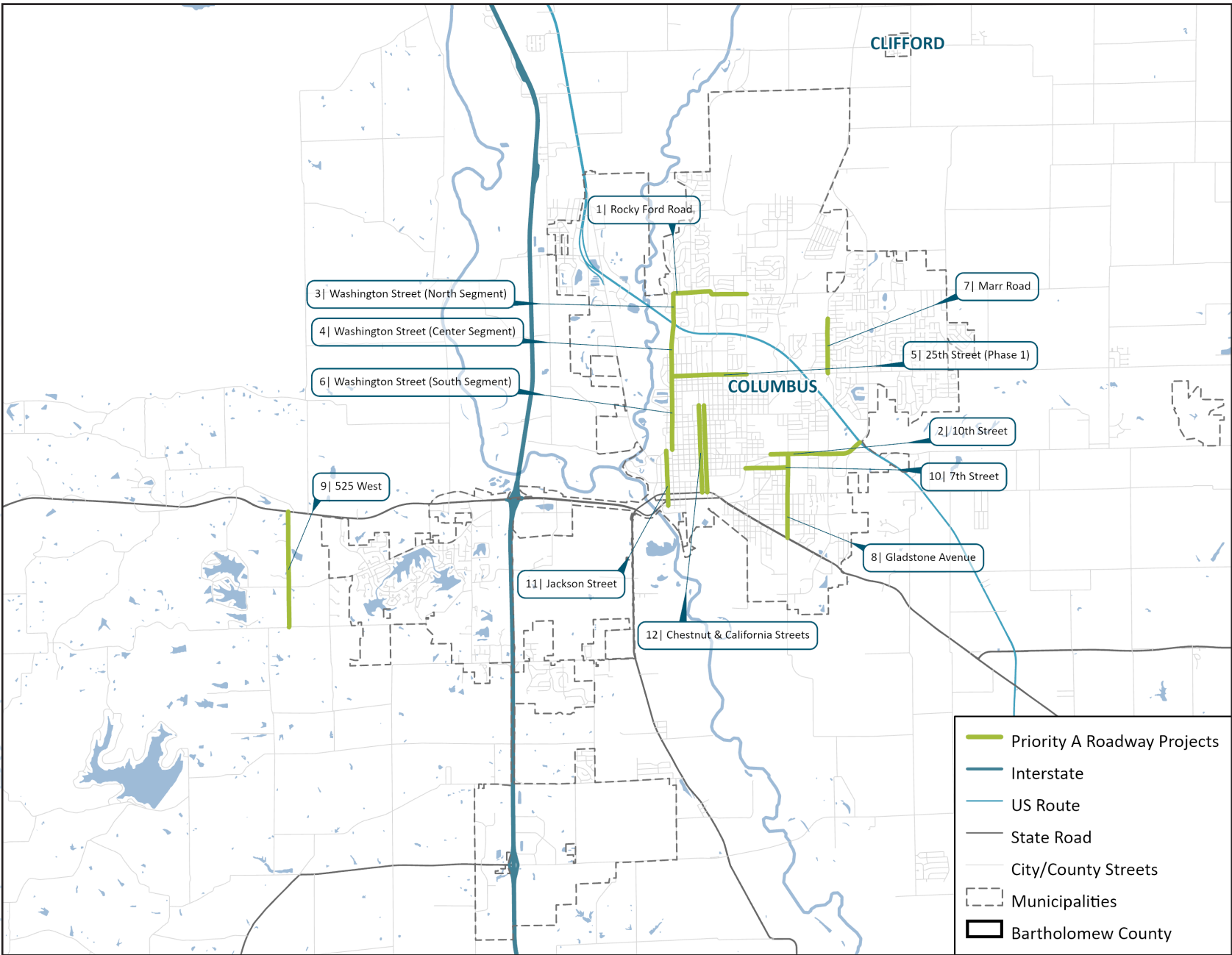


Figure 54: Long-Term (Priority B) Transportation Projects for FY 2026-2045

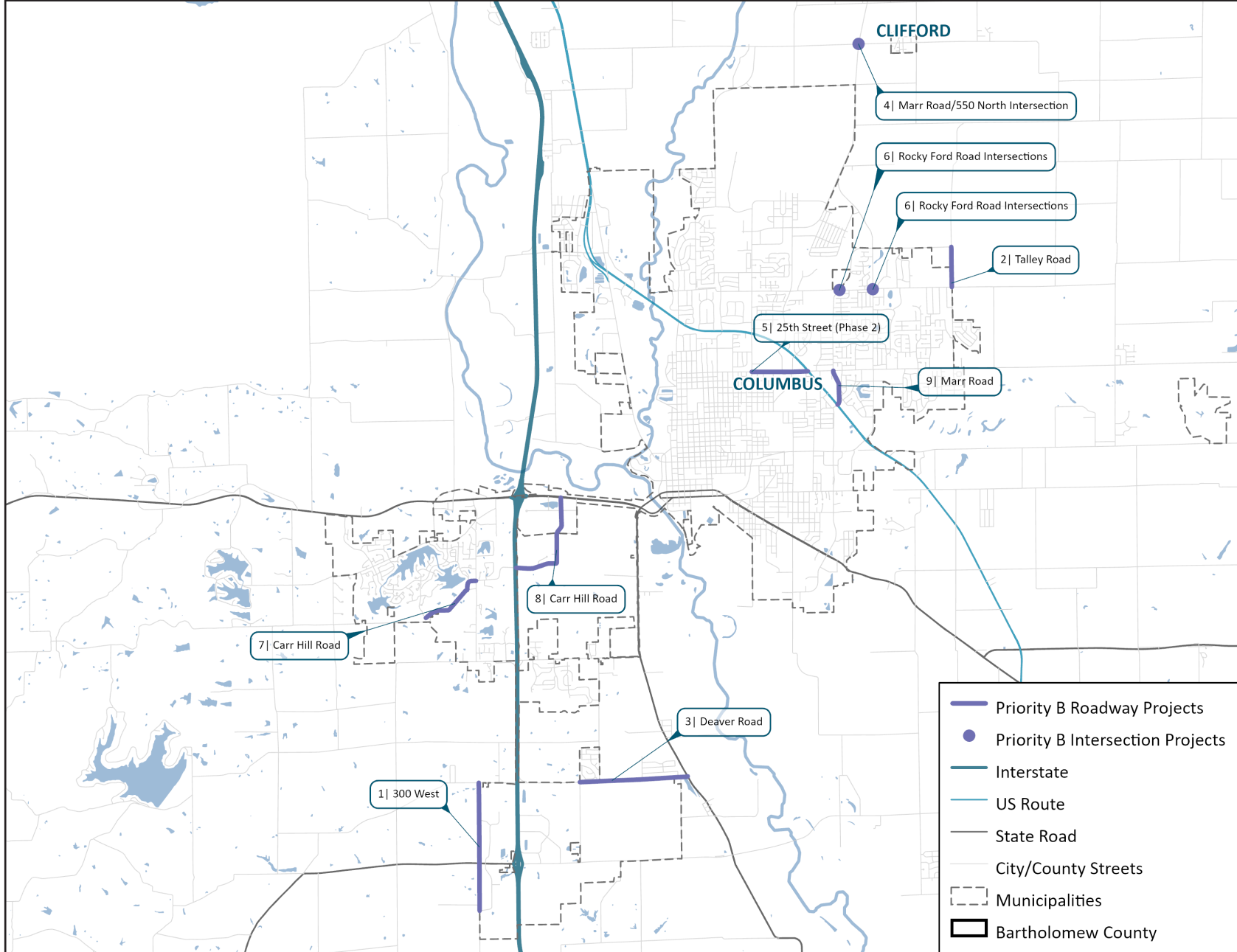


Table 22: Priority A Transportation Projects 2026-2045

NO.	PROJECT NAME	LOCATION	DESCRIPTION	COST ESTIMATE	PBPP PERFORMANCE MEASURE SUPPORTED
1	Rocky Ford Road	Washington Street to Central Avenue	Street & Bike/Ped. Improvements	\$1,102,500	Safety, Pavement Condition
2	10th Street	Haw Creek Trail to US 31	Bike/Ped. Improvements (Shared Use Path & Sidewalk)	\$1,211,000	Safety
3	Washington Street (North Segment)	US 31 to Rocky Ford Road	Street & Bike/Ped. Improvements	\$1,325,500	Safety, Pavement Condition
4	Washington Street (Center Segment)	25th Street to US 31	Street & Bike/Ped. Improvements	\$3,578,500	Safety, Pavement Condition
5	25th Street (Phase1)	Washington Street to Central Avenue	Street & Bike/Ped. Improvements	\$2,972,500	Safety, Pavement Condition
6	Washington Street (South Segment)	11th Street to 25th Street	Street & Bike/Ped. Improvements	\$3,452,500	Safety, Pavement Condition
7	Marr Road	25th Street to Brentcross Drive	Street & Bike/Ped. Improvements	\$2,504,800	Safety, Pavement Condition
8	Gladstone Avenue	10th Street to State Street	Street & Bike/Ped. Improvements	\$2,612,000	Safety, Pavement Condition
9	525 West	SR 46 to Carr Hill Road	Road Improvements	\$3,781,500	Pavement Condition
10	7th Street	Central Avenue to Gladstone Avenue	Street & Bike/Ped. Improvements	\$1,383,000	Pavement Condition
11	Jackson Street	Between 1st and 11th Streets	Bike/Ped. Improvements (Cycle Track)	\$95,000	Safety, Pavement Condition
12	Chestnut & California Streets	Between 3rd and 19th Streets	Bike/Ped. Improvements (One-Way Cycle Track on Each Street)	\$270,000	Safety
Total Priority A Projects				\$24,288,800	Safety, Pavement Condition

Table 23: Priority B Transportation Projects 2026-2045

NO.	PROJECT NAME	LOCATION	DESCRIPTION	COST ESTIMATE	PBPP PERFORMANCE MEASURE SUPPORTED
1	300 West	Between International Drive/500 South and Deaver Road	Street & Bike/Ped. Improvements	\$1,843,000	Safety
2	Talley Road	Rocky Ford Road to Sawin Drive	Street & Bike/Ped. Improvements	\$2,572,600	Safety, Pavement Condition
3	Deaver Road	SR 11 to 175 West	Street & Bike/Ped. Improvements	\$3,534,000	Safety, Pavement Condition
4	Marr Road / 550 North Intersection	Marr Road & 550 North Intersection	Intersection Improvements	\$692,000	Safety
5	25th Street (Phase 2)	Central Avenue to US 31	Street & Bike/Ped. Improvements	\$2,268,500	Safety, Pavement Condition
6	Rocky Ford Road Intersections	Intersections with Marr and Taylor Roads	Intersection Improvements (Roundabouts)	\$2,000,000	Safety
7	Carr Hill Road	Champion Drive to Terrace Lake Road	Street & Bike/Ped. Improvements	\$1,900,500	Safety, Pavement Condition
8	Carr Hill Road	I-65 to SR 46	Street & Bike/Ped. Improvements	\$3,083,500	Safety, Pavement Condition
9	Marr Road	25th Street to US 31	Street & Bike/Ped. Improvements	\$1,587,500	Safety, Pavement Condition
Total Priority B Projects				\$19,481,600	
Grand Total				\$43,770,400	

Table 24: Illustrative Projects

NO.	PROJECT	LOCATION	DESCRIPTION
1	SR 11 Alternative (by INDOT)	SR 46 to 450 South (via new terrain / 150 W / 175 W)	New Road including Bike/Ped. Facilities
2	2nd & 3rd Street Conversion (by INDOT)	Between Lindsey Street and Central Avenue	Conversion from One-Way Pair to Two-Way
3	2nd ColumBUS Transfer Station	To be Determined	New Bus Transfer Station
4	Woodside / Walesboro ColumBUS Route	Not Applicable	New Bus Service to Woodside / Walesboro Industrial Area
5	Indiana Outlets ColumBus Route	Not Applicable	New Bus Service to Premium Outlets / Edinburgh Ind. Park
6	Columbus Sidewalk / Transit Access	To be Determined	Scattered Site Sidewalk Improvements
7	Marr Road	Between State Street and 10th Street	Street & Bike/Ped. Improvements
8	McClure Road	Between 17th Street and McKinley Avenue	Street & Bike/Ped. Improvements
9	50 West	Between Deaver Road and 450 South	Street & Bike/Ped. Improvements
10	Electric Vehicle Charging Station Pilot Project	Various locations throughout Columbus Metropolitan Area	Electric vehicle charging infrastructure
11	Airport Loop Path	North and East Sides of Columbus Municipal Airport	Shared Use Path
12	22nd Street	Between Washington Street and Hawcreek Avenue	Street & Bike/Ped. Improvements
13	Tannehill Road Bridge	Tannehill Road at Driftwood River	Bridge Rehabilitation and Widening

Table 25: Illustrative Projects (cont.)

NO.	PROJECT	LOCATION	DESCRIPTION
14	Regency Drive	Between Prairie Drive and Taylor Road	Street Extension including Bike/Ped. Facilities
15	Indianapolis Road	Between Mill Race Park and Lowell Road	Shared Use Path
16	East Street (Taylorsville)	Between 650 North and 700 North	Street & Bike/Ped. Improvements
17	700 North (Taylorsville)	Between East Street and Hubler Drive	Railroad Crossing Improvements
18	McKinley Avenue	Between State Street and Marr Road	Street & Bike/Ped. Improvements (bike/ped. link to FFY)
19	Sawin Drive	Between Taylor and Talley Roads	Street & Bike/Ped. Improvements
20	Deaver Road	Between 175 West and 300 West	Street & Bike/Ped. Improvements
21	Goeller Road Intersections	Intersections with Tipton Lakes Blvd. and Terrace Lake Road	Intersection Improvements (Roundabouts)
22	Southern Crossing	Between 525 East and SR 7	Road Extension
23	800 North	Between 200 West and US 31	Street Improvements with an emphasis on US 31 Intersection Improvements
24	25th Street	Between US 31 and Talley Road	Intersection & Bike/Ped. Improvements
25	200 South	Between Terrace Lake Road and 400 West	Street & Bike/Ped. Improvements
26	100 North / 200 West	Between Indianapolis Road and Lowell Road	Street & Bike/Ped. Improvements
27	Westenedge Drive	Between Rocky Ford Road and Parkside Drive	Street & Bike/Ped. Improvements
28	Terrace Lake Road	Between Goeller Road and Carr Hill Road	Bike/Ped. Improvements (Path Widening)

Transit Projects

ColumBUS transit completed a Fixed Route Study in 2019. The study recommended several service improvements and expansions. These include:

- Revising all routes to serve a new transit center at 13th St./ Hutchins Ave.
- Implementing 30-minute service on two routes for a six-hour period (11 am to 5 pm) weekdays.
- Increasing the adult fare from \$0.25 to \$0.50. This will increase annual fare revenue between \$32,000 and \$37,000 and will result in a ridership decrease of 10% - 15%.
- Retaining service on one route to the Mill Race transit center.
- Continuing service to the Target transit center.
- The route restructuring emphasizes service to residential trip generators.
- The need for significant public involvement and marketing efforts to implement the new route structure (which is assumed to occur with the opening of the 13th/Hutchins transit center).

Transit expenditure is generally separated into operations and capital costs. Operating expenditures include costs necessary to keep the system operating, such as driver wage and maintenance costs. Capital expenditure includes costs related to new vehicles, shelter at bus stops, office equipment and furnishings, and spare parts for vehicles. Based on data presented in Table 12, Columbus is expected to use the funding received from federal, state, and local sources through the 25-year planning period towards transit operations, ensuring a fiscally constrained transit plan.

Funding for future capital projects that are not included in the current TIP are grant based, and are not forecasted as part of the long-range transportation plan.

APPENDICES

APPENDIX A: ACRONYMS AND DEFINITIONS

APPENDIX B: REVIEW OF RELEVANT PLANS

APPENDIX C: AREA DEMOGRAPHICS

APPENDIX D: SAFETY IN THE MPA

APPENDIX E: CAMPO SWOT ANALYSIS

APPENDIX F: PUBLIC PARTICIPATION

APPENDIX G: CAMPO TRAVEL DEMAND MODEL

APPENDIX H: TRAVEL MODEL OUTPUT RESULTS





APPENDIX

ACRONYMS AND DEFINITIONS

The following is a listing of definitions of acronyms commonly used in transportation planning.

%RMSE – Percent Root Mean Squared Error

3-C – Continuing, Cooperative, and Comprehensive

ACS – American Community Survey

ADA – Americans with Disabilities Act

ADT – Average Daily Traffic

ADTT – Average Daily Truck Traffic

APC – Automatic Passenger Counters

ARRA – American Recovery and Reinvestment Act

AVL – Automatic Vehicle Locators

CAAA – Federal Clean Air Act Amendments

CAC – Citizen’s Advisory Committee

CAMPO – Columbus Area Metropolitan Planning Association

CMAQ – Congestion Mitigation and Air Quality Improvement

CO – Carbon Monoxide

FAST Act – Fixing America’s Surface Transportation Act

FHWA – Federal Highway Administration

FTA – Federal Transit Administration

FY – Fiscal Year

HSIP – Highway Safety Improvement Program

HTF – Highway Trust Fund

INDOT – Indiana Department of Transportation

INAFSM – Indiana Association for Floodplain and Stormwater Management

IRBC – Indiana Business Research Center

IRI – International Roughness Index

ISTEA – Intermodal Surface Transportation Efficiency Act

ISTDM – Indiana Statewide Travel Demand Model
ITS – Intelligent Transportation Systems
L&I – Louisville & Indiana Railroad Company
LEHD – Longitudinal Employer-Household Dynamics
LOS – Level of Service
LRTP – Long Range Transportation Plan
MAP-21 – Moving Ahead for Progress in the 21st Century
MFT – Motor Fuel Tax
MPA – Metropolitan Planning Area
MPO – Metropolitan Planning Organization
NAAQS – National Ambient Air Quality Standards
NHFP – National Highway Freight Program
NHPP – National Highway Performance Program
NHS – National Highway System
NO₂ – Nitrogen Dioxide
O₃ - Ozone
Pb – Lead
PCI – Pavement Condition Index
PM₁₀/PM_{2.5} – Particulate Matter
PMTF – Public Mass Transportation Funds
PYB – Prior Year Balance
SAFETEA-LU – The Safe, Accountable, Flexible, Efficient Transportation Equity Act
SIP – State Implementation Plan

SO₂ – Sulfur Dioxide
SRTS – Safe Routes to School
STBG – Surface Transportation Block Grant Program
STP – Surface Transportation Program
SWOT – Strengths, Weaknesses, Opportunities, and Threats
TAZ – Traffic Analysis Zone
TDM – Travel Demand Model
TIP – Transportation Improvement Program
UPWP – Unified Planning Work Program
USDOT – United States Department of Transportation
UZA – Small Urbanized Area
V/C – Volume to Capacity Ratio
VMT – Vehicle Miles of Travel
W&P – Woods & Poole Economics
YOE – Year of Expenditure

APPENDIX B

REVIEW OF RELEVANT PLANS

The following review of plans pertaining to Columbus, IN provides the foundation from which the CAMPO Metropolitan Transportation Plan was developed. This review clarifies state, regional, city-wide, and neighborhood transportation goals, priorities, recommendations, and projects. Reviewing plans and policies from the state to local level ensures that the CAMPO MTP aligns with such plans and policies intended to guide investment and development priorities in the region. This comprehensive review identifies relevant elements from each plan that would impact the CAMPO MPA's current and future transportation and mobility plans and investments. In total, the study team reviewed seven existing planning documents related to transportation planning and land use development in the CAMPO region.

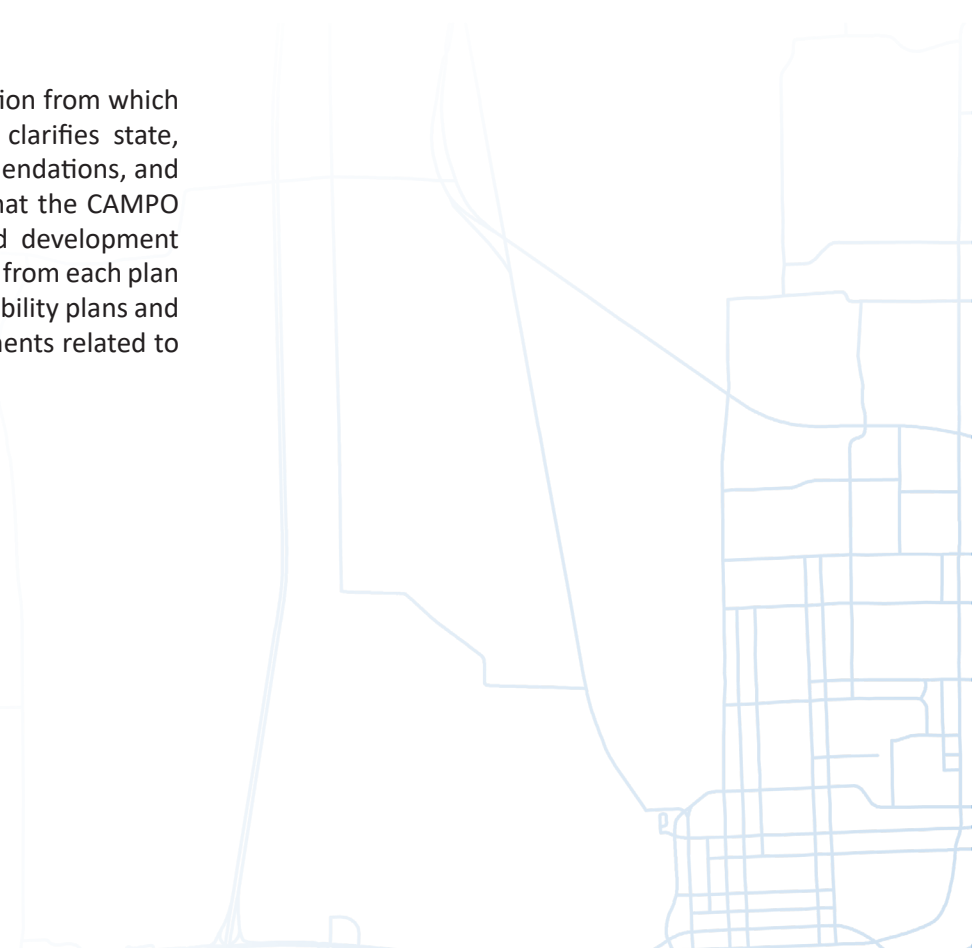


Table B-1 lists the title, author, and year of publication for the seven plans, studies, and initiatives selected for review.

The relevant documents were grouped based on their general purposes and scopes. These groups include:

- Transportation Planning
- Transit Planning and Operations
- Land-Use Planning and Economic Development
- Pedestrian and Bicycle Planning

Table B-1: Plans/Studies Reviewed

PLAN/STUDY	AGENCY/ENTITY	PUBLICATION DATE
Transportation Planning		
Indiana DOT LRTP 2018-2045	IN DOT	2019
CAMPO 2040 LRTP	CAMPO	November 2016
Transit Planning and Operations		
Columbus, Indiana: Fixed Route Study	City of Columbus	November 2019
Land Use Planning and Economic Development		
Columbus Central Neighborhood Plan	City of Columbus	November 2018
Envision Columbus: Downtown Strategic Development Plan	City of Columbus	August 2019
Infill Sites Profiles	City of Columbus	July 2017
Pedestrian and Bicycle Planning		
Bartholomew Consolidated School Corporation Safe Routes to School Plan	BCSC	August 2012

TRANSPORTATION PLANNING

INDIANA DOT LRTP 2018-2045

Agency: Indiana Department of Transportation (INDOT)

Geography/Scale: Indiana

Purpose: The INDOT LRTP 2018-2045 Future Transportation Needs Report is Indiana’s statewide, long-range transportation plan (LRTP). This plan is intended to be used as a policy document guiding the development of Indiana’s transportation system. The purpose of the LRTP is to assure that the transportation infrastructure network will adequately serve future needs through the year 2045. The state-wide LRTP is also intended to be used by regional and local planning entities when planning for and investing in transportation infrastructure and making decisions regarding land use and development.

Summary

INDOT’s 2018-2045 LRTP utilized several forms of public engagement including public meetings, open houses, and a steering committee to guide the planning process and inform the plan’s vision and goals. The vision of the LRTP was driven by policy goals that are consistent with national planning goals. The seven goals from which the Plan’s objectives and performance measures derive are as follows:

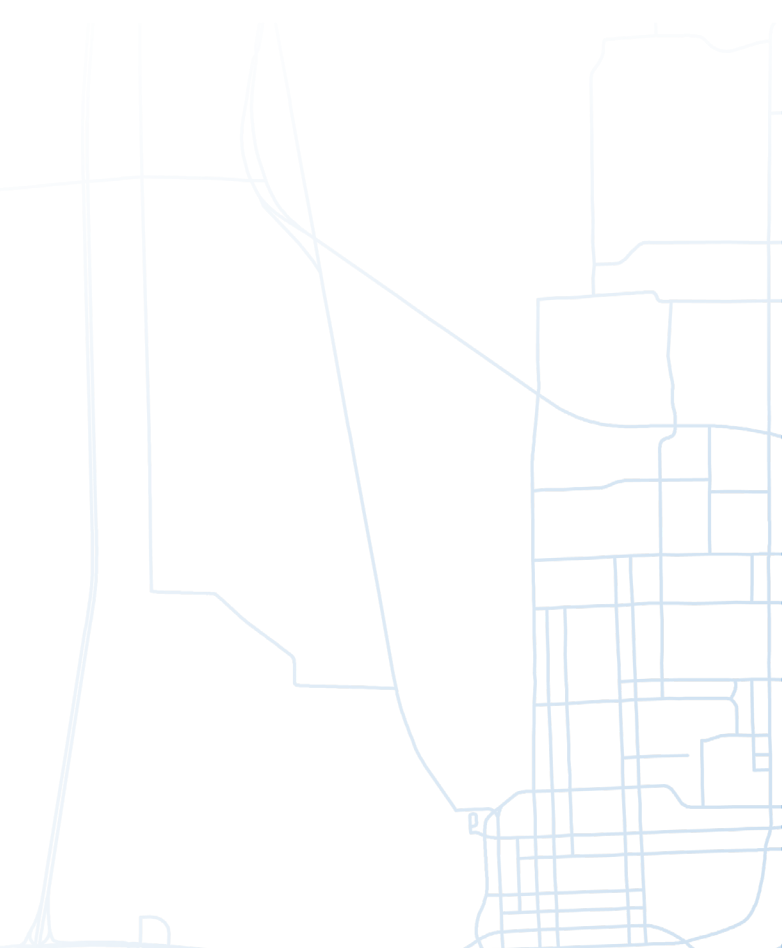
Safe & Secure Travel: Move Indiana toward zero deaths and reduction of serious injuries by applying proven strategies and enhancing the safety and security of our transportation system for all users.

System Preservation: Going beyond taking care of what we have and maintain our multimodal transportation system and infrastructure in a state of good repair.

Economic Competitiveness and Quality of Life: Enhance the competitiveness of Indiana’s economy as the “Crossroads of America” through strategic multimodal transportation investments, reducing transportation costs, and the safe and efficient movement of people and goods.

Multi-modal Mobility: Maximize the performance of our transportation system, ensuring efficient movement of people, goods, and regional connectivity by enhancing access to different modes of transportation.

Environmental Responsibility: Minimize the potential impacts of the transportation system on the natural and human environment.



New Technology and Advancements: Develop and deploy advanced transportation technologies and embrace a broad-based, comprehensive research program to plan for the future.

Strategic Policy Actions: Address multiple goal areas through key policy initiatives.

The Indiana LRTP identified more than \$1 billion per year in pavement and bridge maintenance and improvement costs and over \$9.2 billion in major corridor improvements. The following includes some of the LRTP's main findings:

- 94% of interstates were in fair or better condition in 2016.
- 97% of bridges were in fair or better condition in 2017.
- Most rail lines are single track and at least 345 miles of rail lines are unable to accommodate the industry-standard 286,000-pound weight limit.
- The average annual number of accidents at rail-highway at-grade crossings between 2007 and 2016 was 120, ranking 6th in the nation.
- 25.9 miles of the South Shore Line between Gary and Michigan City would add more frequent train service, reduce delays, improve travel times, and double weekly ridership to 26,000 in the next 20 years.
- Each port is served by only a single Class I railroad and the Mt. Vernon port is also constrained by inadequate direct highway access.
- Approximately 59% of airport pavements need preventative maintenance.
- 1% of people (ages 16 and over) use public transportation to get to work.
- Approximately 69% of state roadways are suitable for bicycles.
- An average of seven percent of severe vehicular accidents involved pedestrians between 2006 and 2016, ranking 18th in the nation.

Figure B-1 describes INDOT's performance measures for five of the seven Plan goals. The last two goals, New Technology and Advancement, and Strategic Policy Actions were not assigned performance measures in the Plan.

Between fiscal year 2018 and 2024, the Indiana LRTP identified an average of \$2.7 billion available each year for INDOT. It is projected that \$2.75 billion will be available each year from 2025 to 2045. The largest share of these resources come from State Federal-aid FHWA funds at 29%, local Federal-aid FHWA funds at 9%, and State highway funds at 54%.

Figure B-1: INDOT LRTP Performance Measures by Goal

 GOALS	 PERFORMANCE AREA	 PERFORMANCE MEASURES
Safe & Secure Travel	Safety Performance Measures	<ul style="list-style-type: none"> • Number of Total Fatalities • Number of Total Serious Injuries • Rate of Fatalities • Rate of Serious Injuries • Number of Non-Motorized Fatalities and Serious Injuries
System Preservation	Pavement & Bridge Condition Performance Measures	<ul style="list-style-type: none"> • Percentage Good Interstate Pavements • Percentage Good Non-Interstate NHS Pavements • Percentage Poor Interstate Pavements • Percentage Poor Non-Interstate NHS Pavements • Percentage Good NHS Bridges • Percentage Poor NHS Bridges
Economic Vitality	Freight Reliability Performance Measure	<ul style="list-style-type: none"> • Truck Travel Time Reliability
Multimodal Mobility	Congestion Performance Measure	<ul style="list-style-type: none"> • Hours of Excessive Delay
	Travel Reliability Performance Measures	<ul style="list-style-type: none"> • Percentage Interstate Travel that is Reliable • Percentage Non-Interstate NHS Travel that is Reliable
	Ridesharing Performance Measure	<ul style="list-style-type: none"> • Non-Single Occupant Vehicle Travel
Environmental Responsibility	Air Quality Performance Measure	<ul style="list-style-type: none"> • On-Road Mobile Source Emissions Reductions

CAMPO 2040 LRTP

Agency: CAMPO

Geography/Scale: City of Columbus and Bartholomew County

Purpose: The purpose of the Columbus Area Metropolitan Planning Organization’s (CAMPO) Long Range Transportation Plan (LRTP) is to assess the existing transportation infrastructure in the Metropolitan Planning Area (MPA), and develop a strategy to maintain and enhance the area’s transportation assets through the plan horizon year of 2040. The long-range plan forecasts future transportation needs and identifies how to meet these needs over a 25-year plan horizon.

Summary: The 2040 CAMPO LRTP is an update to the 2037 LRTP, adopted in 2011. CAMPO staff, local stakeholders, and the public collaborated to create the Plan. It identifies existing transportation needs, establishes a vision for the region’s transportation system, and prioritizes investments to facilitate a safe, efficient, multi-modal, and sustainable transportation system. The plan analyzes demographic trends, commuting patterns, land use, environmental, and development considerations, transportation system infrastructure and operations, safety issues related to the transportation system.

Key findings from the LRTP related include the projected population growth of the CAMPO MPA which is estimated to grow by just over 18.8 % by 2040 reaching a total population of 91,384. This represents a modest annual growth of 0.55% through year 2040. The population is over 90% white and has a median household income (MHI) of \$52,742, slightly over the US MHI (\$51,914). The workforce is auto oriented with 94% of commuters using a single person vehicle to commute to work.

Interstate 65 is the heaviest traveled roadway in CAMPO MPA with an ADT of 40,000 –50,000 in Bartholomew County. In the local system SR 46 has the highest traffic volumes between I-65 and SR 11 with an ADT of approximately 30,000, followed by the two bridges on SR 46 that cross the East Fork of the White River (approximately 24,000 ADT each).

The Plan development team developed six goals with corresponding objectives informed by the existing conditions analyses and community input. These goals and objectives take advantage of the area’s strengths and opportunities while mitigating threats and improving upon weaknesses. The goals and their objectives are listed below:

Goal 1: Support Economic Vitality

- Objective 1.1: Assess the efficiency and safety of freight movement and identify and implement any needed improvement
- Objective 1.2: Reduce the impact of freight on other modes of travel
- Objective 1.3: Support transit and bicycle/pedestrian improvements that increase access to local and regional employment centers
- Objective 1.4: Encourage transportation projects that maintain or enhance the economic vitality of Columbus and Bartholomew County
- Objective 1.5: Improve connectivity across railroads, streams, and other barriers to growth

Goal 2: Increase accessibility and improve quality of life

- Objective 2.1: Encourage continued “infill” development in areas with existing infrastructure and mixed-use development
- Objective 2.2: Improve system reliability and reduce congestion
- Objective 2.3: Increase the supply of affordable housing with multi-modal access to employment centers
- Objective 2.4: Improve transportation network connectivity in CAMPO MPA

- Objective 2.5: Encourage transportation infrastructure that both supports and contributes to the architecturally significant buildings and overall high level of design in Columbus
- Objective 2.6: Encourage the recognition of streets as public spaces that work in concert with the adjacent properties to establish a character for neighborhoods, business areas, the Columbus downtown, and the community as a whole.

Goal 3: Encourage transportation choices/ multi-modal connectivity

- Objective 3.1: Provide transportation choices to mobility-limited persons, low-income households and senior citizens
- Objective 3.2: Expand ColumBUS service to increase transit access
- Objective 3.3: Promote transportation projects that support multi-modal access, particularly between centers of public activity
- Objective 3.4: Strengthen the relationship between land use development and the transportation system
- Objective 3.5: Increase sidewalk and pedestrian coverage, especially in residential areas

Goal 4: Improve Safety and Efficiency

- Objective 4.1: Reduce the number of both total and fatal/severe injury crashes in the MPA
- Objective 4.2: Improve safety on pedestrian and bicycle facilities
- Objective 4.3: Improve safety related to rail crossings
- Objective 4.4: Improve safety within the vicinity of schools
- Objective 4.5: Promote transportation projects that enhance safety for all modes of travel
- Objective 4.6: Improve signal coordination and maintenance to increase efficiency and safety
- Objective 4.7: Improve emergency preparedness and emergency response in the MPA

Goal 5: Prioritize existing system preservation and maintenance

- Objective 5.1: Reduce the number of structurally deficient bridges
- Objective 5.2: Maintain satisfactory pavement conditions
- Objective 5.3: Maintain satisfactory sidewalk conditions
- Objective 5.4: Maintain a satisfactory bus fleet
- Objective 5.5: Preserve existing environmental assets and support environmentally sustainable transportation system enhancement
- Objective 5.6: Use latest technologies and state-of-the-art practices to improve the system capacity and reliability

Goal 6: Foster coordination throughout the MPA

- Objective 6.1: Increase coordination between key stakeholders to maximize the strengths of the region
- Objective 6.2: Educate and inform the general public on transportation and land use planning
- Objective 6.3: Provide transportation options consistent with the plans of local governments and the public
- Objective 6.4: Encourage strong community engagement in the planning process

Alignment with Indiana L RTP

Overall, the CAMPO L RTP goals align with the Indiana L RTP goals. The Indiana L RTP goals that overlapped the most with CAMPO’s L RTP include “Safe and Secure Travel”, “System Preservation”, and “Economic Competitiveness and Quality of Life”.

There are a few differences between the two L RTPs. While both CAMPO and Indiana’s L RTP developed goals and objectives related to multi-modal transportation, they differ in some respects. Indiana’s L RTP goal, “Multi-Modal Mobility” focuses heavily on freight and logistics while CAMPO’s L RTP goal, “Encourage transportation choices/ multi-modal connectivity”, focuses on transit, pedestrian, and bicycle modes of travel.

Indiana’s L RTP goals also emphasized the importance of technology and how to use it to collect and analyze data in transportation planning. CAMPO’s L RTP mentioned technology in a few objectives but did not make it a focal point of the plan like Indiana’s L RTP.

The CAMPO L RTP did not include a goal specific to the environment but did address the environment through several objectives that related to reducing environmental impacts and preserving environmental assets. The environmental responsibility goal from the IN L RTP aligns with Goal 3 in the CAMPO L RTP, despite Goal 3 not being specific to the environment. This is due to the known positive impacts of active

and multi-modal transportation on the environment.

Table B-2 below provides an overview of the goals and objectives from the CAMPO L RTP that align with each of the IN L RTP goals.

Table B-2: Indiana DOT L RTP and CAMPO L RTP Alignment

INDIANA DOT 2018-2045 L RTP GOAL	CAMPO 2040 L RTP GOALS	CAMPO 2040 L RTP OBJECTIVES
Safe & Secure Travel	Goal 6	6.1
	Goal 4	4.1-4.7
	Goal 3	3.1, 3.3, 3.5
	Goal 1	1.1, 1.3, 1.5
System Preservation	Goal 2	2.1
	Goal 3	3.4
	Goal 5	5.1-5.6
Economic Competitiveness and Quality of Life	Goal 1	1.1 – 1.5
	Goal 3	3.2, 3.3, 3.4
	Goal 6	6.1
Mulimodal Mobility	Goal 1	1.1, 1.5
	Goal 3	3.1-3.5
Environmental Responsibility	Goal 2	2.1
	Goal 3	3.1-3.5
	Goal 5	5.5
	Goal 6	6.1, 6.4
New Technology and Advancements	Goal 5	5.6
	Goal 6	6.4
Strategic Policy Actions	Goal 6	6.1, 6.3, 6.4

TRANSIT PLANNING AND OPERATIONS

Columbus, Indiana: Fixed Route Study (November 2019)

Agency: City of Columbus, IN

Geography/Scale: Columbus, IN

Purpose: This study reviewed the routes and operations of the anticipated new transit center for the City's transit system, ColumBUS. This transit center will be located at 13th St./Hutchins Ave., approximately two miles from the existing Mill Race transit center.

Summary: The Study reviewed the existing ColumBUS transit system, gathered public input, and identified areas of improvement for the system. The study utilized stakeholder interviews, driver interviews, public workshops, an online survey, and a project steering committee to inform and guide the study. The study included the following components:

- Review of the existing fixed-route system and compared it to peer systems
- Cost estimates of additional services and calculated the expenses associated with adding a fixed-route operation.
- Review of the current ColumBUS routes on key efficiency measures to determine the most productive routes
- Assessment of the efficiency of ColumBUS's vehicles and facilities in terms of maintenance and upkeep
- Review of the operating practices related to business procedures and practices
- Proposed detailed service guidelines regarding where, when, and how often the fixed-route service should be provided.
- Recommendations regarding a service improvement and expansion plan that included revising all routes to serve the new transit center, modifying fares and route frequencies, improving access for residential areas, and involving the public via marketing efforts when implementing a new route structure.

ColumBUS operates nine fixed-route buses. Key findings of the fixed routes study include that adding an additional fixed-route bus in operation at peak times results in annual operating cost increases of \$36,600 for managerial and dispatching costs. Route 4 is the most productive route by a wide margin while Routes 1 and 5 are the least productive. Any increase in service which increases peak bus requirements would require an increase in fleet size.

Key aspects of the service improvement and expansion plan include the following:

- Revising all routes to serve the transit center at 13th St./ Hutchins Ave.
- Implementing 30-minute service on two routes for a six-hour period (11 am to 5 pm) weekdays.
- Increasing the adult fare from \$0.25 to \$0.50. This will increase annual fare revenue between \$32,000 and \$37,000 and will result in a ridership decrease of 10% - 15%.
- Retaining service on two routes to the Mill Race transit center. Note: this recommendation was modified to include only one route in the final service plan.
- Continuing service to the Target transit center.
- The route restructuring emphasizes service to residential trip generators.
- The need for significant public involvement and marketing efforts to implement the new route structure (which is assumed to occur with the opening of the 13th/Hutchins transit center).

The existing fixed-route system and recommended fixed-route system are depicted below in Figure B-2 and Figure B-3.

Figure B-2: ColumBUS Existing Fixed-Route System

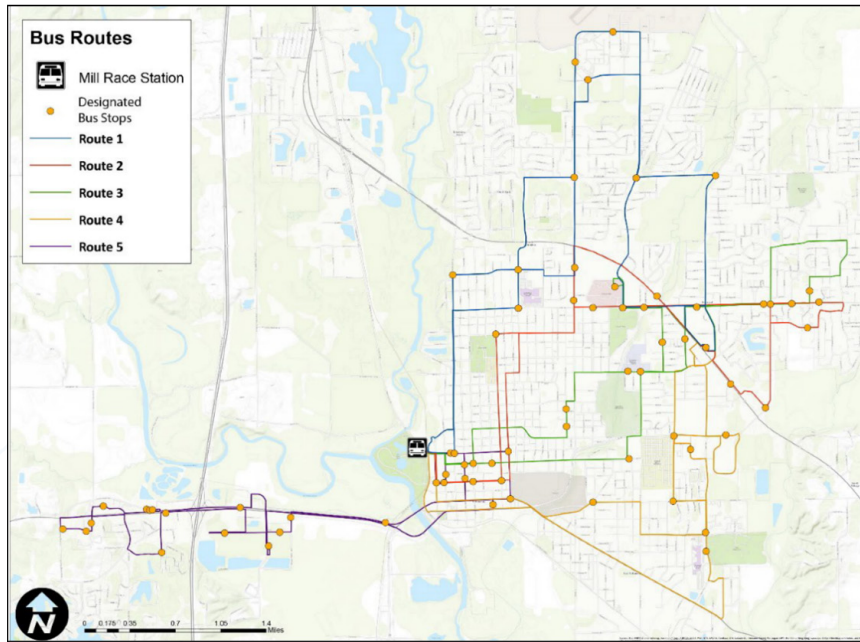
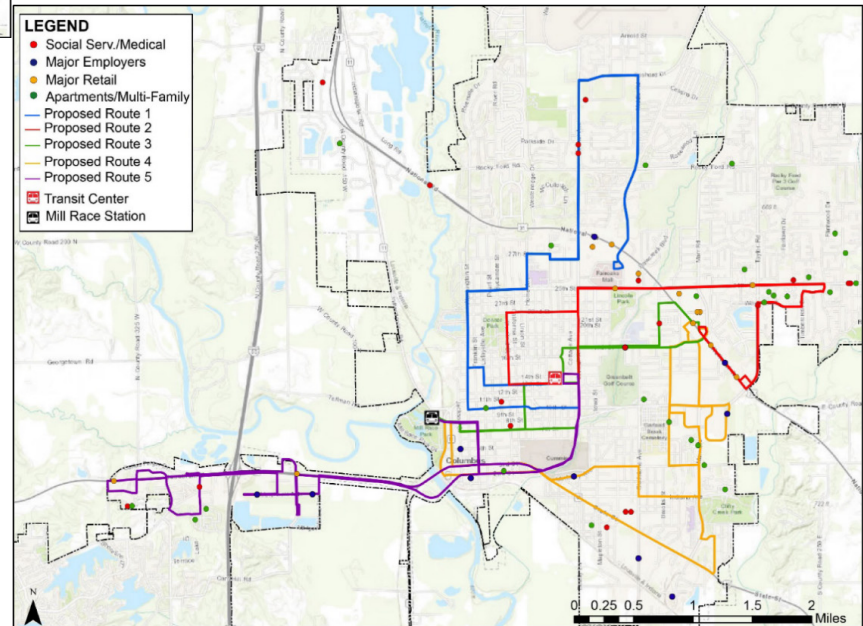


Figure B-3: ColumBUS Proposed Fixed-Route System



The Columbus, IN Fixed Route Study aligns with the following goals and objectives from the CAMPO 2040 LRTP (2016) listed in Table B-3:

Table B-3: CAMPO LRTP and Columbus, IN Fixed Route Study Alignment

CAMPO LRTP GOAL	CAMPO LRTP OBJECTIVES	COLUMBUS, IN FIXED ROUTE STUDY ALIGNMENT
Goal 1: Support Economic Vitality	1.3, 1.4, 1.5	Transit access, connectivity, and ridership plays a large role in any economy. Increasing access to local and regional employment centers and improving service would have a direct positive impact on the CAMPO region’s workforce and economy. The transit system also improves connectivity across barriers such as railroads and bodies of water.
Goal 2: Increase accessibility and improve quality of life	2.2, 2.4	The mission and purpose of the Study is to improve the reliability, connectivity, and overall efficiency of the transit system for the CAMPO region.
Goal 3: Encourage transportation choices/ multi-modal connectivity	3.1, 3.2, 3.3, 3.4	The Study improves the transportation choices for CAMPO residents and strengthens the relationship between land use and the transportation system by better connecting nodes of activity, residential areas, and employment centers.
Goal 4: Improve safety and efficiency	4.5	The Study recommends system re-routing and other changes to promote the public transit system as a transportation project that can have a real benefit for all modes of travel in the CAMPO MPA.
Goal 5: Prioritize existing system preservation and maintenance	5.4	One of the focus areas of the Study is the maintenance and sufficiency of the bus fleet for ColumBUS.

LAND-USE PLANNING AND ECONOMIC DEVELOPMENT

Columbus Central Neighborhood Plan (November 2018)

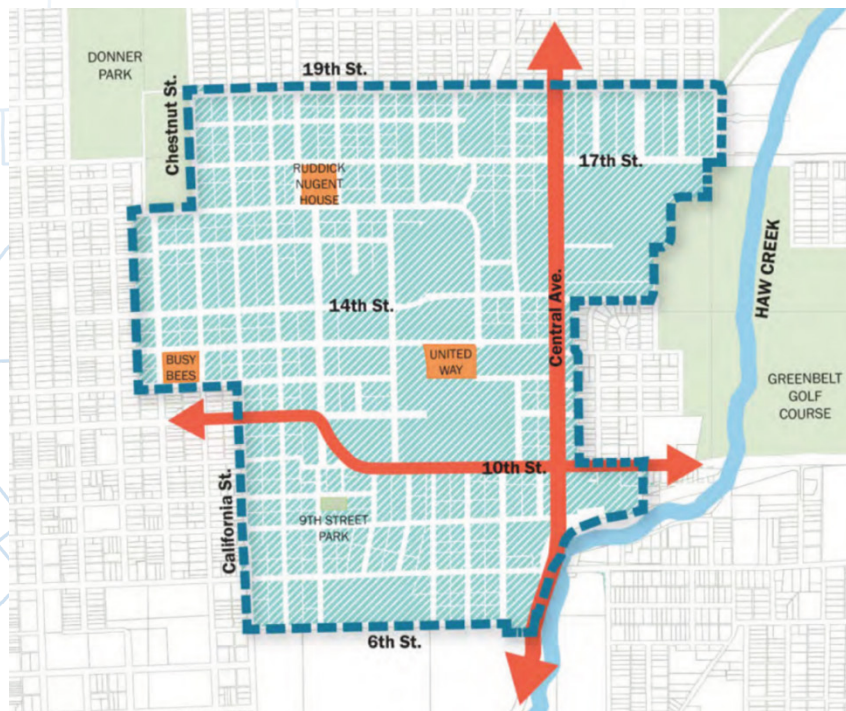
Agency: City of Columbus, IN

Geography/Scale: Central Neighborhood, Columbus, IN

Purpose: The City of Columbus saw a need to create a neighborhood level plan for the Central Neighborhood to minimize land use conflicts and better manage redevelopment.

Summary: The City of Columbus-Bartholomew County Planning Department conducted a planning effort to outline and guide how to manage changing land uses and demands on services and infrastructure in the Central Neighborhood area. The area generally lacks amenities and neighborhood conveniences, but the community expects continued growth, in part due to its proximity to Downtown, concentration of walkable and bikeable blocks, access to parks, and various infill opportunities. Figure B-4 illustrates the location of the Central Neighborhood, major north-south and east-west roads, and several community assets.

Figure B-4: Columbus's Central Neighborhood



The planning process included a variety of stakeholders and public input opportunities including a steering committee made up of council members, local industry leaders, non-profits, and residents, stakeholder conversations, and a multi-day charrette. The goals and recommendations of the plan were developed based on the public input gathered, an analysis of existing conditions, and a market analysis. The plan's goals include:

1. Promote mixed-use and mixed-income development while minimizing land use conflicts
2. Recommend infrastructure improvements that support the expected increase in pedestrian and bicycle traffic while sustaining appropriate routes for truck traffic
3. Examine land uses and recommend zoning changes
4. Improve access to jobs, healthy foods, recreation, community services, education, and affordable housing.

The Plan's recommendations center around three geographically defined "focus areas" within the Central Neighborhood and five framework plans. Each focus area has a corresponding set of recommendations tailored to the intended purpose and vision for that area. The focus areas are shown in Figure B-5.

Figure B-5: Central Neighborhood Plan Focus Areas

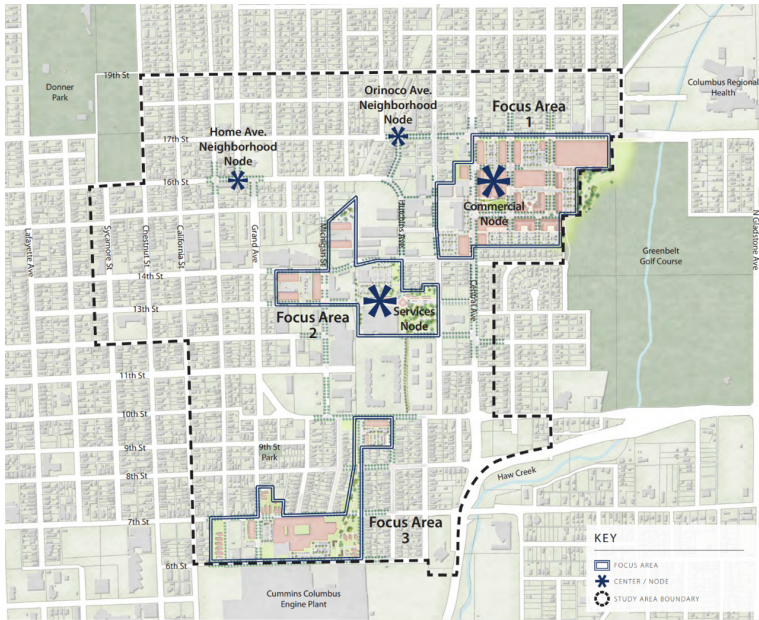
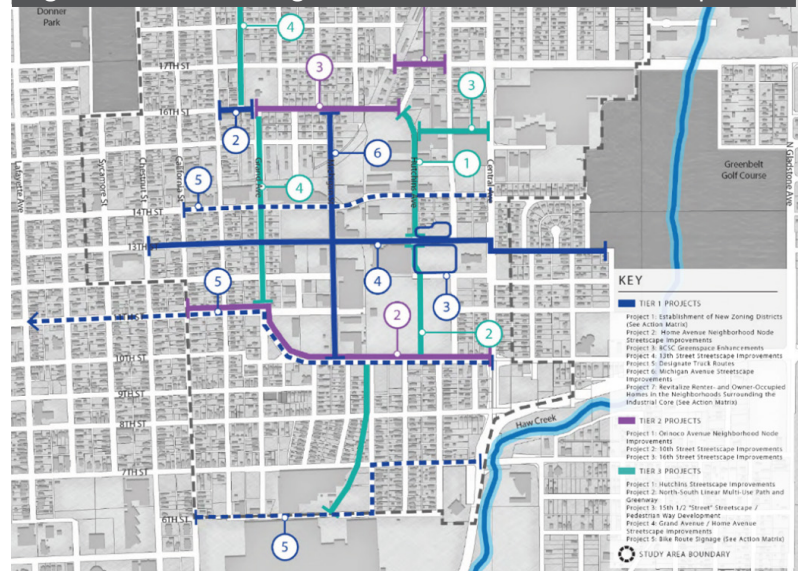


Figure B-6: Central Neighborhood Recommendations Map



The framework plans include recommendations for land use, truck connectivity, bike connectivity, pedestrian connectivity, and complete streets. Seven principles guide all recommendations:

1. Support the neighborhood’s industrial core
2. Rehabilitate renter and owner-occupied housing in the historic neighborhoods surrounding the industrial core
3. Create identifiable mixed-use centers and nodes
4. Incorporate an appropriate mix of residential types
5. Strengthen building frontage
6. Complete streets for all users
7. Celebrate industrial character

All recommendations are aggregated in the implementation section and assigned to one of three tiers. Most projects include some form of streetscape improvements or multi-modal infrastructure investments.

Alignment with CAMPO 2040 LRTP:

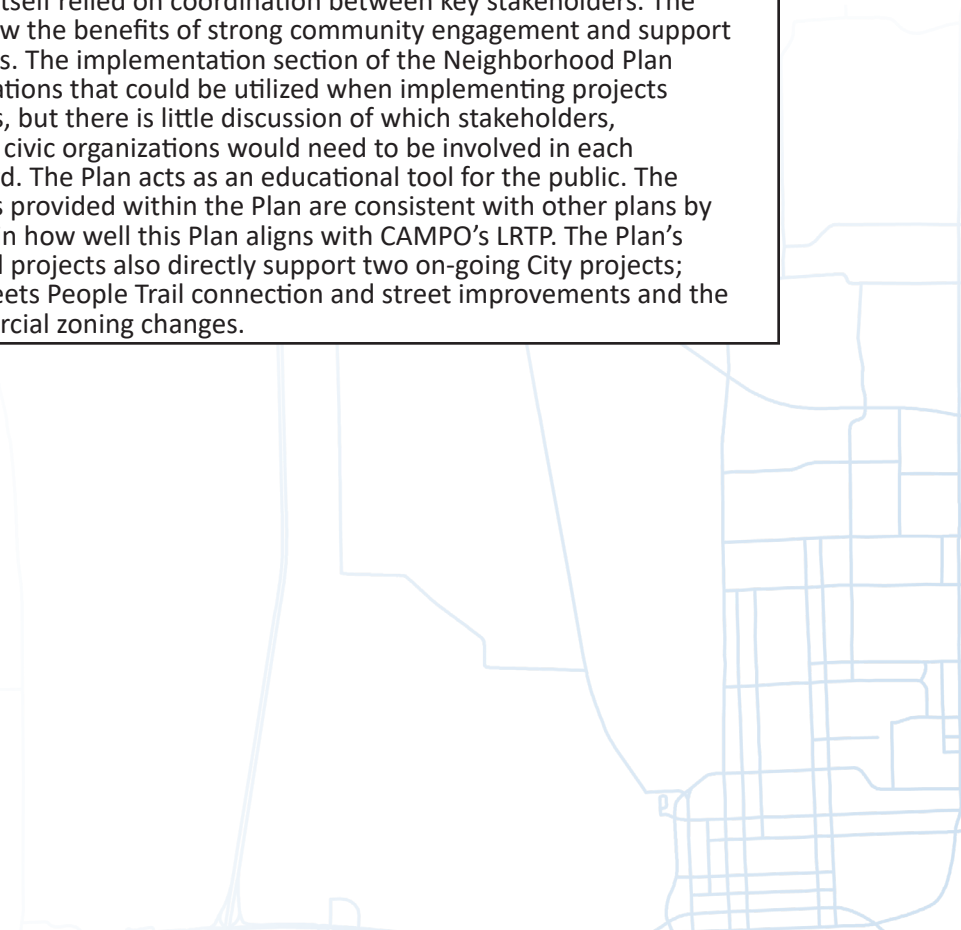
The Central Neighborhood Plan aligns with the following goals and objectives from the CAMPO 2040 LRTP (2016) outlined in Table B-4:

Table B-4: CAMPO LRTP and Central Neighborhood Alignment

CAMPO LRTP GOAL	CAMPO LRTP OBJECTIVES	CENTRAL NEIGHBORHOOD PLAN ALIGNMENT
Goal 1: Support Economic Vitality	1.1, 1.2, 1.3, 1.4	Most of the projects and recommendations in the Plan directly or indirectly relate to economic vitality. The Plan addresses truck traffic impacts in a way that balances the importance of truck access to support existing industrial businesses in the neighborhood and the need to create an inviting and safe public-right-of-way for all modes of travel in the neighborhood. The Plan recommends bicycle and pedestrian infrastructure investments as well as sustainably supporting the local economy and housing market.
Goal 2: Increase accessibility and improve quality of life	2.1, 2.2, 2.3, 2.4, 2.5, 2.6	The many streetscape improvement recommendations, proposed mixed-use and mixed-income development, and emphasis on increased accessibility and connectivity to amenities and services within the neighborhood plan are a few examples of how the Central Neighborhood Plan’s goals and recommendations mirror the intention and objectives of Goal 2.
Goal 3: Encourage transportation choices/ multi-modal connectivity	3.1, 3.2, 3.3, 3.4, 3.5	One of the Central Neighborhood Plan’s primary focuses is the connection between land use, development, and transportation. The emphasis on complete streets and improved accessibility align with all objectives within Goal 3. The Plan recommends creating nodes of services and amenities, streetscape enhancements along main streets to improve the pedestrian environment, and a centralized transit hub to anchor the existing community center.
Goal 4: Improve safety and efficiency	4.1, 4.2, 4.4, 4.5	The streetscape improvements and focus on pedestrian and cyclists’ comfort within the Plan will likely reduce fatal and severe injury crashes in the area due to slower vehicle speeds. Safety benefits will be reaped principally by pedestrians and cyclists with a tangential yet still significant benefit to vehicle safety from reduced speeds more awareness of all users of the public-right-of-way.

Table B-4: CAMPO LRTP and Central Neighborhood Alignment (Cont.)

CAMPO LRTP GOAL	CAMPO LRTP OBJECTIVES	CENTRAL NEIGHBORHOOD PLAN ALIGNMENT
Goal 5: Prioritize existing system preservation and maintenance	5.2, 5.3, 5.5	Due to the increasing overlap of residential and industrial land uses in the Central Neighborhood, maintaining pavement conditions will likely be a focal point of any streetscape improvement and maintenance plan. Sidewalk conditions and streetscapes overall are assessed in the Plan and include projects and recommendations related to improvements and maintenance. As a part of implementing complete streets policies in the neighborhood, the Plan recommends integrating stormwater management with street trees and landscaping, which will have positive impacts on the environment. Increased walkability and improved conditions for cyclists in the neighborhood may reduce VMT and thereby reduce greenhouse gas emissions.
Goal 6: Foster coordination throughout the MPA	6.1, 6.2, 6.3, 6.4	The planning process itself relied on coordination between key stakeholders. The results of the Plan show the benefits of strong community engagement and support in the planning process. The implementation section of the Neighborhood Plan lists tools and organizations that could be utilized when implementing projects and recommendations, but there is little discussion of which stakeholders, city departments, and civic organizations would need to be involved in each project moving forward. The Plan acts as an educational tool for the public. The transportation options provided within the Plan are consistent with other plans by the City as evidenced in how well this Plan aligns with CAMPO’s LRTP. The Plan’s recommendations and projects also directly support two on-going City projects; the 17th and 19th Streets People Trail connection and street improvements and the neighborhood commercial zoning changes.



Envision Columbus: Downtown Strategic Development Plan (August 2019)

Agency: City of Columbus, IN

Geography/Scale: Columbus, IN

Purpose: This plan outlines development opportunities that will preserve and enhance the best aspects of Columbus while introducing a means for achieving a more vibrant, active, sustainable, and creative downtown.

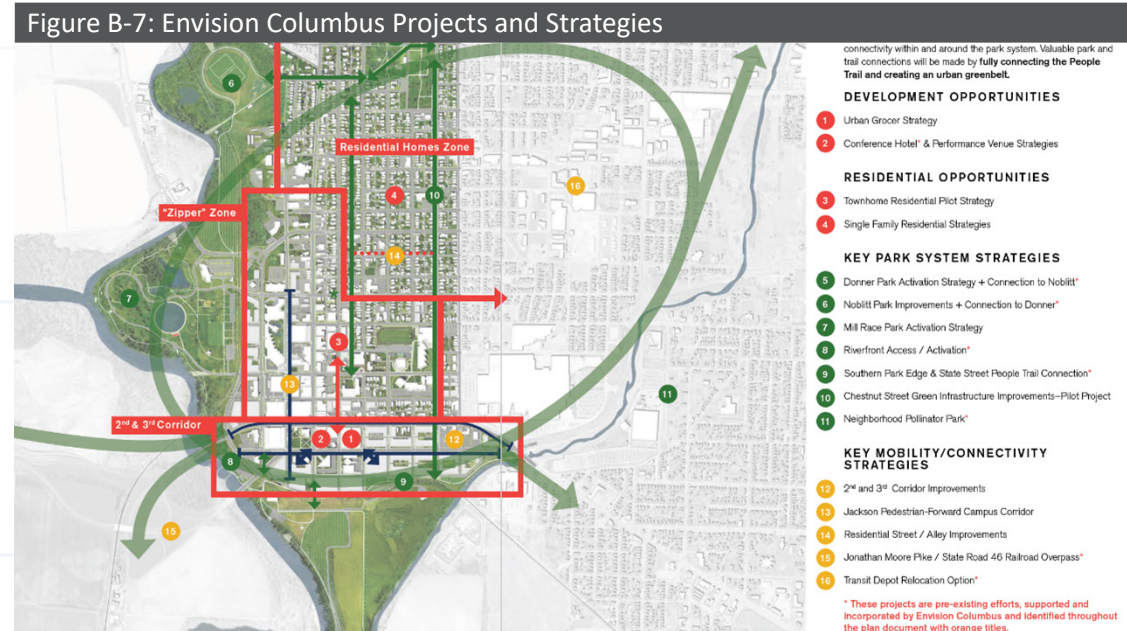
Summary: The Downtown Strategic Development Plan centers around three principals: Economic Strength and Diversification, Quality of Life, and Vibrant Downtown Core. Along with these three principals, the Plan was guided by three overarching goals:

- Achieve a mix of viable programs within various opportunity zones – areas of the downtown described not only by proximity but by common character and potential.
- Establish a flexible strategy for implementation and offer a vision for the future of Downtown Columbus.
- Build upon previous plans and studies completed to date, using them as a foundation and point from which to launch.

The planning process involved inventorying existing conditions, gathering information and insight from the public, and performing a market analysis on the Downtown area. From this foundation of information, design ideas, strategies, and projects were

explored and assessed. Finally, a cost and implementation plan for the final strategies and projects was developed.

Strategies and projects fall within 4 categories: Residential opportunities; commercial opportunities; Mobility/connectivity system strategies; and Park system strategies. The proposed projects and strategies by category are shown in the map in figure B-7.



Projects and strategies depicted in the map above (Figure B-7) are listed below by category:

Commercial Opportunities

- Urban Grocer Strategy
- Conference Hotel & Performance Venue Strategies

Residential Opportunities

- Townhome Residential Pilot Strategy
- Single Family Residential Strategies

Park System Strategies

- Donner Park Activation Strategy + Connection to Noblitt
- Noblitt Park Improvements + Connection to Donner
- Mill Race Park Activation Strategy
- Riverfront Access / Activation
- Southern Park Edge & State Street People Trail Connection
- Chestnut Street Green Infrastructure Improvements—Pilot Project
- Neighborhood Pollinator Park

Mobility/Connectivity Strategies

- 2nd and 3rd Corridor Improvements
- Jackson Pedestrian-Forward Campus Corridor
- Residential Street / Alley Improvements
- Jonathan Moore Pike / State Road 46 Railroad Overpass
- Transit Depot Relocation Option

Alignment with CAMPO 2040 LRTP:

The Envision Columbus: Downtown Strategic Development Plan aligns with the following goals and objectives from the CAMPO 2040 LRTP (2016) detailed in Table B- 5:



Table B-5: CAMPO LRTP and Envision Columbus Plan Alignment

CAMPO LRTP GOAL	CAMPO LRTP OBJECTIVES	ENVISION COLUMBUS DOWNTOWN STRATEGIC DEVELOPMENT PLAN ALIGNMENT
Goal 1: Support Economic Vitality	1.3, 1.4, 1.5	Envision Columbus's proposal for an urban grocer, conference hotel, and performance venue would support the economic vitality of the City. The one-way to two-way conversions, corridor improvements, and complete streets recommendations would maintain or enhance the economic vitality of Downtown in particular.
Goal 2: Increase accessibility and improve quality of life	2.1, 2.2, 2.3, 2.4, 2.5, 2.6	Almost all the recommendations from Envision Columbus align with Goal 2 of the CAMPO LRTP. Envision Columbus's recommendations are intended to increase accessibility and improve the quality of life of Columbus residents. To name a few, the alley activations, park system improvements, streetscape re-designs, as well as the single family and town-home concepts would encourage infill development, increase the supply of affordable housing, improve connectivity, support the character and vibrancy of existing neighborhoods, and encourage the recognition of streets as public spaces to work in tandem with adjacent properties and create an enjoyable community landscape.
Goal 3: Encourage transportation choices/ multi-modal connectivity	3.1, 3.3, 3.4, 3.5	The Plan proposes investing in multi-modal facilities that connect residents to Downtown and the park system. It also emphasizes the need to connect nodes of activity and think of the streets in relationship to their surrounding land uses.
Goal 4: Improve safety and efficiency	4.1, 4.2, 4.3, 4.4, 4.5, 4.6	The complete streets projects related to corridor activation, converting one-way streets to two-way, and better accommodating all modes of travel in Downtown will improve safety by implementing traffic calming that will likely reduce fatal and severe injury crashes. These safety benefits will be seen by pedestrians, cyclists, and drivers. The Jonathan Moore Pike / State Road 46 Railroad Overpass project will improve the safety related to crossing a railroad. To the extent that some students may use Downtown streets to get to school, these recommended complete streets projects will improve their safety in traveling to and from school. Additionally, improving signal coordination and maintenance is a focus of the mobility and connectivity portion of Envision Columbus.
Goal 5: Prioritize existing system preservation and maintenance	5.2, 5.3, 5.5	Maintaining pavement and sidewalk conditions is a part of complete streets recommendations. The plan also promotes supporting and investing in the park system while encouraging non-vehicle travel, which will help preserve environmental assets and support sustainable transportation options.
Goal 6. Foster coordination throughout the MPA	6.1, 6.2, 6.3, 6.4	The implementation component of Envision Columbus relies on coordination between key stakeholders and extensive, continuous public engagement. Each proposed project and strategy include a detailed explanation of the next steps required for implementation, including which stakeholders and governing bodies should be involved. The Envision Columbus Plan itself also relied on stakeholder and public engagement and education to develop Plan goals, projects, and recommendations.

Infill Sites Profiles (July 2017)

Agency: City of Columbus - Bartholomew County Planning Department

Geography/Scale: Columbus, IN

Purpose: Support and facilitate infill development in the City of Columbus.

Summary: The Infill Sites Profiles (2017) support the City of Columbus Comprehensive Plan goal of developing “infill” sites as an alternative to the continued outward expansion of the City. This infill development aims to protect farmland, use infrastructure investments efficiently, spend tax-payer dollars wisely, manage long-term growth, and improve neighborhood quality.

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A total of 27 infill sites are listed and described by their size, type (redevelopment or undeveloped), location, number of parcels, and zoning. The sites were evaluated based on their alignment with the comprehensive plan’s future land use map, compatibility with surrounding land uses, access to public facilities, access to bicycle and pedestrian networks, road access, and street connectivity surrounding the site.

Alignment with CAMPO 2040 LRTP:

The Infill Sites Profiles align directly with the following goals and objectives from the CAMPO 2040 LRTP (2016) described in Table B-6.

Table B-6: CAMPO LRTP and Redevelopment Undeveloped Plan Alignment

CAMPO LRTP GOAL	CAMPO LRTP OBJECTIVES	REDEVELOPMENT UNDEVELOPED: INFILL SITES PROFILE ALIGNMENT
Goal 2: Increase accessibility and improve quality of life	2.1	Infill development promotes the efficient use of land and resources by reducing the burden on cities to extend infrastructure and services to areas outside of their service boundaries. Infill also fills in gaps by addressing existing vacancies and therefore improves connectivity for neighborhoods and urban centers.
Goal 3: Encourage transportation choices/ multi-modal connectivity	3.4	Infill development helps strengthen the relationship between land use and the transportation system. This plan describes what type of land uses would be most compatible on each site, helping guide development so that it works in tandem with the existing and planned transportation system.
Goal 5: Prioritize existing system preservation and maintenance	5.5	Infill development is more sustainable and environmentally friendly than greenfield development. Infill usually does not require extending roads, water, and sewer systems to undeveloped areas and therefore is more fiscally responsible than greenfield development. In this way, infill is also a more sustainable and environmentally friendly type of development.

PEDESTRIAN AND BICYCLE PLANNING

Bartholomew Consolidated School Corporation: Safe Routes to School Plan

(August 2012)

Agency: Bartholomew Consolidated School Corporation

Geography/Scale: Bartholomew County / BCSC District

Purpose: The BCSC Safe Routes to School (SRTS) Plan is intended to make infrastructural and programmatic change that improve the safety of children traveling to school by foot and bicycle. Expected benefits of SRTS programs include improved child safety as well as reduced motor vehicle congestion at school drop-off and pick up locations, promotion of an active lifestyle by integrating physical activity into everyday life, and encouraging children to learn responsibility and practice independence.

Summary: The BCSC SRTS Plan focuses on nine schools in the BCSC district: CSA-Lincoln Elementary, Parkside Elementary, Richards Elementary, Schmitt Elementary, Smith Elementary, Southside Elementary, Taylorsville Elementary and Central and Northside Middle Schools. Community-wide infrastructure and human behavioral issues identified in the Plan are listed in Table B-7 and Table B-8 respectively.

Table B-7: BCSC Safe Routes to School Community-Wide Infrastructure Issues

School Zone
<ol style="list-style-type: none"> 1. Lack of easily identified school zone 2. Lack of consistent school zone signage 3. Lack of consistent speed limits within school zones 4. School campus is not designed with bicycling and walking in mind
Surrounding Neighborhood
<ol style="list-style-type: none"> 1. Missing curb ramps 2. Lack of sidewalk in some areas, gaps and poorly maintained sidewalk in other areas 3. Insufficient street lighting in some areas 4. Gaps in multi-use paths that lead to the schools 5. Crosswalks are often not marked or the paint is faded 6. Lack of high visibility treatments at high volume intersections near schools such as zebra striped crosswalks 7. Parking is permitted near the schools and intersections which diminishes sight lines 8. Lack of pedestrian components to traffic lights 9. Missing connections within the surrounding neighborhood

Table B-8: BCSC Community-Wide Human Behavioral Issues

A. Parent Drivers	Failure to follow arrival/dismissal procedures
	Distracted driving
	Speeding on school grounds or in school zone
	Idle cars for extended periods
B. General Public Drivers	Failure to yield to bicyclists and pedestrians
	Disregard for speed limits, signs and signals
	Distracted driving
	Failure to follow crossing guard's instructions
C. Pedestrians	Failure to follow directions of the crossing guards
	Crossing the street mid-block without the benefit of a crosswalk
	Darting between parked cars
	Wearing dark clothes when natural light is low
D. Bicyclists	Darting onto the street without looking left and right
	Riding in traffic without paying attention to traffic rules
	Riding on the sidewalk without giving pedestrians the right-of-way
	Not wearing high visibility clothing and having a light on their bike at dusk or dawn
	Not wearing a bike helmet
E. Neighbors	Failure to maintain landscaping to keep the sidewalk clear
	Failure to remove snow and ice from sidewalks
	Lack of yielding to bicyclists and pedestrians
	Parking vehicles in front of home that block sidewalks, placing trash receptacles in the middle of the sidewalk on collection day

The BCSC SRTS Plan describes existing conditions at each school and recommends specific infrastructure investments to improve conditions for cycling and walking. The Plan describes SRTS programs that Columbus and BCSC could implement as well. Individual school recommendations include the following:

CSA-Lincoln Elementary/Central Middle School

- Program: Promote carpooling for CSA-Lincoln parents and continue the Husky Hike programs for CSA-Lincoln and add a similar program for Central Middle School

- Infrastructure: Add a 4” wide yellow stripe two feet from the curb face in both the CSA-Lincoln and Central bus loading areas to provide a visual guide for staff and students regarding a safe distance from the buses; add pedestrian scale lighting to the fire lane adjacent to CSA-Lincoln to accommodate students traveling through that area

Parkside Elementary

- Program: Implement walking and biking school buses from surrounding neighborhoods; replace and upgrade existing bike racks
- Infrastructure: Construct a sidewalk that allows students to circumvent the school driveway as they approach from the east side of the school; construct a sidewalk on the west side of Westenedge Drive from US 31/ National Road to Parkside Drive

Richards Elementary

- Program: Implement a “Drive 25 – Keeps Kids Alive” campaign in the neighborhoods with wider streets and speeding problems; create a parent support network for those families living within the Walk Zone
- Infrastructure: Construct a 6’ wide asphalt path on the east side of Par 3 Drive from Fairlawn Drive to Rocky Ford Road; restripe the crosswalk on Fairlawn Drive, south of the church driveway, with a ladder pattern and add an arrow sign (MUTCD W16-7P) to the existing crosswalk signage

Schmitt Elementary/Northside Middle School

- Program: Organize walking and biking school buses from surrounding neighborhoods at Schmitt; consider the use of a safety patrol to assist with arrival/dismissal and safe crossing behaviors at Northside
- Infrastructure: Create a No Parking Zone in front of Schmitt on California Street during arrival and dismissal times; stripe a crosswalk and install curbcuts in the parent access driveway at Northside

Smith Elementary

- Program: Organize a walking school bus from the neighborhood to the east of the school utilizing the pedestrian easement; periodic police enforcement of speed limits and rules of the road near the school

- Infrastructure: Improve the pedestrian easement located between the school and Dawnshire Drive by striping crosswalks, installing curbcuts and replacing depressed areas where water tends to pool

Southside Elementary

- Program: Encourage carpooling from surrounding neighborhoods; consider consolidating bus stops in each subdivision
- Infrastructure: Formalize the northern connection from the Cross Creek subdivision and connect it to school property; maintain the crosswalk on Spear Street from the fairgrounds entrance to the school

Taylorville Elementary

- Program: Institute a walk/bike/bus to school day at least once a quarter to encourage alternate transportation uses; create a support group for families living within the walk zone
- Infrastructure: Add crosswalks at south side driveways, along with sidewalk segments and curb cuts; add signage at south driveway “Do Not Block Driveway” and “Drop-off Only in AM” at front loop drive

The BCSC SRTS Plan recommendations reflect five complementary strategies, referred to as the “Five E’s”: engineering, enforcement, education, encouragement, and evaluation. The four Plan goals that follow the “Five E’s” are as follows:

- Goal 1: Prioritize transportation infrastructure construction projects that enable more children to walk to school.
- Goal 2: Educate parents and students about the rules of the road for pedestrians, bicyclists and motorists, especially in school zones
- Goal 3: Increase the levels of community-wide awareness of the school zone environment – i.e. congestion, pollution, safety concerns, safe driving etc.
- Goal 4: Improve arrival/dismissal procedures and locations at schools to reduce congestion and increase safety conditions for those children who are walking and biking to school

Alignment with CAMPO 2040 LRTP:

The BCSC Safe Routes to School Plan aligns directly with the following goals and objectives from the CAMPO 2040 LRTP (2016) listed in Table B-9:

Table B-9: CAMPO LRTP and BCSC Safe Routes to School Plan Alignment

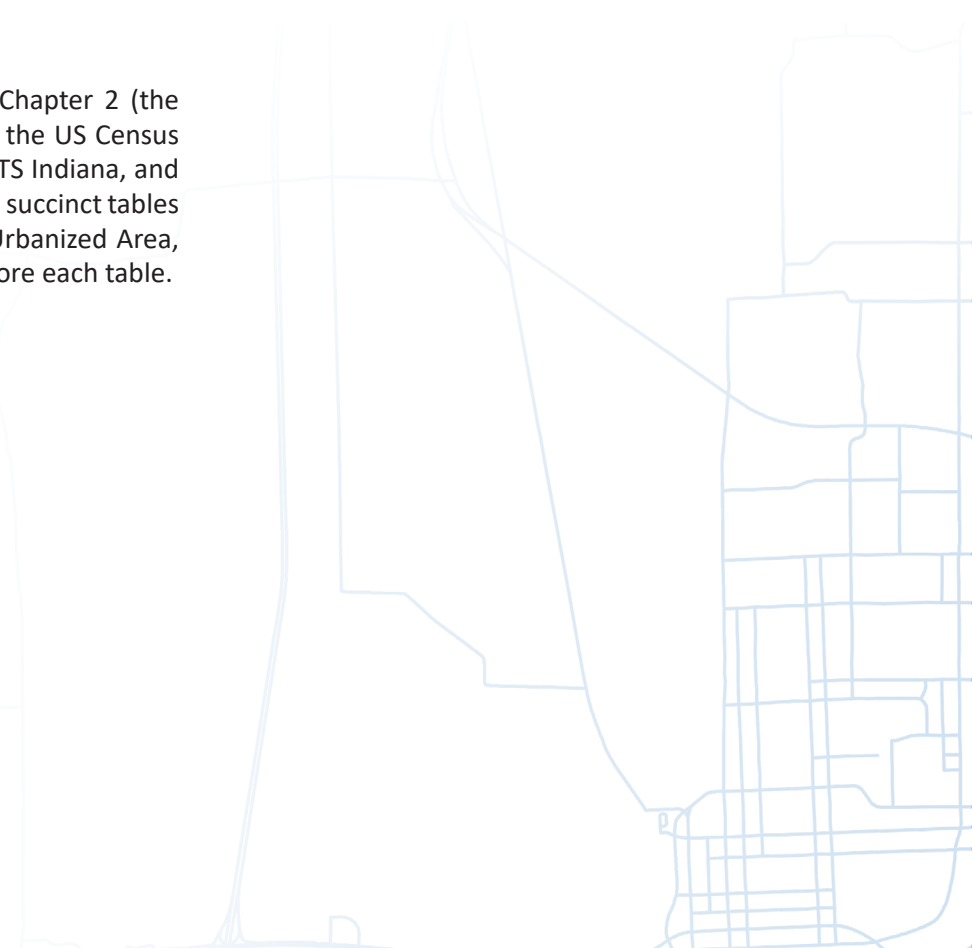
CAMPO LRTP GOAL	CAMPO LRTP OBJECTIVES	BCSC SAFE ROUTES TO SCHOOL PLAN ALIGNMENT
Goal 1: Support Economic Vitality	1.3	The BCSC SRTS Plan aligns with Goal 1 of the CAMPO LRTP to the extent that schools are also employment centers for teachers and staff and those employees would benefit from investments in safer pedestrian and cycling infrastructure surrounding schools.
Goal 2: Increase accessibility and improve quality of life	2.6	The BCSC SRTS Plan aims to increase accessibility and improve the quality of life for children, parents, and the community. Keeping children safe and active by investing in pedestrian infrastructure along roadways in turn alters and improves the character of neighborhoods, business areas, and the community wherever those investments occur.
Goal 3: Encourage transportation choices/ multi-modal connectivity	3.1, 3.3, 3.5	The BCSC SRTS Plan encourages transportation choices and multi-modal connectivity. The main purpose of the Plan is to invest in multi-modal infrastructure around schools to ensure safe travel to and from school for children.
Goal 4: Improve safety and efficiency	4.1, 4.2, 4.4, 4.5	Improved safety is a primary goal of the SRTS Plan. The implementation of the SRTS Plan would likely reduce fatal and severe injury crashes due to the traffic calming benefits of SRTS infrastructure investments. SRTS educational programs would educate the community on traffic safety and educate children on how to safely travel to and from school. Reducing the number of vehicle trips from transporting children to and from school would reduce congestion and improve the safety of the road system for all modes of travel.
Goal 5: Prioritize existing system preservation and maintenance	5.3, 5.5	Maintaining sidewalks is a key component of the BCSC SRTS Plan. Additionally, reduced vehicle trips due to more children walking or biking to school instead of being driven has a positive impact on air quality.
Goal 6. Foster coordination throughout the MPA	6.1, 6.2, 6.3, 6.4	The Plan details the various entities involved in the SRTS process including parents, school administrators, task forces, and others. The “Five E’s” outlined in the BCSC SRTS Plan align with Goal 6 of the CAMPO LRTP. “Educating” the public regarding transportation alternatives and how to safely use them and “encouraging” community engagement in the planning process are both components of the Plan. The Plan also advocates for transportation options consistent with the plans of the City of Columbus and Bartholomew County.

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APPENDIX C

AREA DEMOGRAPHICS

This appendix presents much of the data behind the conclusions drawn in Chapter 2 (the 'Regional Trends' chapter). The data comes from numerous sources including the US Census Bureau, Woods & Poole Economics, the Indiana Business Research Center, STATS Indiana, and Indiana Statewide Travel Model. The data has been combined and compiled into succinct tables to highlight specific characteristics of the City of Columbus, the Columbus Urbanized Area, and the CAMPO MPA. A brief description of the data presented is provided before each table.



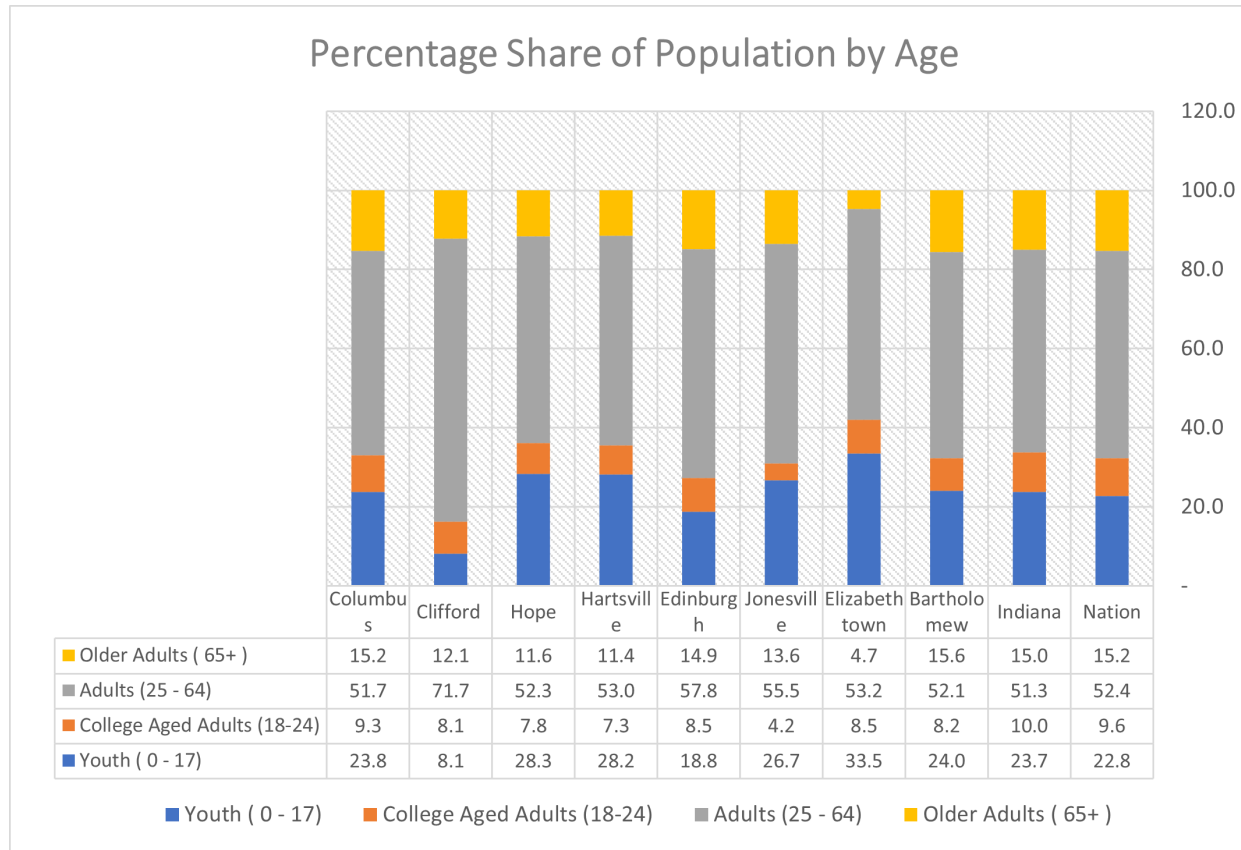
The historical and forecasted population in the CAMPO planning area (Bartholomew County) and the Columbus Urbanized Area is presented in Table C-1. The historic population, for 2000 and 2010, are from the most recent two decennial censuses. The forecasted populations are estimated from a number of sources including Woods & Poole, STATS Indiana, INSWM, and historic growth trends.

Table C-1: Population Growth Trends

SOURCE	YEAR									GROWTH RATE (%)
	2000	2010	2015	2017	2025	2030	2035	2040	2045	
US Census	71,763	76,794		81,024						0.72%
STATS Indiana		76,794				84,496				0.48%
Woods & Poole		76,845			83,580	84,535	85,035	85,030	83,850	0.25%
INSWM			79,460		82,890		86,339		89,771	0.41%
CAMPO LRTP 2016		76,794			84,982			91,384		0.58%

Figure C-1 shows age group distribution for the Columbus MPA based on ACS 5-Year (2014-2018) analysis.

Figure C-1: Age Group Distribution



The ethnic breakdown within the CAMPO MPA is shown in Table C-2 and compared to the national average for context (ACS 5-Year 2014-2018).

Table C-2: Ethnic Background (Source: US Census ACS 5-Year Estimates)

NAME	BLACK OR AFRICAN AMERICAN ALONE	AMERICAN INDIAN AND ALASKA NATIVE ALONE	ASIAN ALONE	NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE	SOME OTHER RACE ALONE	TWO OR MORE RACES	WHITE ALONE
Columbus city, Indiana	2.5%	0.3%	11.7%	0.1%	2.3%	2.5%	80.8%
Clifford town, Indiana	10.5%	0.0%	0.8%	0.0%	0.0%	0.0%	88.7%
Hope town, Indiana	0.9%	0.0%	0.0%	0.0%	0.3%	2.5%	96.2%
Hartsville town, Indiana	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	99.0%
Edinburgh town, Indiana	5.6%	0.3%	0.0%	0.3%	6.1%	2.7%	85.1%
Jonesville town, Indiana	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	97.9%
Elizabethtown town, Indiana	1.7%	0.0%	0.0%	0.0%	5.5%	1.3%	91.5%
Bartholomew County, Indiana	2.0%	0.2%	7.0%	0.0%	3.3%	2.2%	85.3%
Indiana	9.3%	0.2%	2.2%	0.0%	2.2%	2.4%	83.6%
United States	12.7%	0.8%	5.4%	0.2%	4.9%	3.2%	72.7%

Table C-3 shows household size percentages for Columbus MPA based on ACS 5-year (2014-2018) estimates.

Table C-4 shows median household income for CAMPO MPA based on ACS 5-year (2014-2018) estimates.

Table C-3: Household Size

HOUSEHOLD SIZE	% OF TOTAL
1-Person	27.6
2-Person	41.3
3-Person	13.8
1-Person	17.3
Total	100

Table C-4: Median Household Income

JURISDICTION	MEDIAN INCOME
Columbus	\$60,152
Clifford	\$61,563
Hope	\$49,922
Hartsville	\$49,375
Edinburgh	\$43,169
Jonesville	\$56,250
Elizabethtown	\$44,750
Bartholomew County	\$59,045
Indiana	\$54,325
United States	\$60,293

Figure C-2 shows educational attainment for Columbus MPA and compares with the state of Indiana and the United States (ACS 5-Year 2014-2018).

Figure C-2: Educational Attainment

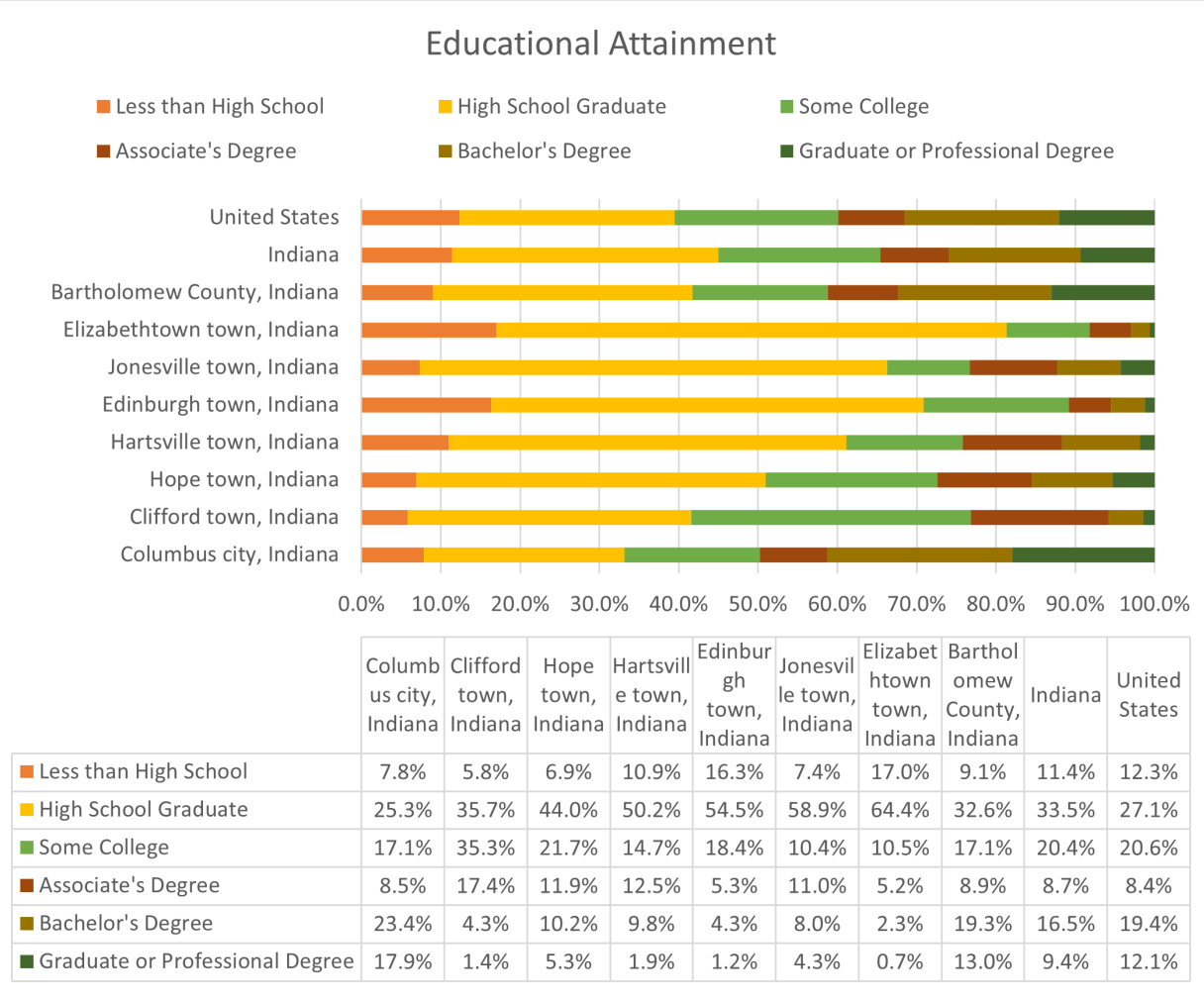


Figure C-3 shows income to poverty ratio for Columbus MPA and compares with the state of Indiana and the United States (ACS 5-Year 2014-2018).

Figure C-3: Income to Poverty Ratio (Source: ACS 5-Year Estimates)

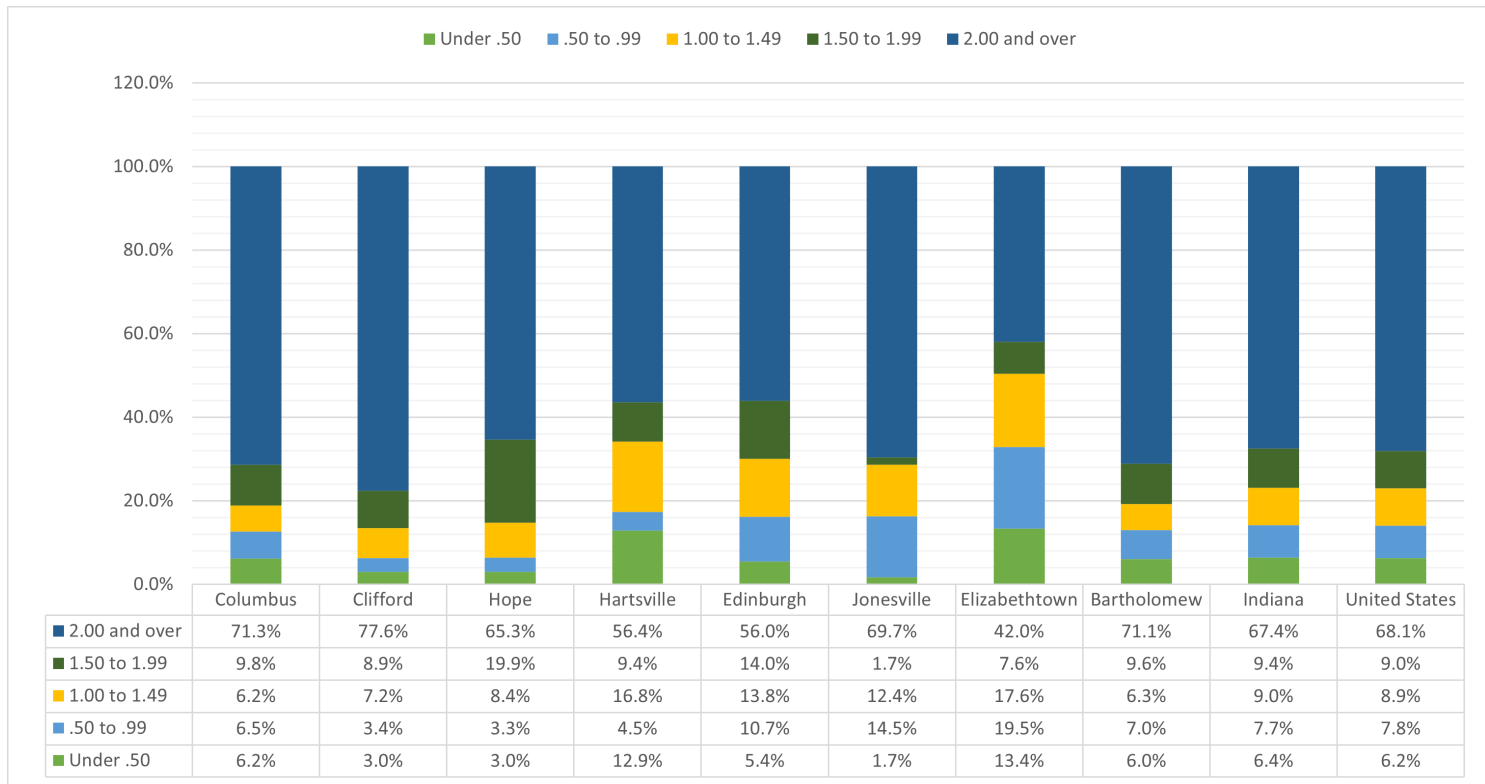


Figure C-4 shows commuting travel time for Columbus MPA for the workers 16 years and older.

Figure C-4: Commute Travel Times (Source: US Census 2018)

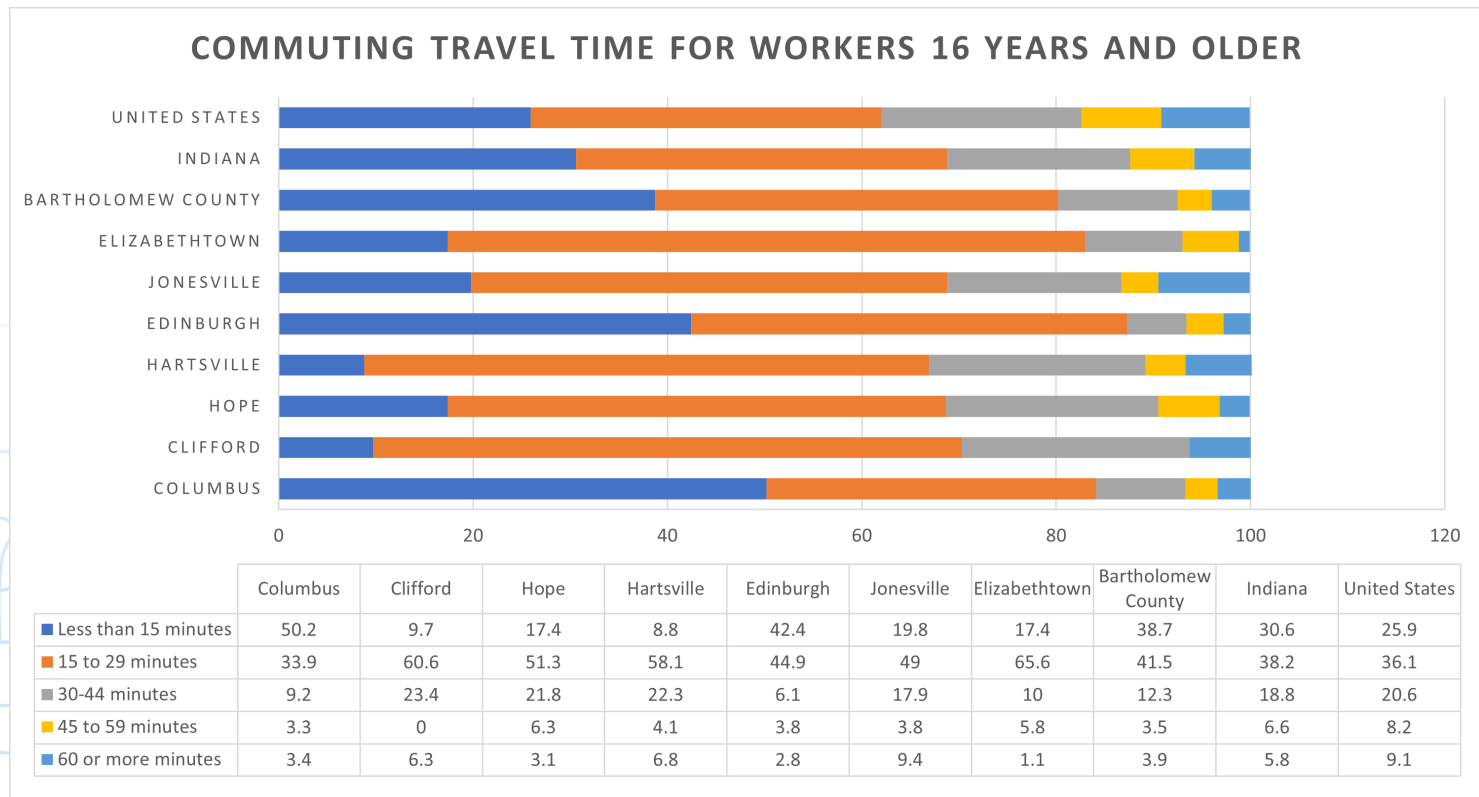
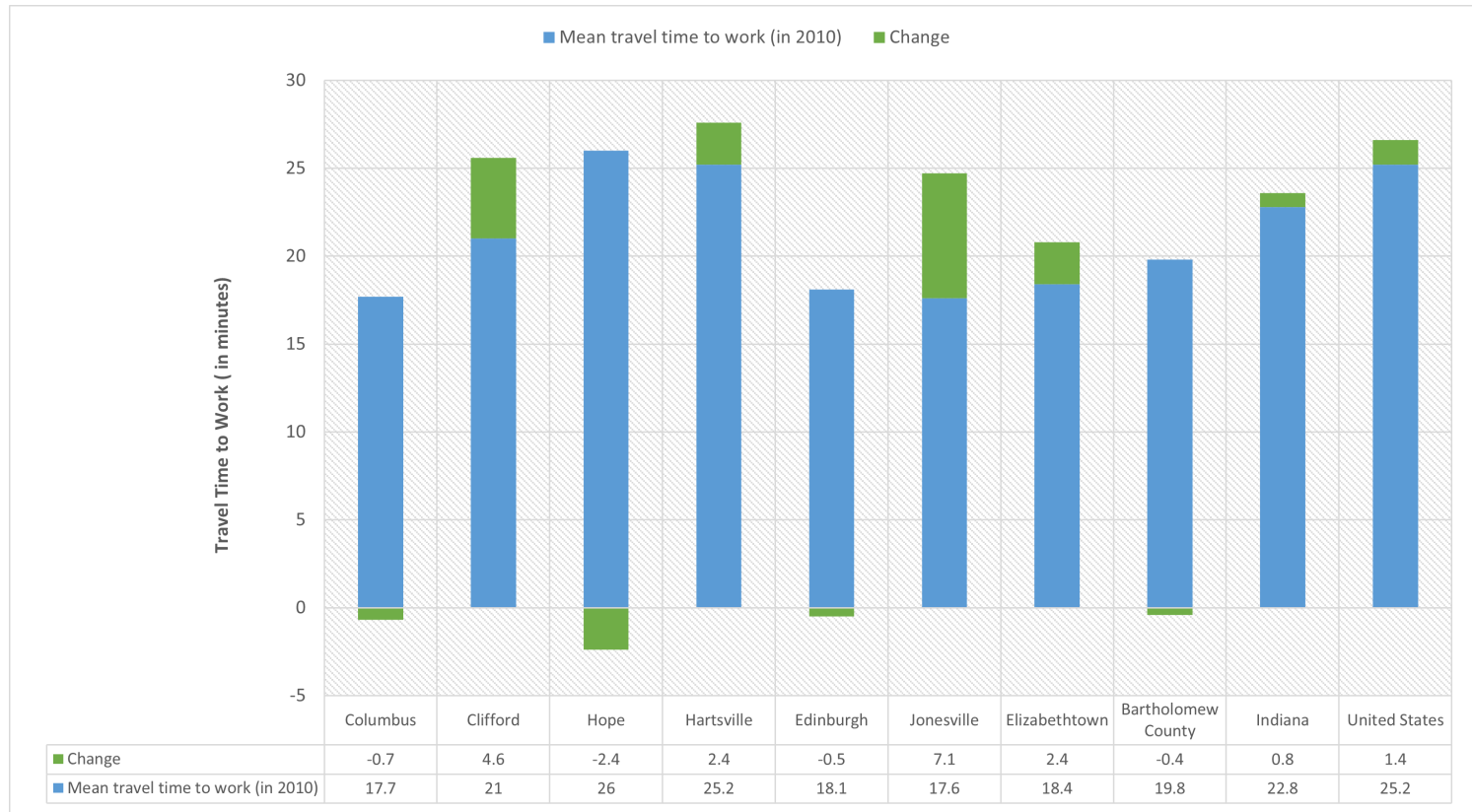


Figure C-5 shows comparison of mean travel times between 2010 and 2018.

Figure C-5: Comparison of Travel Time to Work Between 2010 and 2018



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APPENDIX

SAFETY IN THE MPA

This appendix presents much of the data behind the conclusions drawn in Chapter 5 (the ‘Safety in the MPA’ chapter). The bulk of the data regarding crash and travel statistics comes from the Indiana Department of Transportation. The data has been combined and compiled into succinct tables to highlight specific characteristics of the types of crashes, locations of crashes, and injury statistics. A brief description of the data presented is provided before each table.



Table D-1 presents the total crashes and injuries by injury severity level in the CAMPO MPA. The crash severities are defined as follows:

- *Fatal* – Crashes that results in the death of one of more persons.
- *Incapacitating Injury* – Any injury, other than fatal injury, including severe lacerations, broken ribs, skull or chest injuries and abdominal injuries.
- *Non-Incapacitating Injury* – Any injury, other than fatal and incapacitating injury, with evident injury including lumps on head, abrasions, bruises and minor lacerations or claims of injuries that are not evident.
- *Property Damage Only (PDO)* – Crashes involving property damage only with no injuries.

Table D-1: 2015-2019 Crashes by Severity

YEAR	CRASHES			INJURIES		
	FATAL	INJURY	PDO	FATALITIES	INCAPACITATING	NON- INCAPACITATING
2015	16	519	1503	16	77	78
2016	14	630	1545	14	117	84
2017	14	555	1478	14	113	98
2018	17	552	1494	17	95	93
2019	9	540	1534	9	84	82
Grand Total	70	2796	7554	70	486	435

Table D-2 presents the fatality and incapacitating injury rates per 100 million VMT in the CAMPO MPA and compares it against statewide average injury rates. Since the number of crashes is usually expected to increase with an increase in VMT, the crash rate is a valuable measure to compare crashes between different regions across different years. Fatality rates have increased over the past five years. Incapacitating crashes, on the other hand, do not present a clear trend, mainly due to the change of methodology in reporting incapacitating injury crashes. The CAMPO MPA injury rates remained under Indiana statewide average injury rates between 2011 and 2013, while the regional rates were higher than statewide rates in 2014 and 2015.

Table D-2: Fatal and Incapacitating Injuries - CAMPO MPA vs. Indiana

YEAR	CAMPO MPA		INDIANA	
	INJURIES PER 100 M VMT		INJURIES PER 100 M VMT	
	FATALITIES	INCAPACITATING	FATALITIES	INCAPACITATING
2015	0.56	3.07	1.04	4.46
2016	0.77	5.21	1.00	4.84
2017	0.55	2.66	1.12	4.39
2018	1.08	7.90	1.06	6.77
2019	1.70	26.11	1.00	22.72

Crashes by day of week are provided in Figure D-1. The crashes were highest on Friday and remained relatively low on the weekends. The crash frequency remained constant on other days of the week.

Figure D-1: Area Traffic Crashes by Day of Week

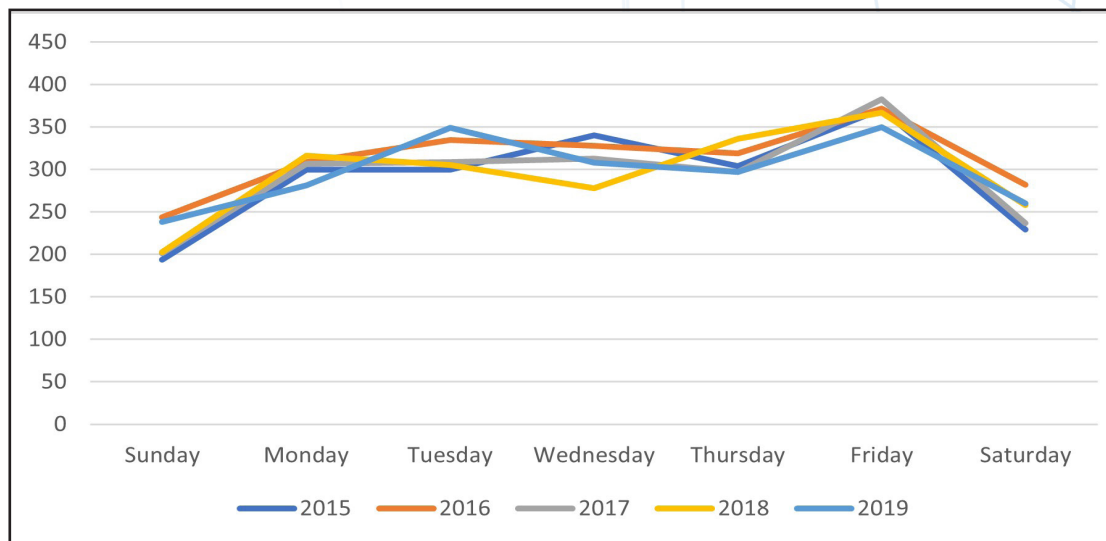


Table D-3 presents the total crashes in CAMPO MPA by major collision types. Rear-end crashes are the most common collision type contributing to nearly a quarter (24%) of the total crashes. Running off road along with right-angle crashes are the second most prevalent collision type in the CAMPO MPA at 19% and 16% of total crashes, respectively. The rear end, right angle, and turning crashes commonly occur at intersections and along congested corridors. Prior to 2014, the “Collision with Object on Road” and “Collision with Animal” collision types were not used, and instead the crashes involving animals were noted as “Animal/Object in Roadway” as primary

cause and categorized into other collision types, such as “Head on Collision”, “Sideswipe”, “Ran Off Road”, “Other”, etc. It appears that this change in categorizing crashes involving animals came in effect mid-October 2014, at the same time as the change in definition of incapacitating crashes. While the “collision with deer” and “right-turn” crashes decreased between 2015 and 2019, “same direction sideswipe crashes increased noticeably during the same period. Most other crash types remained consistent between 2015 and 2019.

Table D-3 : Crashes by Collision Type

COLLISION TYPE	2015	2016	2017	2018	2019	Grand Total
REAR END	495	511	493	494	505	2498
RAN OFF ROAD	374	496	381	373	396	2020
RIGHT ANGLE	322	349	343	342	280	1636
COLLISION WITH DEER	168	136	164	157	147	772
SAME DIRECTION SIDESWIPE	135	146	146	141	195	763
OTHER	137	173	139	134	160	743
BACKING CRASH	132	95	103	143	106	579
LEFT TURN	98	94	94	99	87	472
HEAD ON BETWEEN TWO MOTOR VEHICLES	45	45	29	32	51	202
OPPOSITE DIRECTION SIDESWIPE	33	48	31	35	42	189
COLLISION WITH OBJECT IN ROAD	28	30	39	33	42	172
LEFT/RIGHT TURN	20	19	20	28	31	118
RIGHT TURN	25	24	24	18	14	105
COLLISION WITH ANIMAL OTHER	15	14	22	20	13	84
NON-COLLISION	10	9	15	12	11	57
REAR TO REAR	1	0	4	2	3	10
TOTAL	2,038	2,189	2,047	2,063	2,083	10,420

Table D-4 presents the alcohol impaired and distracted crashes in the CAMPO MPA between 2015 and 2019. Distracted driver crashes include fatigued, illness/medicated, prescription drugs, asleep, inattentiveness, etc. The impaired driving crashes have remained fairly constant over the five-year analysis period, peaking in 2017 and 2018. The distracted driving crashes have decreased over the same period.

The age distribution of drivers involved in impaired (alcohol & drugs) crashes is provided in Figure D-2. Crash frequency is the highest for age groups between 25-35, which account for about 27% of crashes in this age range. The impaired driving decreases as the age of drivers increases, with less than 10 crashes involving drivers over 65 years old.

Table D-4: Impaired and Distracted Driver Crashes

YEAR	CRASHES	INJURIES		
		FATAL	INCAPACITATING	NON- INCAPACITATING
Impaired Driving Crashes				
2015	2	-	2	-
2016	2	-	1	-
2017	7	-	2	-
2018	5	-	1	-
2019	2	-	1	-
Total	18	0	7	0
Distracted Driving Crashes				
2015	99	1	3	5
2016	95	-	5	4
2017	86	-	2	4
2018	92	-	4	6
2019	89	-	3	4
Total	461	1	17	23

Figure D-2: 2015-2019 Impaired Driver Crashes by Age Group

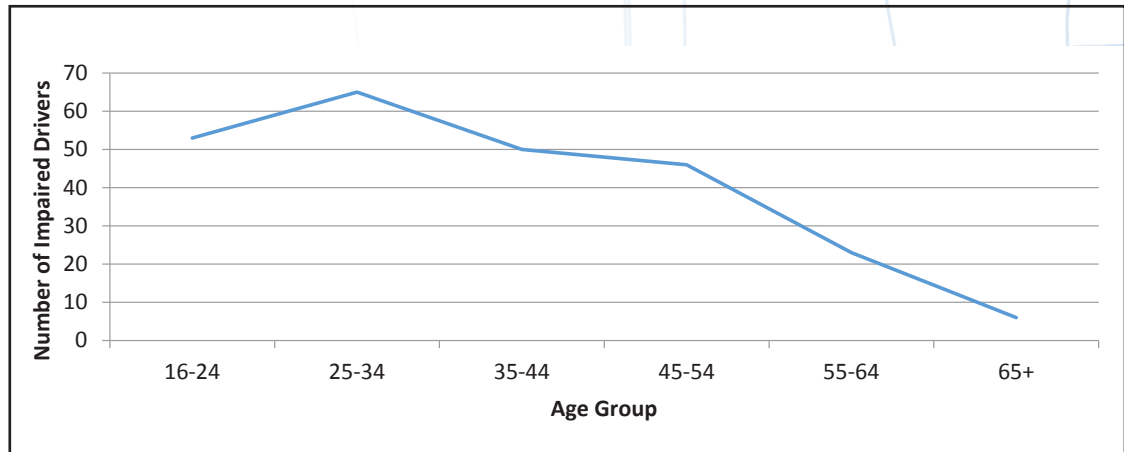


Table D-5 presents the crashes involving bicycles and pedestrians in the CAMPO MPA. The majority of the bicycle and pedestrian crashes resulted in injuries, with five fatal pedestrian crashes in the region between 2015 and 2016

Table D-5: 2015-2019 Bicycle and Pedestrian Crashes by Severity

YEAR	TOTAL	INJURIES		
		FATAL	INCAPACITATING	NON- INCAPACITATING
Bicycle Crashes				
2015	12	-	2	2
2016	14	-	2	2
2017	16	-	3	1
2018	13	-	2	-
2019	10	1	1	1
Total	65	1	10	6
Pedestrian Crashes				
2015	-	4	1	16
2016	-	3	3	21
2017	3	2	3	12
2018	5	4	2	20
2019	-	2	2	11
Total	8	15	11	80

Figure D-3 and Figure D-4 present the age distribution of pedestrians and bicyclists involved in the crashes respectively. The crashes were noted to be highest for pedestrians between the ages of 25 and 29, and bicyclists between the ages of 10 and 14.

Figure D-3 : 2015-2019 Pedestrian Crashes by Age Group

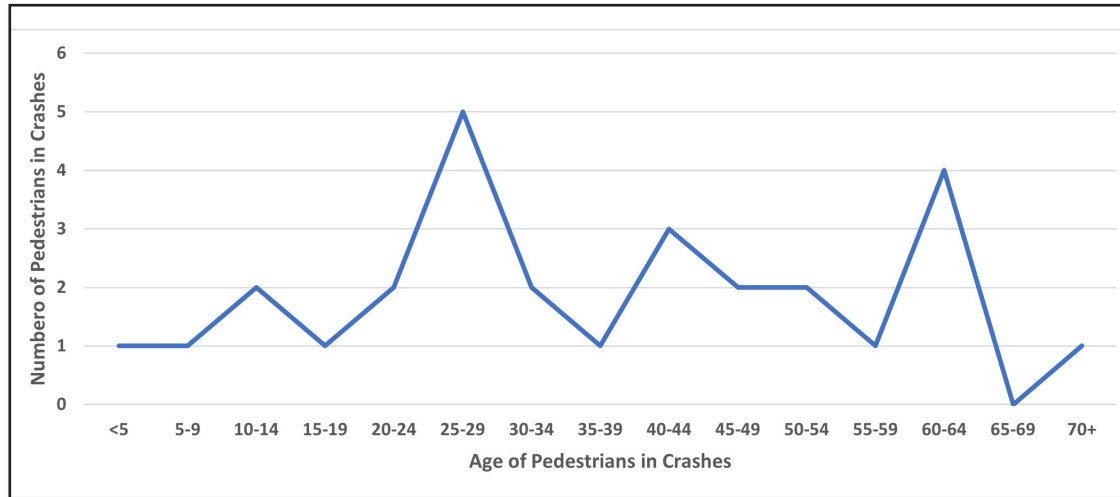


Figure D-4: 2015-2019 Bicycle Crashes by Age Group

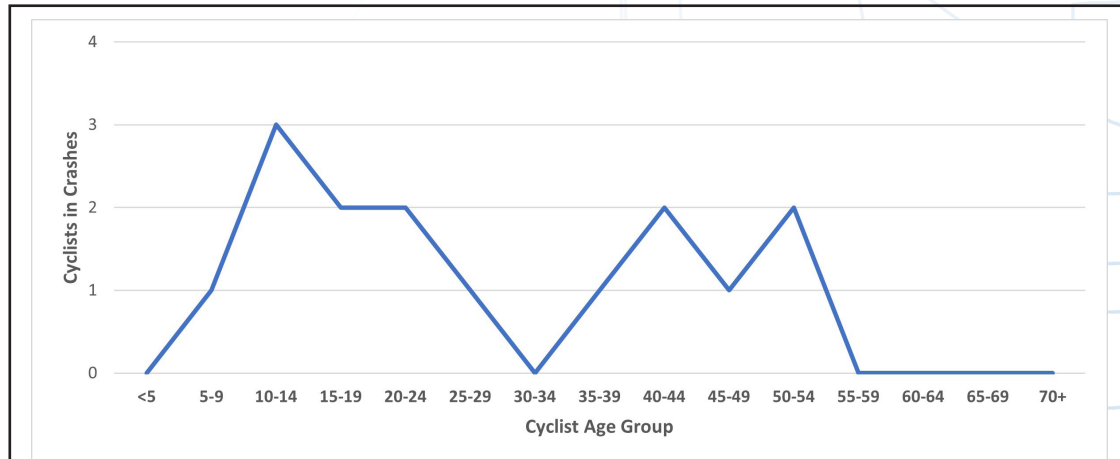


Figure D-5 presents fatal and injury crashes along the major corridors in the region. Higher speed state routes and city arterials are the source of the majority of injury and fatal crashes during the study period.

Figure D-5: 2015-2019 Crashes on Major Corridors by Severity

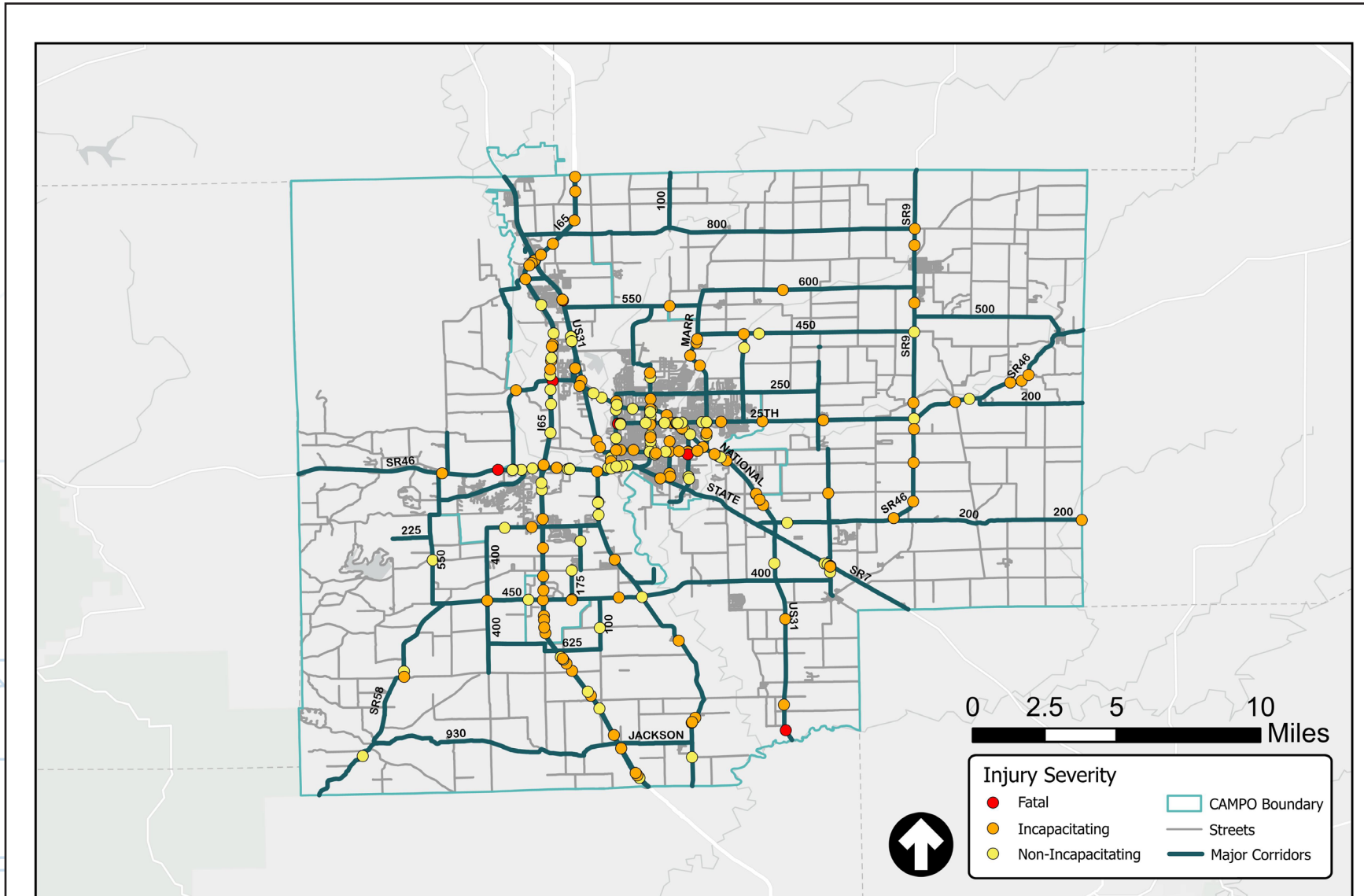


Table D-6 presents the mid-block crash data for the major corridors in the region. US 31, I 65, SR 46, 25th St., and SR 11 are the highest crash frequency corridors in the region.

Table D-6: 2015-2019 Mid-Block Crashes on Major Facilities

CORRIDORS	CRASHES	INJURIES		
		FATAL	INCAPACITATING	NON- INCAPACITATING
US 31	782	7	63	64
I 65	1,073	14	54	24
SR 46	606	9	41	45
Central	166	-	13	15
25th	270	3	17	23
SR 11	265	1	18	16
Marr	93	2	16	10
CR 450	138	-	8	11
SR 7	205	-	16	9
SR 58	123	1	8	7

Table D-7 presents the major crash intersection locations in Columbus. Intersection of 25th Street and US 31 recorded the highest number of crashes over the five-year period. Other high crash frequency intersections included 25th and Taylor, 10th and Marr Rd., and 10th and National.

Table D-7: 2015-2019 High-Frequency Intersection Crash Locations

INTERSECTION	CRASHES	INJURIES		
		FATAL	INCAPACITATING	NON- INCAPACITATING
25th & US 31	48	0	2	3
25th & Taylor	44	0	1	1
10th & Marr	34	0	2	5
10th & National	27	0	1	2
Central & National	24	0	2	1
I-65 & US 31	24	0	1	0
US 31 & SR 7	21	0	0	0
SR 46 & Lindsey	16	0	0	1
SR 11/Brown & 2nd	16	0	0	1
Jonathan Moore & SR 46	15	0	1	1
US 31 & CR 400	15	0	0	0
US31 & CR400	15	0	0	0

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APPENDIX E

CAMPO SWOT ANALYSIS

The goals and objectives for CAMPO were developed based on regional FAST Act priorities, INDOT transportation policy factors, extensive stakeholder engagement and input received during public meetings. A SWOT (Strengths, Weaknesses, Opportunities and Threats) exercise was performed for the previous planning document and updated with the help of CAMPO MTP steering committee members in 2020 to highlight the positive and negative factors impacting the existing and future transportation infrastructure in the region. The four elements explored as part of the SWOT analysis include:

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- STRENGTHS:**
 Characteristics of the CAMPO MPA that give it an advantage over other, similarly sized MPAs in the country.
- WEAKNESSES:**
 Characteristics of the CAMPO MPA that put it at a disadvantage relative to other similarly sized MPAs in the country.
- OPPORTUNITIES:**
 Either elements of the CAMPO MPA which can be exploited to be an advantage for the MPA, or elements that are currently underutilized within the MPA.
- THREATS:**
 Elements of the transportation system or growth trends that could potentially cause problems for the CAMPO MPA over the next 25 years.

SWOT ANALYSIS



The inputs received under each element of the SWOT analysis is presented below:

STRENGTHS

1. Champions of biking and walking
2. Spirit of Collaboration
3. Robust employment opportunities
4. Talented workforce
5. Strong municipal finances
6. Safe community
7. Compassionate neighbors
8. Community Pride
9. Access to major metros
10. Commitment to Quality of Place

WEAKNESSES

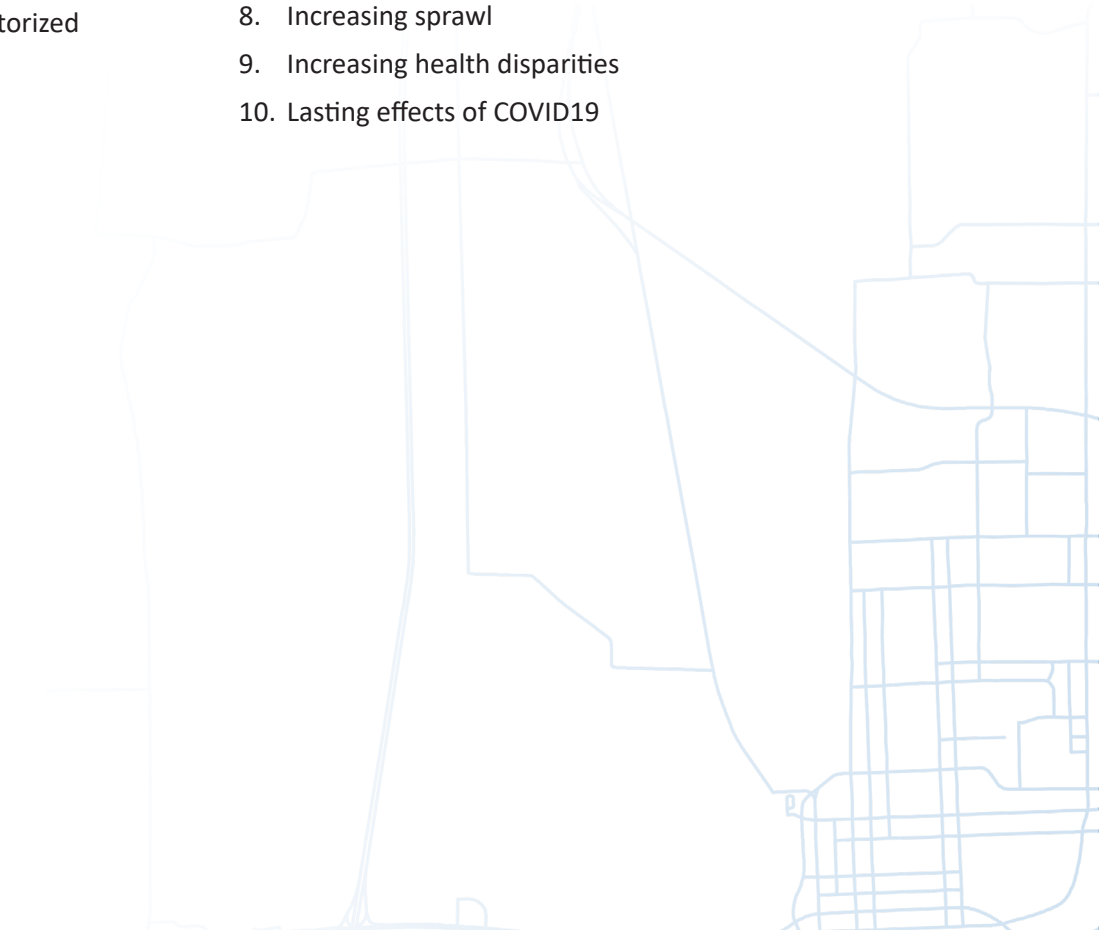
1. Automobile dependency
2. Low economic diversity
3. Limited bicycle network
4. Limited access to public transit
5. Aging infrastructure
6. Limited sidewalk network
7. Sprawling development
8. Unresolved priority conflicts between motorized and non-motorized users
9. Social pressure to conform
10. High train traffic

OPPORTUNITIES

1. Automobile dependency
2. Low economic diversity
3. Limited bicycle network
4. Limited access to public transit
5. Aging infrastructure
6. Limited sidewalk network
7. Sprawling development
8. Unresolved priority conflicts between motorized and non-motorized users
9. Social pressure to conform
10. High train traffic

THREATS

1. Loss of major employers
2. Extreme weather events
3. Growing income gaps
4. Population decline
5. Brain drain
6. Rising cost of living
7. Aging infrastructure
8. Increasing sprawl
9. Increasing health disparities
10. Lasting effects of COVID19



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APPENDIX

PUBLIC PARTICIPATION

The 2045 CAMPO long-range planning process involved an extensive public outreach effort, resulting in a large number of spoken and written comments from the public. This effort was consistent with the requirements of CAMPO's Public Participation Plan (2018). Public participation is an important component of any planning process. A planning process should both communicate information about the process to the general public and enable residents to provide input and meaningful feedback. Effective public participation builds trust and buy-in from area residents, resulting in a better plan and a plan that is more likely to be embraced by the region.

Some of the most effective methods of public participation involve in-person, face-to-face encounters. In previous years, CAMPO has been able to utilize open houses and community events to receive vital feedback from the public on local priorities and necessary improvements. During the course of the long-range transportation plan, a global outbreak of the COVID-19 virus made large in-person gatherings unfeasible. Various stages of social restrictions were in place throughout the project period, ranging from total lockdown, crowd size limits, and mandatory mask requirements. As a result, the project team used all reasonably available means to engage the public in a safe and socially distanced manner.



To effectively engage the public remotely, the project team used a variety of outreach methods to maximize the number and type of opportunities for residents to become involved in the process. The public was provided the opportunity to guide the study and provide feedback on the report's findings through multiple channels. The project team was guided by a Steering Committee comprised of stakeholders from across the study area. In addition, between October 2020 and September 2021 the project team hosted a virtual public workshop, provided a public survey, and offered an in-person open house. The following section provides detail on the engagement activities and their findings.

The public workshop and open houses utilized PowerPoint Presentations to highlight the planning process, graphically illustrate scenarios, and examine deficiencies at selected locations where transportation improvements were proposed. Display boards with maps of Columbus and Bartholomew County were utilized during an in-person open house to facilitate public comment. To generate enthusiasm and boost participation during these events, "voting" exercises were conducted to prioritize the land-use and transportation scenarios. CAMPO's website, Facebook page, media releases, and email contact group lists were utilized to keep the public updated on the process and aware of events throughout the long-range plan process. The public involvement process is summarized below.

Virtual Public Workshop

Zoom

October 22, 2020, 12:00-1:00 PM and 6:00-7:00 PM

A virtual community workshop was hosted October 22, 2020 to provide an interactive opportunity for participants to guide discussions about the region’s future, review progress since the previous plan, and identify transportation challenges in the Columbus Area.

Identical presentations were hosted at noon and 6:00 pm, and a recording of the presentation was made available on the City of Columbus’ website via YouTube link. Approximately 33 members of the public registered to attend the meeting and provided feedback, and an additional 80 accessed the recording.

Participants at the workshop identified conflicts between bicycles and automobiles as the biggest transportation challenge in the Columbus area. Their feedback further indicated a need to expand bicycle and pedestrian infrastructure to allow better access to regional destinations and provide transit access to the Walesboro Industrial Park. When asked about future growth scenarios, the participants expressed strong desire to support infill growth and development.



Community Survey

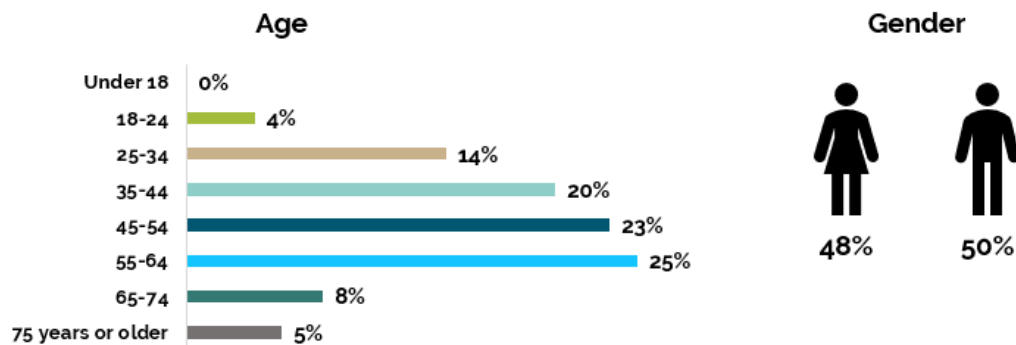
On-Line

October 12 - December 6, 2020

A community survey took place October 12 through December 6, 2020. The survey was available through a link on the MPO's website and via social media. The survey was created to capture the sentiment of residents toward various elements in the community (transportation modes, commutes, transportation goals, etc.).

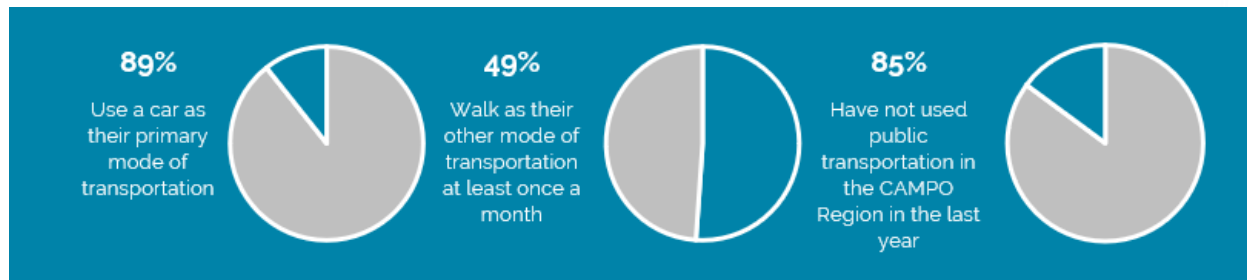
The community survey is an important tool that helps to inform the plan. It helps the planning team confirm trends and identify issues that may have been missed during other engagement activities. The survey included 30 multiple choice, ranking, and open ended questions. Over one hundred and forty respondents completed the survey by the closing date.

Survey Participants

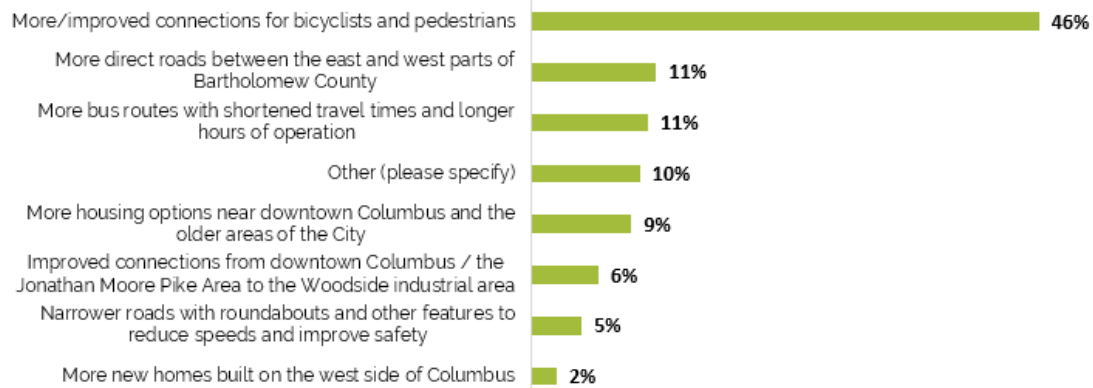


Results from the community survey revealed that almost all people use a car as their primary mode of transportation (89%). When given the option of other modes of transportation such as biking, walking, and bus transit, and the frequency in which they are used, it was found that 49% of people bike at least once a month, 65% of people walk at least once a month, and 7% of people ride the bus at least once a month.

Of those who responded to the survey, 85% have not used public transportation in the CAMPO region within the last year. However, 91% of respondents use public transportation when traveling in another city. When traveling in another city, 75% use subways, 73% use buses, 64% of respondents use taxis, 48% use light rail, and 26% use trolley/streetcars. It should be noted that 58% of people have never used a ride sharing/ride hailing service such as Uber, Lyft, or GoGo Grandparent.



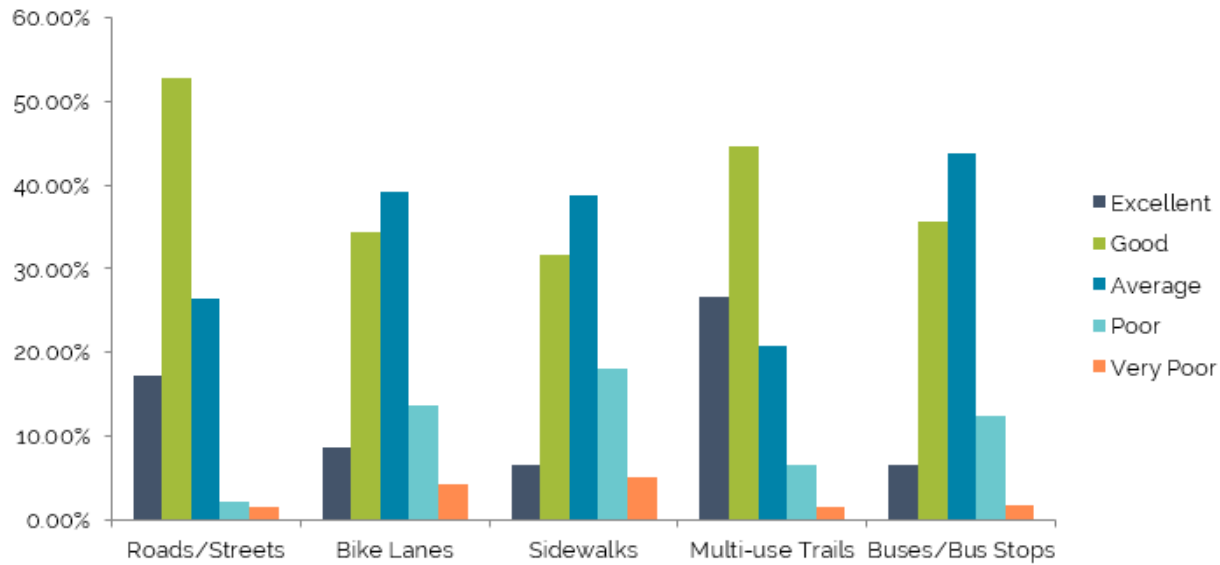
When asked what would change how people travel, the most common responses include more and improved connections for bicyclists and pedestrians (46%), more direct roads between the east and west parts of Bartholomew County (11%), and more bus routes with shortened travel times and longer hours of operation (11%). Based on this survey result, it is clear that there is a desire for more connections throughout the area.



APPENDIX F PUBLIC PARTICIPATION

Approximately 26% of survey respondents found the roads and streets to be average and 53% found the roads and streets to be good. Only 4% of survey respondents found the roads and streets to be below average. This same trend can be seen for multi-use trails; however, 23% of survey respondents found sidewalks to be below average. In addition, 18% and 14% of survey respondents found bike lanes and buses/bus stops to be below average, respectively.

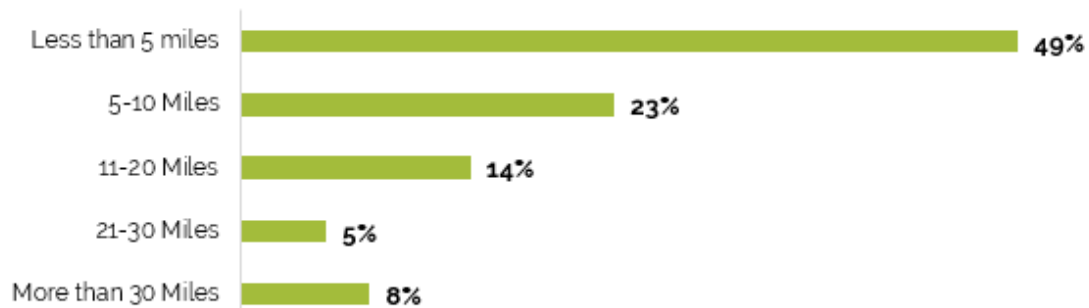
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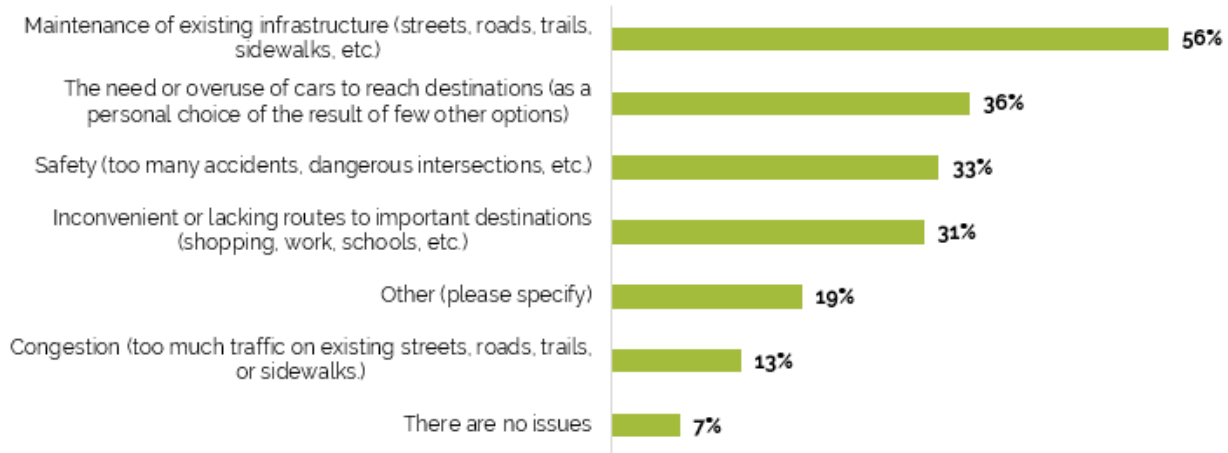
When asked about commuting, 79% of respondents typically work outside the home. This assumes that changes made as a result of the COVID-19 pandemic are not typical. 87% of respondents use their personal car for their commute. Commute distances range between less than 5 miles to more than 30 miles. The vast majority of respondents have a commute less than 5 miles (49%). Only 8% have a commute more than 30 miles. This equates to a commute time of less than 15 minutes for 57% of respondents. Only 7% of respondents have a commute time of more than 45 minutes. It was found that 92% of survey respondents feel that their commute time is acceptable.

Approximately 81% of survey respondents begin and end their commute to work in Bartholomew County. This is followed by 9% who begin their commute in Bartholomew County and end elsewhere and 8% who begin their commute elsewhere and end in Bartholomew County. Only 2% of survey respondents neither begin nor end their commute to work in Bartholomew County.

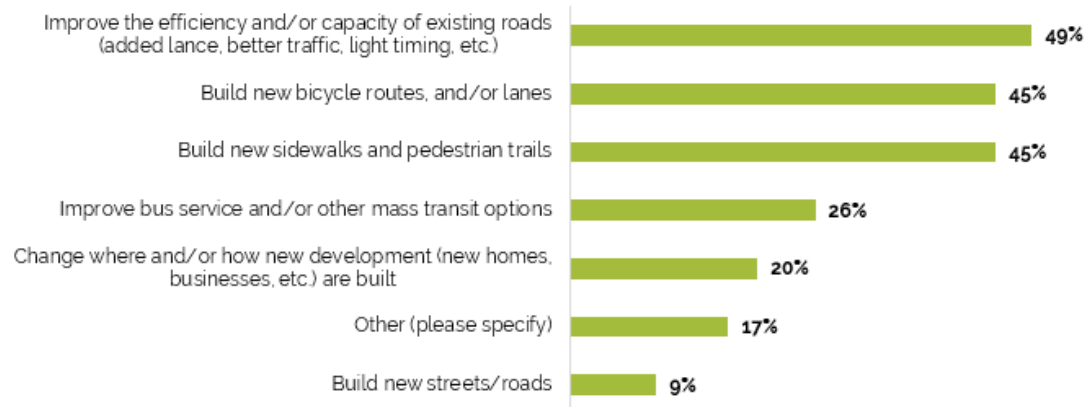
Average Commute Distance



One consistent theme was the desire to focus on road maintenance (56%) as well as the need or overuse of cars to reach destinations (36%). Survey respondents felt that those two transportation issues were the most important issues that need to be addressed in the CAMPO area. Additional transportation issues include safety (33%), inconvenient or lacking routes to important destinations (31%), other (19%), and congestion (13%). 7% of survey respondents found that there are no transportation issues.



When asked how the challenges should be addressed, there was strong support for improving the efficiency and/or capacity of existing roads (49%). The survey also found strong support for new bicycle routes and/or lanes (45%), as well as building new sidewalks and pedestrian trails (45%). It should be noted that only 9% of survey respondents feel that new streets/roads should be built.



In addition to the above transportation issues, survey respondents stated that they would like the CAMPO area to focus on stormwater management and flooding (35%), improving access to local businesses (35%), rural transit access (32%), air quality and climate change (28%), improving access to tourist destinations (12%), other (11%), and none (10%).

Additional Transportation Issues



Each of the current goals of the current transportation system was listed in order to determine if survey respondents still felt that the goals apply to the region. Overall, it was concluded that each of the goals is still applicable to the region with support levels ranging between 98% - 100%. The top priorities identified by the public are increasing the accessibility and improving quality of life, supporting economic vitality, and improving safety.

Public Open House

Evolution Training Center

August 5, 2021, 5:30 PM - 8:00 PM.

An open house was conducted at the Envision Training Center, 2670 Verhulst Street, Columbus, IN, 47203. The event was hosted at a facility that was publicly accessible and also provided an opportunity for an open air, socially distanced engagement. The purpose of the event was to gather public input on the proposed scenarios to be evaluated by the CAMPO Travel Demand Model and seek input on the future priority projects. A total of 17 people attended the meeting. The public had the opportunity to review the various alternative scenarios and comment on the preferred scenario. CAMPO and Lochmueller Group staff were available to answer questions and discuss plan details with the public.

A voting exercise was conducted where participants were given five “CAMPO Bucks”. The participants were asked to spend their CAMPO Bucks on the projects they would like to prioritize for future funding over the next 25 years. Those projects that received the highest number of dollars included bike and pedestrian improvements on Rocky Ford Road between Washington St and Central Ave, a shared use path on 10th Street from the Haw Creek Trail to US 31, and complete streets improvements to Washington St from US 31 to Rocky Ford Rd. Results of the activity were combined with input from the Steering Committee to inform the final project prioritization list.

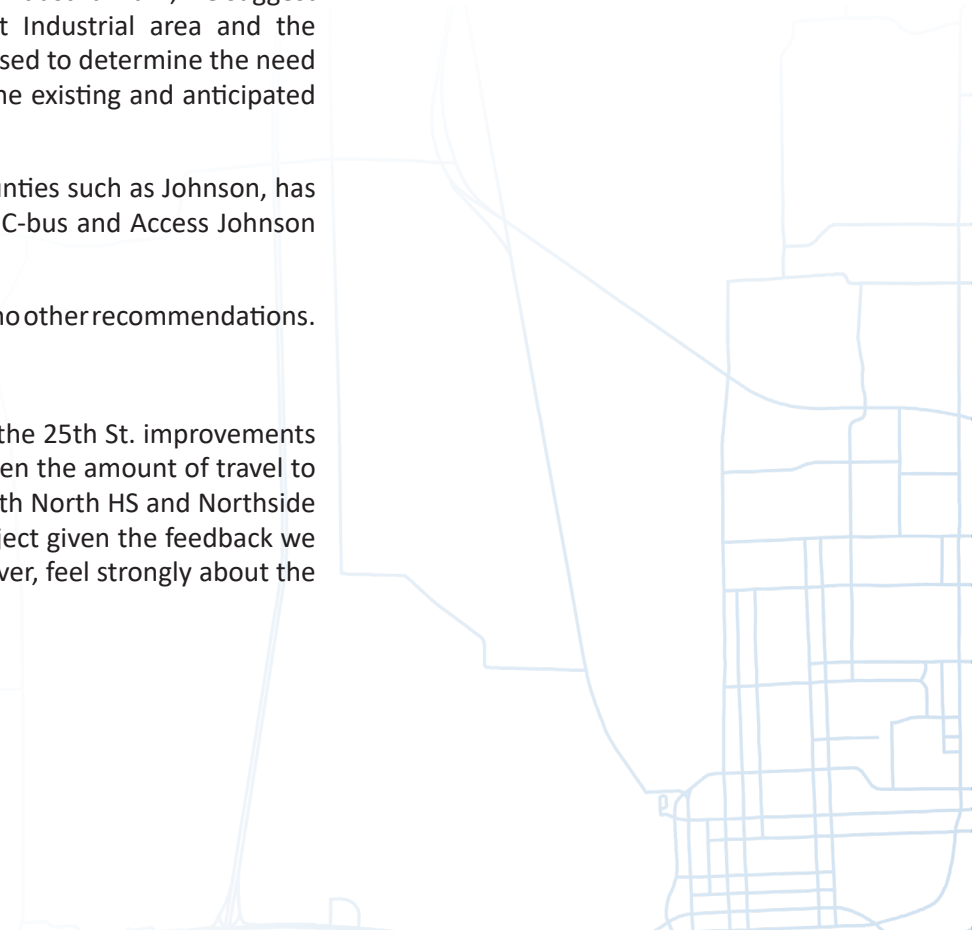
Additional comments received during the public meeting related to improving the wheel chair accessibility throughout the community and increasing bike facilities throughout the area, particularly north-south connections in the City of Columbus.

Public Comment Period

September 25 - October 25, 2021

The draft plan is posted on the City of Columbus website for a 30-day public comment period. The comments received from the public and steering committee are listed below.

- The road in front of my office is in poor condition and floods when it rains (Old US 31, north of CR 650 N).
- It is difficult to negotiate gravel paths with a wheelchair or stroller, including those at Pollinator Park at Blackwell Park.
- Since one of the goals is to provide employee transportation to Walesboro Industrial Park, we suggest consideration for providing transportation services to the Joint District Industrial area and the Edinburgh Industrial Park. Are you able to help us understand the criteria used to determine the need for transportation to Walesboro and if the same could be applicable for the existing and anticipated industry in northern Bartholomew County?
- Another goal is to establish transportation connections to surrounding counties such as Johnson, has there been any consideration for a convenient location for a bus stop for C-bus and Access Johnson County which could be provided within the Edinburgh area.
- I have reviewed the plan and feel like these will be great improvements. I have no other recommendations.
- Thanks for facilitating a great process resulting in a terrific plan.
- My only feedback would be to encourage the team to consider escalating the 25th St. improvements to priority A rather than B. That corridor is an important one, especially given the amount of travel to the schools and considering south of 25th is considered a walk zone for both North HS and Northside MS. If I had to choose, I would consider replacing #5 with the 25th St. project given the feedback we received at our last meeting regarding traffic calming efforts. I don't, however, feel strongly about the replacement.



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APPENDIX G

CAMPO TRAVEL DEMAND MODEL

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A Travel Demand Model (TDM) is an important transportation planning tool developed to evaluate transportation systems through an integrated demand-capacity analysis. The model utilizes a study area roadway network, land use data, and regional travel patterns to replicate existing travel conditions in the form of traffic allocated to the roadway network. Once the model is validated and calibrated against the observed conditions, the model is used to predict future travel patterns based on roadway and transit network changes, future population and employment growth, and land use modifications. The model provides information used by decision-makers to consider future infrastructure investments and policy scenarios that help reduce traffic congestion and promote economic growth in the region. Some of questions the model is equipped to answer include:

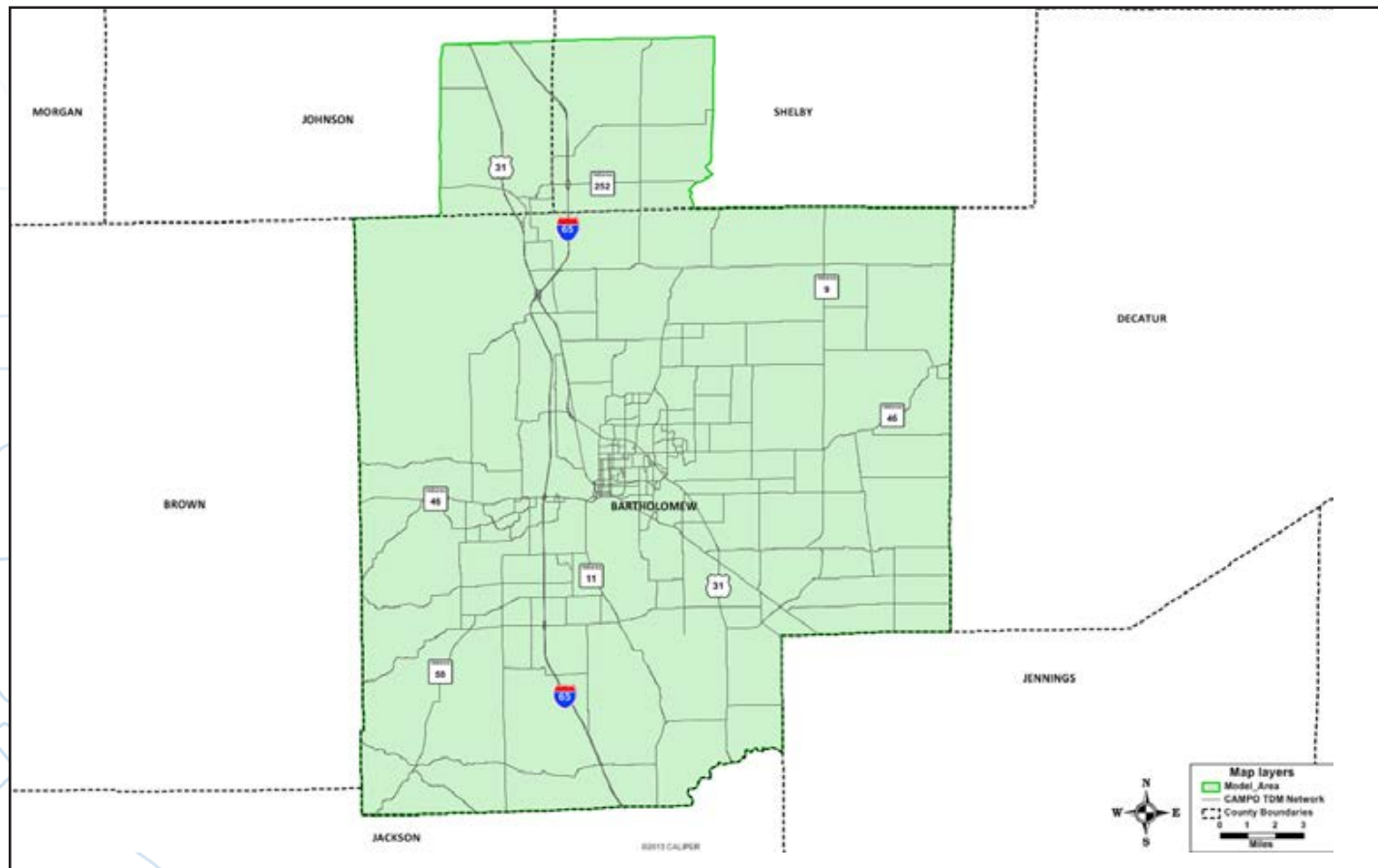
- Would transit ridership increase as a result of more frequent transit service or new routes?
- Would vehicle-miles-traveled decrease as a result of denser, mixed-use developments?
- Would adding dedicated pedestrian and bicycle infrastructure result in fewer trips being made by automobile?
- Would increasing travel/parking costs result in modified travel behaviors relative to destination and mode preferences?

Lochmueller Group has completed the first TDM for the Columbus Area Metropolitan Planning Organization (CAMPO). The TDM is based on TransCAD Version 6 platform. During the LRTP update process, the TDM base year was changed from 2010 to 2017. The model area encompasses the entirety of Bartholomew County, as well as portions of Johnson and Shelby Counties. A map of the model area is provided in Figure G-1. The model area was sub-divided into 413 (379 internal and 34 external) small geographical areas called traffic analysis zones (TAZs). The socioeconomic characteristics of each TAZ, such as population and employment, are used by the model to generate traffic demand for trips into and out of each TAZ. The socioeconomic data for 2017 was obtained from the US Census and American Community Survey (ACS).

The model network includes 574 miles of roadways plus the ColumBUS transit fixed route service to assign trips between the TAZs. The model utilizes outputs from the Indiana Statewide Travel Demand Model (updated 2020) to estimate trips originating and ending outside of the model study area, as well as trips passing through the model area without stopping (such as those on Interstate 65).

The CAMPO TDM was developed as a “hybrid” travel demand model. The hybrid model blends aspects of both traditional four-step models and activity-based models. It provides a distinct advantage over the most commonly used traditional four-step models by reducing zonal aggregation bias which can skew model results and by providing consistency with tour and trip-chaining behavior, realistic representation of special populations (seniors, low-income, students) for environmental justice purposes, sensitivity to fuel prices and urban design, and planning capabilities for transit, bicycle and pedestrian modes among several additional benefits. Unlike the data and resource intensive activity based models the CAMPO hybrid travel demand model was developed in under a year and takes less than 20 minutes to run.

Figure G-1: CAMPO TDM Model Area

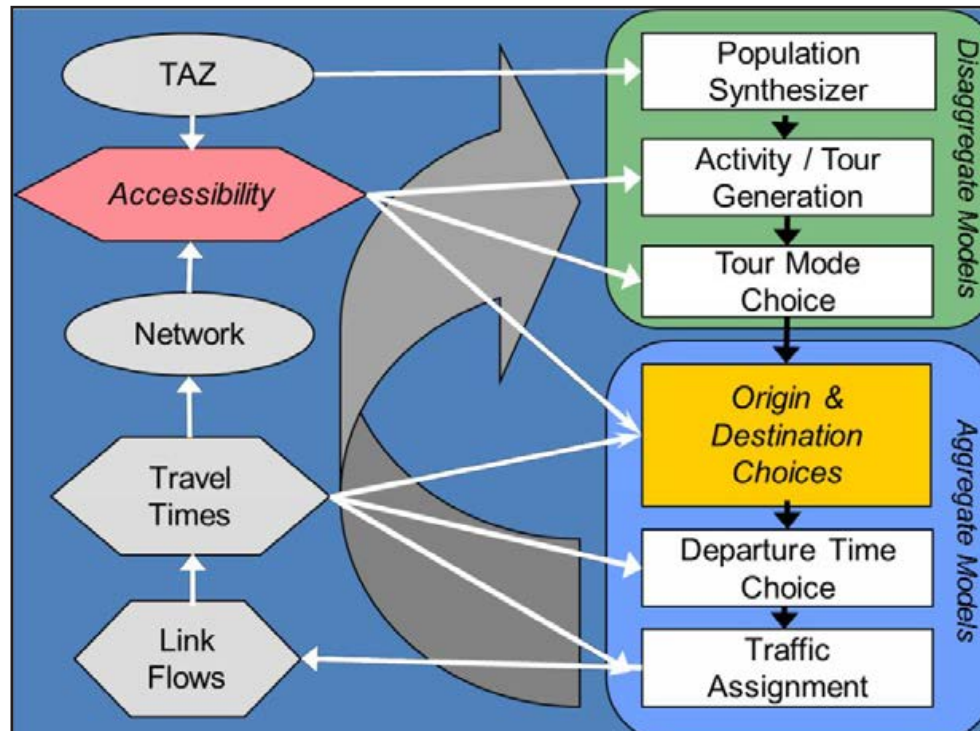


The hybrid model begins by generating a synthetic population of individual households based on the aggregate characteristics of the population encoded in the TAZs. Then a model predicting households' level of vehicle ownership is applied. The number of tours of various purposes (work, school, other, etc.) and the number of stops on these tours are predicted for each household. The dominant mode of travel (private automobile, school bus, public bus, walking/biking) is modeled for the household's tours of each purpose. Then, grouping households within the same TAZ together, probable locations of the stops on automobile tours are chosen. Next, for each probable stop location, a preceding location is chosen such that the resulting probable sequences of stops form tours that begin at home and proceed from one stop to the next until returning to home.

For each trip in the resulting travel pattern, the probability of walking, driving alone or with passengers is predicted, as is the departure time (in 15 minute time periods). Finally, the trips are assigned to the roadway network and routes are chosen such that travelers minimize their travel time and costs. The resulting travel times are used to recalculate accessibility variables, and both are then fed back and used to repeat the process, beginning from the generation of tours and stops, until the changes from one iteration to the next in the resulting roadway volumes are minimal. This process is illustrated in Figure G-2. Detailed model description is presented in the CAMPO Travel Demand Model – Technical Document.

The model was calibrated to satisfy the validation standards recommended in the "Travel Model Validation and Reasonableness Checking Manual", published by Federal Highway Administration (FHWA). The model was well calibrated with a Percent Root Mean Squared of Error (%RMSE) of 28 percent.

Figure G-2: Hybrid Travel Demand Model Structure

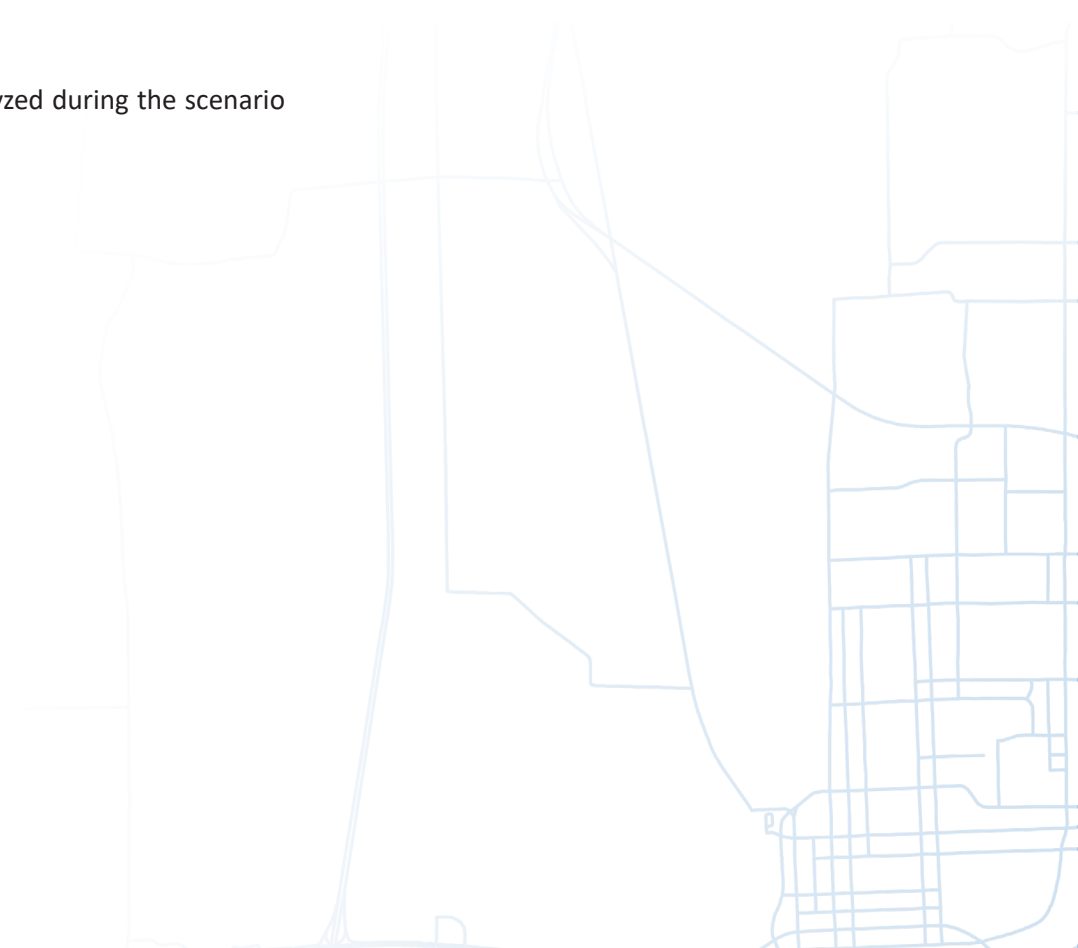


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APPENDIX H

TRAVEL MODEL OUTPUT RESULTS

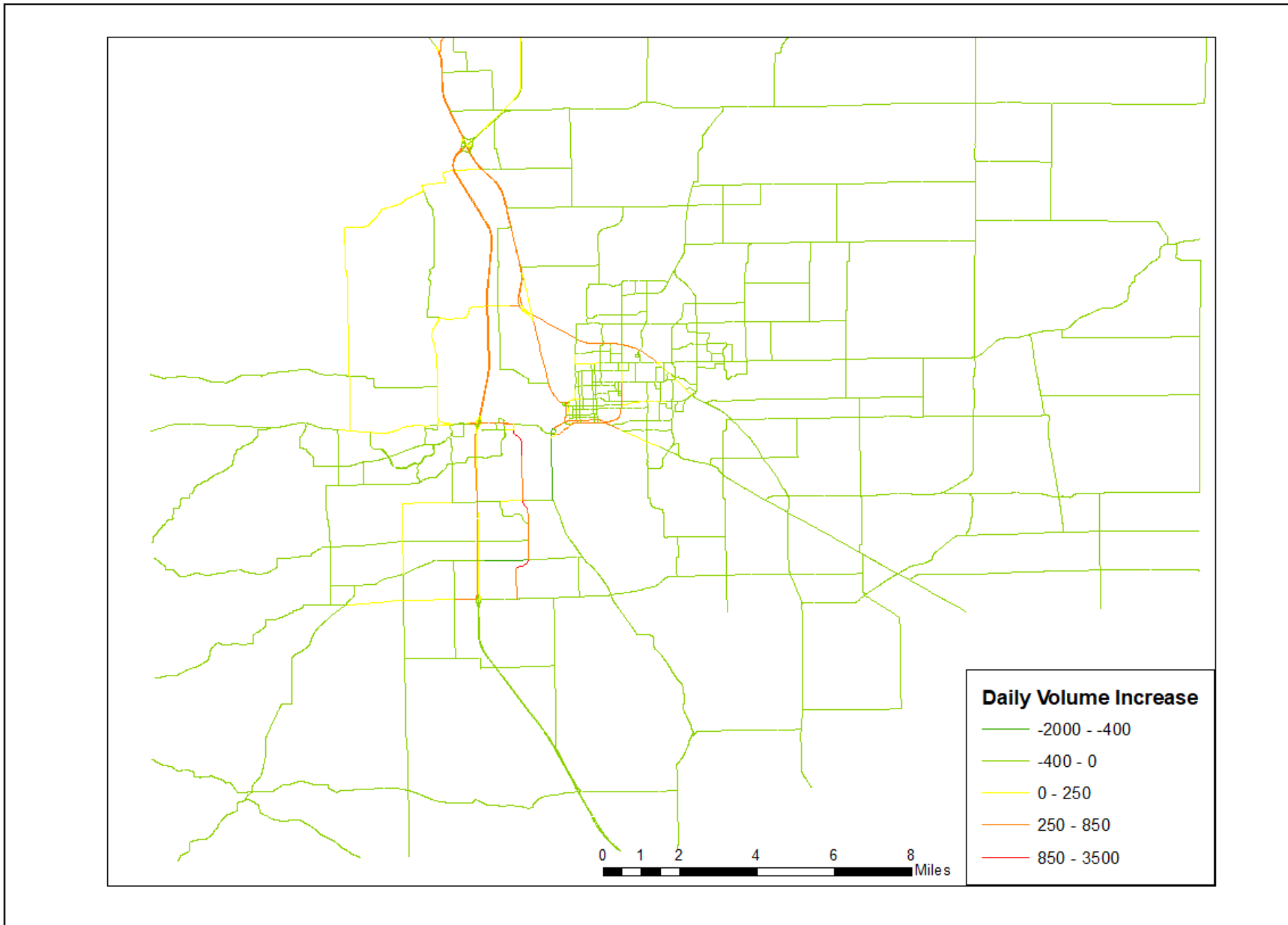
This appendix presents detailed outputs for different scenarios analyzed during the scenario evaluation step.



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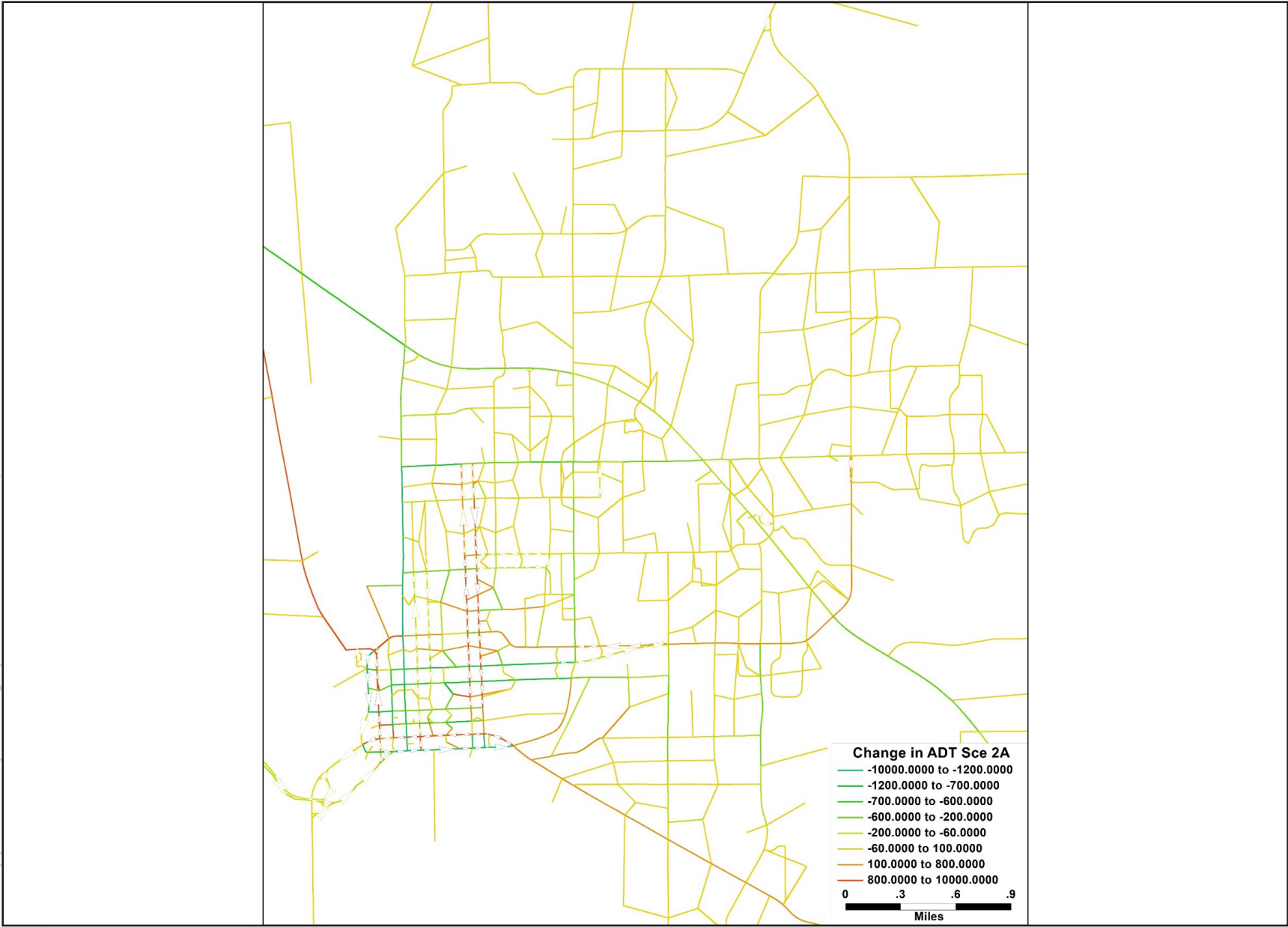
SCENARIO 1: NORTH-SOUTH ALTERNATIVE

Figure H-1: Scenario 1 Daily Traffic Volume Change



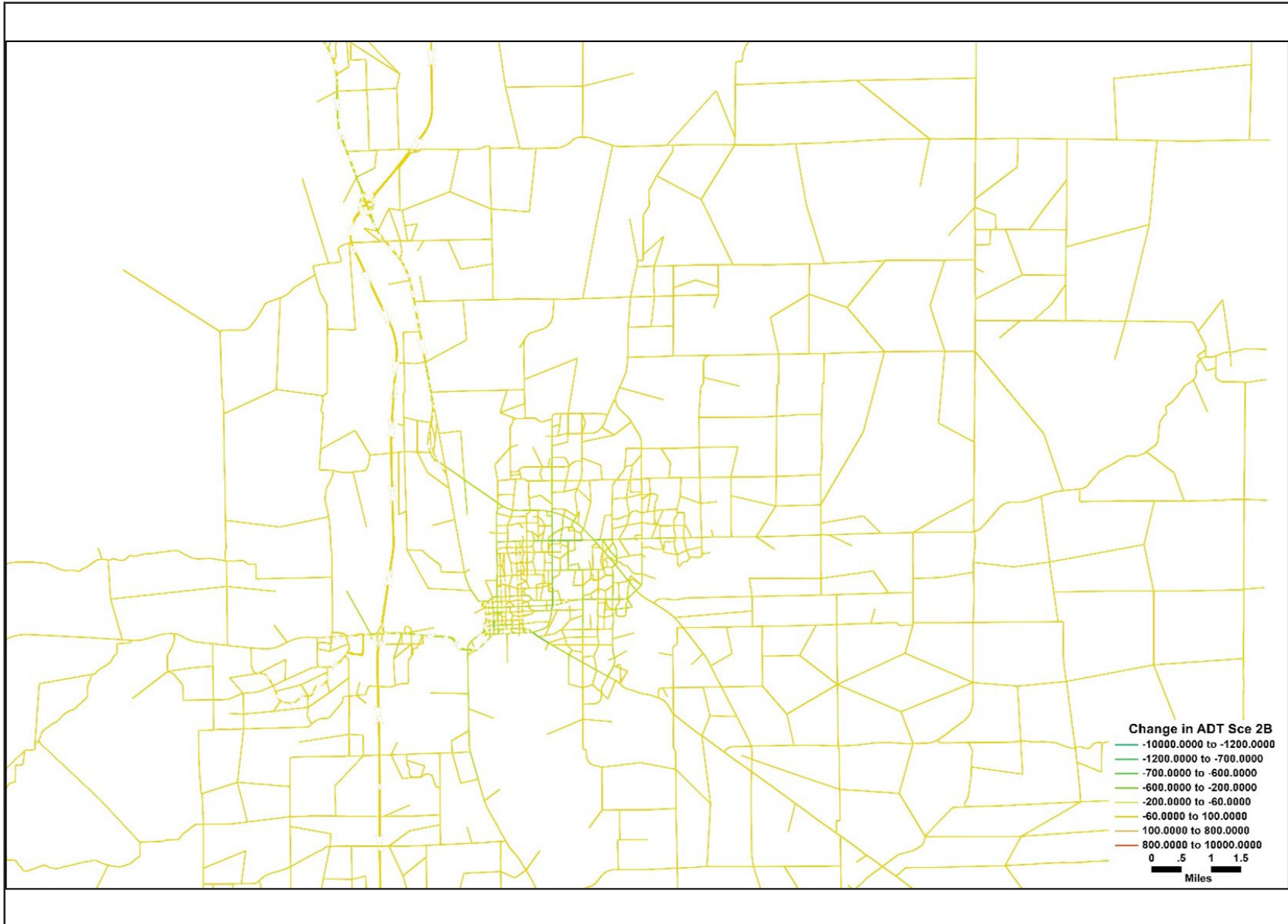
SCENARIO 2A: ENVISION COLUMBUS SCENARIO

Figure H-2: Scenario 2A Daily Traffic Volume Change



SCENARIO 2B: PEDESTRIAN AND BICYCLE SCENARIO

Figure H-3: Scenario 2B Daily Traffic Volume Change



SCENARIO 2BB: PEDESTRIAN AND BICYCLE SCENARIO

Figure H-4: Scenario 2Bb Daily Traffic Volume Change

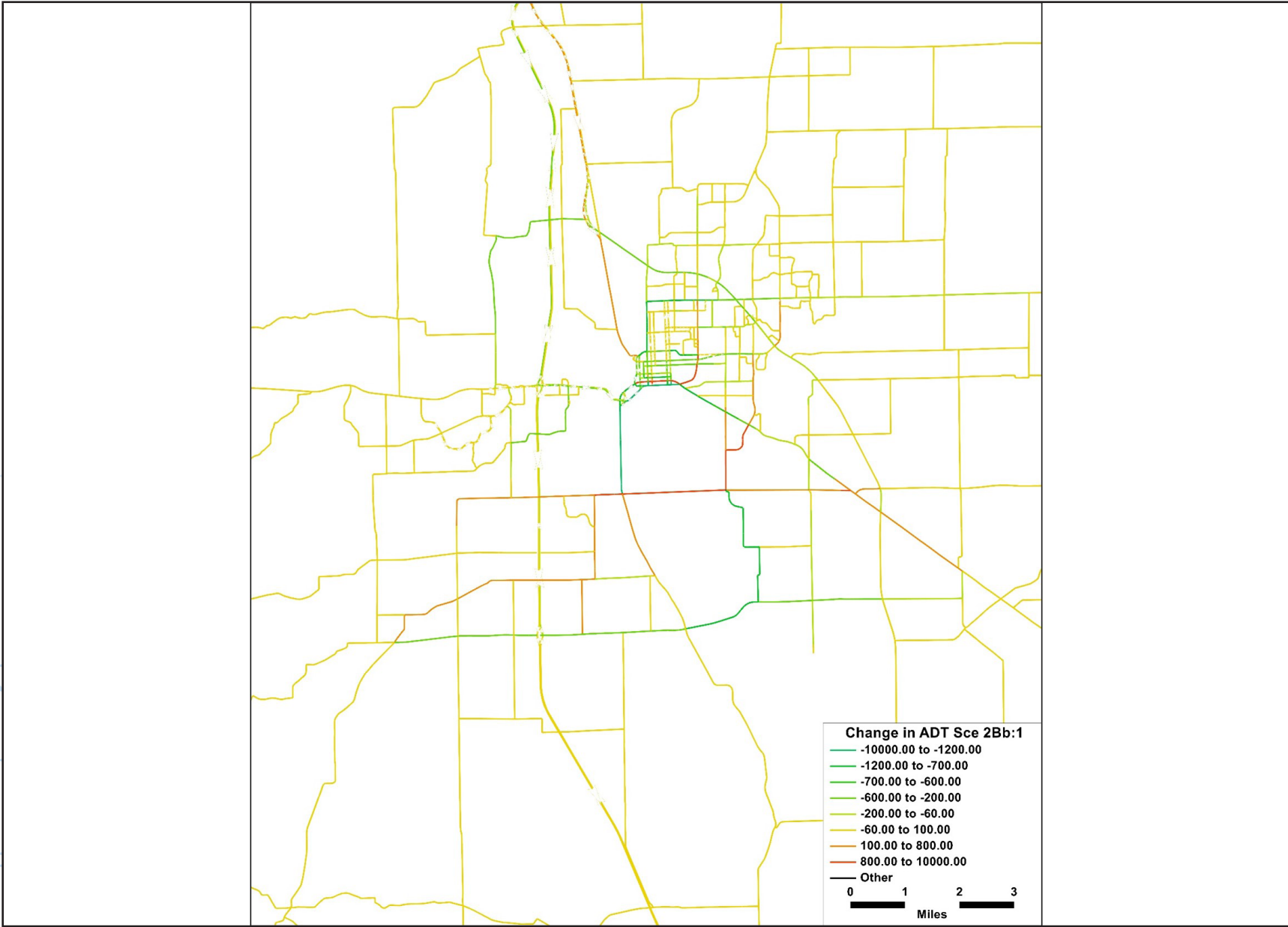


Figure H-5: Scenario 1 Average Daily Traffic (ADT)

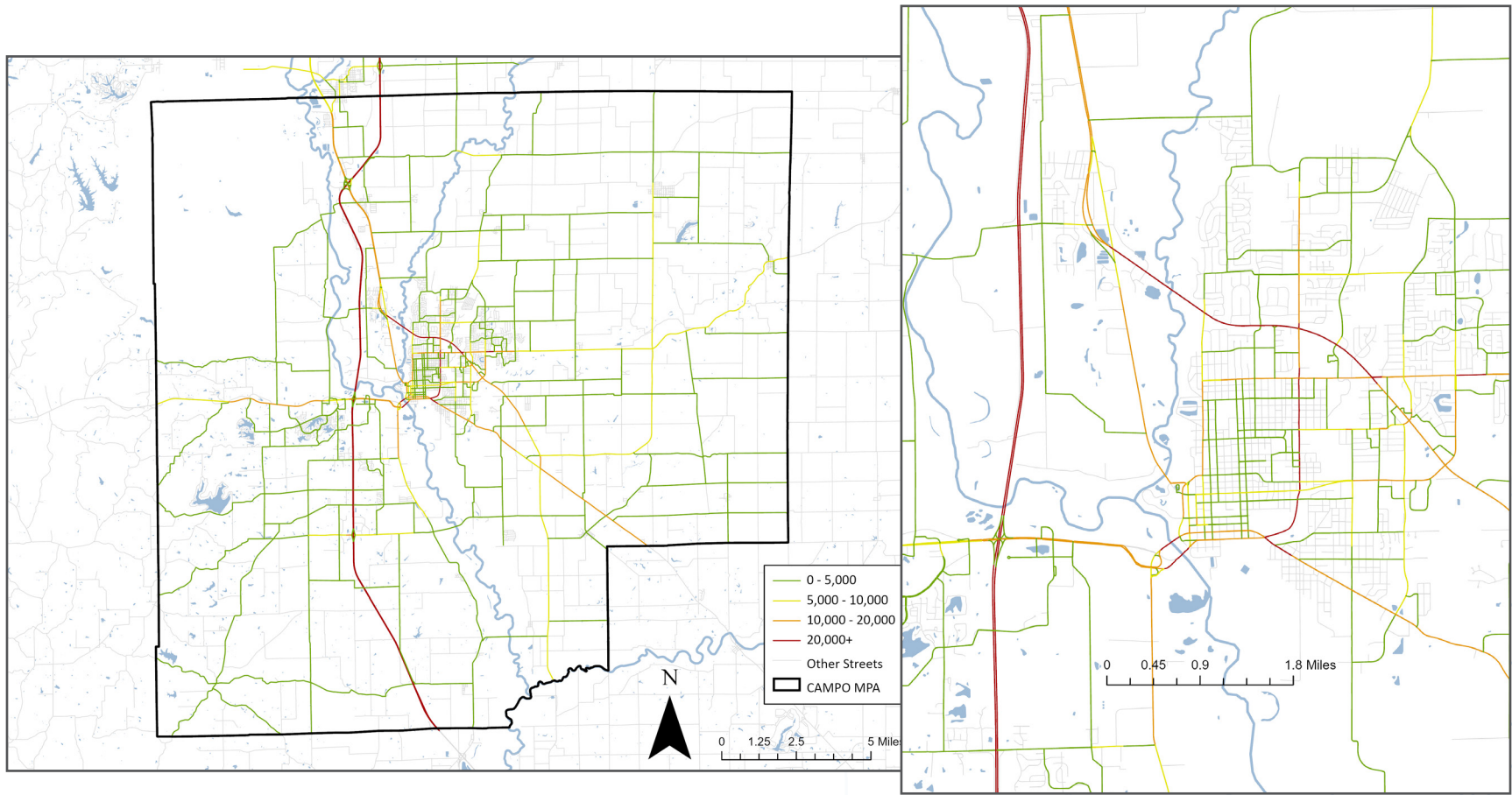


Figure H-6: Scenario 2a Average Daily Traffic (ADT)

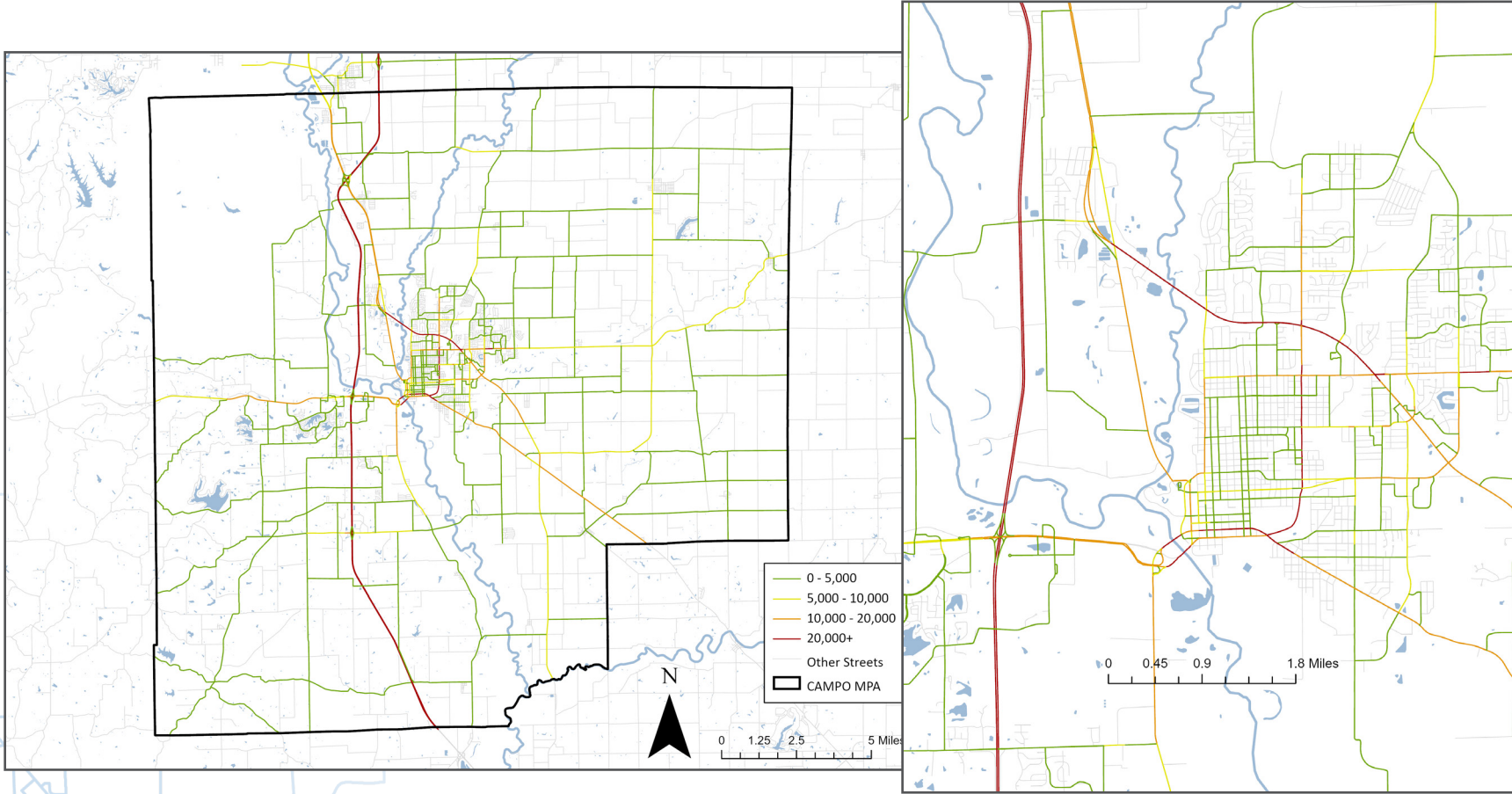


Figure H-7: Scenario 1 Level of Service

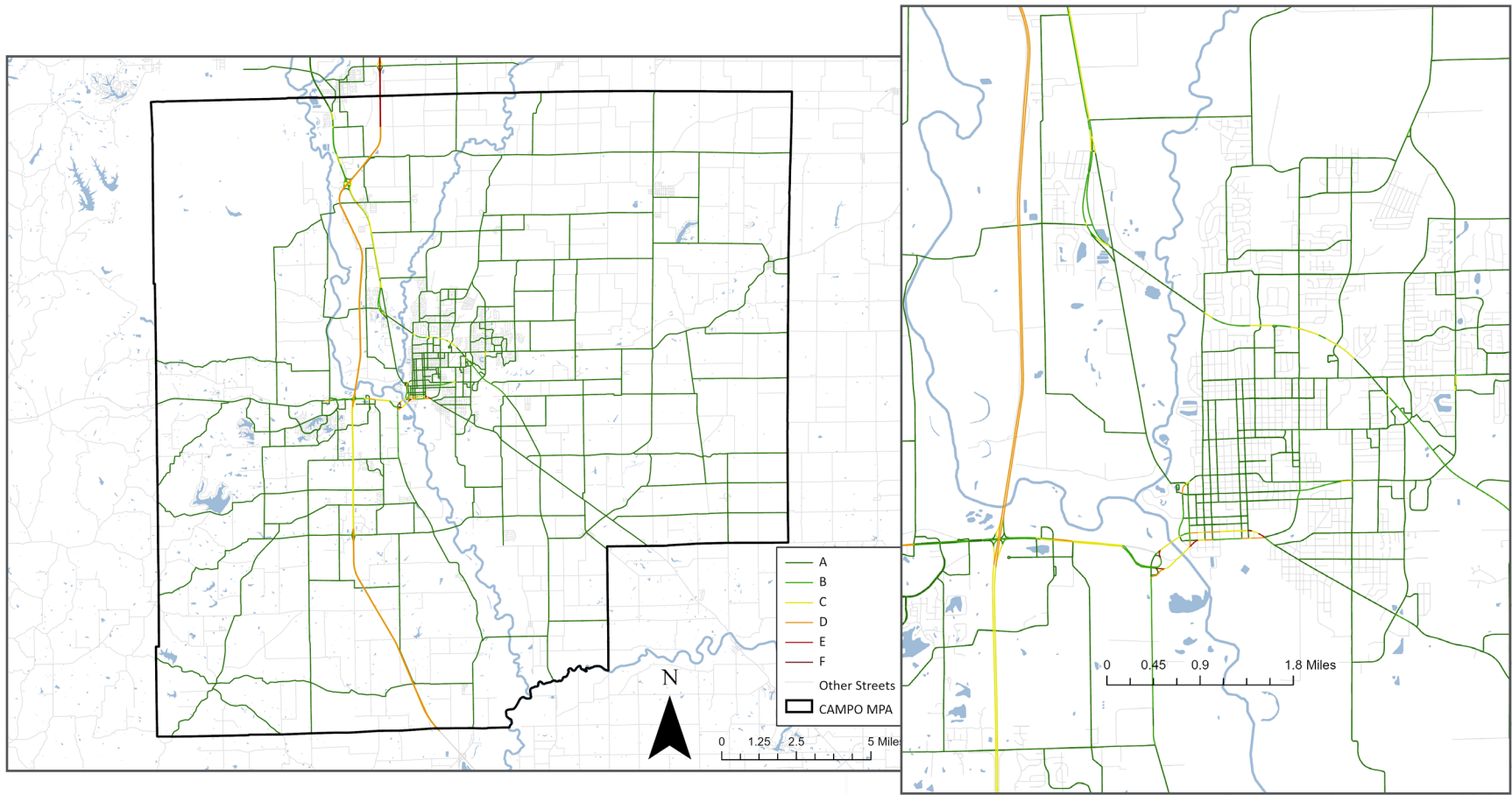
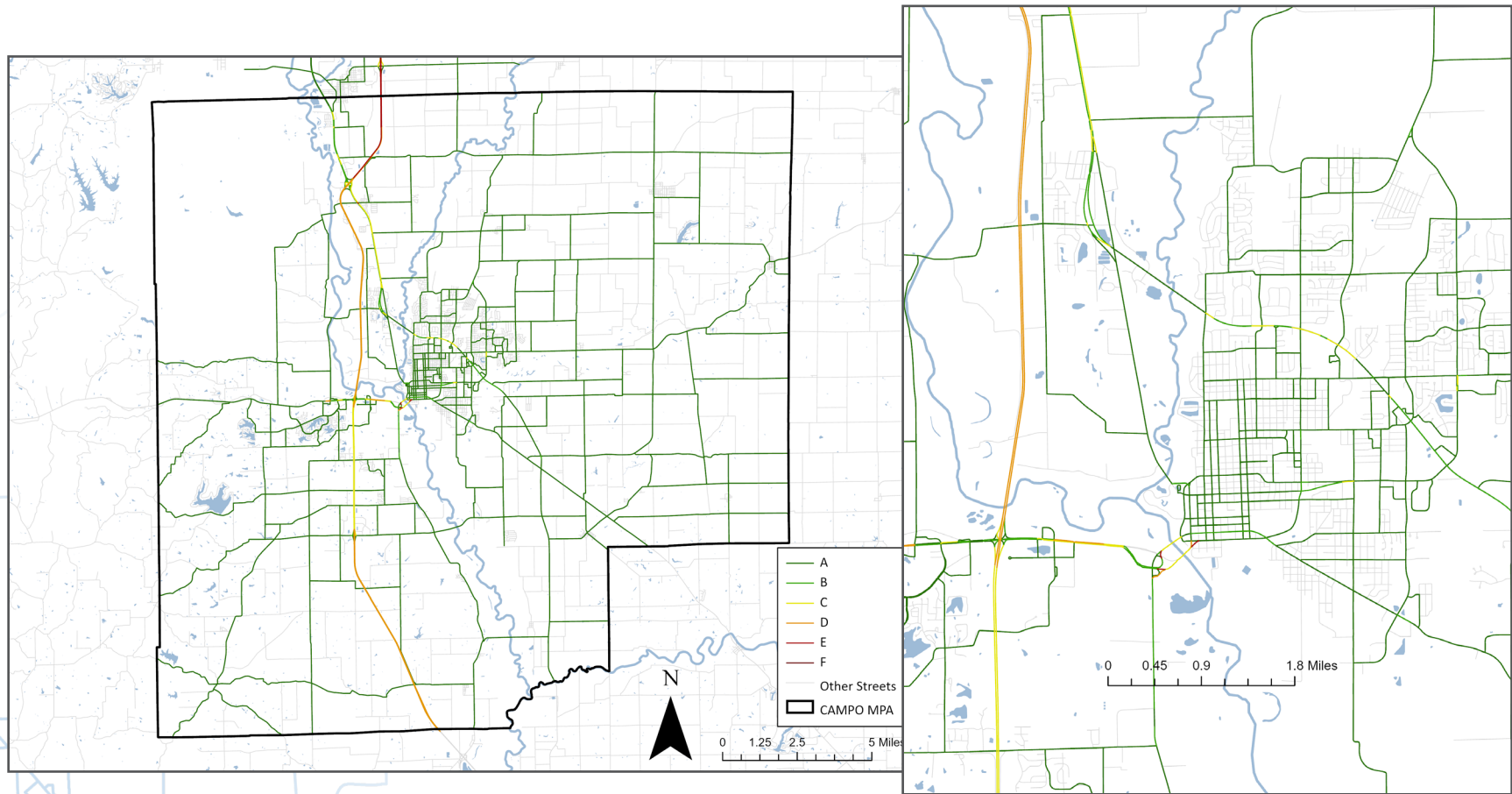


Figure H-8: Scenario 2a Level of Service



TRANSIT ENHANCEMENT SCENARIO

A transit enhancement scenario was evaluated as part of the 2015 MTP and discussed here for reference.

In the transit enhancement scenario, the travel demand model is used to evaluate various factors including population density, transit route alignments, service frequency, access to employment centers, street design, gas prices and transit fares to predict transit demand in the region. The model provides technical guidance on answering questions such as:

- How will the transit demand change over the next 20 years?
- How would additional routes or service improvements impact ridership?

The model results indicate that the transit ridership could increase by 15 – 20 percent with the improvements proposed in the transit enhancement scenario compared to the 2040 baseline scenario. Table H-1 shows the increases in transit ridership in 2040 based on the improvement to the regional fixed-route transit service. Due to the low percentage of transit trips compared to vehicle trips, the increase in transit had very little effect on roadway volumes or LOS.

Table H-1: Forecasted Transit Ridership in the MPA (2015 MTP)

YEAR	TRANSIT ASSUMPTIONS	DAILY RIDERSHIP
2010	Baseline (4 routes)	1,015
2040	Baseline (5 routes)	2,376
2040	Baseline + Walesboro & Edinburgh Routes	2,744
2040	Baseline + Walesboro & Edinburgh Routes + 15 Minute Frequencies on Routes 1 & 4	3,018

Figure H-9: 2015 MTP Transit Enhancement Scenario Average Daily Traffic

Transit Enhancements Scenario Change in ADT vs. 2040 Base Scenario

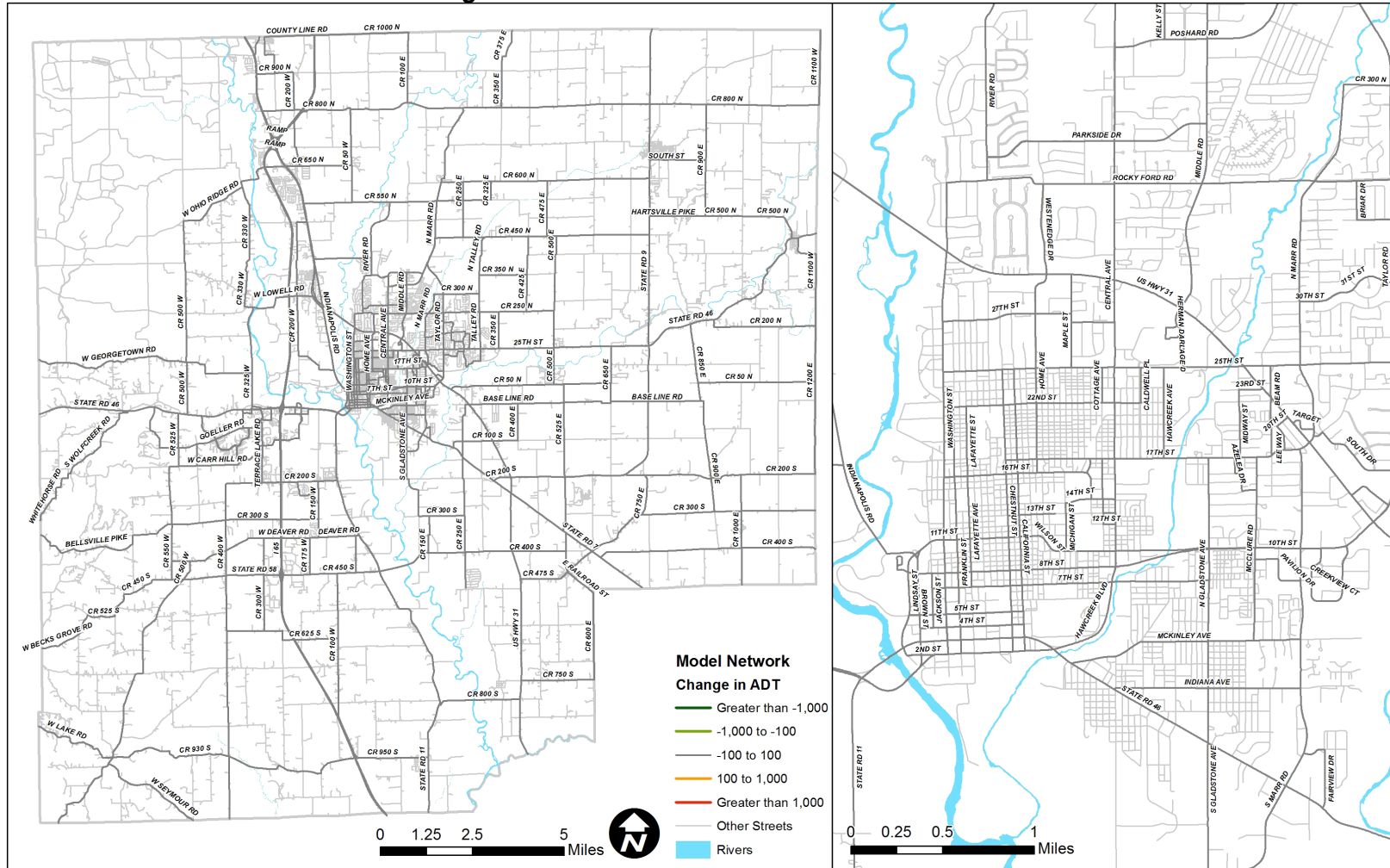


Figure H-10: 2015 MTP Transit Enhancement Scenario Level of Service

Transit Enhancements Scenario Levels of Service (LOS)

