

The Jackson Area Comprehensive Transportation Study

2050 Long Range Transportation Plan

September 2023 Draft



JACTS

JACKSON AREA COMPREHENSIVE
TRANSPORTATION STUDY

Chapter 1

Introduction

In November 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA), the current federal transportation funding legislation. This is the sixth bill for surface transportation that has shaped the program to meet the nation’s changing transportation needs. The current legislation continues to supply the funds and refine the programmatic framework for investments needed to maintain and grow transportation infrastructure.

As the designated metropolitan planning organization (MPO) for the Jackson urbanized area, the Region 2 Planning Commission (R2PC) through the Jackson Area Comprehensive Transportation Study (JACTS) is responsible for the development of a multi-modal, Long-Range Transportation Plan (LRTP). The LRTP identifies the Jackson area's transportation needs through the year 2050, including the projects and policies to meet those needs. The IIJA continues to require the plan to be updated on a five-year cycle and cover at least a 20-year planning horizon.

The development of the JACTS 2050 Long Range Transportation Plan was a cooperative effort undertaken by R2PC, the Jackson County Department of Transportation (JC DOT) Jackson Area Transportation Authority (JATA), City of Jackson, Michigan Department of Transportation (MDOT), Federal Highway Administration (FHWA), the 2050 LRTP Steering Committee, other local units of government, and concerned residents throughout Jackson County. Development of the plan was initiated in December 2022 with a Steering Committee Kickoff meeting on June 1, 2023.

The Jackson area transportation planning process examined and evaluated the existing transportation facilities and travel characteristics to measure the present operating efficiency. An understanding of the relationships between land use, population, and trip making characteristics is essential for anticipating future needs. The primary concern in the long range planning process is to develop a system that will meet the transportation demands of the Jackson area. In addition to safety and time considerations, emphasis will continue to be on preserving and maintaining the existing facilities.

The plan lays the groundwork for the proposed improvements to the area’s transportation system in a safe, efficient and economic manner. The projects are then included in R2PC’s short-range plan, known as the Fiscal Year (FY) 2023-2026 Transportation Improvement Program (TIP). The FY 2023-2026 TIP is a program for scheduling the implementation of projects selected through the long range transportation planning process.

The Jackson Metropolitan Planning Organization (MPO)

Federal law requires that each urbanized area with a population of more than 50,000 persons establish a designated MPO to ensure that it has a continuing, cooperative, and comprehensive transportation planning process. The “3 C” process that the federal transportation bill ISTEA – the Intermodal Surface Transportation Efficiency Act of 1991 – outlined provides guidelines for consideration of all transportation interests. The

following are important to remember when engaging in the transportation planning process across jurisdictions:

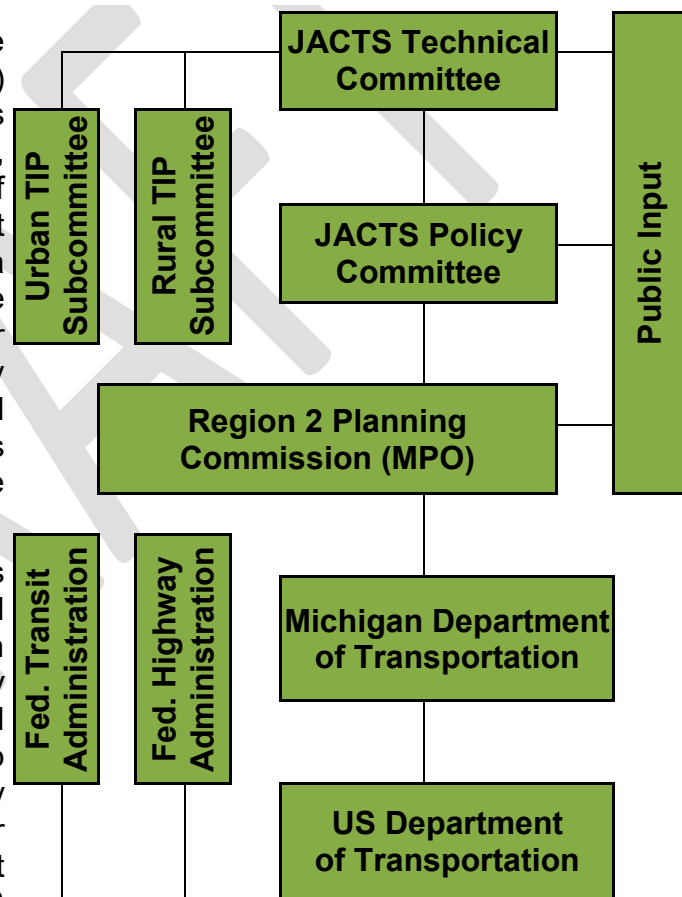
- **Connections:** The convenient, rapid, efficient, and safe transfer of people and goods among modes that characterize comprehensive and economic transportation services.
- **Choices:** Opportunities afforded by the multi-modal system that allow transportation users to select their preferred means of travel.
- **Coordination and Cooperation:** Collaborative efforts of planners, users, and transportation agencies to address travel demands by investing in dependable, high-quality transportation services either by a single mode or by two or more modes in combination.

Relevant Boards and Committees

The Jackson Area Comprehensive Transportation Study (JACTS) Technical Advisory Committee (TAC) is comprised of staff (planners, engineers, managers, etc.) from units of government and modal agencies (transit and airport) within the metropolitan area boundary; representatives from the MDOT; and, a non-voting member representing the Federal Highway Administration. The TAC reviews all plans and programs and makes technical recommendations to the JACTS Policy Committee.

The JACTS Policy Committee is comprised of elected and appointed officials from units of government within the metropolitan area boundary. They are involved in formulating and implementing policies pertaining to transportation matters. The Policy Committee serves as a forum for discussion and analysis of development and improvement issues. The JACTS Policy Committee forwards its recommendations to the R2PC Board.

Figure 1-1
JACTS Organizational Structure



The R2PC Board, also known as the R2PC Full Commission or R2PC Executive Committee, reviews and affirms the recommendations of the JACTS TAC and/or Policy Committee. Together, the three committees direct the work of the R2PC staff in completing three primary documents, 1) the Unified Work Program (UWP), which documents the work to be completed during the fiscal year; 2) the Transportation Improvement Program (TIP), which includes a list of the transportation and transit projects

to be funded with federal funds within a 4-year time period; and, 3) the Long-Range Transportation Plan.

Study Area

The 2050 LRTP study area encompasses the Jackson metropolitan area boundary, which covers the entirety of Jackson County. The U.S. Census-designated urbanized area boundary for Jackson includes the City of Jackson and all or parts of Blackman, Leoni, Napoleon, Sandstone, Spring Arbor, and Summit Townships. All Census block areas within this core which have a population density of 1,000 or more persons per square mile are automatically included in the urbanized area, as well as adjacent areas that have developing “urban characteristics.”

Plan Development

This plan is anticipated to be updated in 2028, based on current state and federal transportation requirements.

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Chapter 2

Vision, Goals, & Objectives

The vision, goals, and objectives are meant to guide the long range transportation planning process over the life of the plan. The development of these elements is a critical part of the planning process. They are used as a benchmark to determine if future projects align with the vision for the Jackson MPO, and are a means of measuring the success of implementing the plan. They also reflect the values and principles of the community, measuring the expectations for the quality of life.

The vision, goals, and objectives for the plan are listed in the section below. They were developed through meaningful public input to ensure that the Jackson MPO 2050 Long Range Transportation Plan correctly captured what the community envisions for the future ideal Jackson transportation system. Sources of input include a public survey and discussions at steering committee meetings. The guidance from the new federal transportation legislation, the Infrastructure Investment and Jobs Act (IIJA), that was signed into law by President Biden on November 15, 2021, also influenced these planning elements. The ten planning factors that come from the federal transportation bill provided a strong blueprint for the plan's goal. The goals align with the needs of the Jackson MPO and the local communities within the planning area, while also meeting state and federal requirements. The objectives are developed to ensure that the future needs of the local transportation system are considered.

The Jackson MPO also supports the state's mission to improve traffic safety by fostering effective communication, coordination and collaboration among public and private entities in support of the "Toward Zero Deaths" initiative on all federal, state, and locally maintained roads.

2050 Long Range Transportation Plan Vision

Create a transportation system that promotes safety and provides strong, multimodal connections to and within communities that is sustainably funded and well-maintained.

Goals & Objectives

Goal 1. Safety & Security

Increase the safety and security of the transportation system for motorized and non-motorized users.

Objectives

- 1.1 Reduce crashes and eliminate hazardous locations.
- 1.2 Minimize crashes and conflicts among all transportation modes and users.
- 1.3 Use best practices to increase safety.
- 1.4 Continue to support MDOT's safety targets and Vision Zero.

Goal 2. Accessibility & Mobility

Increase the accessibility and mobility options available to people and freight.

Objectives

- 2.1 Minimize transportation barriers for all people, especially the physically challenged, senior citizens, young people, and persons who do not have automobiles available, have limited economic means, or choose not to travel by automobile.
- 2.2 Provide appropriate transportation connections, especially for non-motorized modes, to major land uses and activity centers within Jackson County, including residence, employment, recreation, community facilities, and commercial centers.
- 2.3 Improve or increase facilities for pedestrians and bicyclists.
- 2.4 Design the transportation system to operate efficiently.
- 2.5 Provide enhanced, improved capacity accessibility to the transportation system to move freight and enhance the range of freight service options available.

Goal 3. Preservation

Emphasize the preservation of the existing transportation system.

Objectives

- 3.1 Based on the goals, policies and plans of local communities, preserve and maintain the existing transportation network.
- 3.2 Support transportation system maintenance.
- 3.3 Emphasize system rehabilitation rather than expansion, except for the provisions of the I-94 Modernization Study.
- 3.4 Incorporate new technologies in well-researched, purposeful ways.

Goal 4. Community Impact & Environment

Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

Objectives

- 4.1 Minimize disruptions made by the transportation system to neighborhoods, especially to ensure that they do not disproportionately affect low-income and minority populations.
- 4.2 Preserve historic sites and districts, and ensure minimal impact if necessary.
- 4.3 Conserve prime agricultural and natural resource areas and open spaces.
- 4.4 Minimize disruptions to natural resources, environmentally sensitive areas, wetlands, and other critical areas and habitats.
- 4.5 Support projects that reduce greenhouse gases, air pollutant concentrations, and noise, such as electric cars, public transit, and non-motorized transportation.

4.6 Encourage policies, plans and projects that minimize energy resources consumed for transportation.

Goal 5. Integration & Connectivity

Enhance the integration and connectivity of the transportation system across and between modes for people and freight.

Objectives

- 5.1 Develop transportation services consistent with area land use, housing, water quality management, economic development, and recreation/open space plans.
- 5.2 Encourage land use policies and practices, access management, and right-of-way preservation to meet the future needs of the transportation system.
- 5.3 Ensure that the transportation system is multi-modal and intermodal in character.
- 5.4 Improve intermodal connectivity for people and freight.
- 5.5 Support the development of information technology and connected vehicle networks that integrate people and freight.

Goal 6. Economic Vitality

Support the economic vitality of Jackson County by enabling global competitiveness, productivity, efficiency.

Objectives

- 6.1 Develop an efficient transportation system that encourages tourism and job employment retention and attraction.
- 6.2 Support projects and policies that enable transportation modes to be simultaneously considered as economic development and tourism investments.
- 6.3 Improve and enhance the movement of workers.
- 6.4 Improve economic productivity and competitiveness throughout the system.
- 6.5 Encourage transportation system investments from the private sector.

Goal 7. Operations & Maintenance

Promote efficient system management and operation.

Objectives

- 7.1 Promote transportation project and technologies that reduce distance and time spent traveling.
- 7.2 Improve on-road operating efficiency through the use of transportation management techniques where possible, including Intelligent Transportation Systems (ITS).
- 7.3 Coordinate the movement of goods and persons for maximum efficiency.
- 7.4 Encourage the multiple use of transportation rights-of-way by different modes, including pedestrian and bicyclists.

7.5 Minimize capital and operating costs for all modes.

7.6 Ensure the scale and character of transportation improvements is consistent with the ability to finance such improvements.

Goal 8. Public Involvement

Encourage the public to become involved in the planning and development of transportation facilities and services.

Objectives

8.1 Provide opportunities for the involvement of all segments of the community in the development of JACTS plans and programs through multiple outlets.

8.2 Allow for timely public review and comment at key decision points in the planning and project development process.

8.3 Look for ways to include traditionally under-represented communities, especially minority and low-income populations.

8.4 Identify the needs of individual customers rather than what planners think they need.

Goal 9. Resiliency & Reliability

Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation.

Objectives

9.1 Maximize quality and minimize quantity of storm water run-off.

9.2 Support the development, integration, and use of local, regional, and state storm water mitigation plans and policies.

9.3 Consider the impact to the Upper Grand River watershed for any transportation project.

9.4 Consider the impact to local floodplains and wetlands for any transportation project.

9.5 Consider the impacts of extreme weather events to storm water mitigation on the transportation system.

Goal 10. Travel & Tourism

Enhance travel and tourism.

Objectives

10.1 Consider the impact on tourism when making investment decisions.

10.2 Provide and maintain economical non-motorized facilities in rural, suburban and urban areas that may transform the region into a non-motorized travel destination.

10.3 Integrate water trails into the transportation framework to promote travel and tourism in the region.

10.4 Emphasize context-sensitive designs that preserve historic character.

Chapter 3

Public Participation & Consultation

Public Participation Plan

Introduction & Purpose

Public participation is a critical part of the planning process. Without the involvement of local citizens, designing a program that effectively meets the needs of the public can be difficult. The Region 2 Planning Commission (R2PC), as the state designated Metropolitan Planning Organization (MPO) for the Jackson County census-designated Urbanized Area, acting through the Jackson Area Comprehensive Transportation Study (JACTS), actively seeks to incorporate the involvement of the public in its planning efforts pursuant to the Public Participation Plan (PPP) that is designed to accomplish the following goals:

- Comply with the public participation requirements of the Fixing America's Surface Transportation (FAST) Act and Infrastructure Investment and Jobs Act (IIJA).
- Provide opportunities for Jackson County residents and citizen-based organizations to identify priorities, discuss views, and provide input into plans, projects, or policies of the MPO.
- Listen, inform, and educate citizens about the MPO's planning initiatives.
- Achieve participation and partnership among the public, the Region 2 Planning Commission, the Michigan Department of Transportation (MDOT), Federal Highways Administration (FHWA), Federal Transit Administration (FTA) and local governmental jurisdictions in the planning and execution of projects.

The purpose of this document is to provide a clear directive for the public participation activities undertaken by JACTS as it pertains to the MPO's primary responsibilities that include the development and implementation of the Long Range Transportation Plan (LRTP), the Transportation Improvement Program (TIP), and the Urban Transportation Unified Work Program (UWP).

This is accomplished by adhering to the following principles:

- Early and continuous involvement
- Reasonable public availability of technical data and other information
- Collaborative input on alternatives, evaluation criteria, and mitigation needs
- Open meetings where matters related to transportation policies, programs, and projects are being considered
- Open access to the decision-making process prior to closure

Compliance with Federal Requirements

The JACTS Public Participation Plan was originally adopted in 1994 to meet the requirements of the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). In 1998, ISTEA was succeeded by the Transportation Equity Act for the 21st Century (TEA-21). These federal acts required that MPOs develop and use a proactive public participation process that provides complete information, timely public notice, full public access to key decisions, and supports early and continuing involvement in development of Long-Range Transportation Plans (LRTPs) and Transportation Improvement Programs (TIPs). In 2006, the Safe, Affordable, Flexible and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) expanded public participation provisions requiring MPOs to develop enhanced participation plans, have public meetings at accessible locations and at convenient times, include visualization techniques in transportation plans and TIPs, and make plans available online. The FAST Act further emphasized these requirements when it passed in 2015 and the IIJA continues to stress the importance of public participation.

Title VI of the Civil Rights Act of 1964 requires agencies receiving federal funds to provide language assistance measures for individuals with limited English proficiency. If you require translation of any Region 2 Planning Commission documents or need assistance at a public meeting, please contact the Region 2 Planning Commission office staff at (517) 788-4426 or submit a comment form online at www.region2planning.com/contact.

Description of Public Participation Activities

JACTS will consult with governmental units within the MPO, local economic development organizations, freight related businesses, non-motorized transportation organizations, local transportation providers, and other interested parties in the development of the LRTP, TIP, and the UWP. The Jackson MPO will also conduct outreach, public comment periods, and public meetings.

The three documents in the above paragraph will be published for a minimum of 30 days to receive public comment before adoption. For any amendments that are deemed necessary once any of the publications are adopted, the Jackson MPO shall publish at least one notice in a local news publication of general circulation within the Jackson Urbanized Area prior to approval of the amendment.

The JACTS Participation Plan consists of the following tools:

- 1) Notice of Meetings and Public Comment Periods
- 2) Annual Report
- 3) Public Hearings
- 4) Internet, Newspaper & Other Media
- 5) Outreach
- 6) Visualization Techniques
- 7) Environmental Justice
- 8) Development and Analysis
- 9) Performance Measures

1. Notice of Meetings & Public Comment Periods

JACTS maintains two standing committees to advise the R2PC Board. The JACTS Technical Advisory Committee (TAC) members include engineers, planners, and other

technical staff from the Jackson County Airport, transit agencies and local units of government within the metropolitan area boundary, representatives from MDOT and FHWA. The committee reviews plans and programs and makes technical recommendations to the JACTS Policy Committee.

Members of the JACTS Policy Committee are elected and appointed officials representing local units of government within the metropolitan area boundary. The JACTS Policy Committee acts on recommendations from the TAC and recommends formal action to the R2PC Board.

The R2PC Board is composed of two committees; the Full Commission and the Executive Committee. The Full Commission is made up of the local units of government within Jackson, Hillsdale, and Lenawee counties that contribute annually to the operating costs of the commission. The Executive Committee is comprised of a subset of representatives from the Full Commission. All members of R2PC have representation on the R2PC Board and final authority over all Jackson MPO decisions. All meetings of the JACTS TAC, JACTS Policy Committee and R2PC Board are open to the public and held at locations which comply with the Americans with Disabilities Act (ADA) regulations. Individuals with disabilities may request aids/services within a reasonable time period to participate in the meeting. To do so, please submit a comment form on the R2PC website at www.region2planning.com/contact. Additionally, a public comment item is included on all agendas for any person wishing to address committee members.

Meeting notifications, including date, location, and agenda, are published on the R2PC website, www.region2planning.com, in the Jackson Citizen Patriot newspaper, and in its digital presence, www.mlive.com. Individuals who would like to be placed on the e-mail list to receive meeting notifications can do so by filling out the R2PC comment form at www.region2planning.com/contact.

a. Special Meetings, Workshops, and Public Meetings

Although the majority of the MPO's business can be conducted at regularly scheduled meetings, when significant planning initiatives arise including updating the LRTP or developing the TIP, staff may conduct special meetings, workshops, or public meetings. These events will be administered in the same manner as regularly scheduled meetings.

When public comments are received on plans, programs, or other MPO activities, they are summarized and forwarded to the JACTS TAC, JACTS Policy Committee and the R2PC Board prior to any formal action to adopt or approve the plan, study, or project by the MPO. Copies of comments are kept on file and are available for public review. Comments requesting a formal response are answered within 30 days.

2. Annual Report

The agency's annual report reviews and highlights the activities that R2PC has undertaken during the previous fiscal year and is distributed to the R2PC membership and all governmental jurisdictions, agencies, committee members, and individuals included on the R2PC's general mailing list. The report is published and presented at the R2PC annual meeting, and is available on the agency's website.

The report is a summary of the previous year's activities in transportation, community planning, and traffic safety. Content includes updates on planning studies, completed and

upcoming roadway construction projects, and other general information concerning the activities of the R2PC. The report also contains the names, phone numbers, and e-mail addresses of the staff members. R2PC anticipates to publish annual reports beginning in Calendar Year (CY) 2023.

3. Public Meetings

Before approving any federally required document, the Jackson MPO will conduct a public meeting to solicit comments. Such meetings will take place during the regularly scheduled JACTS meeting, unless deemed otherwise by the JACTS Policy Committee. Notice of the opportunity for public comment will be administered in the same manner as notice of regularly scheduled meetings. To supplement the opportunity for public comment, the Jackson MPO may also engage in hosting public information/open house meetings in publicly convenient and accessible locations.

4. Internet, Newspaper, & Other Media

Staff will use the internet and the newspaper to inform the public of the development of transportation planning processes and products, such as the LRTP and the TIP. The internet and email will be used as a regular part of the public participation notification process, as they have a broad public reach. Notices will also go out to the public by means of the newspaper, on the radio, and at community institutions like libraries, churches, and schools to help bridge the digital divide to reach the public without internet access when appropriate.

5. Outreach Activities

Staff will attempt to identify and contact special interest groups in the community to assure their opportunity to have input and to encourage the involvement of persons who have traditionally been under-served. This would include organizations such as minority populations, low-income populations, private transportation providers, and others. These groups will receive a direct mailing which describes the transportation planning process and their opportunity for input. This includes, but is not limited to, the following:

- Public agencies
- Private transportation providers
- Law enforcement agencies
- Providers of freight transportation
- Railroad companies
- Environmental organizations
- Major employers
- Chambers of commerce
- Travel and tourism offices
- Human service agencies
- Interested citizens

- Agencies and organizations that represent:
 - The elderly
 - The disabled
 - Non-motorized users
 - Minority groups
 - Low-income populations

This list will be continuously updated and groups may be added at any time.

These groups may be notified when:

- 1) A particular agenda item directly impacts an agency or their clientele.
- 2) Planning and development of a major project such as an update of the LRTP or TIP.
- 3) At the request of a JACTS committee member.

6. Visualization Techniques

R2PC will utilize a variety of visualization activities to collect, inform, and educate the public regarding transportation projects, plans, and programs. The activities may include mapping through Geographic Information Systems (GIS), computer model simulations, and photographs. As technology continues to change, visualization techniques will evolve to improve interaction with the public.

7. Environmental Justice

In April 1997, the US Department of Transportation (DOT) issued the environmental justice order to address Environmental Justice in Minority Populations and Low Income Populations (DOT Order 5610.2). The order describes the process for incorporating environmental justice principles into all DOT programs, policies, and activities.

Environmental justice (EJ) is an important part of the planning process and must be considered in the development of the LRTP, TIP, and other JACTS projects. There are three fundamental principles of environmental justice:

- 1) To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority and low-income populations;
- 2) To ensure the full and a fair participation by all potentially affected communities in the transportation decision-making process; and
- 3) To prevent the denial of, reduction in, or significant delay in the receipt of, benefits by minority and low-income populations.

Staff will identify residential, employment, and transportation patterns of low-income and minority populations so that their needs can be identified and addressed and the benefits and burdens of transportation are fairly distributed.

Staff will continue to evaluate and improve the Public Participation Plan to eliminate

barriers to low-income and minority involvement. However, the Jackson MPO cannot do this alone. Agencies and individuals who are connected to these communities are welcomed to participate and facilitate public involvement, Only by the participation of these individuals and groups can JACTS/R2PC advance the letter, spirit, and intent of environmental justice in transportation.

8. Development & Analysis

The Jackson MPO will continue to analyze and update the demographic profile of the transportation planning area that includes the location of minority and low-income populations as required by environmental justice legislation. Maps will be developed showing the proposed LRTP projects in relationship with these areas.

9. Performance Measures

R2PC will determine the success of the Public Participation Plan by evaluating the number and diversity of residents involved in the public involvement process.

Conclusion

The R2PC Public Participation Plan will be reviewed and monitored on a regular basis to maintain its timeliness and effectiveness. Following the principles of the Public Participation Plan will ensure the opportunity for access by the public and encourage proactive public participation in all aspects of the transportation planning process. This increased access for local residents and other groups will help foster the continuous improvement of the Jackson MPO plans and programs to best serve the residents of Jackson County.

Comments or questions concerning the Public Participation Plan should be directed to:

Brett Gatz, Planner
Region 2 Planning Commission
Jackson County Tower Building
120 W. Michigan Avenue - 9th Floor
Jackson, MI 49201
(517) 768-6706
bgatz@mijackson.org

Consultation

NOTE: The information below will continue to be updated as the project moves forward.

MAP-21, a previous federal transportation bill, required that the Jackson MPO consult with federal, state, and local entities that are responsible for the following:

- Economic growth and development
- Environmental protection
- Airport operations
- Freight movement
- Land use management
- Natural resources
- Conservation
- Historic preservation
- Human service transportation providers

The goal of this process is to eliminate or minimize conflicts with other agencies' plans and programs that impact transportation.

Public Participation & Consultation

There were multiple opportunities for public input throughout the planning process. Monthly updates were given at the JACTS Technical and Policy Meetings. JACTS meetings were also advertised on the Region 2 Planning Commission website. A Project Steering Committee was developed and met a few times to gather specific public input. A project contact list was also developed and used to push out notifications that public comment periods were open on draft chapters of the plan.

Figure 3-1
Project Website Homepage



Public Outreach

A memo, dated May 17, 2023, was provided to the following agencies notifying them of the 2050 Long Range Transportation Plan Public Kickoff Meeting on June 1, 2023:

- City of Jackson
- County of Jackson
- The Enterprise Group
- Jackson Area Comprehensive Transportation Study Policy Committee
- Jackson Area Comprehensive Transportation Study Technical Committee
- Jackson Area Transportation Authority
- Jackson County Board of Commissioners
- Jackson County Chamber of Commerce
- Jackson County Department of Transportation
- Jackson County Planning Commission
- Jackson Downtown Development Authority
- Michigan Department of Transportation
- Region 2 Planning Commission
- Walkable Communities Coalition

Public notices for the 2050 Long Range Transportation Plan Steering Committee Meetings were posted on the Region 2 Planning Commission website. These entities were also notified each time draft chapters of the plan were made available for review. They will be notified when the 30-day public comment period begins, when public meetings are held in the fall of 2023, and when the final draft plan is available for review.

Memos notifying parties on the project contact list were distributed via email or mail for the following project updates. Copies of these memos, and other related ones, are found in Appendix A.

Table 3-1: Meeting Date & Notification Table

Date	Plan Milestone Notification	Groups Notified
<i>May 17, 2023</i>	June 1, 2023 Steering Committee Kickoff Meeting	-Project Contact List -Project Steering Committee -JACTS Technical Committee -JACTS Policy Committee -Region 2 Planning Commission -Walkable Communities Coalition
<i>June 7, 2023</i>	Chapters 4, 5, 7, 8, and 12 draft review	-JACTS Technical Committee -JACTS Policy Committee -Region 2 Planning Commission
<i>July 5, 2023</i>	Chapters 2, 6, 9, 10, and 11 draft review	-JACTS Technical Committee -JACTS Policy Committee -Region 2 Planning Commission
<i>July 6, 2023</i>	July 18, 2023 Steering Committee Meeting	-Project Contact List -Project Steering Committee -JACTS Technical Committee -JACTS Policy Committee

		-Region 2 Planning Commission -Walkable Communities Coalition
<i>August 9, 2023</i>	Chapters 1, 3, 13, and 14 draft review	-JACTS Technical Committee -JACTS Policy Committee -Region 2 Planning Commission
<i>August 15, 2023</i>	August 23, 2023 Steering Committee Meeting	-Project Contact List -Project Steering Committee -JACTS Technical Committee -JACTS Policy Committee -Region 2 Planning Com. -Walkable Communities Coalition

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Project Steering Committee

The 2050 Long Range Transportation Plan Steering Committee was assembled to provide specific input into the project. Steering Committee meetings were held on June 1, 2023, July 18, 2023, and August 23, 2023 to discuss the plan and provide opportunity for public engagement. The committee was arranged to gather input from agencies who represent local communities, Act 51 Agencies, county-wide transit services, aging population, mobility impairment, advocates for non-motorized transportation, traffic safety, and state transportation. Membership included representatives from:

- Region 2 Planning Commission
- JACTS Policy Committee
- Jackson County Department of Transportation
- City of Jackson Engineering Division
- Jackson Area Transportation Authority
- MDOT
- Jackson County Chamber of Commerce
- Consumers Energy
- Region 2 Planning Commission Staff

Response/Comments

A list of the public comments that the Region 2 Planning Commission receives during the planning process will be provided below. The 30-day public comment period will start on September 15 and last until October 16.

Figure 3-2 Project Website Meeting Announcement

JACTS 2050 Long Range Transportation Plan Steering Committee Meeting

There will be a JACTS 2050 Long Range Transportation Plan Steering Committee Meeting on Tuesday, July 18, 2023 at 11:00 a.m. This meeting will be held at the Jackson County Tower Bldg., 120 W. Michigan Ave., 17th Floor, Jackson, MI...

[read more](#)

Chapter 4

The Existing Transportation System

The Jackson MPO is served by several modes of transportation. Although the focus of transportation planning tends to be on the road network, the other modes of transportation are also essential to the community. It is important to consider how all of the modes are used so that people and goods can move safely and efficiently. In this chapter, an overview of each existing mode of transportation within the Jackson MPO is given. The current local and regional plans of each mode are laid out along with the highlights of future forecasts, issues, and needs that should be addressed. For information on how these modes coordinate with statewide plans and studies, see Chapter 5.

The Road Network

The road network is the largest component of the transportation system within the Jackson MPO. The roads are used by people in vehicles every day for work, travel and recreation. They are also used by the trucking industry to haul freight, pedestrians to travel in areas where there are no sidewalks, and by bicyclists where there are no separated bicycle infrastructure. The road network is the most critical part of the area's transportation infrastructure.

The following is an overview of the existing road network, maintenance and funding strategies, important policies, existing traffic conditions, existing plans, and future forecasts, issues, and needs for the road system.

Existing Road Network

Regional Road Network

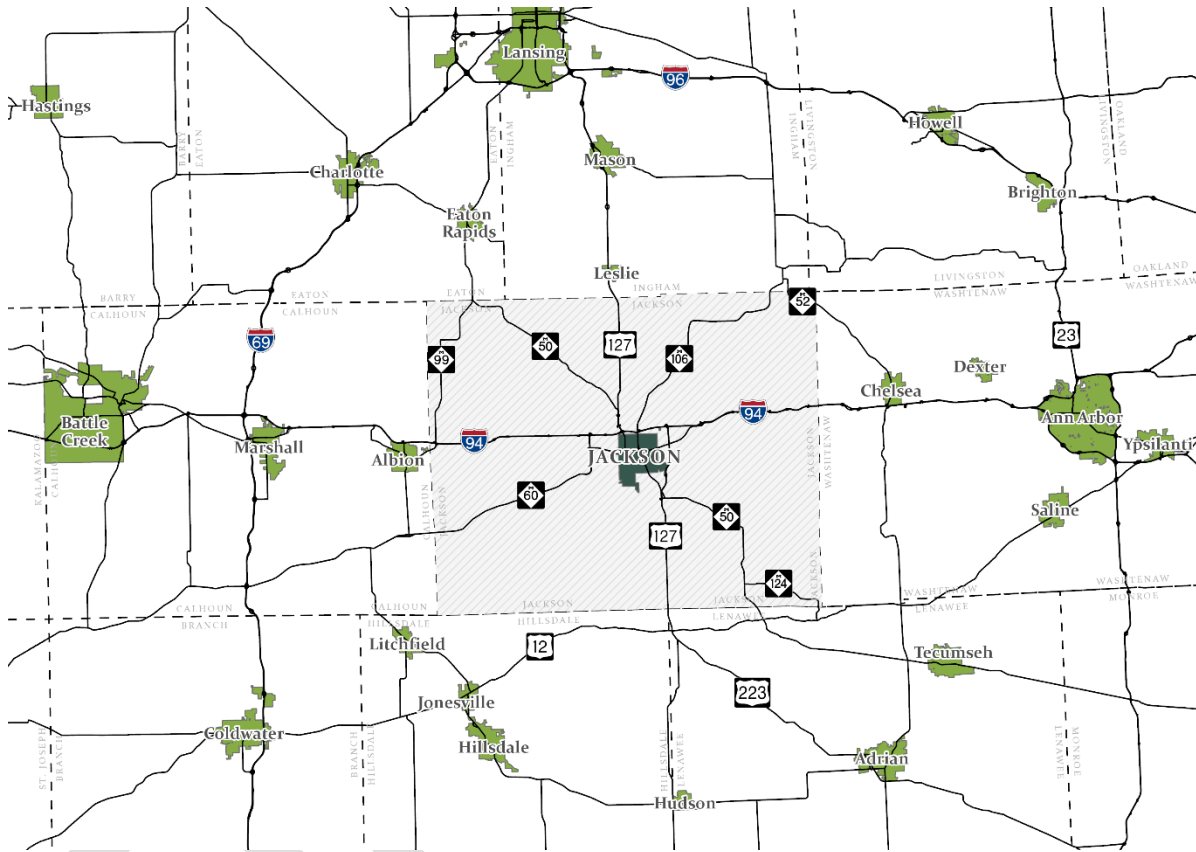
Jackson County, located in south-central Michigan, is fortunate to be positioned on the freeway network linking Michigan and the Midwest to other areas of the United States. Interstate 94 (I-94), connects the Jackson MPO to Ann Arbor, Detroit, and Canada to the east and Battle Creek, Kalamazoo, and Chicago to the west. The City of Detroit is approximately 73 miles east of the City of Jackson and the City of Chicago is approximately 205 miles west of Jackson.

US-127 provides a connection to Lansing to the north and continues south into Ohio, traversing Jackson County. M-50 is a state trunkline highway that runs from the northwest to the southeast through the county, connecting the City of Jackson to the Village of Brooklyn. M-50 provides connections outside the County to Charlotte and to the Grand Rapids metropolitan area to the northwest and to Tecumseh and Monroe to the southeast. M-60 is another state trunkline highway that connects Jackson to southwest Michigan. M-60, terminating at I-94, runs through Spring Arbor and Concord before extending beyond the County through the rural countryside to Niles. M-106 is another state trunkline that begins in downtown Jackson and extends beyond the County to the northeast.

There are additional highways within Jackson County outside of the City of Jackson. M-124 provides an alternate connection from the Village of Brooklyn to US-12. This route

travels through the scenic Irish Hills and provides access to many lakes and Walter J. Hayes State Park. M-99 passes through the Village of Springport. Going south, it connects to Albion in Calhoun County and to the north it runs concurrently with M-50 north to Eaton Rapids. From there, it splits and heads north to Lansing. M-52 also cuts through the northeast corner of Jackson County.

**Figure 4-1
Regional Road Network Map**



National Functional Classification System

The National Functional Classification (NFC) System is used to identify how individual roads serve the County’s road system, including factors like roadway design, speed, capacity, and the relationship to existing and future land use development. Designating roads as a part of this system also plays a role in determining eligibility for federal aid funding. Transportation agencies can describe roadway system performance, benchmarks, and targets by functional classification. As agencies continue to move towards a more performance-based management approach, functional classification will be an increasingly important consideration in setting expectations and measuring outcomes for preservation, mobility, and safety.

There are approximately 1,943 miles of roadway within the NFC system in Jackson County. The Federal Highway Administration (FHWA) provides guidelines for assigning roadways with a classification. The Michigan Department of Transportation tracks the number of miles within each county that are a part of the functional classification system. Table 4-1 lists Jackson County’s total mileage from the most recent update in 2021.

Table 4-1: NFC Roadway System Length Miles for Jackson MPO Roads (2021)

National Functional Classification Type	National Functional Classification Number	Urban Miles	Rural Miles	Total Miles
Interstate	1	9	21	31
Other Freeway	2	14	5	20
Other Principal Arterial	3	36	7	43
Minor Arterial	4	80	71	151
Major Collector	5	67	287	347
Minor Collector	6	10	159	170
Local Collector	7	382	794	1,193
Total Mileage		598	1,345	1,943

Figure 4-2, a map of the NFC system in Jackson County, is on the next page.

NFC Types

There are eight different road categories within the NFC system. Categories 1-7 are used to identify roads within the system. The higher the class number, the more important the road is to the road network. Class 0 roads are other roads in a county, but are not a part of the system. An overview of the system within the Jackson MPO is listed below.

Interstates, Other Freeways, and Other Principal Arterials. The principal arterial road system includes freeway and non-freeway classifications. The NFC Numbers for the roads found in these categories are 1 for “Interstate,” 2 for “Other Freeway,” and 3 for “Other Principal Arterial.” In the Jackson MPO, categories 1 and 2 this includes I-94 and portions of US-127 and M-60.

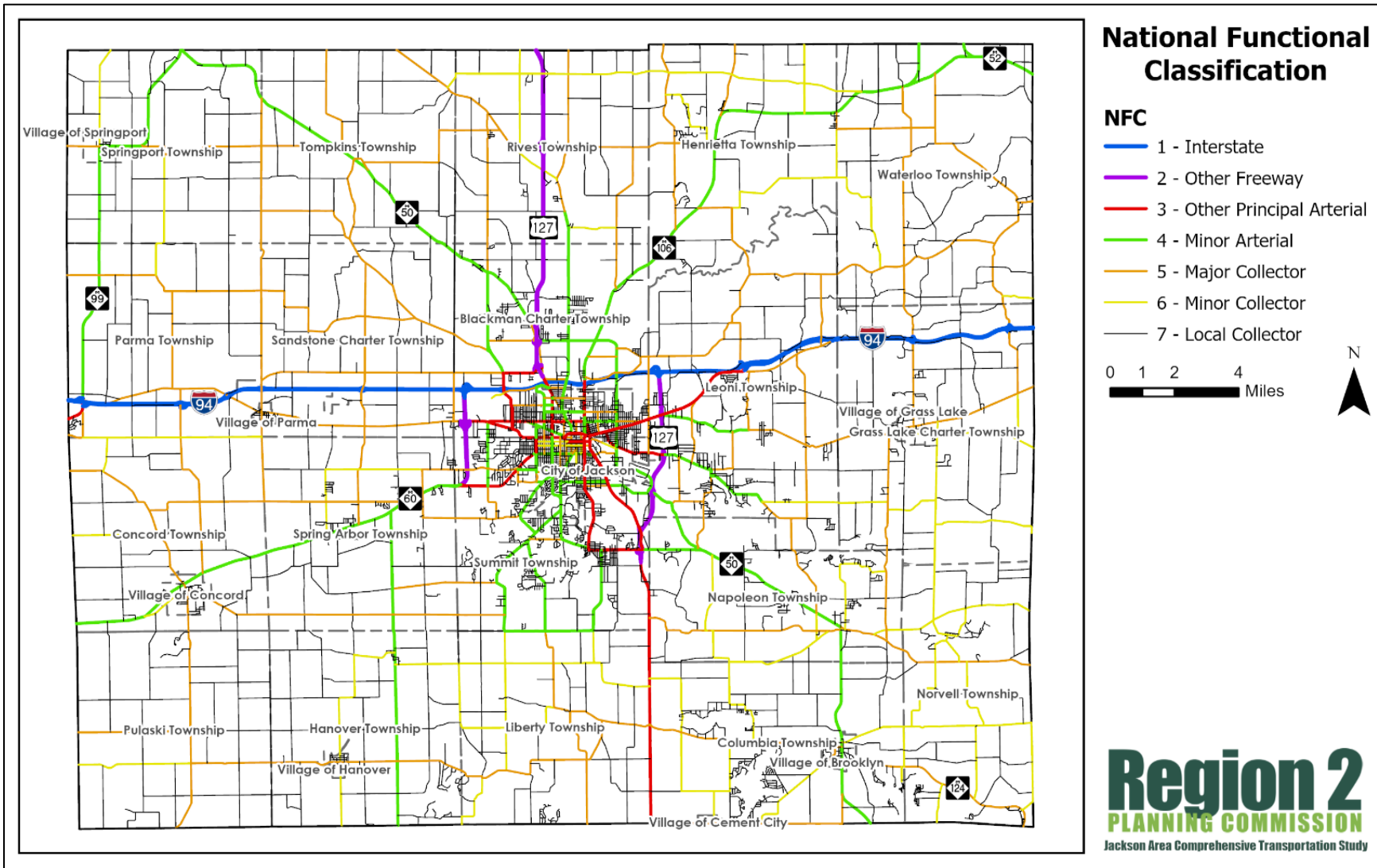
Principal arterial roads in the Jackson MPO serve the major centers of activity of the metropolitan area, have high traffic volumes, and the longest continuous trips. They also carry a high proportion of the total urban area travel on a minimum amount of mileage.

Principal arterials that connect to rural minor arterials have been identified as portions of M-99/W Michigan Ave, Spring Arbor Rd, Springport Rd/Airport Rd/Laurence Ave, M-50/N West Ave/Business US-127, Cooper St/Business US-127, West and East Michigan Ave/Business 94, Louis Glick Highway, US-127 South, E McDevitt Ave and Francis St. These routes also serve major centers of activity and have high traffic volumes. These routes differ from interstates and freeways by allowing automobile access to adjacent property.

Minor Arterials. The minor arterial street system interconnects and augments the principal arterial system, providing service for trips of moderate length at a lower level of travel mobility than major arterials. The NFC Number for the roads found in this category is 4.

Major, Minor, and Local Collectors. The collector street system provides land access and traffic circulation within residential neighborhoods, commercial, and industrial areas. Collector streets may penetrate residential neighborhoods, distributing traffic from the arterial roads through an area to the ultimate destination. The NFC Number for the roads found in these categories are 5 for “Major Collector,” 6 for “Minor Collector,” and 7 for “Local Collector.”

Figure 4-2: NFC System in Jackson County



Existing Policies & Programs

Road Maintenance & Funding

The responsibility for maintaining the roads and streets within the City of Jackson lies with the Engineering Division, Department of Community Development, and the Department of Public Works. The Engineering Division routinely collects Average Daily Traffic (ADT) volumes and maintains an inventory of pavement conditions in order to develop program improvement and maintenance projects.

Township roads in Jackson County are the responsibility of JCDOT, however, townships work with the County to ensure that the needs of the local community are being addressed. The assessment and determination of road maintenance and improvement project needs is facilitated through the collection of Average Annual Daily Traffic (AADT) volumes and pavement condition inventories (also called PASER). The seven villages - Brooklyn, Cement City, Concord, Grass Lake, Hanover, Parma and Springport - are responsible for the maintenance and operation of their street systems.

Funding improvements include appropriations from city and village general funds, state funding for general use on major and local streets through the Act 51 Michigan Transportation Fund (MTF) gas tax program, and federal transportation funds for use on the federal-aid eligible roadways. Because of the pattern and rate of development in Jackson County, the majority of the road improvement projects within the Jackson MPO have been and are likely to continue to be focused on the preservation and maintenance of the existing road system.

Complete Streets

Complete Streets is the idea that roads should be designed for all users. The Region 2 Planning Commission, the Jackson County Department of Transportation, and the City of Jackson passed Complete Streets resolutions in 2006. The Michigan Legislature passed Complete Streets legislation in 2010. State law requires that transportation projects consider all users of the roadway system. For more information about Complete Streets, see Chapter 10.

Existing Traffic Conditions

From the basis of traffic volumes in the study area, the major traffic movements identified within Jackson County are as follows:

- 1) To and from retail and hotel establishments at US-127 North near I-94 to retail and office activities along W Michigan Ave and the City of Jackson Central Business District (CBD).
- 2) From US-127 South to commercial and industrial areas along E Michigan Ave, High Street, and the CBD.

Figure 4-3
Cortland Street under Construction



- 3) From US-127 South into the CBD along S Cooper St (US-127 BR /M-50).
- 4) From the southwest at M-60 North to W Michigan Ave.
- 5) From the southwestern residential areas along Horton Rd and Kibby Rd to S West Ave and Fourth St into retail areas on N West Ave, W Michigan Ave and the CBD.

Other notable traffic movements in the area include Airport Rd from County Farm Rd to Wildwood Ave, S Brown St from W Michigan Avenue to Spring Arbor Rd, and along the Francis St corridor which carries traffic into Jackson from M-50 and Jackson College. Some of the issues include the north-south movement on the west side of the City, movement from I-94 into Downtown, access into Downtown from the east, and movement between the southeast and the southwest parts of the City. These challenges are characterized by discontinuous north/south and east/west routes.

West Ave provides access from the urban center to the major commercial areas to the north and the residential areas to the south. A new bridge over the Norfolk Southern railroad at N West Ave was completed in 2012, and intersection improvements at W Ganson St, improved traffic flow. Traffic traveling to or from Downtown with destinations at commercial uses along N West Ave can also use Wildwood Ave or W Michigan Ave.

Lansing Ave is a minor arterial which provides travel between downtown and the northern suburbs. The route terminates near the urban center. Being a moderately traveled route, Lansing Ave experiences some delays for northbound traffic where it intersects with North St during peak periods. Traffic flow between Lansing Ave and Downtown is occasionally interrupted by the railroad that crosses Steward Ave and Blackstone St to the south. Access to the north along Lansing Ave is good as the route extends into Ingham County.

M-106 (Cooper St) provides the best access from I-94 into Downtown. M-106 links I-94 traffic to industrial areas east of Cooper St near the urban center. Travel from Cooper St traverses through Downtown and continues south as M-50/US-127 BR (Brooklyn Rd), eventually connecting to US-127 South. A railroad crossing at the Cooper St/E Michigan Ave intersection compounds access problems between the CBD and I-94. The City completed the conversion of Washington St and Louis Glick Highway from one-way to two-way between Michigan Ave and Cooper St in early 2018.

The I-94 Freeway Modernization Study, completed in 2005, evaluated the need and feasibility of upgrading nine miles of the interstate between M-60 and Sargent Rd in Jackson County. Since then, the M-60, West Ave, Cooper St, Elm Ave, Hawkins Rd, Dettman Rd and Sargent Rd overpasses have all been replaced. This stretch of freeway has also been widened and many exit and entrances lanes have been extended. The intersections at several exit and entrances ramps have also been converted to roundabouts. Other upgrades include the replacement of the Grand River bridge, lights being installed, and the intersection of I-94, US-127, and M-50/West Ave being converted to a diverging diamond.

Existing Plans

Regional Transportation Safety Plan 2017

The 2017 Regional Transportation Safety Plan provides guidance on how to address safety on local roads in Jackson, Lenawee, and Hillsdale counties. Paid for by MDOT, the

Jackson County Department of Transportation (JC DOT) championed the plan. The overarching goal is the reduction of fatal and serious crash injuries within the three-county area by addressing risk within the following 6 emphasis areas:

- At-risk drivers' age groups
- Driver behavior
- Impaired drivers
- Intersection related crashes
- Single vehicle crashes
- Non-motorized crashes

City of Jackson Thoroughfare Plan 2002

The 2002 Thoroughfare Plan looked at how traffic moved through the downtown and the rest of the City. A series of one-way to two-way conversions were outlined, including Lansing Ave and Steward Ave, Cooper St and Milwaukee St. Many of these recommendations have been addressed and completed as of early 2018.

City of Jackson Master Street Plan 2010

The 2010 City of Jackson Master Street Plan was an update from the 1972 Master Street Plan. In the 2010 plan, Louis Glick Highway was identified as Business I-94 only. Both Louis Glick and Washington Ave have been converted to a two-way street. Most of the work from this plan has been implemented, and a new plan may be considered soon.

City of Jackson Community Master Plan 2016

The City of Jackson Community Master Plan, completed in 2016, proposes a framework focused on the City's long-term stability and redevelopment based on an assessment of the community's existing conditions. The mission of the plan is to build a better future community based on existing facilities and resources. The road network is seen as valuable infrastructure that can influence growth and development. The plan acknowledges the role the national functional classification system has in providing funding for federal-aid eligible roads. The City also considers street design for the transportation system through proposed "Transportation Typologies," tying together the needs of the different transportation modes available, the City's Complete Streets policy, a broader land use context, and community priorities.

Goals and strategies in the plan related to transportation include:

- The City of Jackson will continue to capitalize on its connection to regional and interstate transportation system through good stewardship and by integrating its intra-city transportation network with them. Within the City, all users and modes of transportation will be accommodated in a safe, complete network that balances efficiency of movement with appropriate access to the land uses it supports.
- Decisions will facilitate coordination between land use and transportation and among transportation modes.

- Institute a “culture of complete streets” in which all users are explicitly identified, prioritized and planned for in all transportation projects.

Plan implementation recommends that improvements occur in phases in different areas of the City. Phase I calls for investments in the transportation system downtown, including:

- Continue to implement the Downtown Jackson Streetscape Plan.
- Implement the recommendations from the 2010 Jackson Rail Passenger State Development Study, including consolidating local bus and bicycle services into a location easily accessible from the Amtrak station.
- Convert the Louis Glick Highway/Washington St loop to two-way streets.

Phase II focuses on housing and neighborhoods and includes the following priorities for the road network:

- Develop a vision for a “gateway treatment” at N Cooper St interchange welcoming visitors and providing wayfinding and introducing the Jackson brand.

Phase III highlights Citizen-Government relations, including:

- Using visioning session data from the 2016 Master Plan as a starting point, make preliminary investigations into the feasibility of a commercial and service node at the corner of High and Francis Streets that is specifically designed to meet the daily commercial and service needs of the residents of the south side of Jackson.

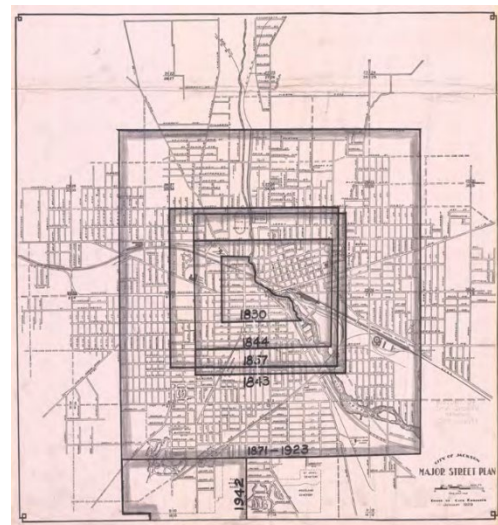
Future Forecasts, Issues, & Needs

The City of Jackson will be considering updates to the 2002 Thoroughfare Plan and the 2010 Master Street Plan, as most of the recommendations have been implemented. Engineers continue to look at what they can do to maintain and improve the road network.

JCDOT staff is considering a few projects to enhance the road system. With the change to becoming a Department of Transportation from a Road Commission in January 2013, there has been a greater focus on planning. The department is considering doing an inventory, analysis, and improvements to the top 50 worst intersections in the county. A corridor study along Airport Rd and modernizing traffic signals are other priorities.

JCDOT also supports installing non-motorized facilities, and looks to plan recommendations for the investment in strategic projects.

Figure 4-4
Jackson Master Street Plan, 1929



Public Transit

Public transit is a critical element of the transportation system, providing the public access to jobs, shopping, health care services, and recreational activities. Public transit is especially important for the elderly, youth, individuals with disabilities, and those who don't drive or can't afford a car. Millennials and Baby Boomers are also demanding fixed routes and shared rider services at increased rates, which creates additional stress on transit services. Public transit service is a great way to reduce traffic congestion, air pollution, and energy consumption.

As the role of public transit evolves in Michigan, having reliable funding sources is critical to meeting local demand. The expense of maintaining a viable public transit system can only be maintained with commitments from federal, state, and local jurisdictions.

Existing Transit Services

The Jackson Area Transportation Authority (JATA)

Public transportation services in Jackson have a long and varied history. Dating as far back as the 1890s, streetcar service was provided by the Jackson Street Railway Company. This service continued through 1936 when the first buses were purchased and began operating under the company name "Jackson City Lines." Since then, public transit services have been operated by both private and public entities. In 1986, the existing public transportation system was restructured under Michigan Public Act 196 and renamed the City of Jackson Transportation Authority (JTA). By becoming an authority, JTA was able to levy taxes to the residents within the City of Jackson to sustain both demand-response and fixed-route transit operations. Demand-responsive public transportation services are also provided on a limited basis to the remainder of Jackson County residents on a contractual basis. In 2011, the JTA changed its name to the Jackson Area Transportation Authority (JATA) to reflect the importance of providing more regional service.

JATA is governed by a nine-member Board of Directors consisting of three members representing the City of Jackson and one representative from Jackson County, Blackman Township, Leoni Township, Summit Township, and two at-large members. The JATA Board meets monthly to oversee the public transportation system.

The Local Transportation Advisory Council (LTAC) assists in the development of JATA services, as required by the Americans with Disabilities Act (ADA) and subsequent updates; the 10(e)18 Accessibility Plan and updates are required under State law; as well as coordination and consolidation issues. The LTAC reviews and provides recommendations on services provided to senior citizens and individuals with disabilities. The LTAC reviews proposed service changes including route modifications and fare increases which affect services provided to seniors and/or the disabled. They meet quarterly.

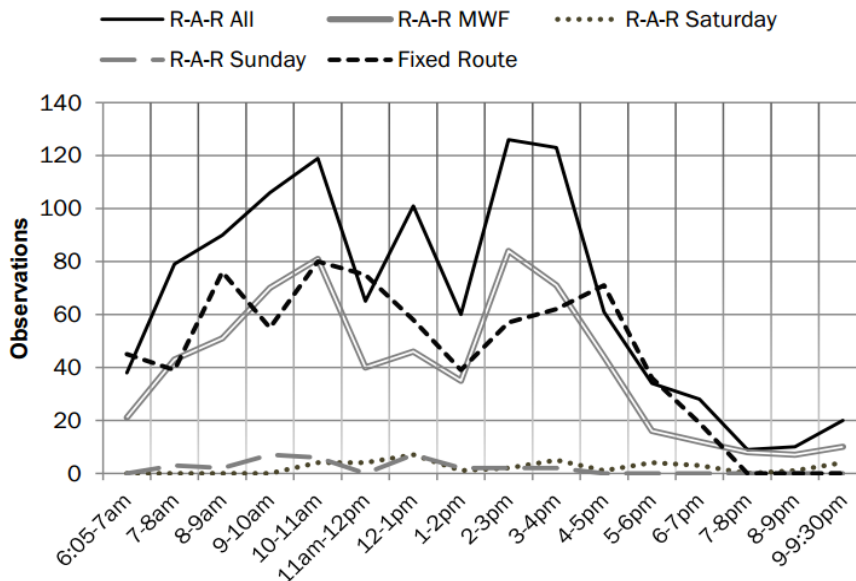
Figure 4-5
JATA Bus in Downtown Jackson



Existing Service Levels

JATA operates fixed route service on seven major routes Monday through Friday from 6:15 AM to 6:15 PM. Saturday service runs from 10:15 AM to 6:15 PM. JATA operates two additional routes which have more defined purposes than the major routes and operates at a much lower service level based on demand. To maximize efficiency, the system is set up as a hub and spoke system. Buses meet for timed transfers at the system hub, located in downtown Jackson. All fixed route buses are handicap accessible and have senior/disabled priority seating. Vehicles are equipped with bike racks to expand the service reach. Fixed route service is focused on the urban area in and around the City of Jackson.

Figure 4-6
Ridership Levels on JATA



JATA also operates demand-response curb-to-curb services throughout the City and County. Weekday service operates from 6:15 AM to 10:15 PM; Saturday service operates from 10:00 AM to 10:00 PM; and Sunday service operates from 7:00 AM to 4:00 PM.

Existing Vehicle Fleet

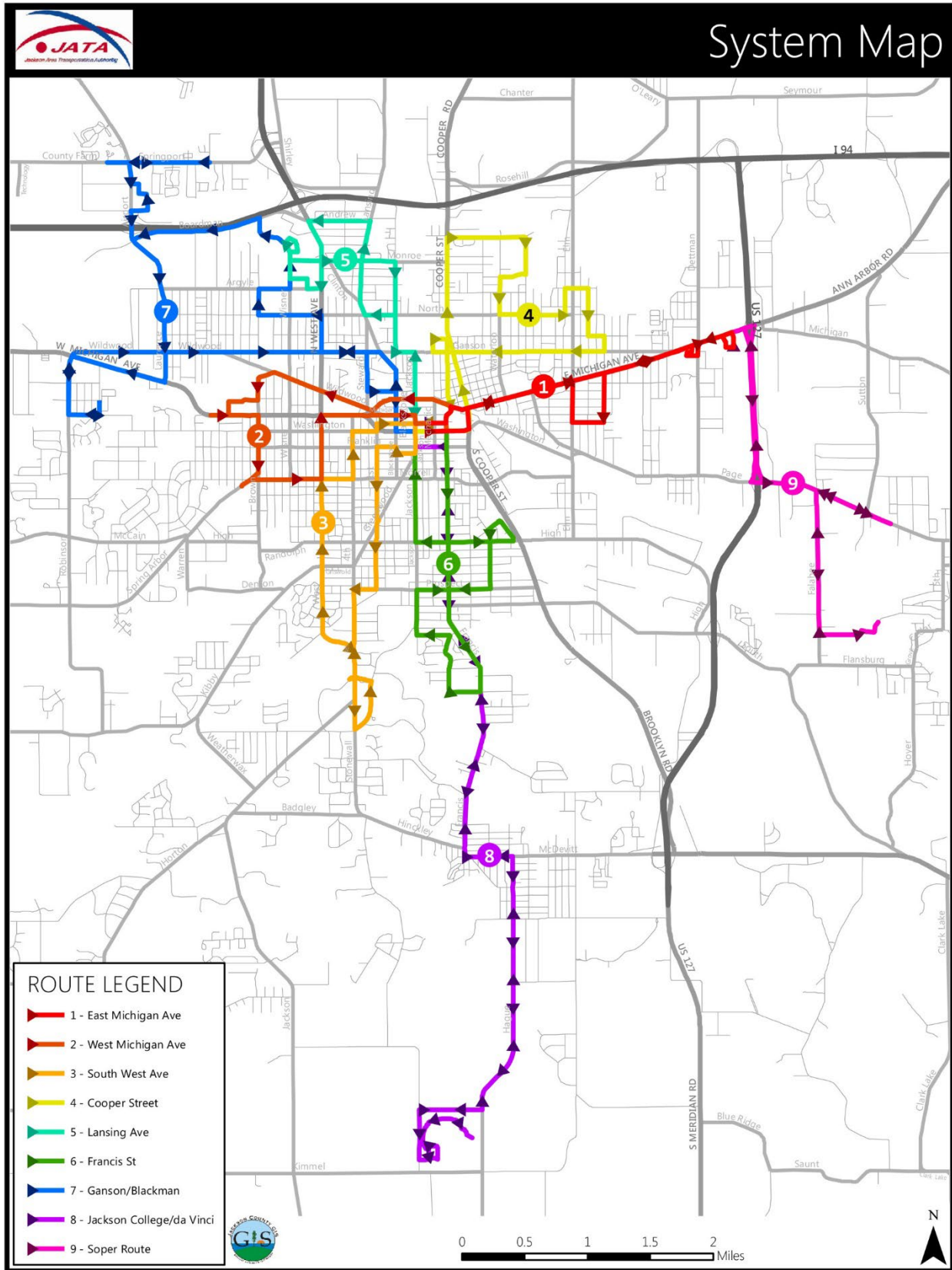
The 2022 JATA fleet consists of 14 full-sized buses, ranging from 29 feet long to 40 feet long. Almost 80% of these will be eligible for replacement within the next five years based on their age. There are 19 medium and light duty vehicles used for demand response. JATA also has five non-revenue vehicles used by staff in maintaining day-to-day operations. All vehicles are handicapped accessible with lifts or ramps and several have additional wheelchair stations that can accommodate up to six wheelchair passengers.

**Table 4-2:
Jackson Area Transportation Authority Ridership – Number of Trips 1991-2022**

YEAR	FIXED ROUTE	DEMAND RESPONSE	SEMI-FIXED (contract)	HEAD START (contract)	RIDES TO WELLNESS	TOTAL
1991-1992	685,272	49,721	59,287	0	0	794,280
1992-1993	760,093	53,229	59,458	0	0	872,780
1993-1994	761,155	63,398	56,049	0	0	880,602
1994-1995	708,577	68,124	41,294	0	0	817,995
1995-1996	665,312	66,796	35,835	0	0	767,943
1996-1997	626,665	66,336	37,128	0	0	730,129
1997-1998	618,988	73,121	36,051	0	0	728,160
1998-1999	597,980	80,499	38,499	0	0	716,978
1999-2000	593,459	96,978	37,967	0	0	728,404
2000-2001	585,446	119,895	18,030	87,847	0	811,218
2001-2002	512,621	115,378	1,605	84,948	0	714,552
2002-2003	516,741	107,790	0	67,584	0	692,115
2003-2004	495,064	98,625	0	52,418	0	646,107
2004-2005	513,116	95,533	0	46,189	0	654,838
2005-2006	559,412	89,637	0	26,292	0	675,341
2006-2007	480,475	74,551	0	0	0	555,026
2007-2008	504,390	57,105	0	0	0	561,495
2008-2009	505,934	52,422	0	0	0	558,356
2009-2010	557,561	46,444	0	0	0	604,005
2010-2011	582,512	44,997	0	0	0	627,509
2011-2012	545,384	41,829	0	0	0	587,213
2012-2013	530,363	42,092	0	0	0	572,455
2013-2014	548,102	40,476	0	0	0	588,578
2014-2015	549,311	39,230	0	0	0	588,541
2015-2016	510,768	32,232	0	0	0	543,000
2016-2017	486,262	34,316	0	0	0	520,578
2017-2018	476,803	37,193	0	0	0	513,996
2018-2019	486,001	34,622	0	0	0	520,623
2020-2021	350,505	22,467	0	0	3,621	376,593
2021-2022	261,108	22,219	0	0	5,718	289,045
TOTAL	16,575,380	1,867,255	421,203	365,278	9,339	19,238,455

Figure 4-7, a map of the JATA transit service system routes, is on the next page.

Figure 4-7: JATA Service Map



Intercity Bus Service

Jackson County is serviced by Indian Trails Bus Lines which operates out of the Jackson Area Transportation Authority's Downtown Jackson Transfer Center. JATA acts as the agent for Indian Trails. There are seven weekly routes that pass through Jackson County primarily serving the I-94 corridor between Ann Arbor/Detroit and Chicago, and include connections to Albion, Battle Creek, Kalamazoo, and Benton Harbor. Northbound travel from Jackson includes a bus departure to East Lansing. Hoosier Rides, a part of Miller Transportation, is another intercity bus services that provides daily connections into and out of Jackson.

**Figure 4-8
Indian Trails Route Map**



Rideshare Services

MDOT offers ridesharing and commuter vanpool programs throughout the state. The MichiVan Commuter Vanpools are operated by Enterprise and open to members of the public and can help employers establish a service for employees.

Uber and Lyft started offering rideshare services within Jackson in 2017. Both are private companies that offer alternative curb-to-curb services for any consumer. The companies connect an employee-driver to a customer seeking an on-demand ride. This kind of service has been transformed by the use of smart phones.

Taxi Cabs & Limousine Services

Multiple taxicab companies operate in the greater Jackson area. These services are licensed and must be registered with the City of Jackson in order to operate within the city limits. In addition to transit and taxicab services, there are several limousine services and car rental agencies in the Jackson area.

Existing Plans and Studies

Connecting Jackson County Study 2017

The Connecting Jackson County Study identified the gaps and issues with the JATA transit service within the City of Jackson and across Jackson County. Completed in early 2018, this study was a deeper analysis of some of the findings from the 2015 JATA Countywide Survey. The study looked at fixed-route and reserve-a-ride services, operations, capital budgeting and funding, inter-city travel, and the confluence of the non-motorized transportation system. Conclusions of the study are listed later in the “Future Forecasts, Issues & Needs” section.

Coordinated Mobility Plan: Region 9 2016

Michigan 2-1-1 and their partners were trying to develop the joint capacity to provide One-Call/One-Click service to Michigan residents to assist with individual trip planning and to address transportation barriers limiting opportunities for employment, health care,

recreation and other personal needs. The statewide study identified regional gaps in mobility, particularly for people with limited transportation options such as veterans, older adults, individuals with disabilities, and people with lower incomes. The study also involved identifying actions that can be taken by local transportation providers and Michigan 2-1-1 to increase regional mobility.

The statewide transit study led to the development of 10 different regional studies. Michigan 211 and MDOT's Office of Passenger Transportation collaborated to develop the Coordinated Mobility Plan for Region 9, which included Jackson, Hillsdale, Lenawee, Livingston, Monroe and Washtenaw counties. This plan was designed to meet the coordinated transportation planning requirements for MAP-21. It provides a review of existing plans and transit services for each of the 6 counties. Regional stakeholders identified and prioritized strategies and potential projects to meet transportation needs. Also, an overview of how to continue coordinated mobility planning within and across the region is included.

Future Forecasts, Issues, & Needs

JATA is expected to continue providing public transit service to the residents of Jackson County. This will include fixed route and ADA demand-response service to City of Jackson residents with additional demand-response service operating throughout the County. Operations are expected to continue with funding provided by passenger fares, federal and state grants, citywide millage, and service contracts.

Table 4-3 provides a list of JATA's capital and operational funding projects proposed for the 2050 Long Range Transportation Plan. The JATA capital program is based on fleet replacement schedules and programs.

The replacement cycles represent the replacement policies, in terms of age and miles, as established by the Federal Transit Administration (FTA) for specific vehicle types. For the purpose of this Plan, JATA proposes to continue to operate their system at their current level of service. Although the focus of JATA will be to preserve and continue at the current level of service, this is not to imply that JATA will not be exploring service enhancement and delivery changes. However, similar to the road recommendations, only those projects which have an identified funding source are included in the list of projects.

The capital and operating costs and revenue projections used to develop the future projects list were provided by JATA. These operating and capital costs cover the fixed-route system and associated ADA and countywide demand-response operations. Cost projections are based on current (2022) dollars and are inflated by 2 percent each year.

**Table 4-3: Jackson Area Transportation Authority
Projected Capital & Operating Expenditures
(FY 2024 – 2050)**

Year	Project	Est. Cost	Year	Project	Est. Cost
2024	3 – Med. Duty Buses	\$ 386,000	2034	2 – 45 ft. Hwy Coaches	\$1,600,000
	Operating Program	7,950,900		1 – 35 ft. Bus	506,000
2025	1 – 35 ft. Bus	\$ 416,000		Security Imprv.	62,700
	Shop Equipment	18,000		Operating Program	9,692,000
	Operating Program	8,110,000	2035	3 – Vans	\$ 180,000
2026	3 – Vans	\$ 149,000		2 – 45 ft. Hwy Coaches	1,600,000
	1 – 35 ft. Bus	425,000		1 – 35 ft. Bus	516,000
	Operating Program	8,272,100		Operating Program	9,886,000
2027	CPU Upgrades	\$ 114,400	2036	1 – 35 ft. Bus	\$526,000
	Operating Program	8,438,000		Service Vehicle	60,000
2028	3 – Med. Duty Buses	\$ 400,000		Operation Program	10,084,000
	Security Imprv.	59,000	2037	1 – 35 ft. Bus	\$ 537,000
	Operating Program	8,606,300		Shop Equipment	23,200
2029	3 – Med. Duty Buses	\$ 405,000		CPU Upgrades	138,400
	1 – 35 ft. Bus	450,300		Operating Program	10,285,000
	Shop Equipment	20,000	2038	1 – 35 ft. Bus	\$ 548,000
	Operating Program	8,778,400		3 – Med. Duty Buses	493,000
2030	1 – 35 ft. Bus	\$ 460,000		Operating Program	10,491,000
	Service Vehicle	54,000	2039	1 – 35 ft. Bus	\$ 559,000
	Operating Program	8,954,000		3 Vans	194,000
2031	1 – 35 ft. Bus	\$ 478,000		Operating Program	10,701,000
	3 – Vans	166,400	2040	Security Imprv.	\$ 70,000
	Operating Program	9,133,000		1 – 35 ft. Bus	570,000
2032	CPU Upgrades	\$ 125,800		Operating Program	10,915,000
	Security Imprv.	63,500	2041	3 – Med. Duty Buses	\$ 507,790
	Operating Program	9,316,000		Security Imprv.	75,600
2033	1 – 35 ft. Bus	\$ 487,000		Operating Program	11,133,300
	3 – Medium Duty Buses	448,000	2042	Service Vehicle	\$ 63,000
	Operating Program	9,502,000		Security Imprv.	81,648
				Operating Program	11,355,966

Year	Project	Est. Cost
2043	1 – 35' Bus	\$ 587,100
	Service Vehicle	65,200
	Maintenance Equipment	150,000
	Operating Program	11,583,085
2044	Security Imprv.	\$ 88,180
	CPU Upgrades	145,300
	3 – Vans	203,700
	Operating Program	12,200,000
2045	1 – 35 ft. Bus	\$ 604,713
	Security Imprv.	95,234
	Operating Program	12,501,042
2046	3 – Med. Duty Buses	\$ 507,790
	Security Imprv.	75,600
	Operating Program	12,501,042

Year	Project	Est. Cost
2047	Service Vehicle	\$ 63,000
	Security Imprv.	81,648
	Operating Program	13,006,040
2048	1 – 35 ft. Bus	\$ 587,100
	Service Vehicle	65,200
	Maintenance Equipment	150,000
	Operating Program	13,266,160
2049	Security Imprv.	\$ 88,180
	Facility Upgrades	145,300
	3 – Vans	203,700
	Operating Program	13,531,483
2050	1 – 35 ft. Bus	\$ 604,713
	Security Imprv.	95,234
	Operating Program	13,802,112

JATA Long Range Transportation Plan

A summary of proposed activities in the JATA Long Range Transportation Plan that currently do not have a funding source include:

- Continuation of specialized Medical Services.
- Provision for all Human Service Agency transportation in Jackson County to:
 - Personal and medical trips
 - Nutrition sites
 - Other specialized services
- Provision for maintenance of non-profit agency vehicles.
- Increased demand responsive service.
- Extension of fixed-route service within the expanding urbanized area including the communities of Michigan Center, Grass Lake, and other satellite centers.
- Provision for corridor service to Lansing, Ann Arbor, and Battle Creek.
- Training facility to accommodate bus driver training for JATA, schools, and other agencies.
- Coordination of intercity bus / rail / public transportation operations.

Active Transportation

MDOT defines active transportation as “human-powered transportation that engages people in physical activity while they travel,” with the two main modes being walking and cycling. Active transportation facilities are important components to the transportation system. They provide an environmentally-friendly, low-cost mode of travel. There are also a number of benefits for people who choose active transportation travel, such as improved health, money saved on gas and car maintenance, and less traffic congestion due to less cars on the road. Some of these facilities can also double as recreational assets. Since 2002, there have been a number of investments made to improve the active transportation network in the Jackson MPO.

Existing Active Transportation Network

Sidewalks and Crosswalks

Pedestrian movement is generally accommodated by the presence of sidewalks and multi-use paths along with pedestrian crosswalks at major intersections. The City of Jackson has implemented “countdown signals” that provide pedestrians with a safe timeframe to cross the street. As required by the Americans with Disabilities Act (ADA), sidewalk ramps at crosswalks with detectable warning surfaces have also been installed. Pedestrian crossing islands and curb extensions are other improved safety features in some parts of Jackson.

The City of Jackson has implemented raised crosswalks downtown, which provide a safer road crossing for pedestrians. Figure 4-9 is an example of one. The benefits to raised crosswalks are that they are at the same level as the sidewalk, rather than being level with the road. This creates a small speed bump for cars so that drivers are more aware of the crossing and they must slow down. These function similar to continuous sidewalks, which is when a sidewalk continues across the road at a stop sign. At this time, continuous sidewalks have not been implemented anywhere in the Jackson MPO.

Figure 4-9
Raised Crosswalk in Downtown Jackson



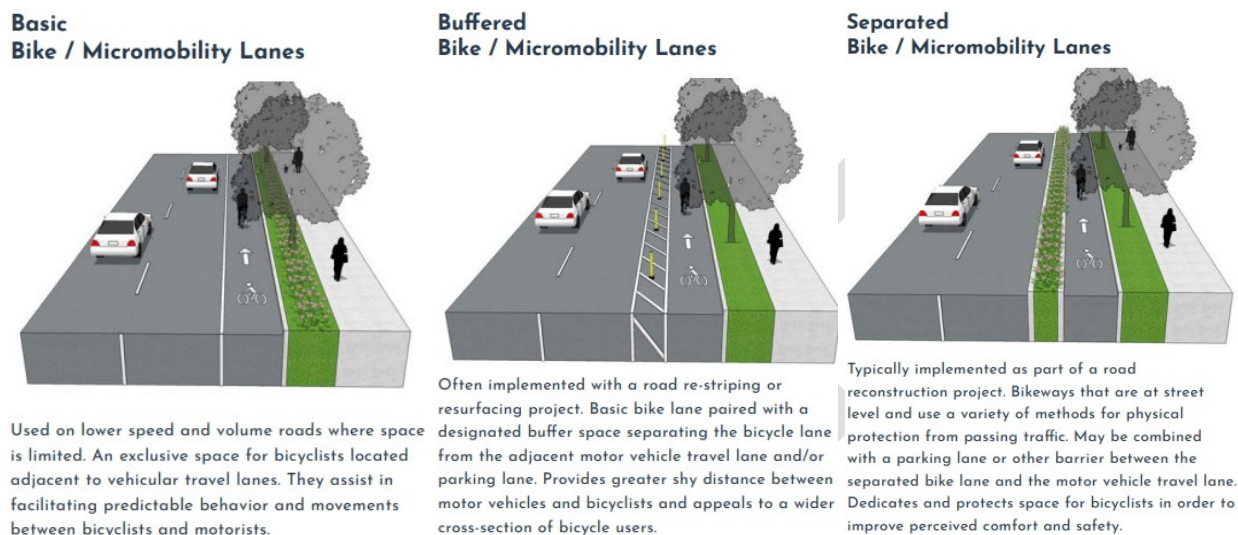
Bike Lanes

Dedicated bicycle facilities create opportunities for a range of users. Bike lanes are found on a number of streets near and within the City of Jackson. They provide a separated space for bicycles to operate, helping drivers understand where they can expect bicyclists to be in the roadway. Bike lanes discourage wrong way riding, and are useful on collector and arterial roads.

There are three types of bike lanes: basic, buffered, and separated. Figure 4-10 demonstrates the differences between the three. Separated lanes are the most optimal since they completely separate bikes from cars and have the most usage. Bike lanes can

also be made safer through painting them green which increases their visibility and helps make drivers more aware of their presence. Currently, all bike lanes in the Jackson MPO fall under the “basic” category. They mostly feature good signage and pavement markings, but none are painted green.

Figure 4-10: Different Types of Bike Lanes



Multi-Use Trails

Multi-use trails serve both pedestrians and bicycles and are a significant part of the active transportation network. These trails are separated from the road, which provides more safety and security than basic bike lanes. Multi-use trails are wider than sidewalks so that they can safely accommodate both pedestrians and bikes. They can also serve as recreation facilities. The following is a list of multi-use trails within the Jackson MPO:

- **Martin Luther King Jr. Equality Trail (Formerly the Intercity Trail)**: A 3 mile paved trail that traverses the city from E Washington St to Weatherwax Dr, where it then connects to the Falling Waters Trail. Constructed in 2000, this trail follows the route of a former Conrail rail line. The trail previously terminated at Merriman St but was extended to downtown Jackson in 2017. The Iron Belle Trail and Great Lake to Lake Trail routes align with the trail.
- **Falling Waters Trail**: A 10 mile paved trail extending from River St in the Village of Concord to Weatherwax Dr in Summit Township. It was built as an extension of the MLK Equality Trail in 2008, and follows the same former Conrail rail line. It passes through and provides access to Lime Lake County Park. The Iron Belle Trail and Great Lake to Lake Trail routes align with the trail.
- **Armory Arts Walk**: A 1 mile paved trail from W Monroe St to N Mechanic St. This trail follows alongside the Grand River. The Iron Belle Trail and Great Lake to Lake Trail routes align with the trail.
- **Mike Levine Lakelands Trail State Park**: 11 of this trail’s 34 miles traverse through Jackson County, following a former Grand Trunk Western rail line. This unpaved trail currently starts at Hawkins Rd in Leoni Township and travels northeast through

the Waterloo State Recreation Area. From there, it extends to the Stockbridge area with a terminus at Whitmore Lake. Future plans include paving this trail and extending it to connect with the Armory Arts Walk. The Iron Belle Trail and Great Lake to Lake Trail routes align with the trail.

- **PAKA Trail:** 1 mile paved trail that connects the MLK Equality Trail to Ella Sharp Park. This trail starts at New Leaf Park and connects to an unnamed trail at Park Rd.
- **Sparks Foundation County Park:** 2 miles of paved trail run through the park. A connection to the MLK Equality Trail was built in 2017.
- **Unnamed Trails:** There are a number of unnamed trails, most of which parallel roads. Table 4-4 lists all unnamed trails in the Jackson MPO as of 2023. A majority of these trails are unsigned.

Table 4-4: Unnamed Trails in the Jackson MPO

Municipality	Parallel Street	Distance	Endpoint 1	Endpoint 2
City of Jackson	Brown St	0.5 mi	Randolph St	Morrell St
	Elmdale Dr	0.5 mi	Hickory Ave	S Jackson St
	Kibby Rd	0.75 mi	The Cascades	Intercity Trail
Village of Concord	N/A	0.75 mi	N Main St	Allman Rd
Blackman Charter Township	Airport Rd	0.25 mi	McDonald's	I-94 East Entrance Ramp
	Rives Junction Rd	0.75 mi	M-50	Northwest Schools
Leoni Township	Ann Arbor Rd	2.6 mi	Hackett St	Gilletts Lake Rd
	Page Ave	1.35 mi	Menards	5th St
Spring Arbor Twp	Teft Rd	1.2 mi	W Main St	Falling Waters Trail
Summit Township	W High St	0.75 mi	Warren Ave	The Cascades
	Horton Rd	0.75 mi	PAKA Trail	Weatherwax Rd
	McDevitt Ave	1.5 mi	Francis St	Oak Lane Rd
	Probert Rd	0.25 mi	Francis St	Maplewood Dr
	Spring Arbor Rd	1.42 mi	Lumen Christi High School	Polly's Country Market
	Weatherwax Rd	0.5 mi	Horton Rd	Falling Waters Trail

Signed Bike Routes

The City of Jackson has a number of signed bike routes. They are identified by the Manual on Uniform Traffic Control Devices (MUTCD) as standard “bike route” green signs with white letters. Bicycle traffic is encouraged to follow these routes throughout the City. The signed bike routes do not have bike lanes nor are they marked with any other indicator like a shared lane marking or “sharrow.”

The Clark Lake Spirit Trail is a 7 mile signed bike route around Clark Lake. This route mostly follows along residential roads, but a few sections feature paved trails separate from the road.

Other Facilities

Paved shoulders are another option for some bicyclists. Paved shoulders are typically found on roads in rural areas and widths can vary from 4 to 8 feet. They may or may not be marked.

Bicycle parking in the Jackson MPO is accommodated through bike racks. Several bike racks have been installed along streets in downtown Jackson. All of the JATA fixed-routes buses have bicycle racks to help accommodate intermodal travel for its customers.

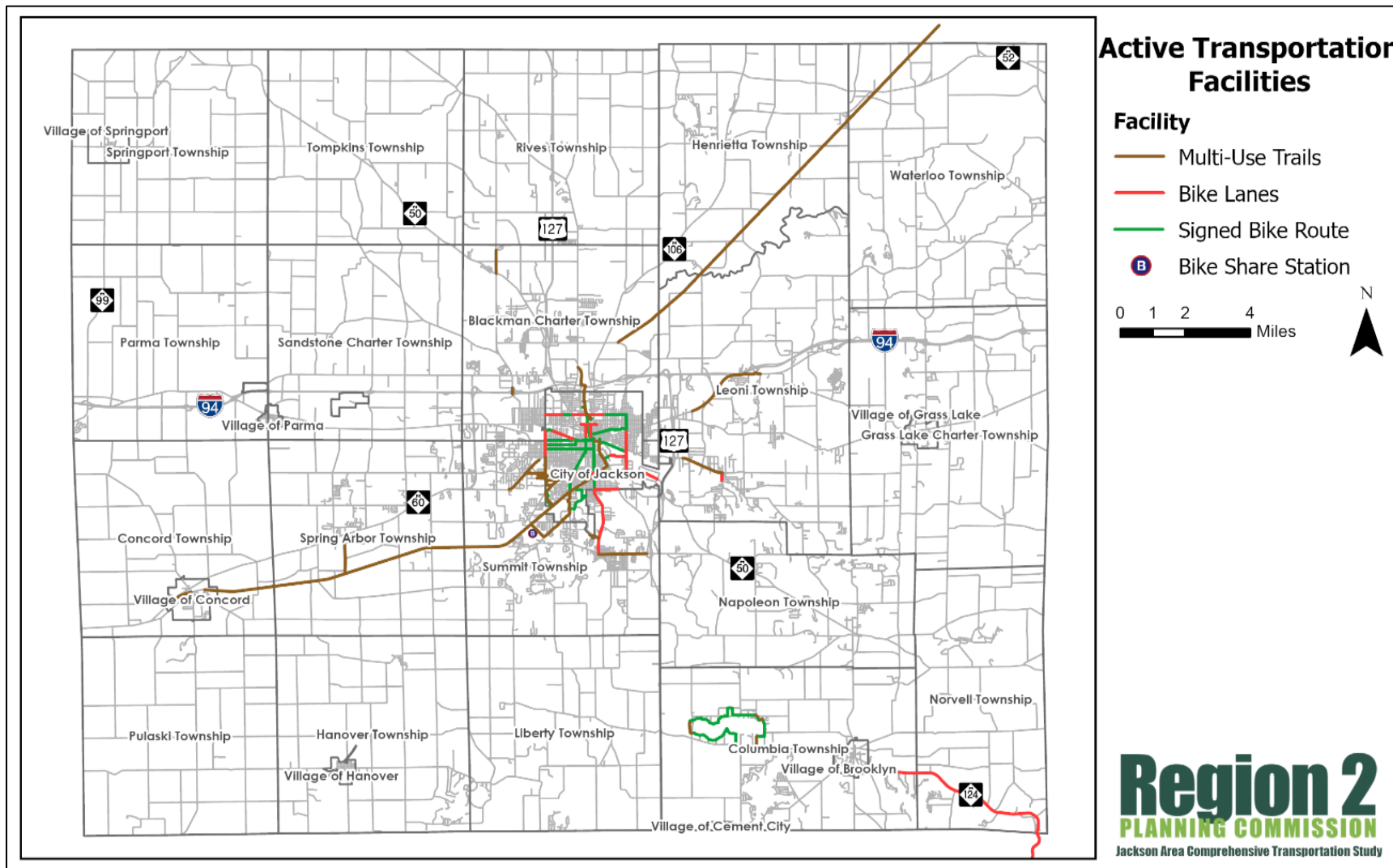
Jackson County supports one bike share station at the parking lot/trailhead where the Falling Waters Trail meets the Martin Luther King Jr. Equality Trail on Weatherwax Dr. The BCycle bike share station was installed in May 2017. In the first four months after installation, there were over 600 bicycle trips taken. The program is generating modest revenue.

Figure 4-11
Jackson County Bike Share Station



Figure 4-12, a map of the existing active transportation facilities, is on the next page.

Figure 4-12: Active Transportation Facilities Map



Existing Policies & Programs

The state transportation law requires that each local unit of government receiving Motor Vehicle Highway Funds (Act 51 funds derived from gasoline and car registration taxes) spend at least one percent of these funds each year for active transportation facilities. The law also requires that each administering road agency prepare a five-year program for expenditure of available funds. The City of Jackson and the Jackson County Department of Transportation review the need for active transportation facilities when programming future road paving and reconstruction projects. Both agencies also review future locations for the addition of active transportation facilities that meet funding requirements through the Transportation Alternatives Program (TAP).

Policies

Policies to address improvements to active transportation facilities in the Jackson MPO were included in the 2045 Long Range Transportation Plan. Some of those policies include:

- Strategies and actions in residential areas should be aimed at improving pedestrian safety and the overall quality of life. Projects that would limit undesirable vehicular activity on specific residential streets as a way of improving the pedestrian environment are encouraged.
- Special care should be given to address the removal of built-in barriers that limit access to pedestrian facilities.
- Pedestrian safety in school zones should be considered through a coordinated effort involving school officials, parents, police, traffic engineers and planners.
- Identify routes that would act as connectors between existing non-motorized trails.
- Improve bicycle facilities including storage, shelters, comfort stations and trail heads at major trip generators, destinations, and transit hubs.
- Improve safety issues such as signage, pavement markings, signals, drainage gate replacement, and rail crossings.
- Promote access between active transportation and other modes of transportation.

Safe Routes to School

The City of Jackson began working on Safe Routes to School (SRTS) with Jackson Public Schools in 2007. Over the last ten years, sidewalk improvements were made to the areas near Cascades Elementary School, Frost Elementary School, Northeast Elementary School and the School for the Arts. The City paid for the planning and engineering of the projects.

JCDOT has been active in the Safe Routes to School program. Several elementary and middle schools have received funding through this program and many others are in the process of developing their “walk to school” plans. JCDOT has assisted in the development of grant applications, and continues to be a resource to schools outside the City of Jackson. Schools outside the city that have received SRTS grants include Napoleon Community Schools, Grass Lake Community Schools, Springport Public

Schools, and East Jackson Middle School. Columbia School District plans to apply for a SRTS grant in October 2023.

Existing Plans and Studies

2020 Jackson City + County Non-Motorized Plan

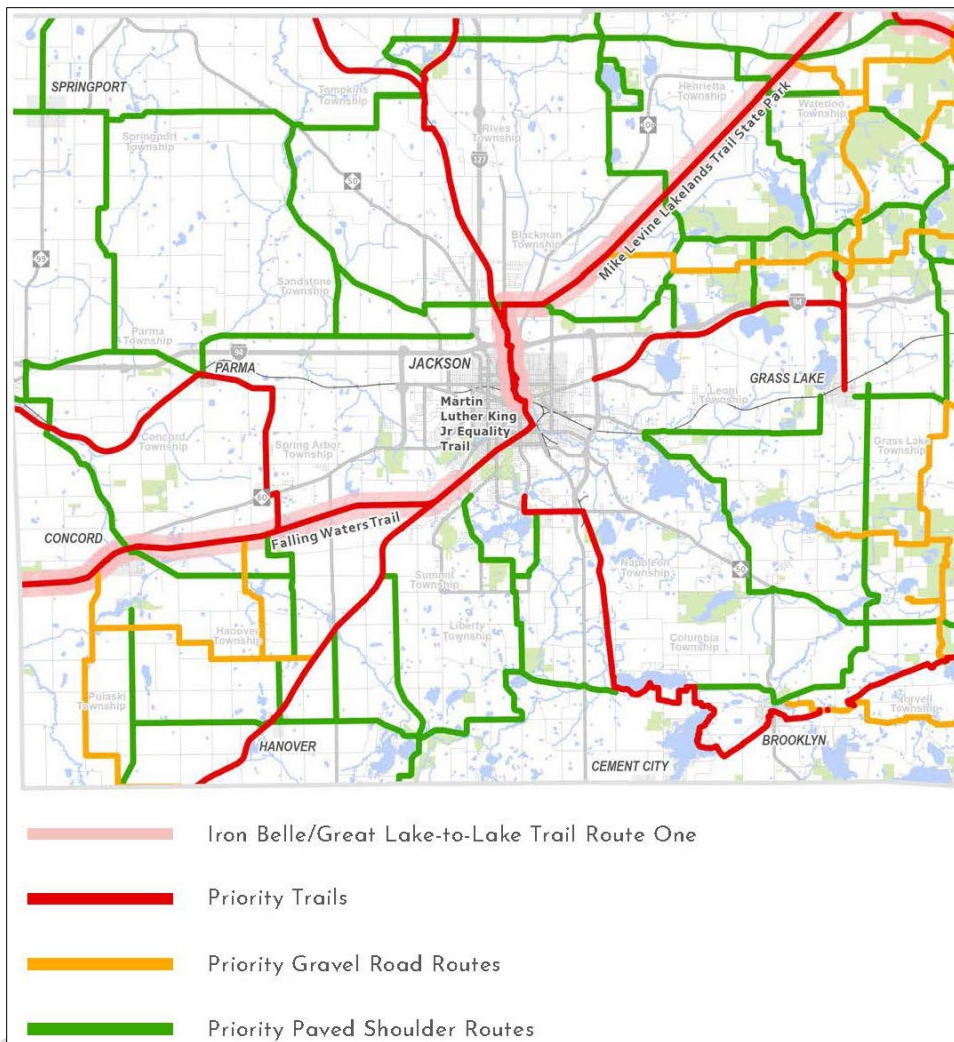
The Jackson City + County Non-Motorized Plan was led by the Region 2 Planning Commission, Jackson County, and the City of Jackson. The goal of this study was to improve biking and walking conditions throughout the county and establish a connected network of sidewalks, bike lanes, and multi-use trails. This plan serves as an update to the 2002 Jackson County Regional Trailway Study, which looked to establish a network of multi-use trails in the county. The 2020 plan proposes a non-motorized network in Jackson County consisting of many different types of routes, such as:

- Rail-trails
- Rail-with-trails
- Utility corridor trails
- Sidepaths
- Bike lanes
- Paved shoulder routes
- Gravel road routes
- Signed bike routes

Figure 4-13 on the next page shows a map of the proposed network. It consists of 57.2 miles of new priority trails which would provide connections between communities within Jackson County. They would also help with statewide trail projects such as the Iron Belle Trail and Great Lake-to-Lake Trail Route 1. Along with new trails, this plan also outlines other bike infrastructure that should be developed, such as bike parking, a uniform sign system, connected vehicle infrastructure, and bike sharing stations. It includes the costs of developing nine priority trails and how much funding will come from federal, state, local, and private sources.

It would be beneficial for Jackson County and the communities within the Jackson MPO to consider the developments of this plan. The proposed network would provide many benefits to the community by allowing alternatives to commuting by car and establishing more opportunities for recreation. The plan recommends that a countywide trail commission be established to oversee the construction and maintenance of the proposed county trail system.

Figure 4-13: Proposed Jackson County Non-Motorized Trail Network



Jackson County Recreation Plan 2020 – 2024 Edition

A priority of the Jackson County Recreation Plan 2020 – 2024 Edition was to develop and implement a recreation plan that responds to the desire of the public and enhances local parks and programs. One goal is to create a trail system throughout the county that will provide alternate modes of transportation as well as opportunities for recreation. An online survey was conducted in spring of 2019, which asked a question regarding the construction of non-motorized trails within Jackson County. Approximately 86% of respondents supported the development of a regional trail system. This plan supports the development of a non-motorized trail network and implementing the recommendations from the Jackson City + County Non-Motorized Plan. Jackson County will implement portions of the plan as opportunities arise and resources become available.

2003 City of Jackson Bike Route Map

The City of Jackson approved a Bike Route map to accommodate bicycle trips on low-volume roads between potential bicycle trip generators. These generators include park and recreational facilities, entertainment and shopping centers, large employers, and

other areas. Specific facilities were developed with input from the Walkable Communities Task Force, bicycling organizations, traffic engineers, planners and the public. Most of these facilities have been implemented over the last 20 years.

City of Jackson Community Master Plan 2016

The City's 2016 Master Plan highlights improvements for the non-motorized network. Non-motorized goals, recommendations and strategies from the plan include:

- Complete the non-motorized transportation network to connect downtown to all major areas of the City.
- Reduce dependence on the automobile for all transportation needs.
- Make connections on existing non-motorized routes to provide access throughout the City.
- Implement the recommendations from the 2010 Jackson Rail Passenger State Development Study, including consolidating local bus and bicycle services into a location easily accessible from the Amtrak node.

City of Jackson Recreation Plan 2020 – 2024 Edition

A priority of the City of Jackson Recreation Plan 2020 – 2024 Edition was to develop and implement a recreation plan that responds to the desire of the public and enhances local parks and programs. One goal is to develop trail networks that traverse Jackson in collaboration with other local governments and organizations. An online survey was conducted in the summer and fall of 2019, which asked a question regarding the construction of non-motorized trails within the city and surrounding area. Approximately 72% of respondents showed support for developing a trail system. This plan supports the development of a non-motorized trail network and implementing the recommendations from the Jackson City + County Non-Motorized Plan. The City of Jackson will implement portions of the plan as opportunities arise and resources become available.

University Region Non-Motorized Plan 2015

The Michigan Department of Transportation University Region led the development of the MDOT University Region: Regional Non-Motorized Plan in 2015. The region is comprised of 10 counties, including Jackson County. The focus of the plan is developing a regional network of trails, paths and streets that provide connections between communities, counties and adjacent regions. The primary goals are:

- Document the existing and proposed network
- Identify opportunities to enhance non-motorized transportation
- Help prioritize non-motorized investment
- Foster cooperative planning across municipal/county boundaries and continue to coordinate these efforts

The plan provides a map of the existing and proposed non-motorized facilities for the 10 county region, including Jackson County. Stated priorities for Jackson County include the completion of trail routes that are on the Iron Belle and the Great Lakes to Lakes trails

along with the development of connections to Brooklyn, Clarklake, and through the Heart of the Lakes Recreation Commission Plan area.

Jackson Trail Connector Feasibility Study 2017

The Michigan Department of Natural Resources, MDOT, Jackson County, and Blackman Charter Township worked together on the Jackson Trail Connector Feasibility Study in 2017 to examine an extension of the Lakelands Trail to the MLK Equality Trail. The study identified the location, benefits, and challenges for several routes, and a preferred trail option. As of 2023, the Lakelands Trail has been extended to Hawkins Rd in Leoni Township, with plans to extend it further underway.

Future Forecasts, Issues, & Needs

The Jackson City + County Non-Motorized Plan, which was completed in May 2020, outlined many issues and needs for Jackson County's non-motorized trail system. Through surveys and public input meetings, the planning committee was able to hear what current issues prevent people from walking or cycling. Some of the issues were:

Issues with walking

- Condition of existing sidewalks (poor/narrow/uneven)
- Lack of sidewalks outside of downtowns
- Drivers paying attention
- Lack of crosswalks
- Snow/ice removal

Issues with cycling

- Lack of separated bikeways
- Lack of bike parking
- Availability of safe bikeways
- Driver attitudes toward bikes
- Narrow roads/no paved shoulders
- High speed traffic
- Road pavement condition

Jackson County and the City of Jackson should consider these issues when planning road projects along with connecting missing segments of multi-use trails, bike lanes, and sidewalks to establish a better network and allow for more usage of the facilities. They should also consider upgrading basic bike lanes to buffered or separated lanes and implementing more bike share stations.

Future Planning Studies

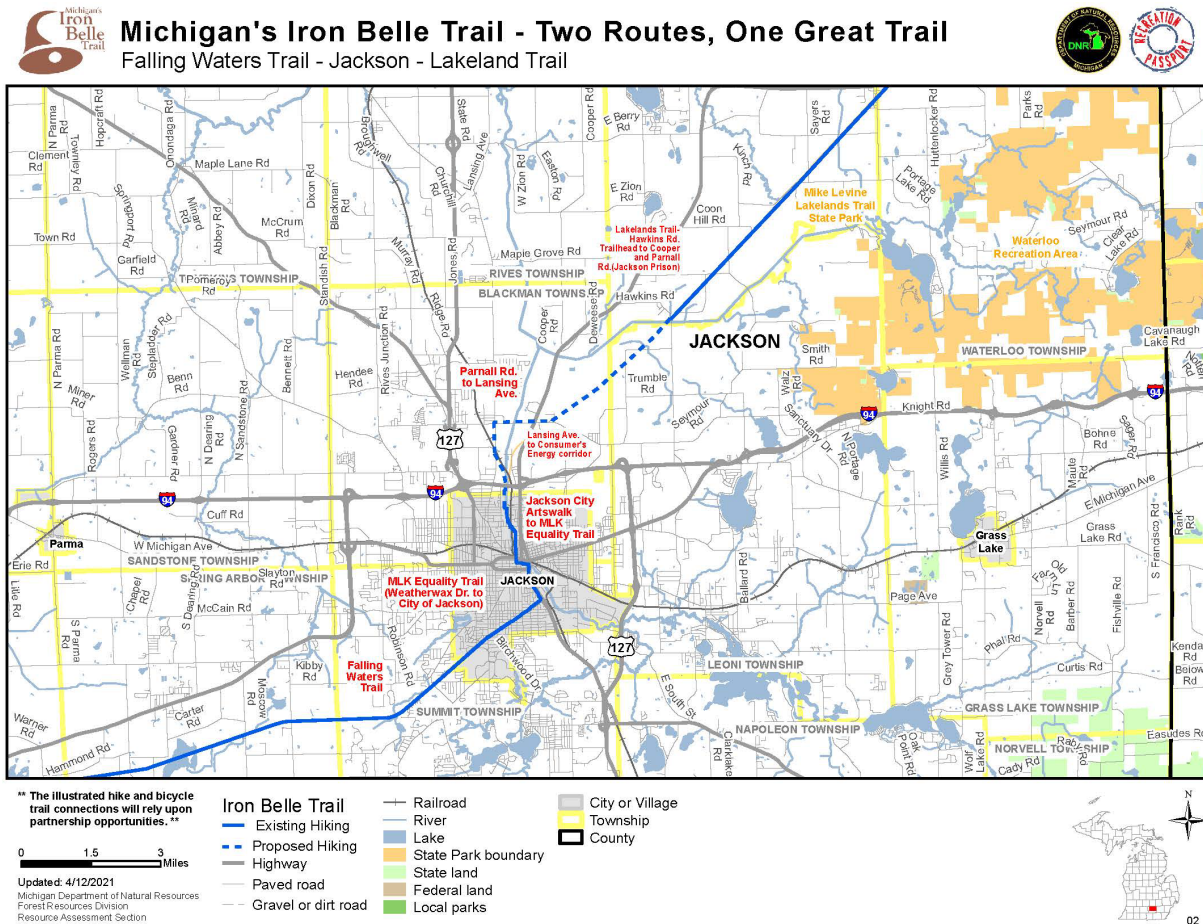
Energy and interest continue to grow to support the development of non-motorized facilities for transportation and recreation. Since a study of non-motorized transportation was done within the past few years, there are no known plans to develop a new non-motorized plan for Jackson County. Planners may see the need for a new study once more facilities are developed in the county. Proposed improvements from the 2020 Jackson City + County Non-Motorized Plan and the 2015 MDOT University Region Non-Motorized Plan will be considered along with the involvement of local villages, townships, the City of Jackson, Jackson County, and the Region 2 Planning Commission.

Iron Belle Trail

The Michigan Department of Natural Resources announced the plan for the Iron Belle Trail in 2015. The trail, which has two routes, one biking and one hiking, will run from Belle Isle Park in Detroit to Ironwood in the Upper Peninsula. In Jackson County, the route

follows the unpaved Lakelands Trail from Stockbridge, running through the northeast part of the county into the City of Jackson. Within the City of Jackson, it follows the Armory Arts Walk, Grand River Walk and the MLK Equality Trail. From there, it connects to the Falling Waters Trail, and continue along a proposed route to Homer in Calhoun County. To date, the trail is mostly complete in Jackson County. Figure 4-14 provides a map of the trail in Jackson County and the current missing connections.

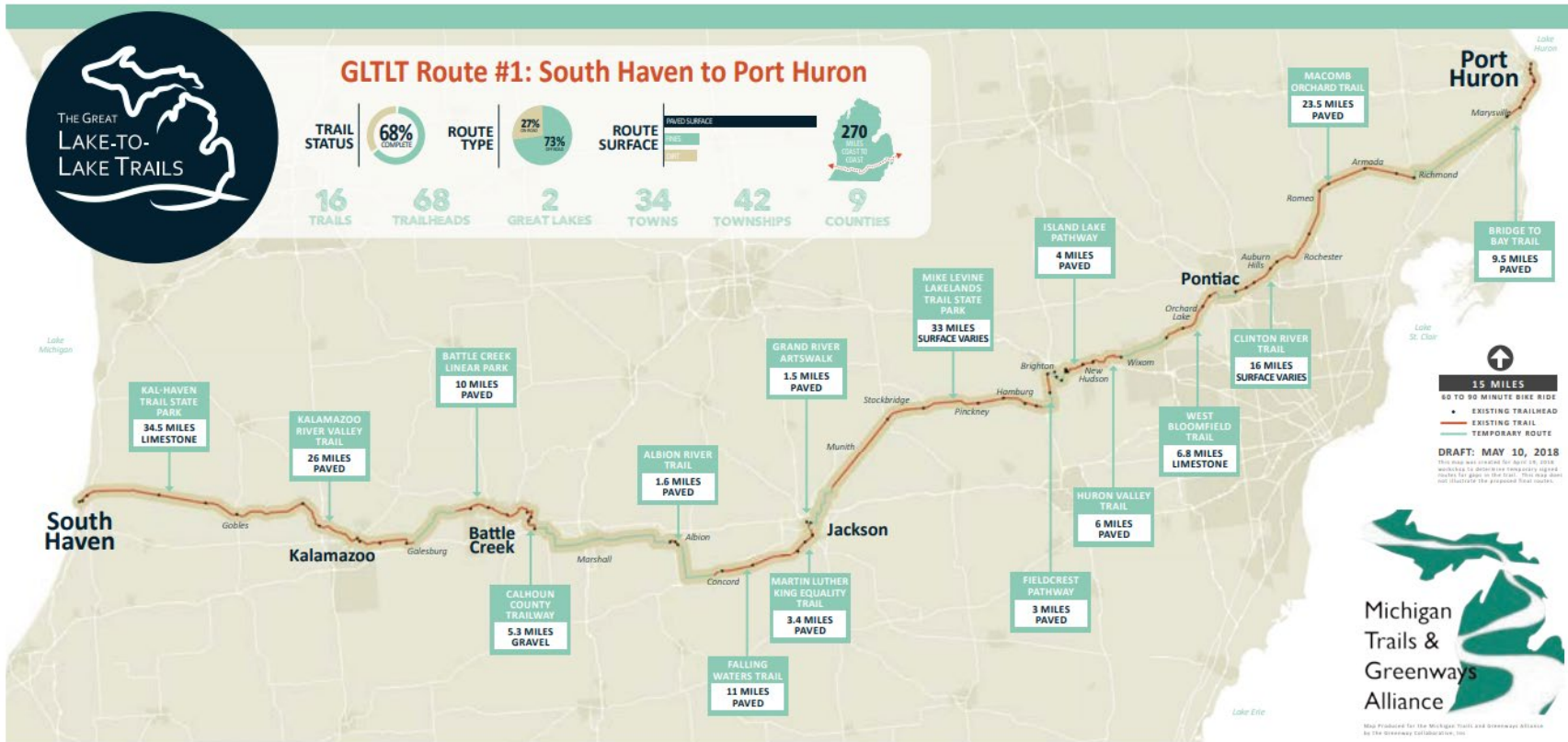
Figure 4-14
DNR Map of the Iron Belle Trail through Jackson County



The Great Lake to Lake Trail

The Great Lake to Lake Trail Route 1 is a collection of existing and proposed trails that will stretch 250 miles from the shore of Lake Michigan in South Haven to the shore of Lake Huron in Port Huron. The trail passes through Jackson County using the existing Falling Waters Trail, MLK Equality Trail, Armory Arts Walk, and Lakelands Trail, following the same corridor as the Iron Belle Trail. To date, the trail is mostly complete in Jackson County. Currently, the trail is missing connections in a few places that would make it possible to fully traverse Jackson County. These missing connections are an extension of the Falling Waters Trail west of Concord toward Homer, a connection of the MLK Equality Trail to the Armory Arts Walk, and a connection of the Armory Arts Walk to the Lakelands Trail. Figure 4-15 provides a map of GLTLT Route 1.

Figure 4-15
Great Lake to Lake Trail Route 1



Passenger Rail

Rail plays a significant role in transportation planning, especially when considering economic development, safety, freight, and intermodal connectivity. Passenger rail service in Jackson is provided by Amtrak through the Wolverine Line. There are also two freight rail lines serving the area, Norfolk Southern and the Jackson and Lansing Railroad. This section addresses the existing conditions and future needs of passenger rail in the community. For more information on freight service in the Jackson MPO, see page 4-37.

Existing Rail Service

Amtrak Service

Jackson is located on the Detroit-Chicago intercity rail passenger corridor. Amtrak operates the Wolverine Line between Pontiac and Chicago, which consists of three daily passenger trains in each direction. Along with Amtrak, the section of the Wolverine Line from Dearborn to Kalamazoo is also used by Norfolk Southern (NS). This section of the line was purchased by MDOT in 2013. In addition to its current use, MDOT seeks other ways this line could be used in the future, such as a state-operated commuter rail.

Usage of the Wolverine Line has slightly fluctuated in the past, but COVID-19 resulted in a massive decrease in ridership and revenues. Passenger use of the Wolverine Line went from 501,124 passengers in 2019 to 244,500 passengers in 2020 and to 153,929 in 2021. This resulted in a 69.3% decrease from 2019 to 2021. At the Jackson Amtrak Station, ridership was 23,615 in 2019 with numbers dropping to 11,741 in 2020 and 7,852 in 2021. Additionally, operating revenues across the Wolverine Line decreased from \$31.3 million in 2019 to \$11.5 million in 2021. However, since 2021 ridership on the Wolverine Line has increased, going up to 367,254 in 2022, a jump of 138.6%.

High-Speed Rail

High-speed rail on the Wolverine Line was first established in September 2013 when the state received \$196.5 million to engineer and upgrade improvements from Porter, IN to Kalamazoo which brought track speeds up to 110 mph. These upgrades improved safety, comfort, and travel times for passengers along this corridor. With MDOT's purchase of the Dearborn-Kalamazoo corridor in 2013, over 200 miles of the line are now under the control of Amtrak and MDOT. Together, they aim to reduce travel times between Chicago and Detroit from 5 hours, 15 minutes to less than 4 hours. Amtrak, under contract to MDOT, took over maintenance functions of the Dearborn-Kalamazoo segment from Norfolk Southern in February 2013. Upgrades to the line include replacement of ties, rails, and switches, improvements to grade crossings, and extension of an advanced signal system. In 2021, the section of line from Kalamazoo to Albion was upgraded to high-speed rail, with speeds increasing from 79 mph to 110 mph. Amtrak and MDOT plan to increase speeds from Albion to Dearborn over the next several years.

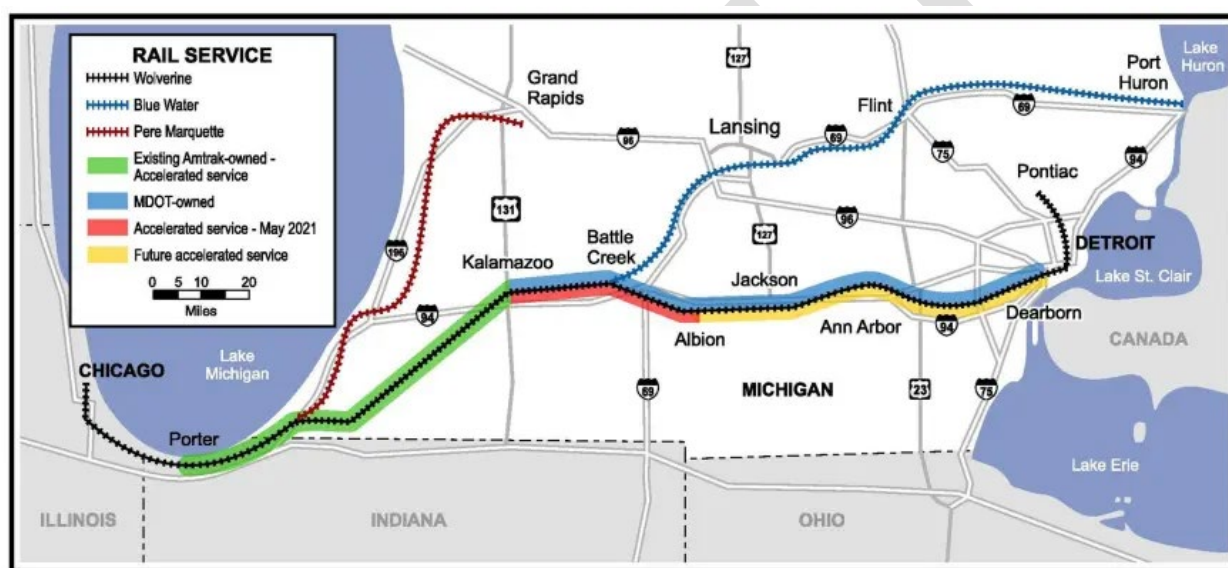
Amtrak, through an ongoing partnership with the Federal Railroad Administration and the State of Michigan, developed a radio-based train communication system, the Incremental Train Control 4 System (ITCS). It is currently in high-speed revenue service on 80 miles of Amtrak-owned track in Michigan and works to prevent train-to-train collisions, train over-speed conditions, and protect track workers. ITCS is a form of Positive Train Control

(PTC), an advanced signal system required by 2018 on most routes with passenger train service.

The development of high-speed rail would spur business productivity in Jackson and along the rail corridor by strengthening the local region's connection to economically vital megaregions such as Detroit and Chicago. Faster service and increased transfer points will expand options for citizens in rural and small urban communities. High-speed rail could also alleviate congestion on the region's roadway network, specifically I-94, which the route runs parallel to.

Figure 4-16 highlights the Wolverine Line, showing the sections of high-speed rail and the ownership of each corridor. The Blue Water and Pere Marquette lines are also shown.

**Figure 4-16
Amtrak Wolverine Line**



Existing Plans and Studies

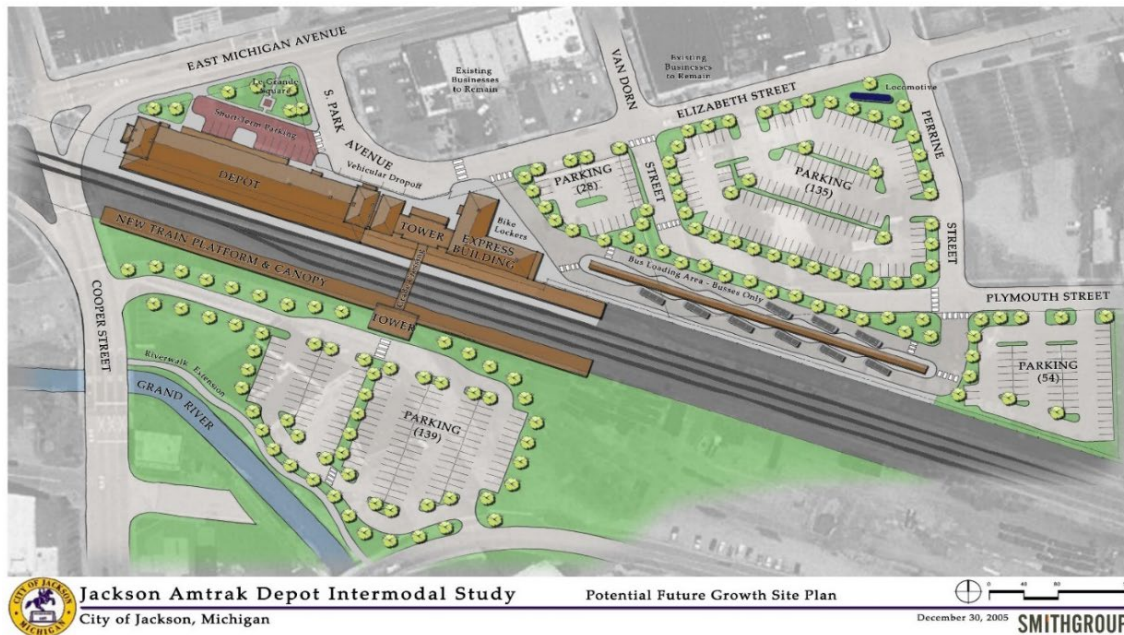
The 2005 City of Jackson Amtrak Depot Intermodal Feasibility Study

The Jackson Michigan Central Railroad Depot, now the Jackson Amtrak Station, was once a highly utilized facility. However, as modes of transportation shifted, the use of the depot declined. In 2005, the Jackson Amtrak Depot Intermodal Feasibility Study was completed for the City of Jackson to develop a multi-modal center at the site. The study provided an assessment of existing historical structures and their potential uses, along with identifying needs, developing conceptual plans, and discussing potential costs and funding sources. This plan would involve the bus station to be moved next to the train station, which would provide a more convenient way for people to get to and from the station. The plan also includes the construction of 356 paved parking spaces, temporary parking, vehicular drop-off, bike lockers, an additional platform with a canopy, and an extension of the river walk.

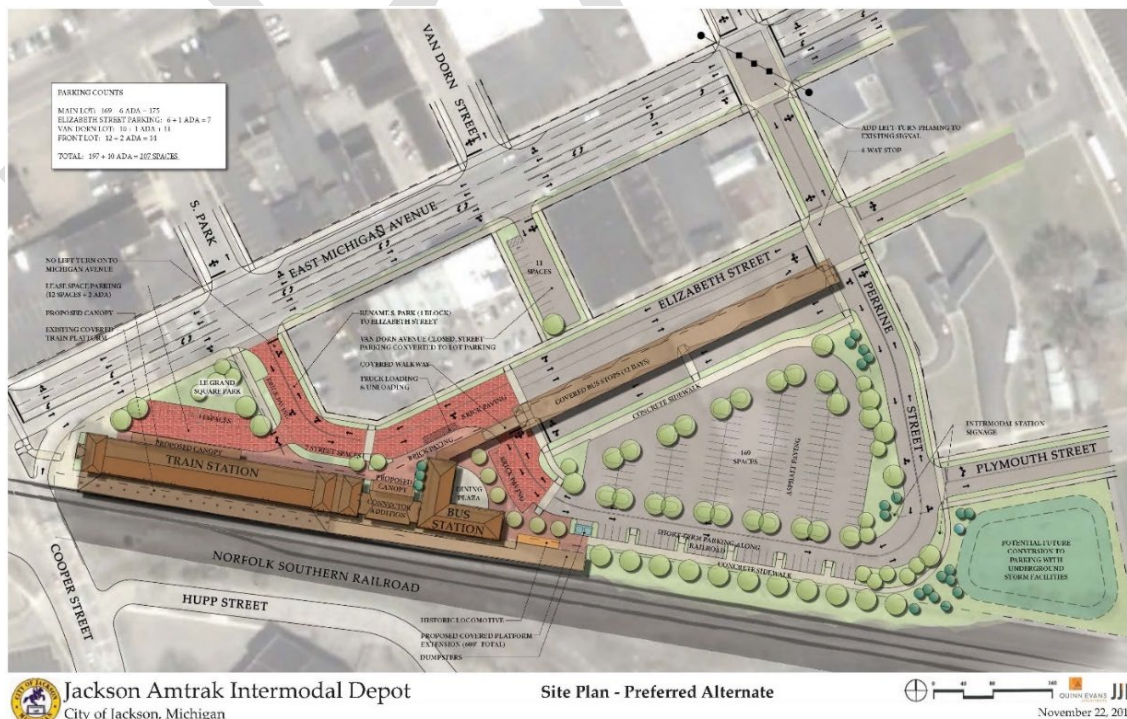
An updated report of this study was completed in 2010 with the intent to refine the design recommendations, update the construction budget estimate, and propose a schedule for

how the city could plan and implement this project. The new proposed design would only utilize space on the north side of the tracks, which would help lower the cost and prevent the demolition of some buildings. It features fewer parking spaces, with 207 in total. Despite less development than the 2005 concept, the project would still be beneficial for Jackson. Figure 4-17 contains the design concepts from both the 2005 and 2010 studies. Each provides an outlook of how the station and surrounding area could be revitalized.

Figure 4-17
(a) 2005 City of Jackson Amtrak Depot Site Development Plan



(b) 2010 City of Jackson Amtrak Depot Alternate Site Plan



Chicago-Detroit/Pontiac Passenger Rail Corridor Program Study

MDOT, in partnership with the Federal Railroad Administration (FRA), Indiana Department of Transportation (INDOT) and the Illinois Department of Transportation (IDOT), initiated a \$4 million Chicago-Detroit/Pontiac Passenger Rail Corridor Program study. The vision of the study is to provide safe and reliable passenger rail service that offers frequent, daily round trips at speeds up to 110 miles-per-hour. Passenger rail improvements will be evaluated along the corridor as well as the following three program components:

- An evaluation of potential route and service alternatives for the corridor.
- Tier 1 Environmental Impact Statement (EIS)
- Service Development Plan (SDP)

A Draft Environmental Impact Statement was completed in September 2014. In 2018, MDOT as lead state, in consultation with the FRA, has concluded that work at the project level would be more beneficial in the longer term than work at the corridor level. Therefore, the FRA will not issue a Final EIS or Record of Decision. They also concluded that this does not prevent future National Environmental Policy Act review of projects within the corridor, if federal funding is received.

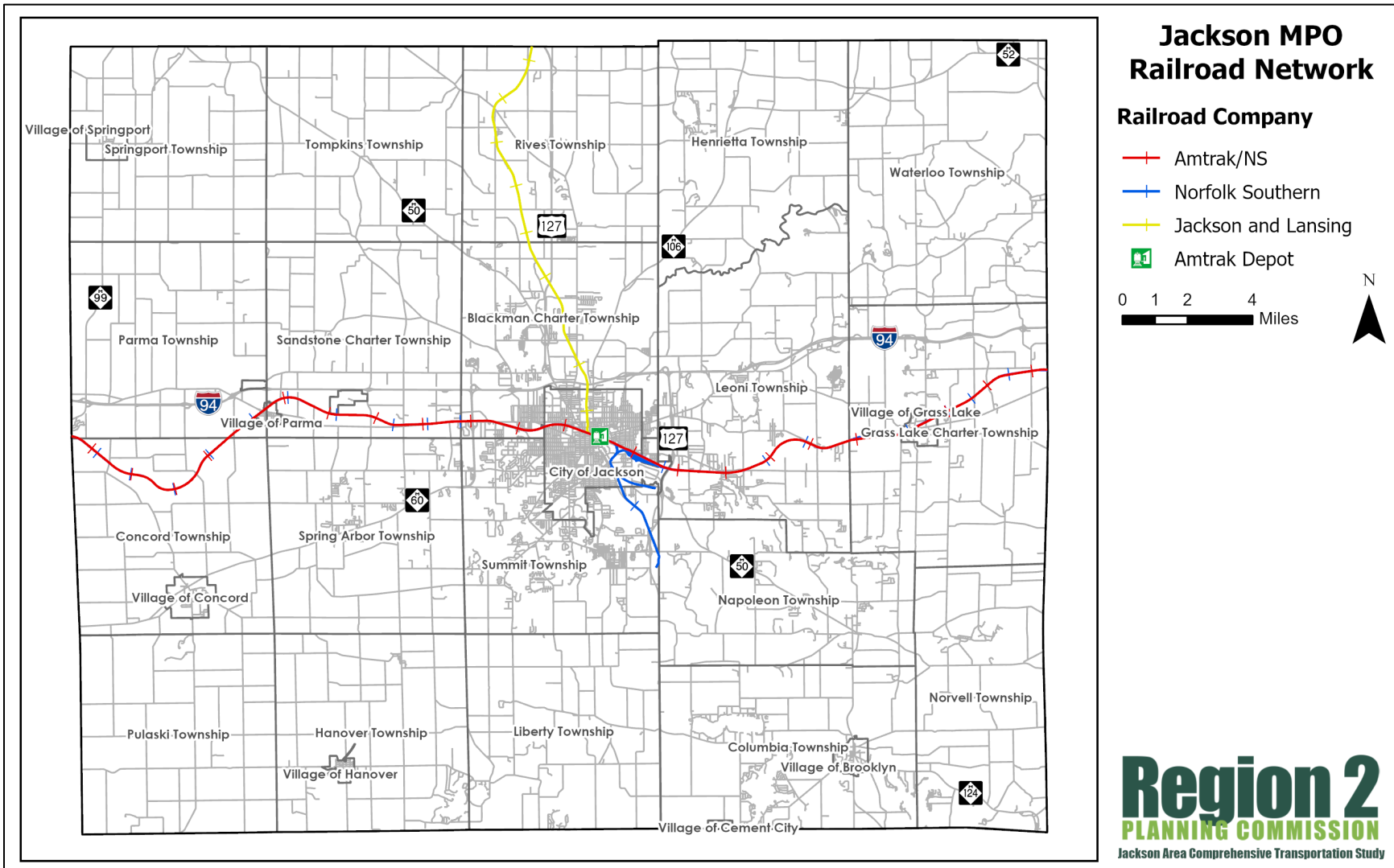
Future Forecasts, Issues, & Needs

Passenger rail transportation will continue to be available to the residents of Jackson County, with any future investment decisions determined by the private sector. The continuing efforts to develop high-speed passenger service along the Chicago-Detroit corridor is encouraged for the successful advancement of rail service as an alternate mode of transportation.

The City of Jackson should also continue to revisit and explore the recommendations of the 2005 Jackson Amtrak Depot Intermodal Feasibility Study and the 2010 alternate site plan. These improvements to the Jackson Amtrak Depot would be beneficial for the city by allowing multiple modes of travel to and from the station. This would also help revitalize the area outside the station and make it more attractive to those who are visiting Jackson by train.

Figure 4-18, a map of the railroad network in Jackson County, is on the next page.

Figure 4-18: Map of Railroad Network



Air Transportation

The Jackson MPO contains several public-use airports, with the largest being the Jackson County Airport - Reynolds Field (JXN). The Jackson County Airport accommodates non-commercial charter and freight flights. There are more than 40,000 landings and takeoffs per year. Located just beyond the northwest corner of the City of Jackson, the airport is an important part of the transportation system, and is a significant contributor of handling the Jackson MPO's goods and services.

Existing Airport Conditions

Jackson County Airport - Reynolds Field

Jackson County Airport - Reynolds Field was established in 1927 when Mr. and Mrs. Wiley Reynolds donated 160 acres of a family farm to the City of Jackson for use as a municipal landing field. The airport now comprises 960 acres of land located between M-60, I-94, Airport Rd and Wildwood Ave. The City of Jackson operated the airport until 1976 when the need for a broader tax base to support the airport became evident. In 1976, after two years of joint operation by the City of Jackson and Jackson County, the airport was sold to Jackson County for \$1.00.

Figure 4-19
Historic Picture of Jackson County
Airport - Reynolds Field



The airport has two paved 100 feet wide runways: Runway 7-25 is 5,357 feet long and Runway 14-32 is 4,000 feet long. The airport owns and maintains two corporate style aircraft hangars plus 15 hangar bays in two hangar structures. It also owns and maintains a terminal, tower, administration and two maintenance buildings. The airport is an all-weather airport with precision approaches as well as visual navigational aids on all runways. There are 105 based aircrafts, most of which are housed in privately owned hangars on airport owned land. The hangar owners pay an annual land lease fee. Runway 7-25 has an Instrument Landing System.

The airport has a general aviation/passenger/charter terminal, a rotating beacon for night navigation, segmented circle and lighted wind indicators on runways 7-25 that measure wind speed and direction, and an automated 24-hour weather station linked to the National Weather Service. The airfield has pilot controlled runway lighting after hours when the tower is not staffed by air traffic controllers. The airport also has several fixed based operators who provide aviation support services.

The Federal Aviation Administration characterizes the airport as a Regional General Aviation Airport and is one of fourteen airports in Michigan with an operating air traffic control tower. The air traffic control services are provided by a private contractor, Midwest Air Traffic Services, Inc., and operate from 7:00 AM until 9:00 PM daily. After hours

arriving and departing aircraft utilize the assigned radio frequency for this airport to announce their intentions to other aircraft in the area.

The airport is estimated to have an economic impact on its service area of approximately \$40 million annually. This impact is due to the use by both airport and non-airport businesses and the general aviation sector, which make it a major transportation hub.

Other Public-Use Airports

- Napoleon Airport
- Shamrock Airport
- Van Wagnen Field
- Wolf Lake Airport

Future Forecasts, Issues & Needs

Regional air carrier airports will continue to function as the primary passenger facilities providing national and international service for the residents of the Jackson metropolitan area. Lansing Capital Region, Detroit Metropolitan, Flint Bishop and Kalamazoo-Battle Creek international airports are all within 90 minutes travel time from Jackson and provide service options for area residents.

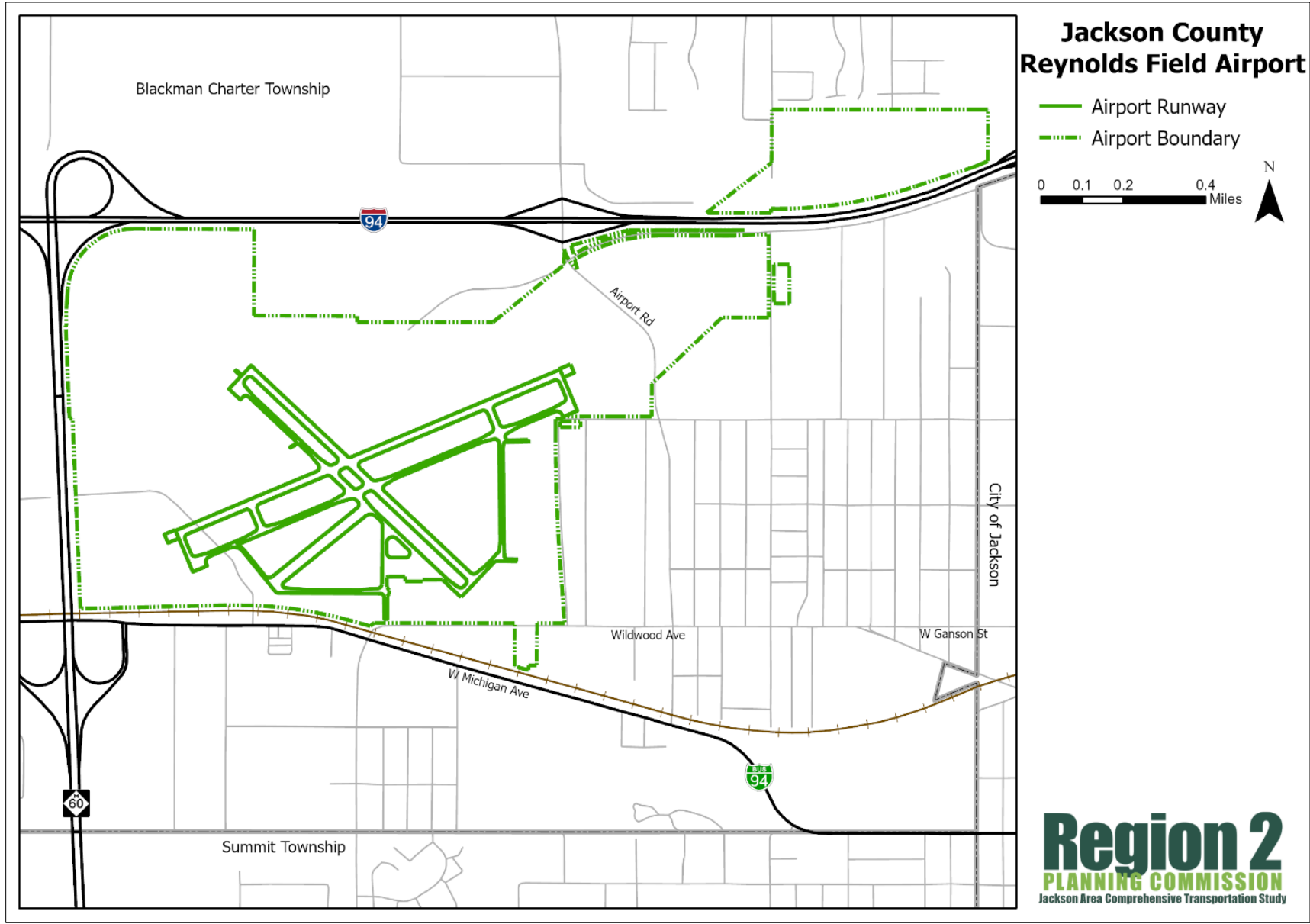
The annual economic value of the airport to the greater Jackson area is determined to be \$40 million (2019). It is expected to continue to provide air services to Jackson County businesses and private individuals by being a major player in the economic development of the region and being a significant transportation hub. The airport also plays a significant role in local and regional pilot training.

In 2017, Runway 7-25 was realigned and lengthened 5,357 feet to replace former runway 6-24. The shift allowed proper safety areas (1000') on both ends of the runway. In 2008, the crosswind runway (14-32) was extended from 3,500 feet to 4,000 feet. The combination of these changes addresses the FAA runway safety area criteria and provides future growth and development opportunities.

In 2017, the airport completed a Business Plan identifying key planning areas for the future, including: predevelopment of hangar sites with all utilities for enhanced revenue; marketing excess airport property for development and income through lease or sale; enhancing the airport as a “destination”; and funding key capital purchases through these new revenue streams.

Figure 4-20, a map of the airport runways and property boundary, is on the next page.

Figure 4-20: Jackson County Airport Map



Freight

The movement of freight has a significant impact on the transportation system. Of the more than 536 million tons of freight moved through the state in 2019, trucking accounted for 72.8%, rail handled 16%, water handled 9.6%, pipeline handled 1.5%, and aviation handled less than 1%. Of the 6 million tons of freight moved in Jackson County in 2019, trucks moved 94.4% and rail moved 5.6%. These modes work together to achieve the safe and efficient delivery of goods across the state and within the Jackson MPO.

Existing Network & Conditions

Freight on the Road Network

Truck traffic is common on the highways throughout the Jackson MPO, especially the freeways of I-94 and US-127. MDOT classified I-94 between Chicago and Detroit as the corridor with the highest amount of freight traffic in the state. There are also several major businesses and factories which generate truck traffic at their facilities.

There are roads in Jackson that are specifically dedicated to routing truck traffic. A tiered and classified system provides a means of determining the best routes to accommodate this traffic in urban and rural areas. The “heavy” truck category, with six or more tires on the road, is directed to specific routes. The City of Jackson and Jackson County have specific listings of streets that can accommodate heavy trucks.

Rail Freight

The main rail line in Jackson County is the former Michigan Central Line, which roughly runs parallel to I-94. Norfolk Southern (NS) uses this line for freight service from Detroit to Kalamazoo. NS also operates local freight service on two smaller lines in Jackson that both split from the main line near Washington Ave and Elm Ave. One line roughly parallels M-50/US-127 BR and terminates at MISA Specialty Processing. This line also serves Omni Source and Gerdau. The other line travels a short distance to the Dawn Food Products factory. NS has a railyard located within Jackson County on Mitchell St, near the intersection of Page Ave and Elm Ave.

A secondary mainline in Jackson County, the Jackson and Lansing Railroad Company (JAIL), connects with Norfolk Southern in Jackson, and CSX and Canadian National (CN) in Lansing with daily freight-only service. JAIL is a subsidiary of the Adrian and Blissfield Railroad.

Aircraft Freight

The Jackson County Airport is used daily for small cargo deliveries by aircraft primarily for “just-in-time” services. Though not a large part of the airport’s operations, current facilities adequately meet the needs of industry in the Jackson area. Currently, there are no plans to expand operations or capacity for this type of activity.

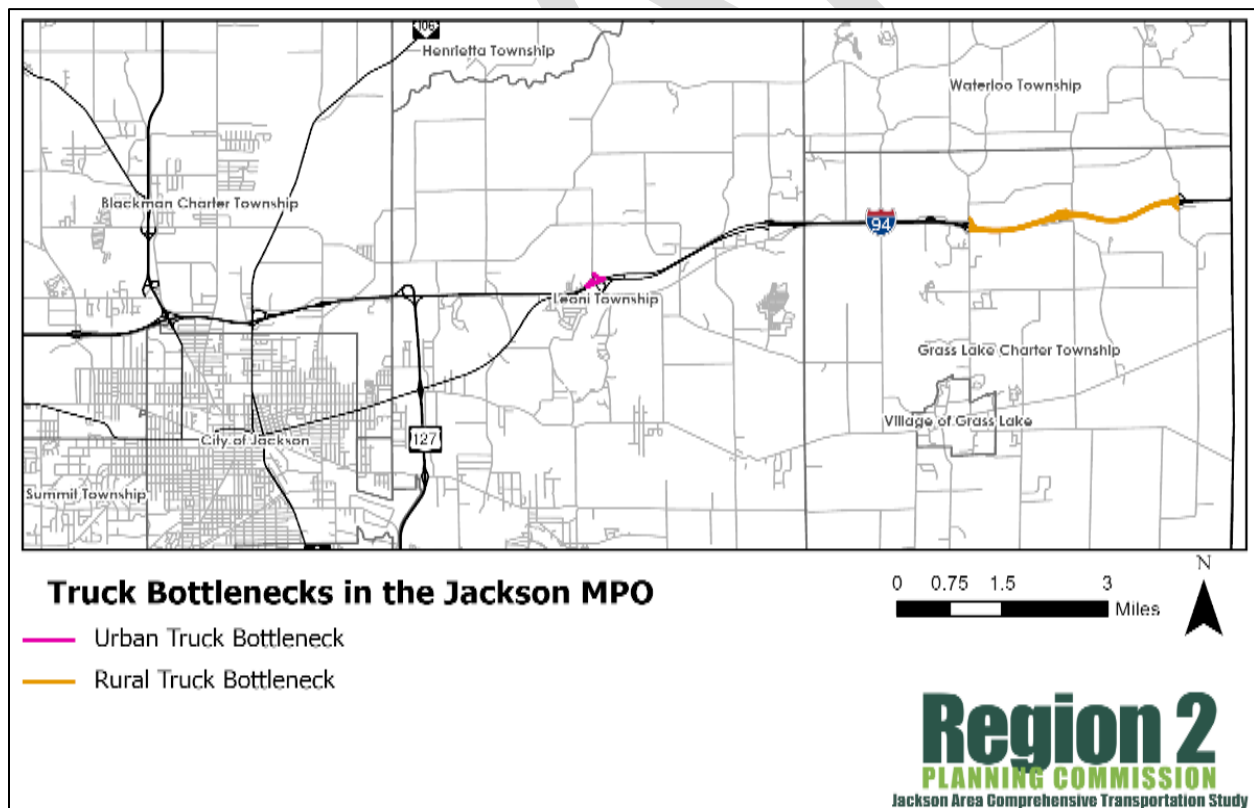
Existing Plans

Michigan Mobility 2045

The State Freight Plan, which was developed as part of Michigan Mobility 2045 (MM2045), provides a comprehensive overview of the state's freight transportation system. A multi-modal and intermodal resource, the plan provides a framework to consider the impact, improvements, and priorities related to freight. It outlines statewide strategic goals, the economic context of freight planning, policies, assets, system condition and performance, a 20-year forecast, overview of trends, needs and issues, and the Freight Investment Plan. Written to address freight at a state-level, the plan can help Jackson understand and consider how local infrastructure and policies can contribute to the future success of accommodating freight locally.

MM2045 identified urban and rural truck bottlenecks throughout the state for 2019. These are places where truck traffic commonly gets backed up and delayed. The areas were evaluated on how much money they cost each user a day. The Jackson MPO contains one urban and one rural bottleneck, both of which are along I-94. The urban bottleneck occurs on I-94 westbound at the Sargent Rd interchange and has a user cost of \$31,058 per day. The rural bottleneck occurs on I-94 in both directions between Mt Hope Rd and Clear Lake Rd. This bottleneck has a user cost of \$31,724 per day, the fifth most costly in the state. Figure 4-21 is a map of each bottleneck's location.

Figure 4-21: Truck Bottlenecks in the Jackson MPO



Future Forecasts, Issues, & Needs

The movement of goods has increased over time, and commodity forecasts project the increase to continue. The nature of that movement will continue to change along with technology as consumer's demand change. The City of Jackson and Jackson County will need to continue to track and maintain its freight infrastructure to keep up with growth projections. Freight traffic impacts congestion, safety, pavement life, air quality, and quality of life.

MDOT has projected a significant amount of growth in freight across the state out to 2045. The Jackson MPO should consider how it could play a part and prepare for the growth. The projections for Jackson County specifically are in Table 4-5. These projections include truck and rail freight that is delivered into, out of, and within the county.

Table 4-5: Freight Projections for Jackson County

Mode	Direction	Tons			Value (Million \$)		
		2019	2045	% Growth	2019	2045	% Growth
Truck	Inbound	2,954,375	3,165,770	7%	3,563	4,314	21%
	Outbound	2,835,526	3,510,926	24%	3,343	6,066	81%
	Within	96,400	72,202	-25%	103	107	4%
	TOTAL	5,886,301	6,748,898	15%	7,009	10,486	50%
Rail	Inbound	147,676	210,972	43%	165	265	60%
	Outbound	202,440	266,241	32%	67	87	31%
	TOTAL	350,116	477,213	36%	232	352	52%
Total	Inbound	3,102,051	3,376,742	9%	3,728	4,578	23%
	Outbound	3,037,966	3,777,167	24%	3,410	6,153	80%
	Within	96,400	72,202	-25%	103	107	4%
	TOTAL	6,236,417	7,226,111	16%	7,241	10,838	50%

Emerging Technology within the Transportation System

Electric Vehicles

IJA legislation allocated \$5 billion for the National Electric Vehicle Infrastructure (NEVI) Formula Program, which is focused on establishing a network of fast chargers across the country to accelerate the adoption of electric vehicles (EVs) and reduce greenhouse gas emissions. The NEVI Formula Program will allocate \$110 million to the State of Michigan between fiscal years 2022 and 2026 to install four 150 kW-or-greater chargers with Combined Charging System (CCS) ports at intervals of no more than 50 miles along each of the state's designated Alternative Fuel Corridors (AFCs).

MDOT developed the Michigan State Plan for Electric Vehicle Deployment in August 2022 to set the direction for a successful deployment of NEVI Formula Program funding within Michigan. Chapter 7 of the plan discusses the analysis completed to identify Michigan's charging needs, general funding, and considerations for future planning and deployment. The Jackson MPO currently does not meet the NEVI charger needs along the two AFCs within it, I-94 and US-127. In this plan, MDOT calls for 4 NEVI chargers to be installed within 1 mile of the I-94/US-127 North interchange. These chargers would all be within the Consumers Energy utility territory.

Connected & Automated Vehicles

Connected and automated vehicles (CAVs) are already impacting the state of Michigan. MDOT has a connected vehicle program that is supported by GM, Ford, the University of Michigan, Oakland County Road Commission, and others. Program assets and testing areas are currently just east of the Jackson MPO. A report prepared for the Region 9 Prosperity Initiative in 2017 called "Planning for Connected and Automated Vehicles" looked at the impact of the technologies for southeast Michigan. The report found that the impacts of CAVs will be broad. They will change the commuting behaviors and patterns; government decisions related to land use, zoning, and infrastructure; and equity and social welfare issues for local communities.

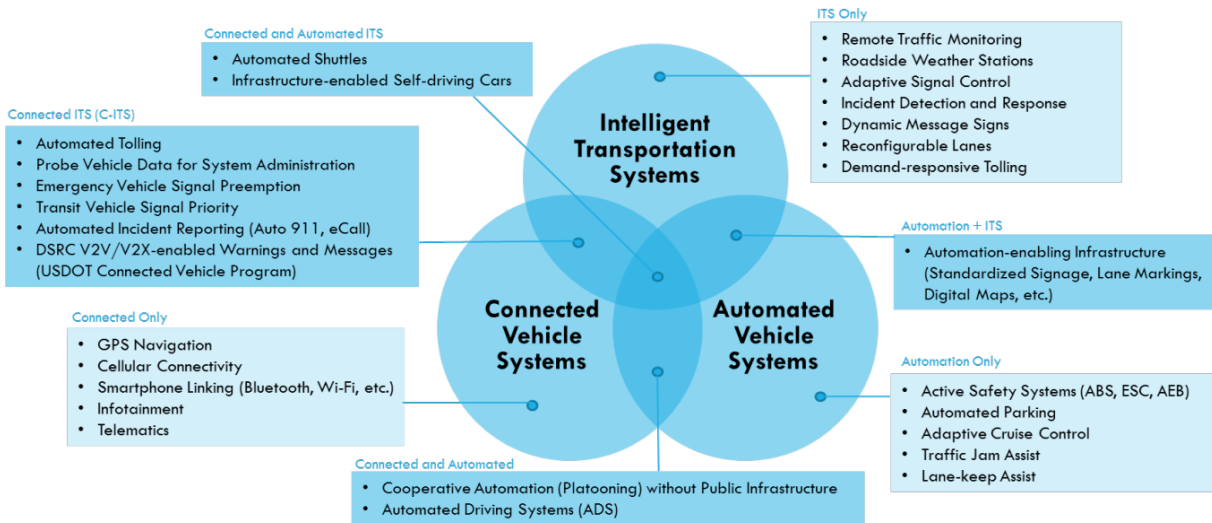
Defining Connected & Automated Vehicles

The term "connected and automated vehicles" refers to a variety of vehicle technologies and systems. There are different ways that vehicles can be connected and/or automated. Intelligent Transportation Systems (ITS) is another component of this emerging technology that can interact and influence CAVs. These technologies are explained in the text below and in Figure 4-22.

- **Automated Vehicle Systems** are any electronic system that influences the lateral and/or longitudinal motion of a vehicle. If the influence is continuous, this is referred to as a driving automation system.
- **Connected Vehicle Systems** enable the exchange of digital communication between a vehicle and another entity. Some vehicles may only be able to receive information while others may only be able to send it.

- **Intelligent Transport Systems** are electronics, communications, or information processing used to improve the efficiency or safety of a transportation system. ITS is typically implemented by a public or quasi-public entity.

Figure 4-22
Connected & Automated Vehicle Terms



Impact

The impact of CAVs is largely unknown because its deployment has been primarily limited to test environments. Researchers have begun to consider how transportation will change as a result of this disruptive technology. The influence of computer-driven vehicles may require changes to transportation laws, policy, infrastructure, and access management. The full impact in urban, suburban, and rural environments is unknown.

Road and highway infrastructure is one aspect of transportation that will be affected. Current design standards have been developed to meet the needs of human drivers, and may need to change to accommodate CAVs. Road markings are a critical part of the road system, and CAV's adherence to these markings is imperative to safety and to maintain consistent road operations. Some automated vehicles rely on identifying road markings, but this could be complicated by snow and rain weather events. Not all roads, especially in rural areas, have complete road markings. With the goal of producing a self-driving car, automakers are exploring other ways to automate lane keeping.

CAVs could potentially allow for a more robust and efficient flow of traffic. The same amount of traffic could be accommodated by fewer lanes because vehicles can operate closer together. In mixed traffic situations, risky driving behavior may decrease with CAVs because their behavior is less erratic. Bicyclists have reported feeling safer next to CAVs because their behavior is easier to predict.

The number of vehicle miles traveled may also be affected. Vehicle miles traveled (VMT) is defined by the federal government as a measurement of miles traveled by vehicles within a state or in an urbanized area, and is used as a standard to track how much people drive. Below are some factors that may affect VMT.

Factors potentially increasing VMT

- **Zero occupancy VMT.** Vehicular miles traveled could increase due to vehicles traveling without passengers between drop-off and pick-up locations.
- **Shift away from mass transit and non-motorized modes.** Increased conveniences and affordability could make CAVs more attractive options than mass transit, biking or walking.
- **Reduced trip chaining.** For example, one vehicle could take a family member to work, return home empty to take another to school, etc. This would mean less vehicle ownership, but may still increase vehicle miles traveled.
- **Increased mobility of non-drivers.** CAVs would offer underserved populations – the elderly, the young, and people with disabilities - access to travel.
- **Urban form and development patterns.** People might be more willing to accept longer commute times because they would be able to engage in other activities while traveling, and, therefore, live in a more affordable home farther from their workplace. This could cause an increase in urban sprawl development patterns.

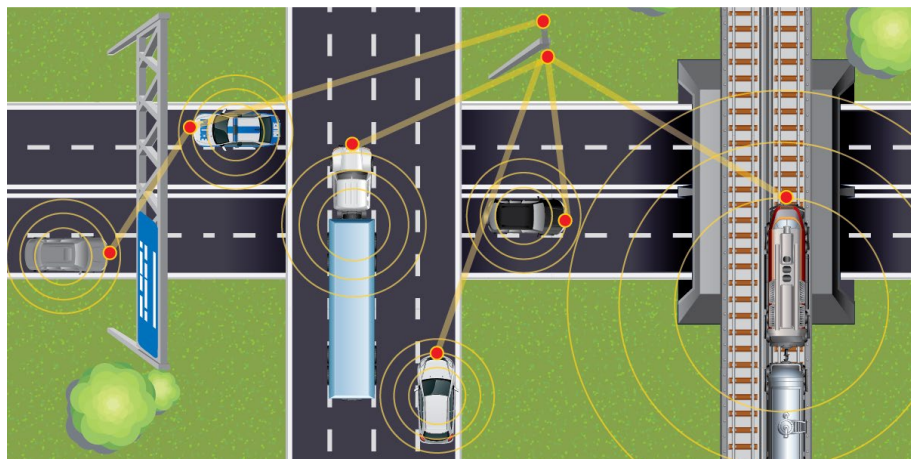
Factors potentially decreasing VMT

- **Lower car ownership.** If people own fewer vehicles due to carsharing options, unnecessary travel could be reduced.
- **Increased vehicle occupancy.** More people will be interested in carsharing, as technology evolves to make it more convenient and less expensive, including suburban and rural areas. More people in fewer vehicles would decrease the total vehicle miles traveled.
- **CAVs used as first and last mile solution along with mass transit.** If CAVs are used to help get people to and from transit routes, and not replace a trip by mass transit, travel may be reduced. If a CAV does not need a human driver, there may be less need to need to park a car and parking facilities could be reduced. As parking demands diminish, communities may no longer need to invest in new parking structures. Communities could lower or eliminate minimum parking requirements. Reduced parking demand may reduce the need for parking requirements.

Intermodal Implications

Some forms of rail have been partial or fully automated for some time. Rail infrastructure is optimally designed to take advantage of these technologies, although maintaining connection and automation through tunnels and in extreme weather conditions can be challenging. As technology advances continue, there is incentive to update transportation facilities to increase safety and efficiency. USDOT, through the Connected Vehicle Safety for Rail initiative, is researching how CAVs and rail will safely interact at railroad crossings.

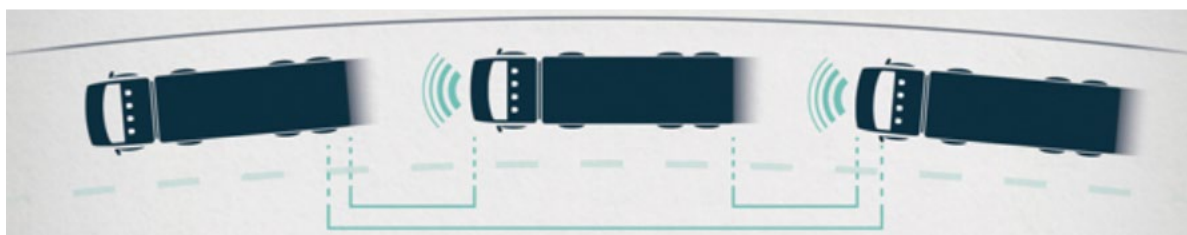
Figure 4-23
Example of How Technology
Can allow for Communication among Modes of Travel



Drones, or remote-controlled aircrafts, have been explored by retail businesses on how to use them to deliver goods to customers. Videographers and photographers are using them to capture unique perspectives of landscapes. Drones are under the complete control and jurisdiction of the Federal Aviation Administration (FAA). The Jackson County Airport specifically addresses drone operations on its website, though the operation is not limited to airports. Drone hobbyists are referred to review the FAA’s “Know Before You Fly” campaign, along with following the recommended federal safety guidelines.

The delivery of goods via automated truck convoy, or platooning, has also been under development for nearly a decade. Recent improvement in technologies has made this idea more likely for deployment in the near term, much like CAVs. This will change the appearance and operations of how truck freight will travel on the road network. Platooning will look like a number of trucks have joined a road train, but act as a single unit. This will make freight delivery via trucks cleaner by reducing emissions, safer due to less brake time needed, and more efficient use of resources. Automation may make interacting with human-driven, connected, and automated vehicles more predictable.

Figure 4-24
Freight Platooning



Understanding how CAVs will relate to pedestrians and bicyclists has yet to be deeply researched. Experts are raising a number of issues as to how these modes will interact. The Pedestrian and Bicycle Information Center, which is supported by the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA), have identified key issues on this topic.

- Address how CAVs will be able to detect and predict the movement of pedestrians and bicyclists.
- Determine the ways that pedestrians and bicyclists will identify and communicate to CAVs.
- Address how CAVs will accommodate yielding to pedestrians and bicycles.
- Consider how CAVs will adapt to the varying speed at which bicycles operate and pedestrians move in various environments.
- Since vehicle speed is a critical factor in crashes with non-motorized modes and mortality rates, consider how CAVs will be instructed to operate within environments at which the posted speed limit is not appropriate.

Recommendations

Full deployment of CAVs in Jackson is years away, however, they may be within the planning horizon. Models, engineering projects, and local policies have not yet begun to consider their role within the community. Things to start considering:

In the near term:

- Reduce minimal parking standards
- Consider how new streetscape design specification and standards will accommodate pick-up and drop-off areas
- Track how CAVs will reshape road right-of-way and access management
- Review how the Complete Streets policy could accommodate the needs of CAVs

Over the mid-term:

- Encourage R2PC to account for CAVs in long range transportation plans
- Work with public transit to investigate the role of CAVs as part of the transit network
- Encourage the state to update the travel demand model and roadway design manuals to take CAVs into account
- Attend regional and state trainings, meetings, and seminars where the impact of CAVs are discussed

Over the long-term:

- Consider policies and pricing that encourages shared use of automated vehicles
- Continue to work with public transit agencies to consider how to integrate shared automated vehicle programs with mass transit
- Manage transportation facilities in terms of people throughput, not vehicle throughput
- Consolidate transportation markets at a regional level

More information on CAVs will be revealed as engineers, government officials, and the public gain experience with this emerging technology. Local communities should consider staying abreast of and follow current state-level conversations to understand how CAVs will impact local communities.

Chapter 5

Coordination with Statewide & Regional Plans

Current federal legislation provides funding for surface transportation through FY 2026, and requires that state long range transportation plans must be reviewed by the local MPO. A review of state and regional safety plans must also be undertaken. This chapter includes a review of these documents.

Michigan Mobility 2045 Plan

In November 2021, the Michigan State Transportation Commission approved the MDOT Michigan Mobility 2045 Plan, which serves as an update to the Michigan 2040 State Long Range Transportation Plan. This plan is a broad policy-oriented document which can be used to guide transportation investment decisions at all levels of government. It has identified strategic multimodal corridors along with general policy strategies, but has not programmed any specific projects or funding. The plan is flexible to accommodate the rapidly changing transportation demands of its citizens operating in a competitive global economy.

Public meetings were held to determine that the assumptions in the plan were consistent with the public's perception. As a result of these meetings, MDOT developed the following long range vision for the state's transportation system:

"In 2045, Michigan's mobility network is safe, efficient, future-driven, and adaptable. This interconnected multimodal system is people-focused, equitable, reliable, convenient for all users, and enriches Michigan's economic and societal vitality.

Through collaboration and innovation, Michigan will deliver a well-maintained and sustainably funded network where strategic investments are made in mobility options that improve quality of life, support public health, and promote resiliency."

Goals & Objectives

The transportation planning process historically defines goals and objectives, identifies problems, generates and evaluates alternatives, and develops short and long term plans. The Michigan Mobility 2045 Plan identifies six goals based on input from MDOT, stakeholders, public comments, national goals, and federal planning factors. Each goal is accompanied by measurable, outcome-based objectives that describe what must be done to achieve the goal and advance the MM2045 vision.

Figure 5-1
Michigan Mobility 2045 Plan



Goal 1. Quality of Life

Enhance quality of life for all communities and users of the transportation network.

Goal 2. Mobility

Enhance mobility choices for all users of the transportation network through efficient and effective operations and reliable multimodal opportunities.

Goal 3. Safety and Security

Enhance the safety and ensure the security of the transportation network for all users and workers.

Goal 4. Network Condition

Through investment strategies and innovation, preserve and improve the condition of Michigan's transportation network so that all modes are reliable, resilient, and adaptable.

Goal 5. Economy and Stewardship

Improve the movement of people and goods to attract and sustain diverse economic opportunities while investing resources responsibly.

Goal 6. Partnership

Strengthen, expand and promote collaboration with all users through effective public and private partnerships.

The state's goals were reviewed and are consistent with those included in the JACTS 2050 Long Range Transportation Plan.

Strategic Multimodal Corridors

In the MM2045, MDOT defined a network of strategic multimodal corridors representing an integrated, multimodal system to support the safe and efficient movement of people, services, and goods. Corridors that traverse through Jackson County include the I-94 corridor and US-127 corridor. A report was conducted on these corridors, which included information regarding traffic safety, infrastructure condition, multimodal assets/services, traffic, and congestion. This information was provided for each corridor statewide and for each section within the University Region, where Jackson County is located.

The Michigan Department of Transportation has stated its continuing commitment to on-going public involvement in its current planning activities as well as in future Michigan Mobility Plan updates.

Supplement Plans

The Michigan Mobility 2045 Plan is the first of its kind to incorporate two federally required documents: the State Rail Plan and the State Freight Plan. Combined, these three documents provide a streamlined vision of Michigan's transportation future across all modes. MM2045 also incorporates the statewide Active Transportation Plan, which provides a vision for walking and cycling infrastructure across the state. The Jackson MPO used these supplementing plans as resources in the development of the 2050 LRTP and other local and regional plans.

2023-2026 State of Michigan Strategic Highway Safety Plan

The 2023-2026 State of Michigan Strategic Highway Safety Plan (SHSP) was completed by the Governor’s Traffic Safety Advisory Commission in January 2023. Four emphasis areas were identified with the mission to “Apply the Safe System Approach through statewide strategies and initiatives that accommodate human mistakes and injury tolerance levels to move Michigan Toward Zero Deaths.” The overall vision of the document is to “Eliminate fatal and serious injury crashes on Michigan’s roadways” with the specific goals of eliminating the state crash fatalities from 1,131 in 2021 to 0 by 2050 and eliminating serious injuries from 5,979 in 2021 to 0 by 2050. Data from the Office of Highway Safety Planning shows an upward trend in fatalities and a downward trend in serious injuries. Deaths in 2021 were up 10.02% since 2017 however, incapacitating injuries were down 1.73% in 2021 since 2017.

Figure 5-2
2023-2026 Strategic Highway
Safety Plan



Emphasis Areas and Action Teams

The 2023-2026 SHSP is focused on addressing four broad emphasis areas: High-Risk Behaviors, At-Risk Road Users, Engineering Infrastructure, and System Administration. Within the emphasis areas, action teams were created to provide targeted guidance on area-specific safety issues. The emphasis areas and action teams are listed below:

- High-Risk Behaviors
 - Distracted Driving
 - Impaired Driving
 - Occupant Protection
- At-Risk Road Users
 - Commercial Motor Vehicle Safety
 - Drivers Age 20 and Younger
 - Motorcycle Safety
 - Pedestrian and Bicycle Safety
 - Senior Mobility and Safety
- Engineering Infrastructure
 - Traffic Safety Engineering
- System Administration
 - Traffic Incident Management
 - Traffic Records and Information Systems

Strategies

Strategies have been outlined for each action team. Some strategies that are pertinent to the Jackson MPO are identified below:

- Identify and promote the use of best practices when designing and operating facilities.
- Raise awareness of pedestrian and bicycle safety.
- Recognize successful pedestrian and bicycle safety initiatives.
- Determine focus communities, cities, and agencies for priority assistance using data.
- Provide recommendations related to pedestrian and bicyclist safety legislation.
- Support, promote, and implement the Toward Zero Deaths national policy.

The Region 2 Planning Commission agrees with the data and strategies presented in the 2023-2026 State of Michigan Strategic Highway Safety Plan. For more information and a full list of strategies, please refer to the 2023-2026 State of Michigan SHSP.

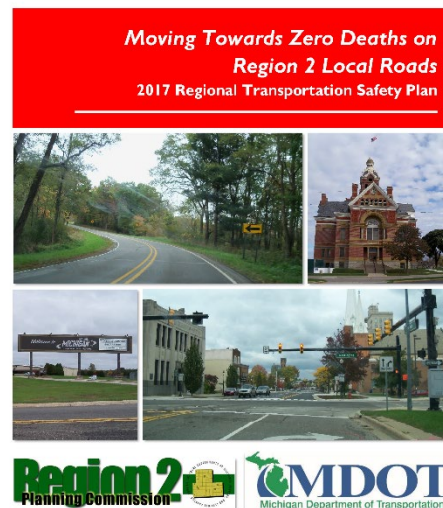
2017 Regional Transportation Safety Plan

The overarching goal of the Regional Transportation Plan is the reduction of fatal and serious injury crashes within Hillsdale, Jackson, and Lenawee Counties, which form the boundaries of Region 2. The vision and mission of the plan are guided by the Michigan SHSP and are as follows: “Move Toward Zero Deaths” and “Improve traffic safety on local roads by fostering improved safety, communication, coordination, collaboration, and education within the three counties.”

Three goals were created based on crash history data in the region and concerns raised by local stakeholders:

- Identify three safety partners to increase awareness.
- Reduce traffic fatality crash rates per 100 million vehicle miles travelled (MVMT) from .0035 in 2015 to .0026 in 2025.
- Reduce serious traffic injury crash rates per 100MVMT from .0148 in 2015 to .0081 in 2025.

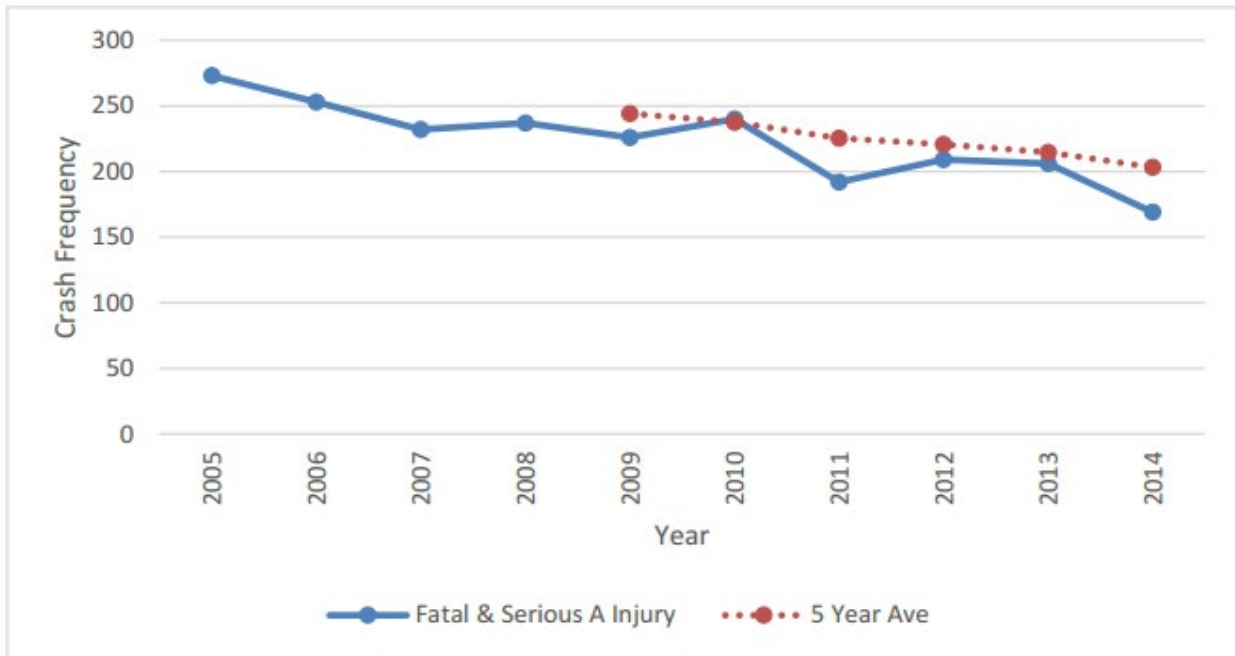
Figure 5-3
2017 Regional Transportation Safety Plan



August 2017
www.opusinternational.com



Figure 5-4
Region 2's Historic Fatal & Serious Injury Crash Frequencies



The plan identifies six emphasis areas: at-risk driver age groups, driver behavior, impaired drivers, intersection related, non-motorized, and single vehicle crashes. The emphasis areas and guidance from stakeholders were used to categorize practical treatment strategies for addressing the identified target crashes. Strategies were identified for each emphasis area. The document is intended to provide guidance to local agencies regarding local areas of concern.

JACTS

JACKSON AREA COMPREHENSIVE
TRANSPORTATION STUDY

Chapter 6

Performance Measures

Transportation legislation developed by Congress provides a vision and direction for all transportation agencies. In July 2012, President Obama signed MAP-21 that established transportation systems move toward a performance- and outcome-based program. The objective of the performance and outcome-based program is for the investment of resources in projects that collectively make progress toward the achievement of nationally set goals. The emphasis continued in the Fixing America's Surface Transportation (FAST) Act and the Bipartisan Infrastructure Law (BIL), signed into law in 2015 and 2021, respectively. As part of MAP-21, national performance goals were created for roads, highways, and public transportation.

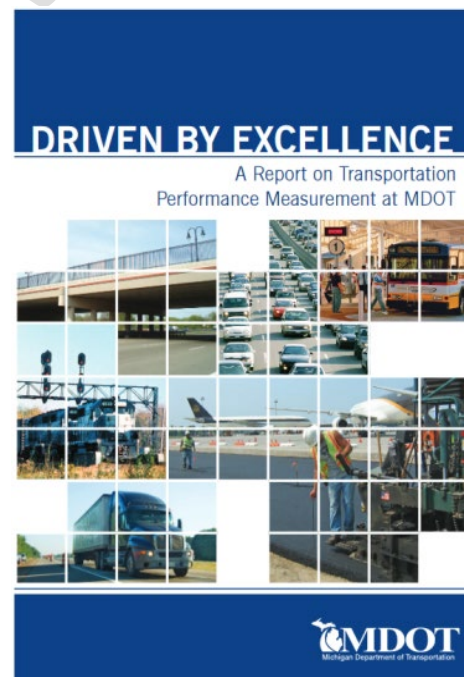
Program Overview

Roads & Highways National Performance Goals

The performance measures were created around monitoring the federal aid highway program. They are designed to be national goals to help monitor the success of the transportation system and help drive investment. Below is a brief summary of the seven national goals included in MAP-21.

- 1) **Safety** - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- 2) **Infrastructure Condition** - To maintain the highway infrastructure asset system in a state of good repair
- 3) **Congestion Reduction** - To achieve a significant reduction in congestion on the National Highway System
- 4) **System Reliability** - To improve the efficiency of the surface transportation system
- 5) **Freight Movement** - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
- 6) **Environmental Sustainability** - To enhance the performance of the transportation system while protecting and enhancing the natural environment

Figure 6-1
A Report on
Transportation Performance
Measures at MDOT



- 7) **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.

Public Transportation National Performance Goals

MAP-21 also mandated the Federal Transit Administration (FTA) to develop a rule establishing a strategic and systematic process of operating, maintaining, and improving public capital assets effectively through their entire life cycle. The Transit Asset Management Final Rule became effective October 1, 2016 and established four performance measures. The performance management requirements are a minimum standard for transit operators. Providers with more data and sophisticated analysis expertise are allowed to add performance measures. Below are the asset categories that are the focus of the transit asset management performance measures:

- 1) Rolling Stock - means a revenue vehicle used in providing public transportation, including vehicles used for carrying passengers on fare-free services.
- 2) Equipment - means an article of nonexpendable, tangible property has a useful life of at least one year.
- 3) Facilities - means a building or structure that is used in providing public transportation
- 4) Infrastructure - means the underlying framework or structures that support a public transportation system.

In addition to transit asset management goals and performance measures, FTA also published the Public Transportation Agency Safety Plan (PTASP) Final Rule, which requires certain operators of public transit systems that receive federal funds under FTA's Urbanized Area Formula Grants to develop safety plans that include the processes and procedures to implement Safety Management Systems (SMS). The plan must include safety performance targets. Transit operators also must certify they have a safety plan in place, originally meeting the requirements of the rule by July 20, 2020. The deadlines for the PTASP were extended due to the COVID-19 pandemic. The plan must be updated and certified by the transit agency annually.

National Goals Implementation Schedule

The timeline for implementation of the national performance measures is determined when a final rule establishing the date for the rule is effective. Table 6-1 outlines the effective date of the final rule and when States and MPOs must take action.

**Figure 6-2
JATA Bus**



Table 6-1: National Goals & Implementation Schedule

Final Rule	Effective Date	States Targets Dates	MPOs Targets Dates	MTP and TIP Inclusion
Safety Performance Measures	April 14, 2016	August 21, 2022	Up to 180 days after the states set targets, but not later than Feb. 27, 2023	Updates or amendments on or after May 28, 2018
Pavement/Bridge Performance Measures	May 20, 2017	October 1, 2022 – November 1, 2022	No later than 180 days after the state(s) sets target; March 30, 2023 – April 30, 2023	Updates or amendments on or after May 20, 2019
Reliability & Freight Performance Measures	May 20, 2017	October 1, 2022 – November 1, 2022	No later than 180 days after the state(s) sets target; March 30, 2023 – April 30, 2023	Updates or amendments on or after May 20, 2019
Statewide non-metropolitan and metropolitan planning	May 27, 2016	There are no measures associated with the planning rule.		
Asset Management Plan	October 2, 2017	By April 30, 2018 State DOTs submit initial plans describing asset management plan processes. By June 30, 2019 State DOTs submit fully compliant asset management plan.		
Transit Asset Management Plan	October 1, 2016	January 1, 2017	Optional reporting year for 2017 and mandatory for 2018. State will set targets for rural transit providers and urban providers will set own targets.	
Public Transit Agency Safety Plan	July 19, 2018	Rule effective July 19, 2019 – by July 20, 2020 transit providers to have Public Transportation Agency Safety Plan in place with a requirement for an annual update		

Target Overview

Within one year of the USDOT final rule on performance measures, states are required to set performance targets in support of those measures. To ensure consistency, each state must to the maximum extent practicable:

- Coordinate with an MPO when setting performance targets for the area represented by that MPO

- Coordinate with public transportation providers when setting performance targets in an urbanized area not represented by an MPO
- After the state (MDOT) establishes targets for the respective performance measures, the MPOs have 180 days within which to support the state targets or establish their own.

Target Coordination with MDOT

Performance target coordination between MPOs and MDOT began in January 2017. As Michigan MPOs, MDOT, and FHWA staff met monthly as part of the Michigan Transportation Planning Association (MTPA), it was convenient to follow scheduled MTPA meetings with a Target Coordination Meeting led by MDOT. The Target Coordination Meetings give MDOT and FHWA the opportunity to provide updates on performance measures and target setting to the MPOs. The meetings also give the MPOs an opportunity to ask questions and provide feedback on the methods used to set performance targets. MTPA members have been meeting with various MDOT agencies in the development of language and timelines to implement the targets. This MDOT Transportation Performance Measures Metro Planning Team has met monthly to ensure the timely delivery of these targets for MPOs to incorporate into their local planning documents. MPOs have also been coordinating with MDOT to develop a process for reporting MPO performance targets and the recommended action to be taken by MPO Policy Committees on setting performance targets.

Performance Reporting Requirements

MDOT is required to report to FHWA on the establishment of state performance targets and the progress made in attaining the state targets on a biennial basis. The reports are due October 1 of each even numbered year.

Federal regulations require the use of four-year performance periods over which progress toward attaining targets is tracked and reported. The exception to the four-year performance period is for the safety performance measures, which are required to be established and reported by MDOT to FHWA through the Highway Safety Improvement Program Annual Report by August 31 of each year.

MPOs are not required to provide annual reports other than MPO decisions on targets. MPOs are required to report MPO performance targets to MDOT in accordance with the documented procedures for MPO reporting targets. This will result in MPOs reporting MPO safety targets annually to MDOT, and other performance targets as they are established.

Road & Highway Future Targets

There are additional performance measures that do not have published targets as of the adoption of this plan. The dates of inclusion can be found below. As the targets are set and published by MDOT, the MPOs will take action either through adoption of the state targets or development of MPO specific targets. The following are the performance measures that do not currently have set targets to date.

1) Interstate & National Highway System Pavements

Current coordination efforts include evaluation of the pavement condition on the interstate and non-interstate National Highway System (NHS). The evaluation of the pavement will be evaluated by four metrics:

- International Roughness Index (IRI)
- Cracking
- Rutting (Asphalt)
- Faulting (Joined Concrete)

The rule designates that MDOT is required to establish two and four year targets for pavement condition on the NHS. There are two sets of targets, one for the Interstate System, and the other for the Non-Interstate NHS. MDOT is required to submit biennial progress reports to FHWA. There are four performance measures for assessing pavement condition based on composite analysis of the metrics. MDOT has provided the following information on performance measure baselines and targets:

Table 6-2: NHS Pavement Condition Performance Measures

NHS Pavement Condition	2022-25 Baseline	2-Year Target	4-Year Target
% of Interstate pavement in Good Condition	70.4%	59.2%	56.7%
% of Interstate pavement in Poor Condition	1.8%	5%	5%
% of Non-Interstate NHS pavement in Good Condition	41.6%	33.1%	33.1%
% of Non-Interstate NHS pavement in Poor Condition	8.9%	10%	10%

**Figure 6-3
Pavement Rutting**



2) NHS Bridges

Current coordination efforts include evaluation of the condition of the substructure, superstructure, deck, and culverts for bridges on the NHS system. The evaluation of the bridges will use the National Bridge Inspection Standards (NBIS). Each substructure, superstructure, deck, and culvert are rated on a 0-9 scale and recorded in the National Bridge Inventory (NBI) database. The NBI Condition ratings are broken up into three categories below:

- Good Condition: Rating of 7-9
- Fair Condition: Rating of 5-6
- Poor Condition: Rating of 0-4
 - Serious or Critical Condition: Rating of 2-3
 - Imminent Failure/Failed Condition: Rating of 0-1

The rule designates that MDOT is required to establish two and four year targets for bridge condition on the NHS. MDOT is required to submit three performance reports to FHWA within the four year performance period. There are two performance measures for assessing bridge condition:

- % of NHS bridges in Good Condition
- % of NHS bridges in Poor Condition

The minimum penalty threshold requires that no more than 10% of NHS bridges measured by deck area be classified as structurally deficient.

Table 6-3: NHS Bridge Condition Performance Measures

NHS Bridge Condition	2022-25 Baseline	2-Year Target	4-Year Target
% of NHS bridges in Good Condition	22.1%	15.2%	12.8%
% of NHS bridges in Poor Condition	7%	6.8%	5.8%

As of the adoption of this plan, MDOT was still working on the development of this target.

3) Interstate & NHS Reliability

In 2015, MDOT formed the Statewide Congestion Management Group (SCMG) to coordinate efforts between the Department and MPO's that address federal system performance measures. Since that time, this group has produced a congestion analysis white paper, reviewed and commented on draft performance measures, provided comment on a RFP for vehicle probe data, and discussed best practices and issues with measuring congestion.

MDOT submits statewide targets for the federal system performance measures. MPO's will have six months to either support the statewide targets or develop their own. MDOT is working with the MPO's to discuss the process and methods for setting the targets, and

**Figure 6-4
Cooper Street Bridge under Construction**



the RITIS and INRIX platforms that can help agencies set their own targets if they desire. The performance measures for assessing interstate and NHS reliability is as follows. MDOT has provided the following information on performance measure baselines and targets:

Table 6-4: NHS System Reliability Performance Measures

NHS System Reliability	2022-25 Baseline	2-Year Target	4-Year Target
% of Reliable Person-Miles traveled on Interstate	97.1%	80%	80%
% of Reliable Person-Miles traveled on Non-Interstate NHS	94.4%	75%	75%

As of the adoption of this plan, MDOT was still working on the development of this target.

4) Freight Movement on the Interstate

Freight movement will be assessed by a Truck Travel Time Reliability (TTTR) Index by analyzing freight travel over several time periods. The measure comes from the recognition that the industry’s use of the transportation system during all times of day. MDOT and the Jackson MPO will have the choice of using FHWA’s National Performance Management Research Data Set or an equivalent data set. MDOT has provided the following information on performance measure baselines and targets:

Table 6-5: Freight Movement Performance Measures

NHS Freight Reliability	2022-25 Baseline	2-Year Target	4-Year Target
Truck Travel Time Reliability Index - Interstate	1.31	1.60	1.60

MDOT must establish 2 and 4 year targets. The targets will be reported in the State’s baseline performance period report. MDOT will have the option to adjust the 4-year target in their mid-performance period progress report. As of the adoption of this plan, MDOT was still working on the development of this target.

Infrastructure Alignment

The transition to performance-based planning is underway at the Jackson MPO and will continue as the federally-required performance measures continue to be identified, understood, and move toward maturity. At the time of the plan’s adoption, there remain several performance measures that have yet to be finalized by MDOT. The only performance measures that MPOs have been required to address are the transit asset management measures and the five highway-related safety measures. MPOs will be working through the remaining performance measures throughout the rest of this year.

MDOT is working with the Jackson MPO to better understand the expectations of the federally-required measures. For planning agencies to maximize the benefits of performance-based planning, good data is needed on the current and desired transportation system. The data is important to set strategic directions, analyze how funds are invested and programmed, and evaluate program outcomes. For many performance

measures there is not a lot of good information to base decisions on. The lack of data makes it difficult to determine how projects or a program of projects will impact future performance.

As planning agencies around the country gain experience in working with the federally-required measures, tools will likely be developed to help agencies understand the impact that investments will have on outcomes. This will allow for the consideration of the tradeoffs in pursuing or focusing on one measure over another to produce results that are important to the stakeholders in the Jackson MPO.

A list of the FY 2023-2026 TIP projects and the performance areas that they align with is found in Appendix B. Information in the project description, primary work type and other narrative associated with the project in the TIP were used to determine if a project aligns with the performance areas. The Region 2 Planning Commission staff assessed the local (City of Jackson and Jackson County) projects, MDOT assessed their own projects, and JATA assessed the transit agency projects.

A major project initiative currently underway by MDOT is the I-94 modernization project. This long-term project will significantly impact the Jackson MPO performance-based planning measures. The project work has and will continue to positively impact several of the national targets, including Safety, Pavement/Bridge, and System Performance Measures. Completed work along the nine-mile corridor includes the addition of weave lanes, a widened median and shoulders, and reconstructed interchange ramps and bridges adhering to modernized standards. These improvements serve to increase the safety of the corridor for both passenger vehicles as well as freight traffic. These improvements have positively contributed towards improving the Safety Performance Targets. The nearly five miles of newly reconstructed or resurfaced pavement will contribute to both the Jackson MPO and Statewide Interstate and National Highway System Pavement Targets. The replacement of the Cooper St and Grand River bridges, as well as planned future bridge replacements will also contribute NHS Bridges Target. Lastly, the weave lanes, widened median and shoulders, and reconstructed interchange ramps and bridges should also positively impact the Interstate and NHS Reliability and Freight Movement Performance Measures.

Chapter 7

Socio-Economic Conditions

For MDOT to develop the Travel Demand Forecast Model (the model) for the Jackson MPO roadway network, which estimates traffic volumes and travel behavior in the area, an analysis of the 2018 land use and socio-economic conditions, as well as a 2050 projection for these characteristics, was used. The 2050 socio-economic estimates were presented in the form of projections that describe the extent and location of growth likely to occur within Jackson County. The projections also help to predict potential travel problems, which are important when considering priorities for transportation facility improvements.

Data on population, number of occupied housing units, and retail/non-retail employment for the base year 2018 and the horizon year 2050 have been distributed to the 534 Traffic Analysis Zones (TAZs) that comprise the model area. TAZs are geographic areas (polygons) that divide a planning region into similar areas of land use and travel activity and act as a simplification of origin and destination points within the community. TAZs are different in each community and can change in size over time. TAZs are established to obtain a meaningful representation of traffic behavior. A map with the TAZ's for Jackson area is presented on the following page.

The base year SE data was obtained based on information from the 2018 American Community Survey (ACS) 5-Year Estimate and from the MDOT employment list which contains the number of employees, the sector, and the geolocation of businesses residing within the Jackson MPO. This “master list” of data is purchased by MDOT from two database sources: InfoGroup (a InfoUSA Company) and Hoovers (a Dunn-Bradstreet Company).

The SE data forecast for the model was obtained considering the recently released 2020 Census data and the Regional Economic Models, Incorporated, or REMI model as well as MDOT projections. Growth assumptions were also based on the TAZ's potential for increased development, availability of vacant land, current zoning regulations, and recent developments in the area that would encourage additional growth.

Socio-economic information for the base year and future years, including future year growth factors by TAZ, was provided to each governmental jurisdiction through memorandums, spreadsheets, and area-specific maps of the socio-economic data by analysis year for comment and review. After the review, the socio-economic data was adjusted where needed, sent for the approval of the JACTS Technical and Policy committees, and included in the model to develop base year and future year travel patterns.

Figure 7-1: Traffic Analysis Zones – Jackson County

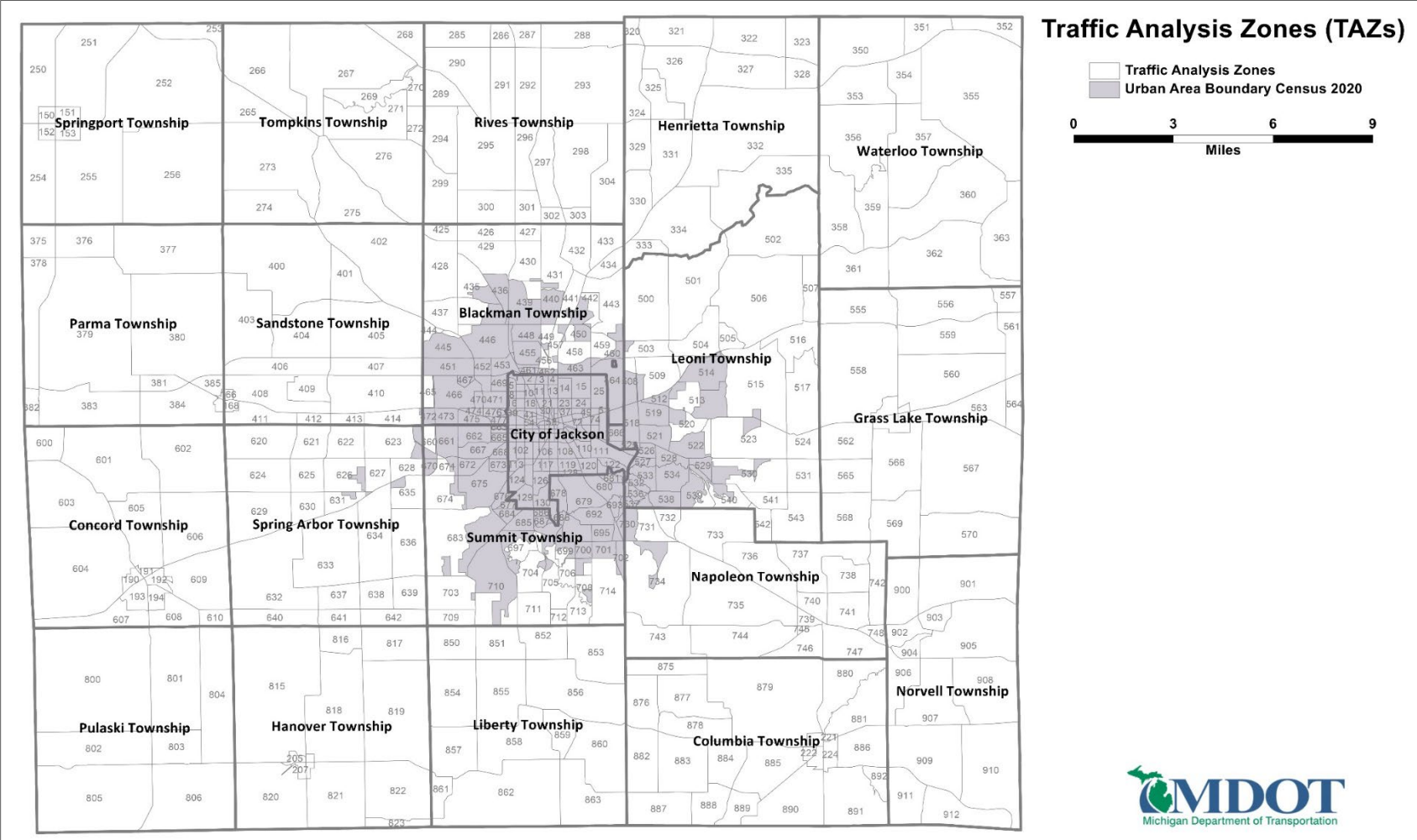
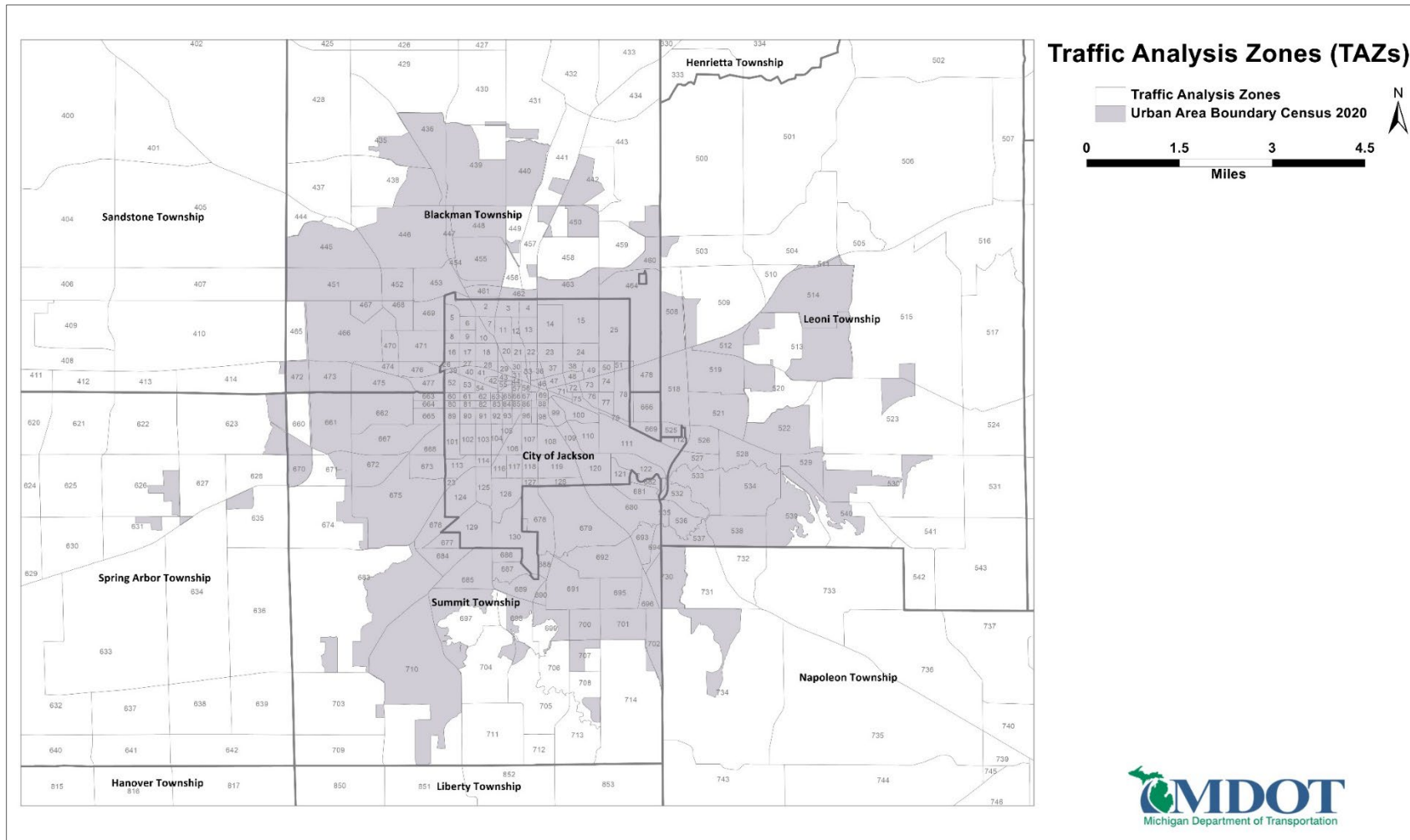


Figure 7-2: Traffic Analysis Zones – Jackson Urban Area



Population

The base year population for the plan was based on previous trends as depicted by the 2018 ACS Estimate. The population projection for 2050 considered the 2020 Census, the REMI forecast data, MDOT SE data projections, and inputs from the local community. The population projections were developed for all jurisdictions within the County and then broken down to the TAZ level.

**Table 7-1: 2018 & 2050 Population Estimates and 2020 Census Population
by Local Unit of Government**

Local Government	2018	2020 Census	2050	% Change (2018-50)
Blackman Township	23,559	25,568	28,406	14.4%
Columbia Township ^a	7,427	7,393	7,872	6.0%
Concord Township ^a	2,556	2,755	2,833	10.8%
Grass Lake Township ^a	5,740	6,069	6,762	17.8%
Hanover Township ^a	3,791	3,662	3,824	0.9%
Henrietta Township	4,746	4,673	4,968	4.7%
City of Jackson	32,900	31,383	28,143	-14.5%
Leoni Township	13,700	13,847	14,217	3.8%
Liberty Township	2,971	3,059	3,336	12.3%
Napoleon Township	6,731	6,788	7,066	5.0%
Norvell Township	2,933	2,800	2,794	-4.7%
Parma Township ^b	3,259	3,205	3,417	4.8%
Pulaski Township	2,123	1,883	1,811	-14.7%
Rives Township	4,634	4,750	4,873	5.2%
Sandstone Township	3,436	3,390	3,685	7.2%
Spring Arbor Township	8,169	8,530	9,062	10.9%
Springport Township ^a	2,166	2,142	2,062	-4.8%
Summit Township	22,814	22,920	24,454	7.2%
Tompkins Township	2,715	2,618	2,680	-1.3%
Waterloo Township	2,943	2,931	2,916	-0.9%
Jackson County	159,313	160,366	163,802	2.8%

^a Township population includes village residents.

^b Parma Village residents included in the Parma Township Total

The approved data estimated for the 2018 base year for Jackson County indicated a population of 159,313, which is 0.66% smaller than the 2020 Census total population of 160,366 recently released. Based on the estimates provided by MDOT the Jackson County population is projected to continue to grow and reach a total of 163,802 which would represent an increase of 2.14% from the 2020 Census data.

Occupied Housing Units

Occupied housing unit numbers for the base year are based on the 2018 ACS estimate while the forecast numbers are based on REMI and MDOT projections as well as local agencies' comments and knowledge of recent developments in the area. Because of the high correlation between occupied housing units and population, the occupied housing

unit projections are also used to estimate where increases or decreases in the population may potentially occur inside of the model area.

**Table 7-2: 2018 & 2050 Occupied Housing Units
by Local Unit of Government**

Local Government	2018	2020 Census	2050	% Change (2018-50)
Blackman Township	8,098	8,675	9,653	19.2%
Columbia Township ^a	3,018	3,191	3,585	18.8%
Concord Township ^a	958	1,062	1,104	15.2%
Grass Lake Township ^a	2,254	2,355	2,744	21.7%
Hanover Township ^a	1,448	1,425	1,490	2.9%
Henrietta Township	1,835	1,900	2,025	10.4%
City of Jackson	12,817	12,751	12,859	0.3%
Leoni Township	5,816	5,649	5,748	-1.2%
Liberty Township	1,202	1,236	1,383	15.1%
Napoleon Township	2,788	2,805	2,851	2.3%
Norvell Township	1,253	1,232	1,261	0.6%
Parma Township ^b	1,244	1,204	1,235	-0.7%
Pulaski Township	784	736	722	-7.9%
Rives Township	1,669	1,720	1,764	5.7%
Sandstone Township	1,269	1,297	1,464	15.4%
Spring Arbor Township	2,675	2,862	3,110	16.3%
Springport Township ^a	855	801	802	-6.2%
Summit Township	9,243	9,464	9,877	6.9%
Tompkins Township	1,127	1,025	1,137	0.9%
Waterloo Township	1,158	1,177	1,180	1.9%
Jackson County	61,511	62,567	65,994	7.0%

^a Township population includes village residents

^b Parma Village residents included in the Parma Township Total

The U.S. average household size has been steadily declining since 1970 when the number of persons per household was 3.14, falling to 2.76 in 1980, 2.63 in 1990, 2.59 in 2000, and 2.53 in 2018. The rate of decline is expected to continue over the next 30 years but at a slower rate. In Jackson County, the average household size reflected the national decline until 2010, falling from 3.23 in 1970 to 2.62 in 1990 and continuing to decline to 2.55 persons per household in 2000 and 2.48 persons per household in 2010. However, based on the 2020 Census this number was reverted to 2.56 persons per household, which is just 1% smaller than the 2.59 estimated by the approved 2018 population and occupied housing unit numbers. The average household size in Jackson County is projected to align with the national trends and see a slight decrease to approximately 2.48 persons per household by the year 2050. Michigan is expected to see an increase in employment over the next 30 years which will encourage more people to remain or move to Michigan. Jackson County is expected to see an increase in population as a result of the positive economic changes which also create a demand for housing.

The 2018 model base year data estimates that there were 61,511 occupied housing units within the study area, which is above the 2010 number of 60,771 occupied housing units and below the 2020 Census number of 62,567 occupied housing units. By the year 2050, the projections estimate a total of 65,994 occupied housing units in Jackson County, which is an increase of 5.5% when compared to the 2020 Census numbers. The projected growth in occupied housing units was allocated to the TAZs by examining local land use plans and discussions with city, village, and township officials regarding current residential development trends. The trends indicate moderate growth in the urban and outlying townships.

Employment

Based on the MDOT employment list containing InfoGroup and Hoovers employment data, 2018 employment for Jackson County was approximately 74,311, with a breakdown of 63,398 in non-retail (manufacturing, service, government-related, and others) and 10,913 in retail jobs.

**Table 7-3: 2018 & 2050 Employment Estimates
by Local Unit of Government**

Local Government	Retail 2018	Retail 2050	% Change (2018-50)	Non- Retail 2018	Non- Retail 2050	% Change (2018-50)	Total 2018	Total 2050	% Change (2018-50)
Blackman Township	4,461	4,485	0.5%	13,025	13,741	5.5%	17,486	18,227	4.2%
Columbia Township ^a	552	621	12.5%	2,255	2,524	11.9%	2,807	3,145	12.0%
Concord Township ^a	89	94	5.6%	849	923	8.7%	938	1,015	8.2%
Grass Lake Township ^a	186	186	0.0%	1,580	1,719	8.8%	1,766	1,905	7.9%
Hanover Township ^a	48	53	10.4%	696	765	9.9%	744	818	9.9%
Henrietta Township	68	69	1.5%	433	487	12.5%	501	556	11.0%
City of Jackson	3,335	3,513	5.3%	25,156	28,955	15.1%	28,491	32,468	14.0%
Leoni Township	729	762	4.5%	4,596	5,466	18.9%	5,325	6,229	17.0%
Liberty Township	66	67	1.5%	370	438	18.4%	436	505	15.8%
Napoleon Township	107	108	0.9%	1,516	1,656	9.2%	1,623	1,764	8.7%
Norvell Township	29	34	17.2%	207	247	19.3%	236	282	19.5%
Parma Township ^b	64	64	0.0%	508	596	17.3%	530	616	16.2%
Pulaski Township	9	9	0.0%	133	158	18.8%	142	167	17.6%
Rives Township	27	28	3.7%	462	556	20.3%	489	584	19.4%
Sandstone Township	79	80	1.3%	1,666	1,869	12.2%	1,745	1,949	11.7%
Spring Arbor Township	159	163	2.5%	1,888	2,043	8.2%	2,047	2,206	7.8%
Springport Township ^a	19	19	0.0%	433	459	6.0%	452	479	6.0%
Summit Township	796	852	7.0%	7,057	7,554	7.0%	7,853	8,406	7.0%
Tompkins Township	27	28	3.7%	174	223	28.2%	201	251	24.9%
Waterloo Township	63	65	3.2%	394	464	17.8%	457	528	15.5%
Jackson County	10,913	11,300	3.5%	63,398	70,843	11.7%	74,311	82,145	10.5%

^a Township population includes village residents

^b Parma Village residents included in the Parma Township

In the year 2050, the total labor force for the study area is projected to increase by 10.5% to a total of 82,145 workers with 70,843 workers in non-retail and 11,300 in retail jobs. The study area employment by type was applied to the 534 TAZs based on assumptions of growth, stabilization, and current trends for each employment sector.

Employment forecasting is the mixing of objective and subjective data. Judgment is required in selecting the type of forecast to be implemented, determining the procedures for making the forecast, and developing a process for reviewing population growth and employment factors. The influx or loss of a new employer or industry can have a considerable impact on an area's development.

Although socio-economic projections can be a helpful tool in planning for future growth and development, projections can be modified as time progresses to reflect actual development impacts. The projections used in the Jackson 2050 LRTP, summarized in Table 7-4, will be re-evaluated periodically to address changes in the population, occupied housing units, and employment that may occur.

Table 7-4: 2018 & 2050 Jackson County Totals

Year	Total Population	Occupied Households	Retail	Employment Non-Retail	Total
2018	159,313	61,511	10,913	63,398	74,311
2050	163,802	65,994	11300	70,843	82,145

JACTS

JACKSON AREA COMPREHENSIVE
TRANSPORTATION STUDY

Chapter 8

Travel Demand Forecasting & Modeling

The Travel Demand Forecast Model (TDFM) for the Jackson MPO was developed in cooperation between the Region 2 Planning Commission (R2PC) and the Urban Travel Analysis unit within the MDOT. MDOT was the lead role in the development, calibration, validation, and application of the Travel Demand Forecast Model (TDFM or “model”). The Jackson MPO acted as the liaison among members of the public, local agencies, the JACTS Technical Committee, the JACTS Policy Committee, and the Region 2 Planning Commission. R2PC and MDOT collaborated on the development schedule of the model, as well as on the dissemination and distribution of model input and output data for review, comment, and subsequent approval.

Travel Demand Forecast Models are used to identify and evaluate the capacity demands of a region’s federal-aid road network. Identification of roadway capacity deficiencies and analysis of the system as a whole, for the base year through and up to the horizon year of the plan in order to determine where future congestion is projected to occur, is vital in the development of the plan.

The TDFM results are useful in aiding the decision-making process. The identification and analysis of congested corridors and links are intended to serve as the basis for forming decisions regarding system improvement, expansion, or for other roadway capacity changes. However, in essence, the roadway congestion analysis, and the plan (prepared by the MPO with input from the MDOT) are “snapshots in time,” reflecting the conditions and trends at the time of development. As economic conditions, transportation system trends, financial outlooks, and land use environments change, it is important that the plan be updated to reflect and account for these changes. The plan, following federal laws and regulations, is reevaluated and/or updated every five years to reassess the travel demands on the federal-aid transportation system. Along with the plan update, the TDFM is also redeveloped or updated to include the changes associated with the new plan. Socio-economic trends and forecasts are also reexamined, which alters travel behavior and demand on the federal-aid road network and may potentially change the strategies of the Jackson MPO.

This chapter describes the base, interim, and horizon years Travel Demand Forecast Model development process for the 2050 LRTP.

Model Process Description

Travel demand forecast models (TDFM) are computer simulations of current and future traffic conditions. The Jackson TDFM is a regional-level transportation planning model, developed by MDOT using the TransCAD Transportation Planning Software Package, provided by Caliper, and focusing on long-term transportation planning concerns and regional travel characteristics. Model results provide road link traffic volumes (known in the modeling tool as “traffic flow”) for AM Peak (7:00am – 9:00am), Mid-Day (9:00am – 3:00pm), PM Peak (3:00pm - 6:00pm), and Off Peak (6:00pm – 7:00am) periods as well

as for the 24-hour time period. The traffic flows are then compared to the capacity allowance of the road links providing a volume-over-capacity ratio for each period which is used to calculate the level of relative congestion on the road links.

The urban TDFM development process for Jackson consists of the inter-related steps below. The traditional “Four-Step” trip-end based model structure consists of steps 2 through 5. The output from each step is used as the input in the following step.

Step 1. Data Development, Collection, and Organization

Regional socio-economic data (SE-data) and transportation system characteristics are collected. This step also includes the development of the model road network and the Travel Analysis Zone (TAZ or “zone”) structure.

Step 2. Trip Generation

Determines who is making trips, how many trips are being made, and why (for what purpose) are trips being made. It does this by calculating the number of trips produced in or attracted to a TAZ by trip purpose based on land use, household demographics, employment, and other SE-data characteristics.

Step 3. Trip Distribution

Determines where people are making trips by calculating how much travel occurs between TAZs, based on the "attractiveness" of the other zones.

Step 4. Mode Choice and Time of Day

Determines how people are making trips (by what mode), and when they are making the trips (what time of day), by allocating trips across the model network into modes of travel such as auto, non-motorized, and transit. After the split into modes, the auto trips are distributed into one of the time periods.

Step 5. Traffic Assignment

Determines what specific routes people are making for their trips based on the shortest travel time, by assigning auto trips between zones to a route/path in the transportation system.

Step 6. Model Calibration/Validation

Involves adjusting the model and verifying that the volumes simulated in traffic assignment replicate (as closely as possible) actual, observed traffic counts within a set of established validation criteria.

Step 7. System Analysis and Model Applications

Involves the use of the calibrated and validated model in the development of the metropolitan transportation plan, Air Quality conformity analysis, project identification and prioritization, and/or impact analysis.

The following sections present detailed information on how these steps were performed in the Jackson Travel Demand Model development.

Data Development, Collection, and Organization

There are two main modeling components that are required to be constructed prior to model development: model road network and traffic analysis zone.

The model road network includes various roadway attributes and generally contains links of the "collector" functional classification and higher. "Local" roads are included in the model network only to maintain continuity, for connectivity purposes, or if these links are regionally significant.

The traffic analysis zones (TAZ or "zones") are geographic areas determined based on the similarity of land use and human activity, compatibility with jurisdictional boundaries, presence of physical boundaries, and the links that make up the road network. The TAZs layer contains SE and employment information for each one of the model zones.

The model road network and the TAZs are mutual. Each TAZ is represented on the model road network as a node called centroid. The TAZ centroid is located at the center point of activity within the TAZ area. All trips that use the model road network start or end at a TAZ centroid. Trips "produced" from or "attracted" to each centroid are connected to the main road system via special model road links called "centroid connectors." These "hypothetical" connections carry the trips produced from and/or attracted to the respective TAZ. Special development criteria are used to ensure centroid connectors meet the main road network system at realistic locations.

Both TAZ and network files contain information required to run the model and were developed for the base year 2018, then for the interim years 2025, 2030, 2040, and the horizon year 2050. After the development, TAZ and network layers were provided to the Jackson MPO staff and Jackson Technical Advisory Committee members for review and comment.

Model Road Network

The model road network consists primarily of the federal-aid road system within Jackson MPO and was obtained from the Michigan Roads and Highways network. Aerial images, site visits, and old Jackson model networks were also used in the process when needed.

The network layer contains fields required for the model runs as well as informational fields such as Road Names, Federal-Aid Status, Facility Type Classification, Area Type, Number of Thru-Lanes, Road Direction, Posted Speed Limit, Lane Width, parking availability, Prohibited Turns, Center-Left Turn Lanes, link capacity, free-flow speed, traffic counts, among others.

The Jackson 2018 calibrated/validated network includes approximately 950 miles of roadway network (excluding centroid connectors) with the classifications in Table 8-1:

Table 8-1: TDFM Network Mile Summary

	CBD	Urban	Suburban	Fringe	Rural	Total
Freeway	0	7	30	26	38	101
Freeway-to-Freeway Ramp	0	0	4	0	0	4
Freeway On-Ramp	0	2	3	2	3	10

Freeway Off Ramp	0	2	3	2	3	10
Principal Arterial CLTL	2	8	4	1	2	17
Principal Arterial	0	8	15	2	5	30
One-way Minor Arterial	0	0	2	0	0	2
Minor Arterial with CLTL	0	6	3	1	0	10
Minor Arterial	0	13	41	41	45	140
One-way Collector	0	1	0	0	0	1
Collector with CLTL	0	1	0	0	0	1
Collector	0	13	71	181	244	509
Local Road with CLTL	0	0	0	0	0	0
Local Road	1	14	26	48	26	115
Total	3	75	202	304	366	950

The base network plus completed projects between 2018 and 2022, as well as the committed projects on the Transportation Improvement Plan (TIP), were accounted for the development of interim and future-year model road networks.

Traffic Analysis Zones (TAZs)

Travel Analysis Zones (TAZ or “zone”) are geographic divisions of the model area and provide the structure for housing the Socio-Economic data approved by the MPO. The SE data associated with each TAZ represents the activity within TAZ and is used to generate the trips that are modeled across the road network.

The 2018 TAZ structure development started by using the TAZ structure from the most recent TDFM, which was used in the 2045 LRTP. Adjustments to the structure were made based on previous recommendations, changes in socio-economic conditions, and to account for changes in traffic loading to the model road network. The 2050 LRTP TDFM has a total of 581 TAZs (534 within Jackson County and 47 of which are used as External Stations containing information about trips coming from outside of the model area).

Socio-Economic Data

Socio-economic data (SE-data) is comprised of demographic and employment information. The SE datasets were collected and processed for the model base year of 2018, and then forecasted out to the LRTP horizon year of 2050.

Other than the population, households, and employment data described in Chapter 7 – Socio-Economic Conditions, characteristics from the 2018 American Community Survey (ACS) 5-Year Estimate as the number of workers per household, the number of K12 students per household, vehicle availability, income levels, among others were used in the development of the model. Enrolment data were also used in the model and were collected from the Michigan School Data website.

As mentioned in chapter 7, after the initial collection of the base year SE data and the forecast SE data development, a thorough review by Jackson MPO staff and Jackson Technical Advisory Committee were conducted. Once reviewed, changes were incorporated into the population, occupied housing units, and employment dataset, and then formally provided to the various MPO committees for approval. Jackson MPO

committees approved the base year SE-data and the future year forecast SE-data for inclusion into the TDFM respectively in August 2021 and September 2022.

The table below shows the approved totals for Jackson population, households, and employment by sectors for the base, interims, and horizon years.

Trip Generation

Trip generation is the first step of the four-step TDFM and it is the process by which the model translates the socio-economic data into numbers of person trips. In this step, internal person trip productions and attractions are calculated for each TAZ, for various trip purposes, based on the relative SE data available for the TAZ. Generally, households produce trips, and employment places attract trips. The five trip purposes used in the Jackson model are home-based work (HBW), home-based retail (HBR), home-based school (HBS), home-based other (HBO), and non-home based (NHB).

Several Trip Generation methods exist, each having its own strengths and weaknesses. In this model, cross-classification methods were used to develop the trip productions. Cross-classification is used to combine two different data variables, such as household size and household income for example, to develop the zonal trip production rates. Trip attractions for this model used a simple regression equation. Both, trip production rates and trip attraction equations for each trip purpose of Jackson model were developed by MDOT Statewide and Urban Travel Analysis Section based on the most recent household travel survey data available – the 2015 *Comprehensive Household Travel Data Collection Program / MI Travel Counts III* (MITC3).

After calculated, trip productions and trip attractions were balanced so that the total productions and attractions were equal for the entire model area which results in each trip produced being attracted somewhere.

The methods described above apply to person trips that are generated for TAZs that are within the model area, called internal trips. Trips that originate or end outside the model area are called external trips. External trips that originate inside the model area and travel outside the model area are identified as “internal to external” (I-E) trips, and trips from outside the model area (external) into the model area are referred to as “external to internal” (E-I) trips. Trips that pass through the model area without stopping are called “external to external” (E-E) trips. External travel is originally provided from the Michigan Statewide model. The information is then further processed and combined with traffic count volumes to develop an estimate of the number of E-I, I-E, and E-E trips for the model area.

Person trips calculated during the trip generation step include Non-Motorized (NM) trips. However, NM trips are relatively minor for this model area when compared to the total amount of trips being generated in the model area, therefore NM trips were not distributed, nor assigned to the road network, but simply taken out of the total person trips being produced. Non-motorized factors for each trip purpose were also developed by MDOT Statewide and Urban Travel Analysis Section based on MITC3.

Commercial vehicle trips are also calculated during the trip generation step. Internal-Internal and Internal-External commercial vehicle production and attractions are based on employment numbers by sector and are obtained using regression equations. After

calculated, production and attraction commercial vehicle trips are also balanced to guarantee that every I-I and I-E commercial vehicle trip produced is attracted somewhere. External – External commercial vehicle trips are also calculated based on information from the Michigan Statewide model combined with traffic count volumes.

The output of the Trip Generation step is a balanced trip table containing passenger car trips for all trip purposes and commercial vehicle trips, which is used as one of the inputs for the next step of the traditional four-step TDFM, Trip Distribution.

Trip Distribution

The second step of the four-step TDFM process is called Trip Distribution. In this step, the balanced trip table from the Trip Generation stage (balanced productions and attractions, by trip purpose) along with the model road network, are used to determine how many trips produced in a zone will be attracted to each of the other zones.

Travel time between zones and a mathematical model called “gravity model” based on the attractiveness of each zone and how far people are willing to travel for different purposes are used in this step to best replicate the potential travel along the model road network and to show a reasonable interaction between one TAZ to another.

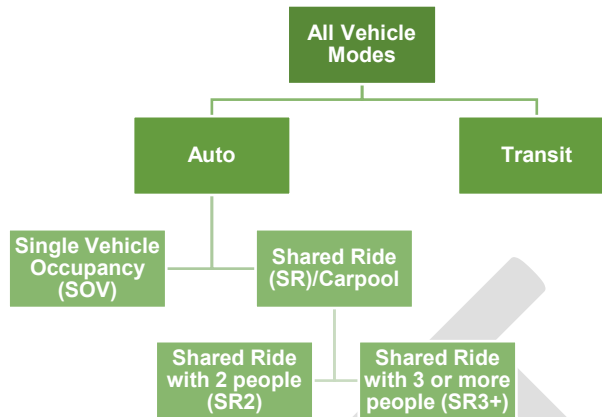
The gravity model assumes that a destination zone attracts trips based on the activity in that zone (number of employees and/or households) and the proximity to the zone of origin. Using the gravity model, trips produced in one zone are "distributed" to all other zones. The gravity model is calibrated using successive friction factor adjustments to produce model travel time trip length distributions for each trip purpose that are consistent with the travel time observed on the most recent household travel survey data available – the 2015 *Comprehensive Household Travel Data Collection Program / MI Travel Counts III*.

The results of the Trip Distribution step are matrices that provide a breakdown of relative TAZ to TAZ interactions by the various trip purposes and trip modes. The results of Trip Distribution are used for the next step, Mode Choice.

Mode Choice and Time of Day

Mode Choice is the third step of the four-step TDFM process. At this stage in model development, all trip data, except for external travel data, are in “person-trip” format. The trips must be allocated to distinct vehicular modes, which are auto and transit trips. The chart below provides a brief overview of the types of vehicle modes that are used to allocate the person trips for this model.

Figure 8-1: Motorized Modes



Transit trips, different than auto trips, are not assigned to the TDFM road network due to the complex nature of the trip interactions and socio-economic conditions related to transit ridership. The TDFM used for MTP purposes is to analyze regional transportation patterns, and not necessarily micro-level or individual trip characteristics. As such, mode choice for this model used a simplified approach where transit trips are initially calculated prior to auto trips and then subtracted from the total vehicular trips. The resulting trip total is then broken into various auto shares: Single Occupancy Vehicles (SOV), Shared Rides with two people (SR2), and Shared Rides with three or more people (SR3+). Shared Rides may alternatively be referred to as “carpooling” or “High Occupancy Vehicles” (HOV). The result of the mode choice component is a series of person-trip tables by vehicular mode and trip purpose for each TAZ Origin-Destination pair.

The mode choice step also includes Auto Occupancy and Time-of-Day sub-steps. In the auto occupancy sub-step formulas are applied for each purpose to convert person trips to vehicle trips. Once the person trips become vehicle trips Time of Day (TOD) modeling factors are applied to split these vehicle mode trips into one of the four TOD periods (AM, MD, PM, and NT). The finalized product from the Mode Choice step is a number of tables representing vehicle mode trip categories by each time period.

Mode Choice, along with auto occupancy and Time-of-Day modeling, factors, and parameters are based on data provided by the *2015 Comprehensive Household Travel Data Collection Program/MI Travel Counts III* program conducted by MDOT.

Traffic Assignment

Traffic (or “Trip”) Assignment is the final step in the traditional four-step TDFM and is the process of route selection between zones. This step takes the trips distributed in the previous phase and assigns them a path on the roadway using the underlying principle of a TDFM that trip makers will use the “best” route, based on travel time.

Different methods and supporting functions can be used in the traffic assignment step. The Jackson model uses the bi-conjugate Frank-Wolfe equilibrium assignment method which takes advantage of multi-threaded processors and converges relatively quickly when compared to other available equilibrium assignment methods.

This assignment method considers the volume as well as the capacity of the road links. During this process, a roadway that is reaching or has reached its maximum capacity will result in reduced travel time. As such, the assignment routine will include these time reductions when choosing the “best” path and if the delay is significant, an alternative road may be used to accommodate that traffic. This continues until the system reaches equilibrium.

After the first iteration of the traffic assignment, the model starts a processed call feedback loop. In this process, the congested travel speeds resulting from the traffic assignment are used to re-compute zone-to-zone travel times. At this point, a comparison is made between the initial and the updated zone-to-zone travel times. If the travel times are not reasonably similar, the updated travel times are then used to rerun trip distribution and the subsequent model steps. This process is repeated iteratively until a convergence criterion or iteration limit is met.

When the feedback convergence criterion is met the Traffic Assignment step results in a series of vehicle-trip (modeled traffic volume or “traffic flow”) tables, by vehicular mode, and separated into TOD, for each model road link within the model road network which is considered the final output of a TDFM.

Post processes then sum all 4 periods traffic volumes creating a volume that represents the number of vehicles that travel on that link (road) over a typical twenty-four-hour day. The “assigned” 24-hour link traffic volumes are then compared with “observed” traffic data (i.e. traffic counts) as part of the model calibration, validation, and reasonability review.

Notice that the TDFMs used for LRTP purposes do not include human-related factors when assigning trips, such as road geometrics (hills, tight curves, etc.), road conditions, and other considerations.

Model Calibration/Validation

The most important, and ultimate goal of the TDFM is to ensure that the base year assigned volumes are reflecting the observed base year conditions. To achieve this goal the TDFM base year assigned volumes need to be within a reasonable level of the traffic counts collected around the model base year. Traffic counts on the federal-aid road system from all respective maintaining road agencies within the MPO are crucial to perform these comparisons and without this information, the effectiveness of the model is limited. For the 2050 LRTP TDFM calibration process, traffic counts provided by MDOT Transportation Data Management System (TDMS) and local road agencies within Jackson MPO were used.

Very often the preliminary model results don't meet the established criteria and model adjustments are needed. These model adjustments are called model calibration and consist of returning to a previous step in the modeling process to calibrate inputs and/or outputs data when it is necessary. Model calibration is applied for each step of the TDFM development process and for the entire model system to adjust the model to achieve model outputs that simulate (within established validation criteria) the actual base year traffic counts. When the calibration is completed, the base year model is considered validated or statistically acceptable.

Application of the Validated Travel Demand Forecast Model

Once the model is validated it can be used (confidently) to forecast “future travel demand”. In this the base year socio-economic data is substituted by forecasted socio-economic data and the base road network is substituted by a road network accounting for changes finalized or committed on the TIP. Then the trip generation, trip distribution, and traffic assignment can be repeated, and future trips can be simulated as part of the planning process. The assumption is that model formulas and relations developed for the base year model structure remain constant over time, as to provide an unbiased forecast. For the 2050 Long Range Transportation Plan, five scenarios were developed: Base year 2018 (validated), Interim year 2025, Interim year 2030, Interim year 2040, and Horizon year 2050. The model results for the base year and the horizon year scenarios are discussed in more detail in Chapter 9: Roadway Congestion, Congested Links, and Recommended Projects.

Different scenarios can be prepared & tested anytime for any significant developments of housing or employment, or for changes to the transportation network as needed. The Jackson TDFM can also be used for additional transportation system analysis outside of the planning process, which includes, but is not limited, to the following:

- Impact analysis for planned roadway improvements, expansions, or other capacity-altering alternatives
- Impact analysis of land use changes on the network (e.g., what are the impacts of a new major retail store being built).
- New accessibility, such as a proposed bridge, can be tested to identify traffic flows to and from the new roadway and for adjacent roadway links. Limiting factors, such as the closure of a bridge can also be tested.
- Road closure, road restriction, and/or detour evaluation studies can be conducted to determine the effects of closing a roadway, and/or restricting capacity, and detouring traffic during construction activities, which are useful for construction management and are also referred to as “Work zone testing”.
- Individual links can be analyzed to determine which TAZs are contributing to traffic flow on that particular link. The results can be shown as a percentage breakdown or by raw volumes. This analysis is referred to as selected link analysis.
- Potential improvements to relieve congestion can also be tested. Future traffic can be assigned to the existing network to show what would happen in the future if no improvements were made to the present transportation system. From this, improvements can be planned that would alleviate demonstrated capacity problems.
- Model runs as part of air quality conformity analysis if required.

JACTS

JACKSON AREA COMPREHENSIVE
TRANSPORTATION STUDY

Chapter 9





Roadway Congestion, Congested Links, & Recommended Projects

The Travel Demand Forecast Model (TDFM or “model”), as described in Chapter 8, was used to identify roadway capacity constraints and congestion within the Jackson MPO. These results were provided for two different year scenarios:

- 1) Base year 2018
- 2) Horizon year 2050 with committed projects, as listed in the FY 2023-2026 TIP, and 2050 Socio-Economic and employment data forecast.

The TDFM produces current or future anticipated roadway volumes over a 24-hour period. Those volumes are compared to the capacity of the roadway through a "Volume over Capacity (VOC)" ratio. Once calculated, the VOCs are assigned to a "Level of Service (LOS)" categorical system, using a letter grade (A-F). A description and visual representation of the LOS grades used for the Jackson MPA are provided in Figure 9-1 below:

Figure 9-1: Level of Service Grades for Vehicular Traffic on Roads

Volume to Capacity Ratio (VOC)	Level of Service (LOS)	Congestion Description	Example
0.00 to 0.60	A and B	Traffic at free & stable flow; high speeds; few interactions	
0.60 - 0.70	C	Moderately high traffic volumes and interactions; stable flow	
0.70 - 0.80	D	High density of traffic & less maneuverability; speed declines; stable flow	
0.80 and above	E and F	Traffic near or at capacity; slowdowns occur; alternate routes used; unstable flow	

The Jackson MPO, and the JACTS technical and policy committees were provided opportunities to review the model results. Since there were limited roadways within the Jackson MPO area that exhibited high VOC levels on a daily level, the results presented to the MPO and the various committees for comment included any roadways with

moderate VOC (0.60 to 0.70) or higher. By showing roadways with moderate VOC levels, members of the various R2PC committees were able to identify potential traffic congestion problem areas that may need attention in future construction programs.

These locations may also illustrate operational-type issues on a roadway segment, especially during peak travel periods. However, other locations not detected by the model results as higher VOCs areas may also present congestion issues once factors not captured by the travel demand model as traffic interruptions (traffic signals, stop signs, merging, etc.), freedom to maneuver, and safety may affect the LOS.

Due to the limited number of congested corridors over a daily period in the area, no capacity projects were tested or selected outside of those already listed in the most current Transportation Improvement Plan (TIP) and already considered in the horizon year scenario.

Base Year 2018 Results

The Base Year 2018 scenario analysis looked at the existing conditions of the area-wide transportation system as it was in 2018. The 2018 year was chosen because of the availability of demographic and employment data and traffic counts for the development and calibration of the model in accordance with the timeline for the 2050 Long Range Transportation Plan. Roadway projects and socio-economic data changes happening after 2018 are not included in this scenario.

The base year model results do not show any roadways with daily traffic volumes that result in a Level of Service E or F ($VOC > 0.80$). Therefore, this document presents the few daily traffic volumes that result in Level of Service C ($0.60 < VOC < 0.70$) and Level of Service D ($0.70 < VOC < 0.80$) for the area. These thresholds result in the ten roadways listed below:

- 1) SB M-106 (Cooper St) between Porter St & Leroy St
- 2) NW & SE M-50 (Brooklyn Rd) between Napoleon Rd & Austin Rd
- 3) SB West Ave between the I-94 West entrance ramp & Commonwealth Ave
- 4) EB & WB Ganson St between Lansing Ave & Cooper St
- 5) NB & SB US-127 between Floyd Ave & Hart Rd
- 6) NB & SB Francis St between Franklin St & Washington Ave
- 7) NB & SB West Ave between Wildwood Ave & North St
- 8) EB & WB Michigan Ave between Laurence Ave & Main St
- 9) NB M-106 (Cooper St) between Leroy St & Porter St
- 10) NW & SE Lansing Ave between Steward Ave & Ganson St

A detailed table of the highest VOC roadway corridors, including AM Peak and PM peak VOCs for the Base Year 2018 can be found in Table 9-1. Figures 9-2 to 9-7 show the daily, AM, and PM peak maps base year scenario for Jackson County and the City of Jackson.

Table 9-1: Base Year 2018 Scenario Capacity Limitations

Jackson Area Comprehensive Transportation Study (JACTS) Base Year 2018 Scenario Congestion										
Rank	Road Name	Direction	From	To	Jurisdiction	Maintaining Road Agency	Length (Miles)	Average AM Peak VOC	Average PM Peak VOC	Average Daily VOC
1	M-106 (Cooper St)	SB	Porter St.	Leroy St	City of Jackson	MDOT	0.81	0.84	0.82	0.77
2	M-50 (Brooklyn Rd)	NW-SE	Napoleon Rd	Austin Rd	Napoleon Twp	MDOT	0.88	0.82	0.79	0.71
3	M-50/BUS US-127 (West Ave)	SB	I-94 West Entrance Ramp	Commonwealth Ave	Blackman Twp/City of Jackson	MDOT	0.30	0.86	0.79	0.70
4	Ganson St	E-W	Lansing Ave	Cooper St	City of Jackson	City of Jackson	0.58	0.72	0.70	0.66
5	US-127	N-S	Floyd Ave	Hart Rd	Summit Twp	MDOT	0.80	0.76	0.79	0.64
6	Francis St	N-S	Franklin St	Washington Ave	City of Jackson	City of Jackson	0.13	0.69	0.67	0.64
7	West Ave	N-S	Wildwood Ave	North St	City of Jackson	MDOT	0.60	0.72	0.70	0.63
8	Michigan Ave	E-W	Laurence Ave	Main St	Blackman Twp	MDOT	0.41	0.71	0.68	0.61
9	M-106 (Cooper St)	NB	Leroy St	Porter St	City of Jackson	MDOT	0.81	0.70	0.69	0.61
10	Lansing Ave	NW-SE	Steward Ave	Ganson St	City of Jackson	City of Jackson	0.32	0.66	0.65	0.60

Figure 9-2: Base Year Daily Congestion - Jackson County

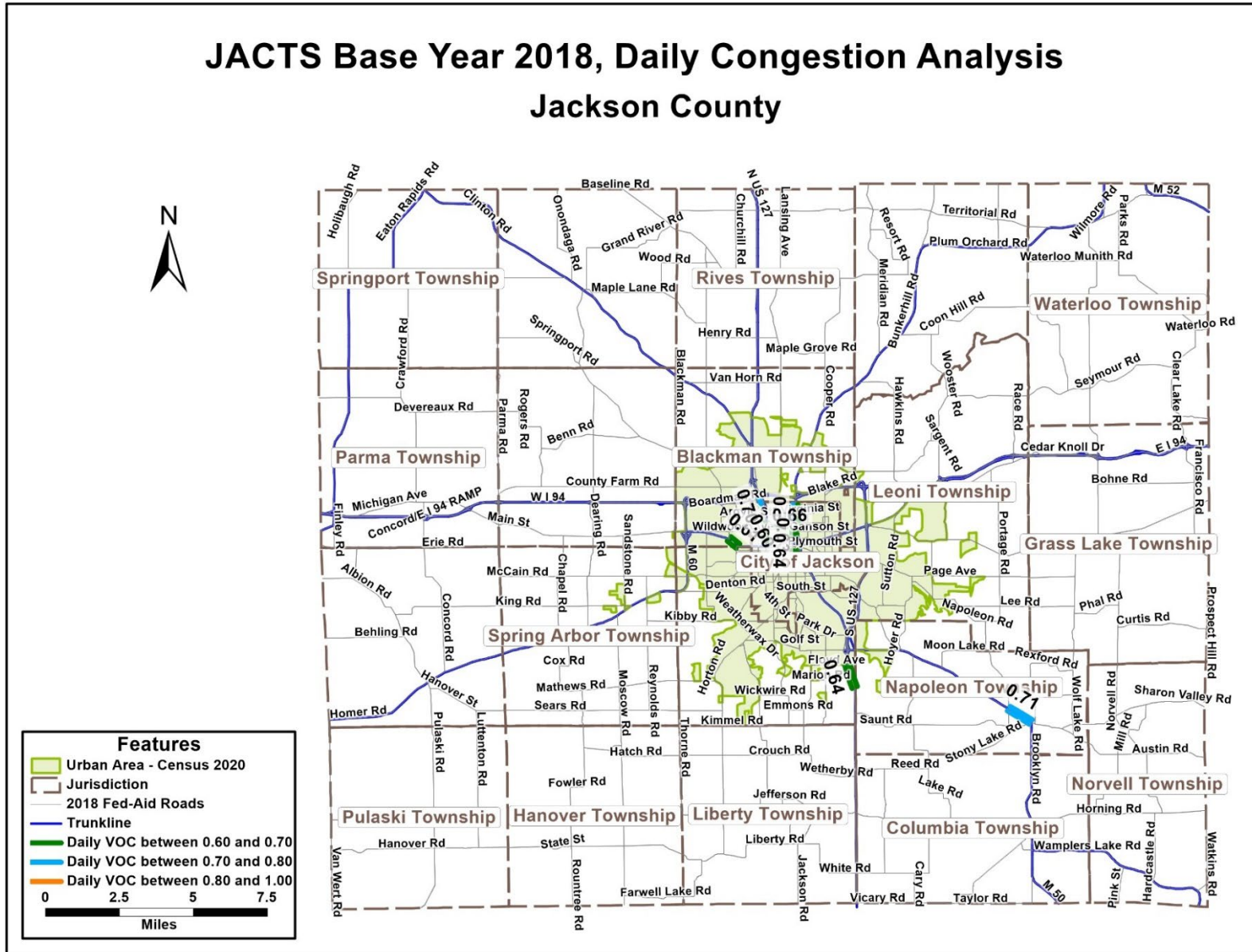


Figure 9-3: Base Year Daily Congestion – City of Jackson

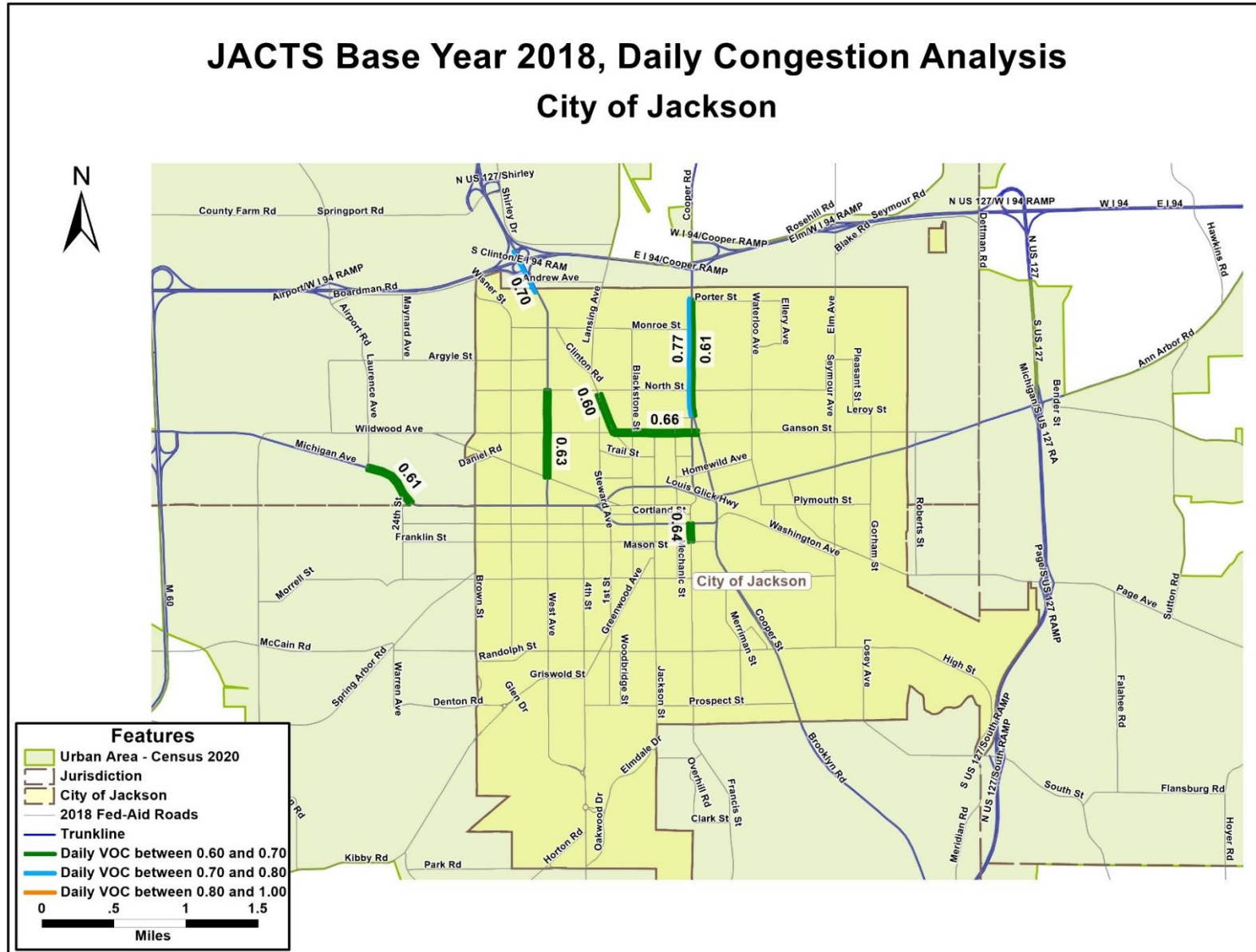


Figure 9-4: Base Year AM Peak Congestion - Jackson County

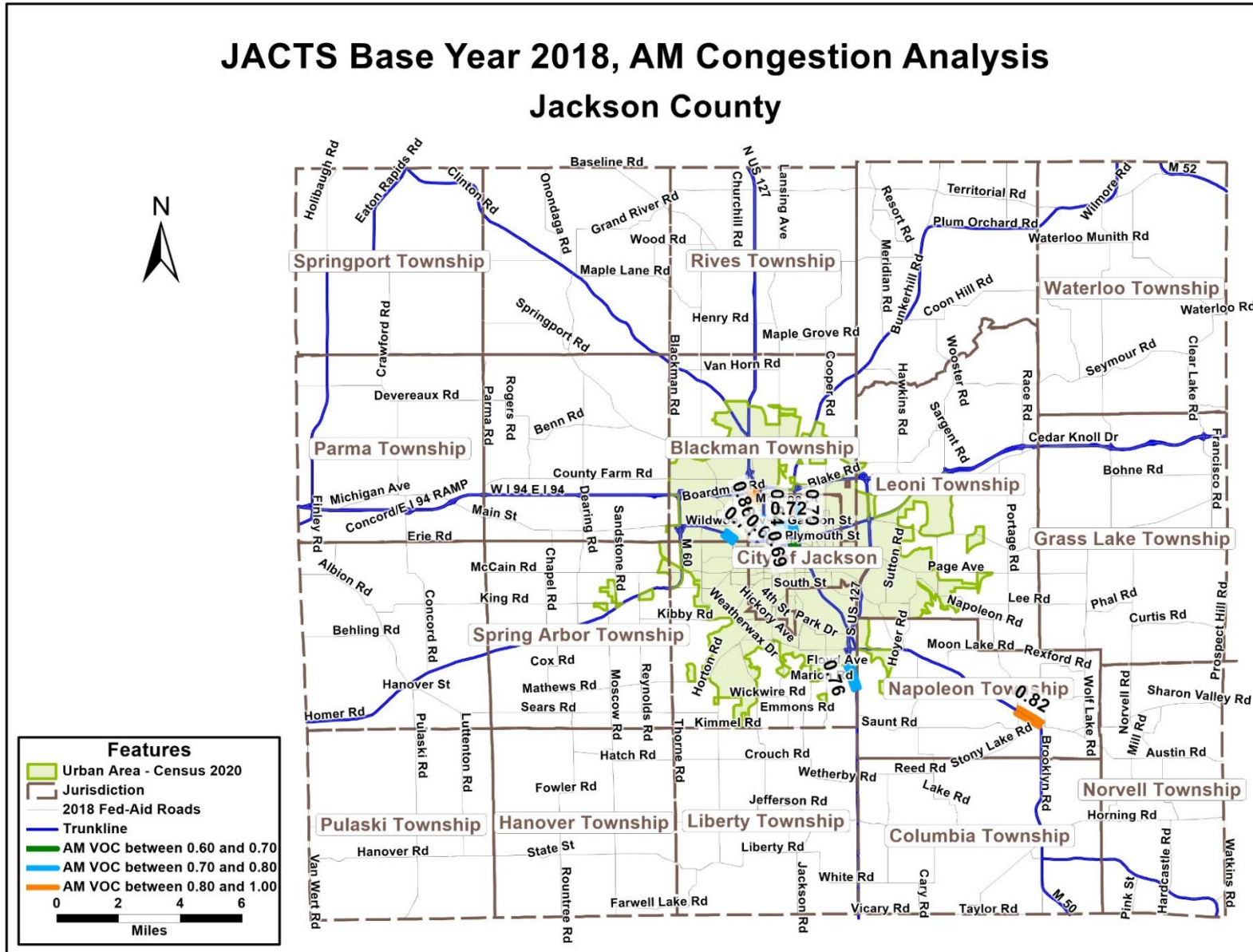


Figure 9-6: Base Year PM Peak Congestion - Jackson County

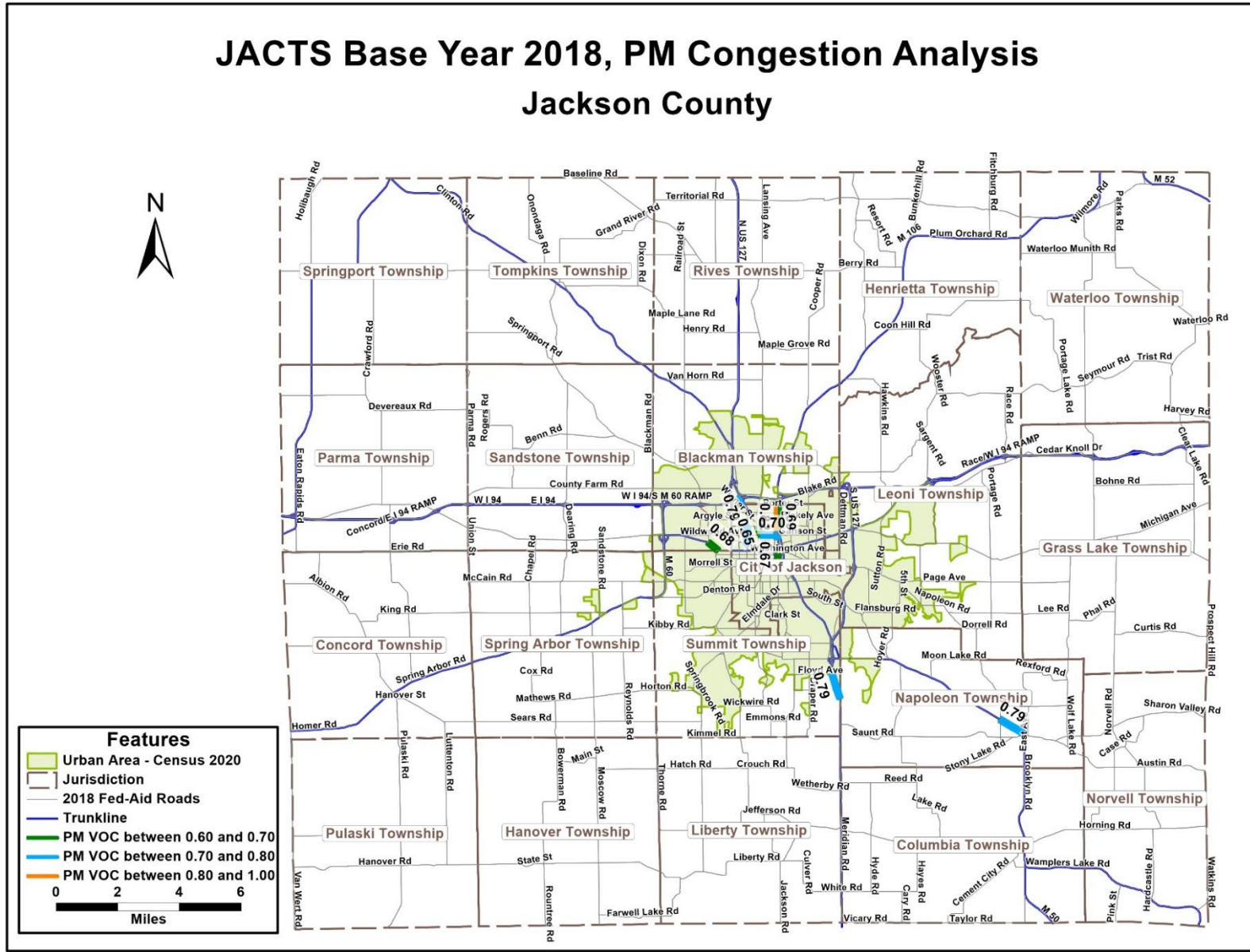
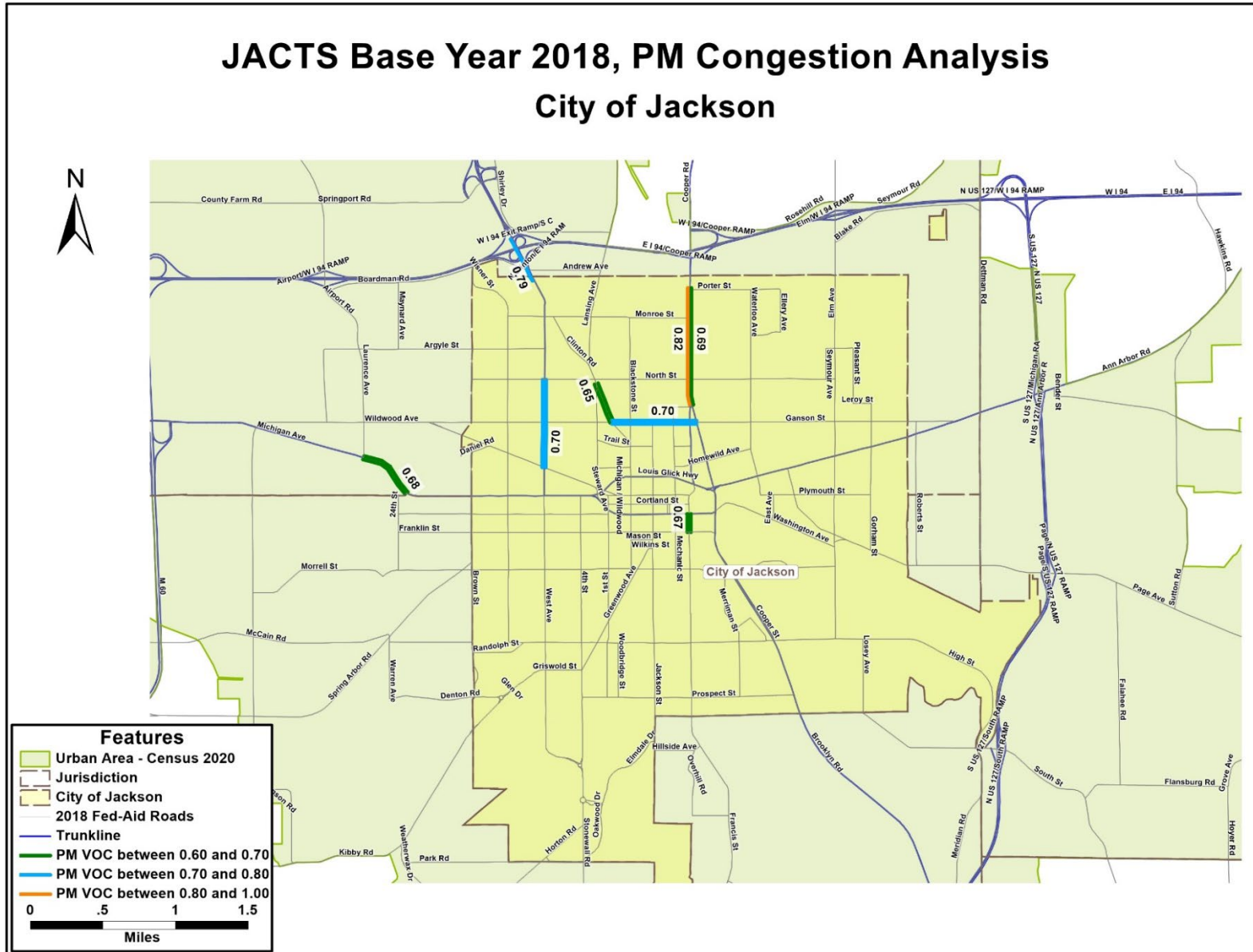


Figure 9-7: Base Year PM Peak Congestion – City of Jackson



Horizon Year 2050 with Committed Projects Results

The Horizon Year 2050 includes all the capacity-related committed projects listed in the FY 2020-2023 TIP and FY 2023-2026 TIP as well as the projects listed on the FY 2017-2020 TIP that were not concluded before 2018 along with the projected changes in socio-economic data through 2050 approved by the JACTS Technical and Policy Committees. Traffic volume results were also compared to the expected capacities for the road system in 2050. The 2050 model shows SB Cooper St. between Porter St. and Leroy St. as the only corridor with daily traffic volumes that result in a Level of Service E or F ($VOC > 0.80$). However, to be consistent with the thresholds adopted for the base year, this document also presents the daily traffic volumes that result in Level of Service C ($0.60 < VOC < 0.70$) and Level of Service D ($0.70 < VOC < 0.80$) for the area. These thresholds for the horizon year 2050 result in the fourteen roadways listed below.

- 1) SB M-106 (Cooper St) between Porter St & Leroy St
- 2) SB West Ave between I-94 West entrance ramp & Commonwealth Ave
- 3) NW & SE M-50 (Brooklyn Rd) between Napoleon Rd & Austin Rd
- 4) NB & SB West Ave between Wildwood Ave & North St
- 5) EB & WB Ganson St between Lansing Ave & Cooper St
- 6) EB & WB Michigan Ave between Laurence Ave & Main St
- 7) NB & SB Francis St between Franklin St & Washington Ave
- 8) NB & SB US-127 between Floyd Ave & Hart Rd
- 9) NB M-106 (Cooper St) between Leroy St & Porter St
- 10) NW & SE Lansing Ave between Steward Ave & Ganson St
- 11) WB I-94 between Airport Rd and Parma Rd
- 12) EB I-94 between Parma Rd and Airport Rd
- 13) EB I-94 between US-127 South and Race Rd

Comparing the results of corridors with $VOC > 0.60$ in the base and horizon model scenarios it is noticeable that many of the same corridors appear in both lists. However, EB/WB I-94 between Parma Rd and Airport Rd and EB I-94 between US-127 South and Race Rd that did not have a moderate VOC in the base year are expected to have $VOC > 0.60$ in the horizon year of 2050 with the projected conditions.

A detailed table of the highest VOC roadway corridors, including the AM and PM Peak periods VOCs, along with maps, for the Horizon Year 2050 with Committed Projects results can be found in Table 9-2 and Figures 9-8 to 9-13.

Table 9-2 Horizon Year 2050 Scenario Capacity Limitations

Jackson Area Comprehensive Transportation Study (JACTS) Horizon Year 2050 Scenario Congestion										
Rank	Road Name	Direction	From	To	Jurisdiction	Maintaining Road Agency	Length (Miles)	Average AM Peak VOC	Average PM Peak VOC	Average Daily VOC
1	M-106 (Cooper St)	SB	Porter St	Leroy St	City of Jackson	MDOT	0.81	0.89	0.86	0.82
2	M-50/BUS US-127 (West Ave)	SB	I-94 West Entrance Ramp	Commonwealth Ave	Blackman Twp/City of Jackson	MDOT	0.30	0.90	0.84	0.74
3	M-50 (Brooklyn Rd)	NW/SE	Napoleon Rd	Austin Rd	Napoleon Twp	MDOT	0.88	0.81	0.80	0.70
4	West Ave	SB/NB	Wildwood Ave	North St	City of Jackson	MDOT	0.60	0.75	0.74	0.68
5	Ganson St	E-W	Lansing Ave	Lansing Ave to Cooper St	City of Jackson	City of Jackson	0.58	0.72	0.70	0.66
6	Michigan Ave	E-W	Laurence Ave	W Main St	Blackman Twp	MDOT	0.41	0.75	0.72	0.65
7	Francis St	N-S	Franklin St	Washington Ave	City of Jackson	City of Jackson	0.13	0.70	0.69	0.65
8	US-127	N-S	Floyd Ave	Hart Rd	Summit Twp	MDOT	0.80	0.76	0.79	0.64
9	M-106 (Cooper St)	NB	Leroy St	Porter St	City of Jackson	MDOT	0.81	0.71	0.73	0.64
10	Lansing Ave	N-S	Ganson St	North St	City of Jackson	City of Jackson	0.32	0.70	0.67	0.62
11	M-50/BUS US-127 (West Ave)	NB	Commonwealth Ave	I-94 West Entrance Ramp	Blackman Twp/City of Jackson	MDOT	0.30	0.68	0.71	0.60
12	I-94 West	WB	Airport Rd	Parma Rd	Blackman Twp/Sandstone Twp	MDOT	7.22	0.63	0.70	0.60
13	I-94 East	EB	Parma Rd	Airport Rd	Sandstone Twp/Blackman Twp	MDOT	7.20	0.64	0.69	0.60
14	I-94 East	EB	US-127 South	Race Rd	Leoni Twp	MDOT	4.92	0.63	0.72	0.60

Figure 9-8: Horizon Year Daily Congestion – Jackson County

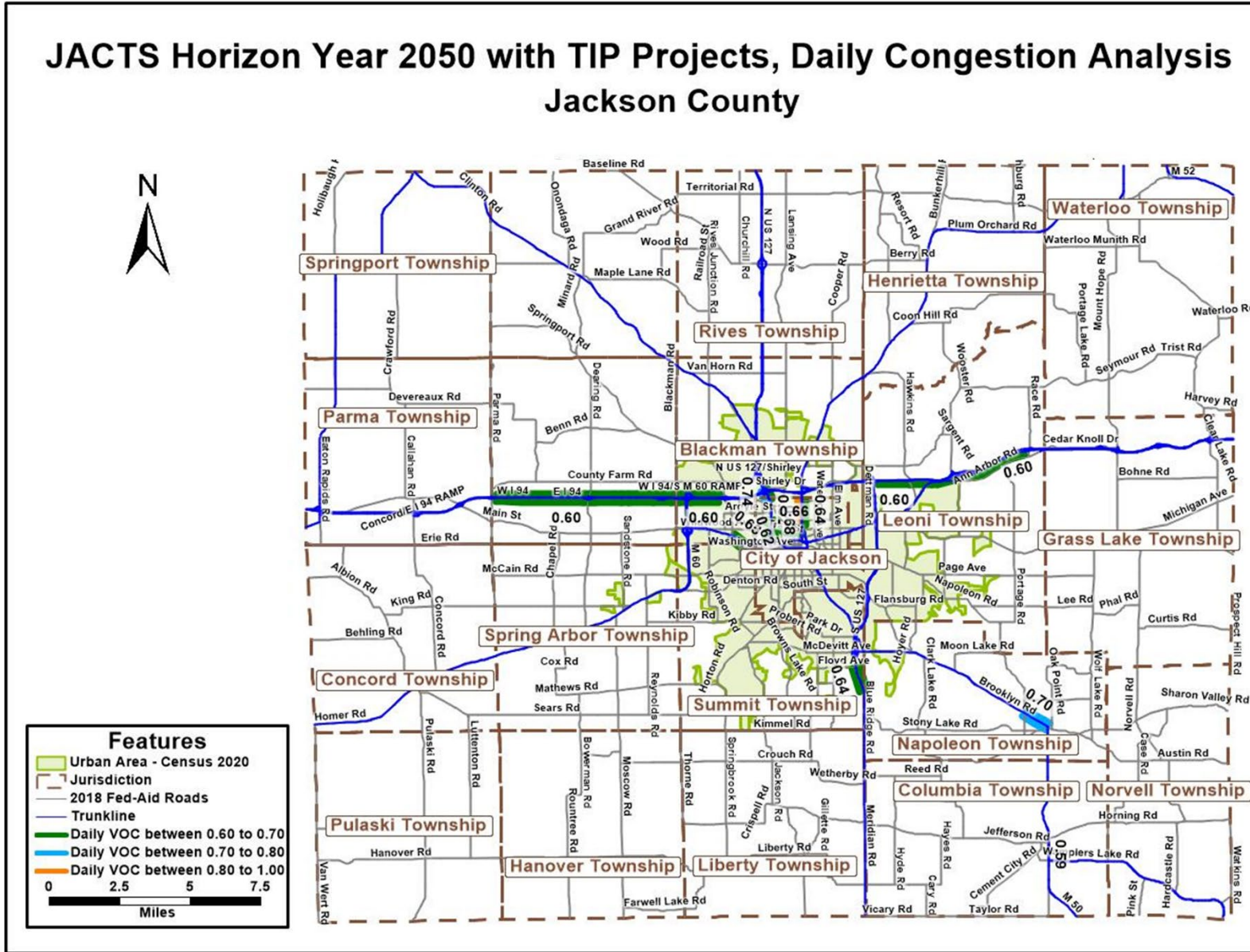


Figure 9-9: Horizon Year Daily Congestion – City of Jackson

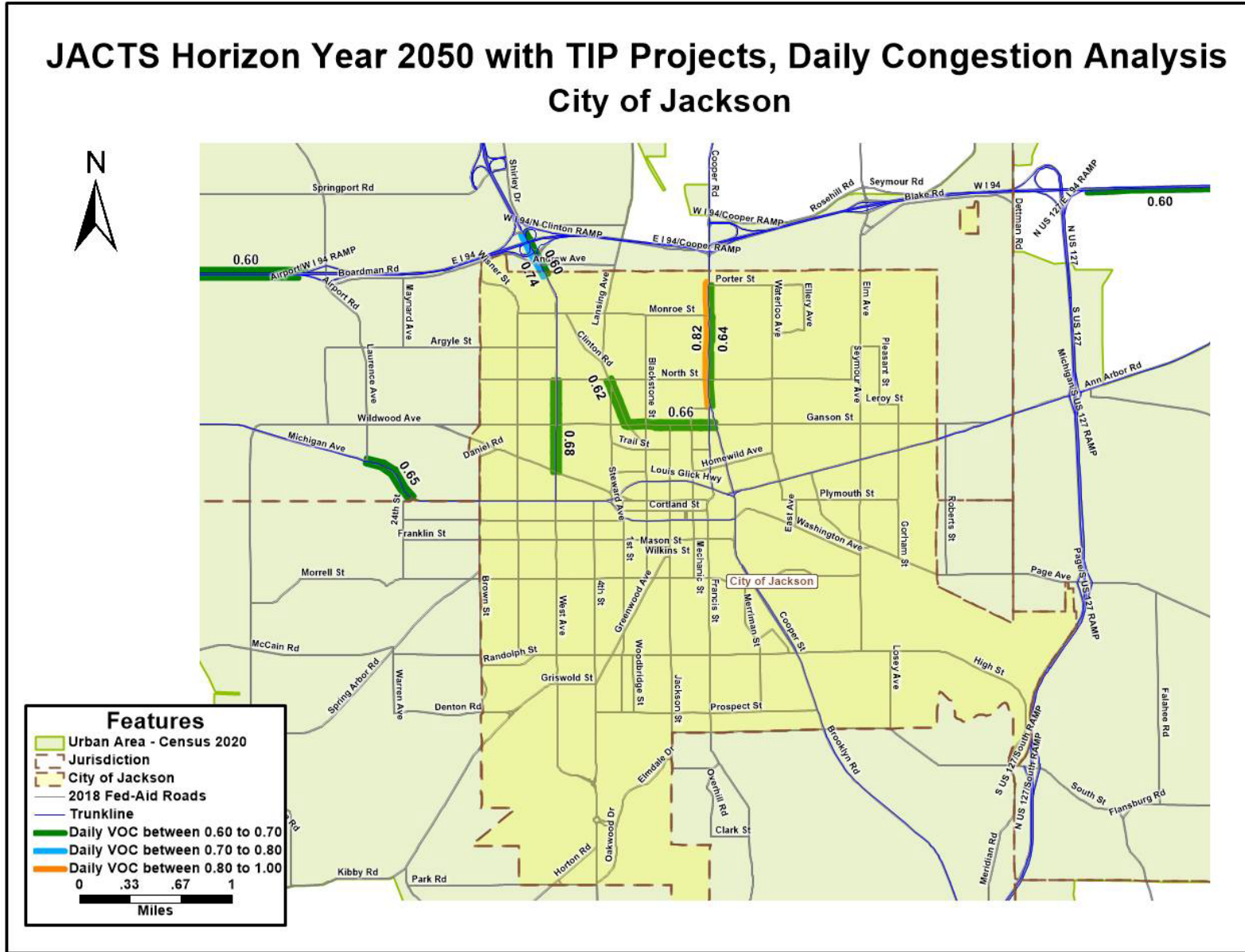


Figure 9-10: Horizon Year AM Peak Congestion – Jackson County

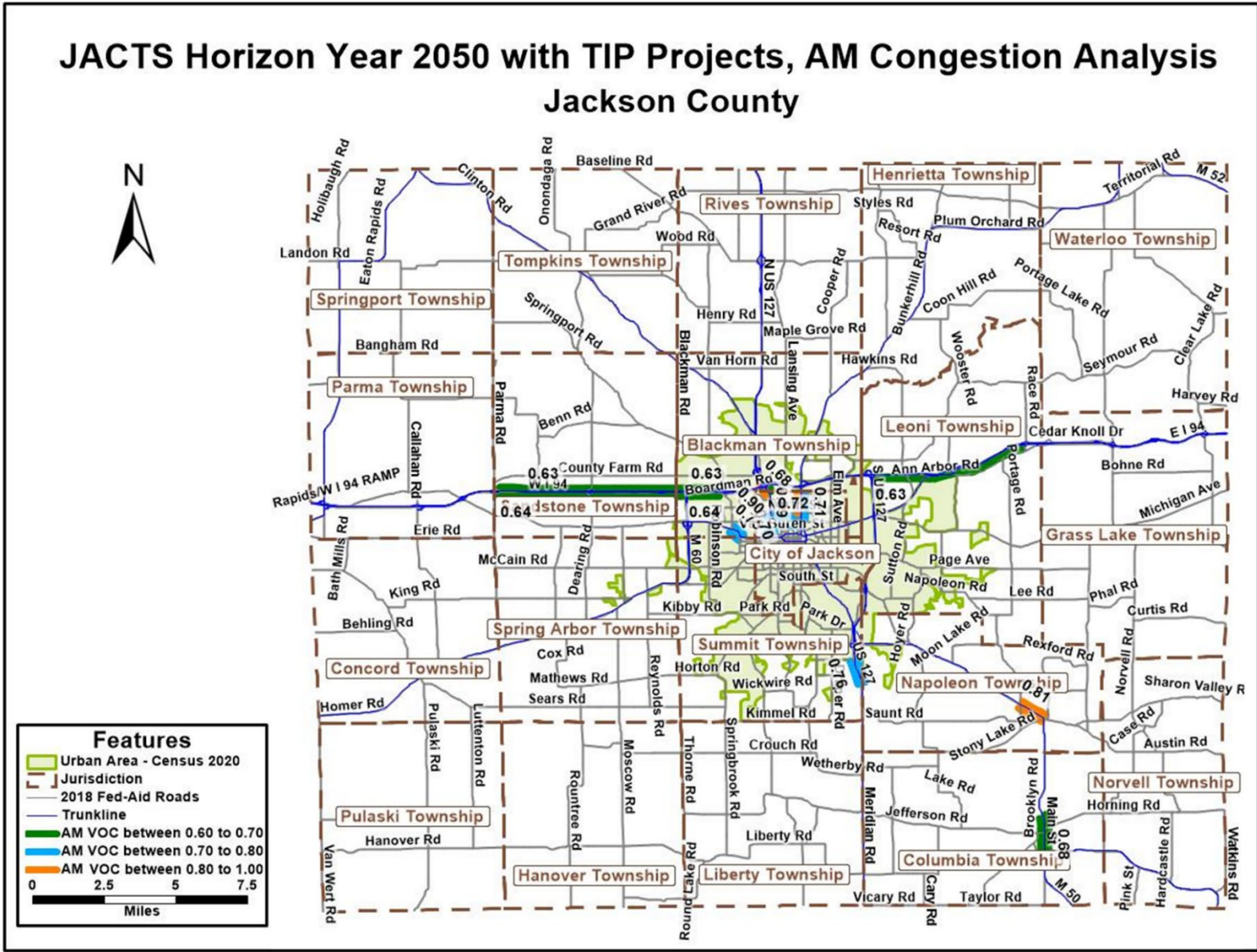


Figure 9-12: Horizon Year PM Peak Congestion – Jackson County

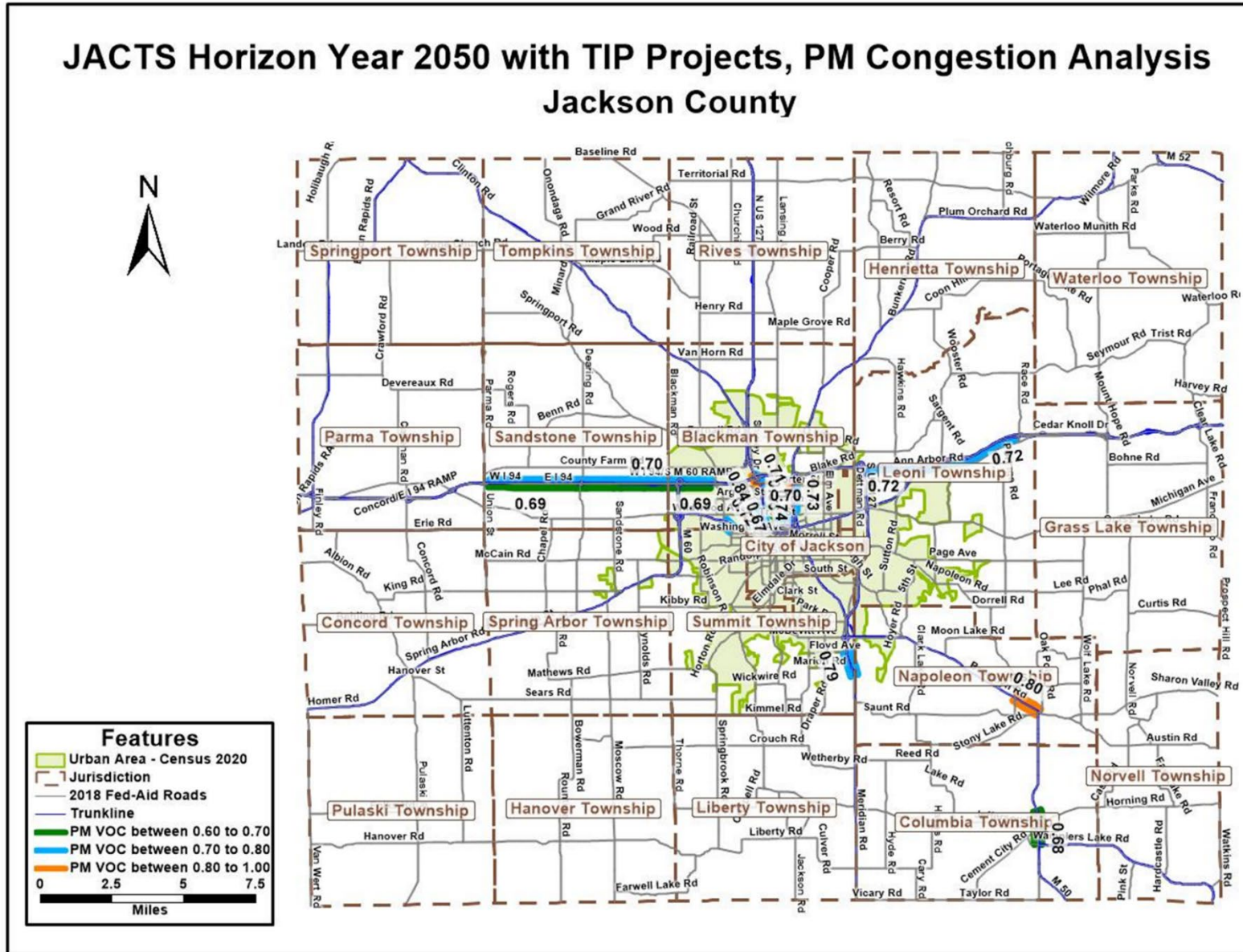
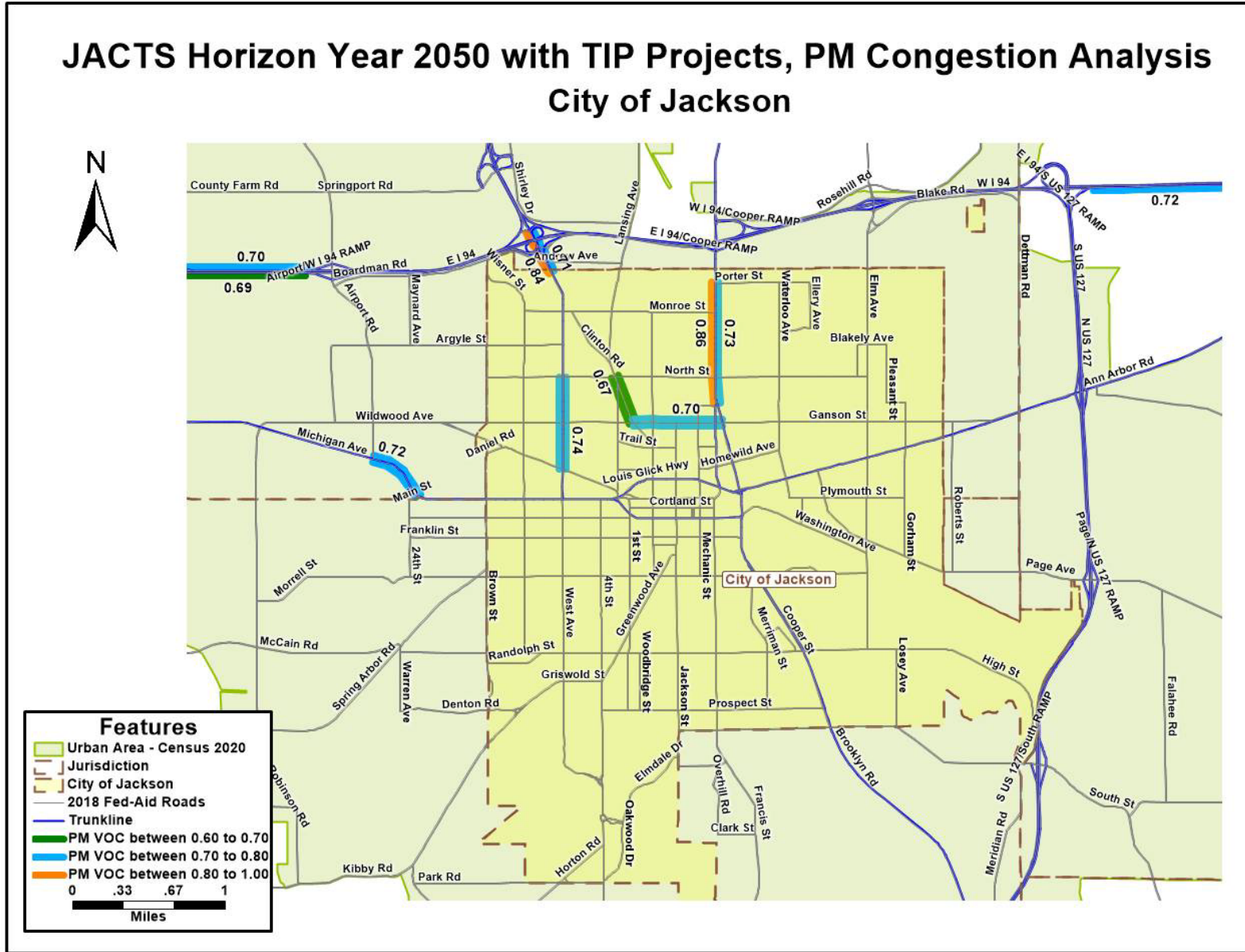


Figure 9-13: Horizon Year PM Peak Congestion – City of Jackson



Recommended Capacity Improvement Projects

After the completion of the travel demand modeling process and identification of congested or deficient corridors, it is necessary to determine what action should be taken to address the current and anticipated future traffic on the road network. With the knowledge of available federal, state, and local revenues for the 27 years span of the plan, the JACTS Technical and Policy Committees considered local community concerns and issues, which determine the improvements that should be programmed in the coming years.

The plan provides a vision of Jackson County's transportation system through the year 2050. The transportation improvement projects included in the first years (2023-2026) of the plan are considered firm commitments by the implementing jurisdictions. This means that funding has been assigned to the specific improvement which will be completed unless unforeseen circumstances prevent completion. The remaining years of the plan (2027–2050) are a vision of how the transportation system may develop based on the existing land use and zoning plans of local communities and the current forecast of available transportation revenues. The transportation improvements in the “out” years (2027-2050) of the Plan represent current priorities for the future. The transportation plan is updated every five years and the priorities listed for the later years may change as conditions warrant.

There are a limited number of congested corridors and no corridors that are currently, or are expected to be, deficient within the Jackson MPO. **R2PC's focus is to maintain the current transportation system. This means that although capacity projects are valid and important for the future of the MPO transportation system, they are viewed to be a lower priority than projects aimed at preserving the existing system.** Preservation projects generally include reconstruction and resurfacing of the road within the existing right-of-way. In most cases, the lane configuration of the road remains the same. These types of projects are not required to be identified within this plan.

Examples of capacity improvement projects may be the addition of traffic lanes, turn lanes, weave lanes, or the construction of a new road. Also, only those roads located on the federal-aid road network are eligible for inclusion in the plan's project list.

I-94 Modernization

Many of the projects currently programmed in the FY 2023-2026 TIP consider several transportation issues outside the focus of the TDFM, in particular the modernization of the Interstate 94 corridor.

MDOT completed the Final Environmental Impact Statement and Final Section 4(f) Evaluation for the I-94 Freeway Modernization Study in November 2006. The Record of Decision (ROD) was approved by the Federal Highway Administration in March 2007. The Re-Evaluation was approved by the Federal Highway Administration in September,

2013, December 2017, and again in October 2020. The project study area is a nine-mile segment of I-94 extending from the M-60 interchange to just east of the Sargent Rd interchange. The project area encompassed approximately nine miles of existing highway, eight interchanges, local frontage roads adjacent to I-94, and 18 distinct bridge structures at 14 locations. The purpose of the project is to:

- 1) Improve the deteriorating condition of existing bridges and road segments consistent with an overall corridor improvement plan
- 2) Improve travel efficiency and road capacity in the I-94 corridor by replacing existing road segments, interchanges, and bridges with modern facilities designed to accommodate projected year 2050 traffic volumes
- 3) To improve motorist safety

The original priorities were determined at the time of the I-94 Modernization Study (2007) in cooperation with an ad hoc committee consisting of local representatives and MDOT experts evaluating the phasing strategy of the elements based on:

- 1) Safety
- 2) Operations
- 3) Condition
- 4) Under-clearance
- 5) Funding Availability

With a projected cost of \$409 million (in 2005-year dollars), sufficient funding is not available for construction of the entire nine-mile corridor. Instead, MDOT will phase project implementation over the next 5 to 40 years based on conditions, traffic volume needs, congestion, funding availability, and safety needs along the corridor. The Preferred Alternative for reconstructing the I-94 corridor has been divided into three separate phases as follows:

Phase 1 - Complete

- Sargent Rd interchange reconstruction, including the closure of the I-94 BL interchange.
- Replacement of the Hawkins Rd and Dettman Rd bridge overpasses.

Phase 2 - Complete

- Cooper St interchange reconstruction and other road improvements as necessary.
- Replacement and widening of the I-94 bridge over the Grand River to accommodate potential future widening of I-94.
- The remainder of I-94 between M-60 and Sargent Rd will receive a major rehabilitation.
- Replacement of the M-60 and Elm Rd interchanges and Lansing Ave and Elm Rd bridge overpasses.

Phase 3

- Reconstruction of US-127/M-50-West Ave interchange to diverging diamond – Complete
- Reconstruct the northern portion of the Sargent Rd interchange
- US-127 South and Airport Rd interchanges reconstruction
- Widen I-94 between M-60 and Sargent Rd – Mostly complete

These unfunded improvements are technically not a part of the JACTS 2050 Long Range Transportation Plan, but instead are included to highlight some of the unmet needs that could be addressed with increased revenues. As future funding is identified and becomes available for implementing the findings included in the I-94 Modernization Study, the JACTS committees will continue to assist MDOT in programming the projects to address the capacity and safety improvements outlined in the study.

Chapter 10

Operational & Management Strategies

The IIJA legislation continues to emphasize the inclusion of operational and management strategies to improve the performance of existing transportation facilities in order to relieve vehicular congestion and to maximize the safety and mobility of people and goods.

The purpose of identifying and utilizing operational and management strategies is to improve the overall performance of the system and to reduce the number of costly widening (capacity) projects and the frequency of total roadway reconstruction projects on the area's roadway network. Jackson participates in and promotes a variety of transportation strategies that support reducing congestion, prolonging the life of the existing facilities, and maximizing the safety and mobility of people and goods. These strategies also support the plan goals of addressing operations, maintenance, preservation, and accessibility.

Programs

Asset Management

Asset management is defined as the process of maintaining, upgrading and operating physical assets cost-effectively, based on a continuous, physical inventory and condition assessment.

The Jackson MPO is actively involved in the asset management process for federal-aid roads in Jackson County and the City of Jackson. One of the goals of the statewide asset management program, overseen by MDOT, is to maximize pavement life by applying the correct "fix" at the right time. Half of all federal-aid eligible roads are inventoried each year by a trained team of field surveyors to determine deterioration levels. The team consists of representatives from MDOT, the Region 2 Planning Commission and either the Jackson County Department of Transportation or the City of Jackson. Each of the local agencies has access to the PASER rating system and the RoadSoft software to use the results of the field data. The City of Jackson and the Jackson County Department of Transportation have chosen to survey all local roads and use this information within their own pavement management and forecasting process. Each road agency is responsible for its own pavement management system. Data for the federal-aid eligible road system has been inventoried annually since 2003.

Figure 10-1
Weathered Asphalt Road



Jackson supports this effort with its involvement in training personnel, field surveying, equipment maintenance, assistance to the local agencies, and reporting the data to MDOT.

Capital Preventative Maintenance

This strategy is one of the implementation steps that can result from the asset management activity. Jackson promotes the timely resurfacing, repaving, repainting, redecking, signal upgrading, and other preventative maintenance activities that extend the life of the existing transportation system infrastructure. Many of the projects can be small in scope, while others are not significant enough to be listed within the context of the Long Range Transportation Plan. The local road agencies conduct the activities primarily as maintenance work using state and local funding.



Figure 10-2
Filling Potholes

The Jackson MPO supports these activities through the annual asset management program and the inclusion of MDOT Capital Preventative Maintenance funding in the TIP.

General Maintenance

By maintaining existing facilities in the best possible condition, the transportation system is sustained and functions more safely for users. Activities considered to be general maintenance include minor resurfacing, crack and chip sealing applications, ice and snow removal, traffic signal maintenance, pot hole filling, sign and pavement marking replacement and upkeep, street cleaning and debris removal, and landscaping activities including mowing, tree trimming, and general roadside maintenance.

The Jackson MPO supports these activities through the funding of sign upgrade projects, enhancement projects, and through participation in the asset management program.

Safety Management

Although many of the activities in the CPM and maintenance categories result in improved safety, safety is a secondary benefit. Activities that are directly related to improving the safety and operation of the transportation system include the development of projects to address high crash locations and intersections, adding specific safety features to existing roadways and bridges, improving geometrics or design, and promoting public safety programs.

Jackson County has also developed a Hazard Mitigation Plan in accordance with state and federal government guidelines. The purpose of the plan is to protect the health, safety and economic interests of residents and businesses by reducing the impacts of natural and technological hazards through hazard mitigation planning, awareness, and implementation. For more information about this plan, see Chapter 14.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) activities involve the addition of facilities, services, and/or technological enhancements designed to improve mobility and safety. Such activities can include computerized signal controls, automated transit fare collection systems, and transit vehicle locator systems. Future activities that could possibly occur include real-time motorist/trucker information with changeable message signs and a centralized traffic monitoring station. Neither the City nor JCDOT have plans for ITS technology.

The Jackson MPO supports ITS activities through its participation in the Regional ITS Architecture and Deployment Plan by the MDOT Southwest Region Office for Jackson County.

Access Management

Access management involves establishing policies and implementing projects that will reduce or eliminate driveways, roadway access points, median openings, and street connections with the intention of improving safety, reducing congestion, and enhancing traffic mobility by reducing conflict points. Application of the best practices of access management has benefits for motorists, bicyclists, pedestrians, transit, government agencies, and communities by helping to maintain the capacity of the road system.

Success with access management requires that several players be involved in the process including, but not limited to, MDOT, local road agencies, property owners, developers, and local planning commissions. MDOT is involved in access management studies to preserve access along state highway corridors. This process involves bringing together all of the stakeholders to develop an access control plan, along with associated land use and zoning changes. Other access management activities include driveway consolidation and shared use, use of medians and/or turning restrictions, construction of frontage roads and the development of educational materials for the general public, planning commissions and developers.

The Jackson MPO supports access management procedures through its participation on MDOT steering committees for access management studies within the Jackson area.

Congestion Management

The FAST Act requires that problem areas identified by the congestion management system be considered in developing metropolitan and statewide transportation plans and improvement programs. MDOT's Congestion Management System (CSM) includes the identification of alternative strategies to alleviate congestion while enhancing the mobility of persons and goods. Under the CSM regulations, general purpose road widening can only be

**Figure 10-3
Construction on US-127**



considered after careful evaluation of the congestion reduction impacts of low-cost improvements such as traffic signal projects, local traffic engineering projects, and transit/ridesharing improvements.

A congestion management system will require continuous data collection and system monitoring. The extent of the program will be determined by MDOT in consultation with MPO's, local officials, transit operators, and other transportation officials.

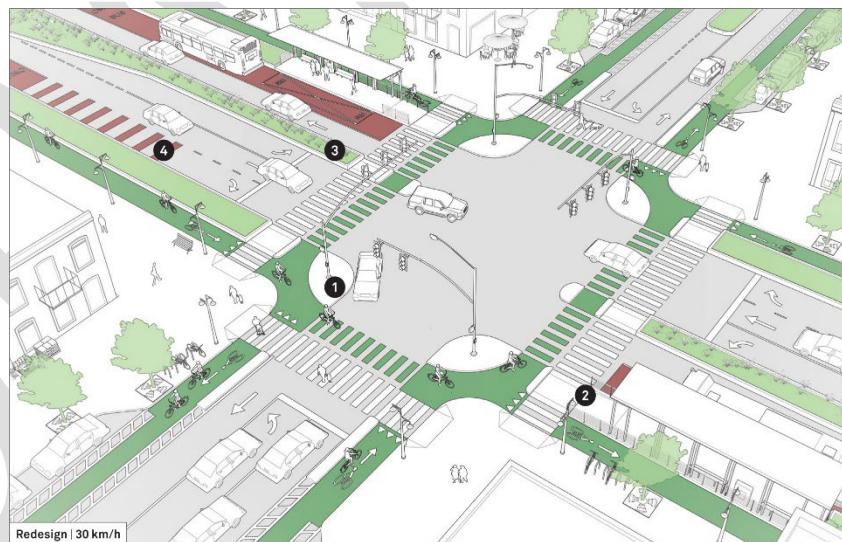
The Jackson MPO will continue to support the development of a congestion management system strategy with uniform performance measures across modes and jurisdictions for the use and analysis of traffic volume and congestion data among local road agencies and MDOT.

Complete Streets

Complete Streets are streets designed and operated to enable safe use and support mobility for all users. This includes people of all ages and abilities, regardless of whether they are traveling as drivers, pedestrians, bicyclists, or public transportation riders. The Region 2 Planning Commission, Jackson County DOT, and the City of Jackson passed Complete Streets resolutions in 2006. The Michigan Legislature passed Complete Streets legislation in 2010.

Figure 10-4 provides an example of Complete Streets. In this example, the streets support the use of vehicles, pedestrians, bicycles, and public transit. While the streets support cars with turn lanes and traffic signals as they normally would, cars are not their only priority. Pedestrians are given wide, complete sidewalks along with crosswalks and signals at the intersection. Bike lanes (highlighted dark green) are built so that they have physical separation from cars and pedestrians, and the intersection is designed to protect cyclists from turning cars while they are waiting or turning right. Buses are supported through bus lanes (highlighted red) which allow them to not get stuck in traffic with other cars, and to also not hold up cars while they are stopped. People using the bus are provided a covered shelter that is easily accessible by walking or cycling. The streets are also given grassy center medians to separate both directions of traffic and the speed limit is reduced to 30 km/h (about 20 mph) to provide more safety to pedestrians and cyclists.

Figure 10-4
Example of Complete Streets



Non-Motorized Management

Effective accommodation of pedestrians and users of the non-motorized transportation devices available today is important for the safe and efficient operation of the entire transportation system. In the Jackson MPO study area, this includes active involvement in the Walkable Communities Coalition, an advisory committee to the Jackson City Council and the Jackson County Planning Commission.

The local agencies are actively involved in the planning, designing, and implementation of non-motorized projects. MDOT produced a non-motorized map for the University Region's eleven-county planning area that was completed in 2017.

In May of 2020, R2PC completed the Jackson City + County Non-Motorized Plan. This plan lays out an interconnected network of trails that could be developed across the county, with nine priority routes highlighted. This plan also outlines other bicycle infrastructure that can be developed, such as bike parking, a uniform sign system, and bike sharing stations. The costs of developing this trail network and the possible funding sources are all outlined in the plan. The Jackson MPO will look to implement the recommendations of this plan as opportunities arise and funding becomes available.

The Jackson MPO supports the activities through participation in the Walkable Communities Coalition, and by providing assistance and coordination with area communities in the development of non-motorized and recreational trail plans and projects. The Jackson MPO will also continue to offer assistance to area jurisdictions in funding non-motorized transportation projects.

Public Transit Management

JATA currently uses MDOT's Public Transit Management System to maintain current capital equipment and operational data and to determine future needs. The Jackson MPO will continue to provide assistance to JATA in maintaining and updating its databases as required. The Jackson MPO will continue to advocate and encourage connectivity between transit and other modes of transportation, and continue to promote public transit through its funding of capital equipment including buses, vans, and shelters.

Figure 10-5
JATA Bus Garage



JACTS

JACKSON AREA COMPREHENSIVE
TRANSPORTATION STUDY

Chapter 11

Financial Analysis & Constraints

The fiscal year (FY) 2023-2026 Transportation Improvement Program (TIP) is a four-year scheduling document containing the projects that are planned to be obligated to implement the surface transportation policies contained in the 2050 Long Range Transportation Plan. The TIP project list is required to be *fiscally constrained*; that is, the cost of projects programmed in the FY 2023-2026 TIP cannot exceed the amount of funding *reasonably expected to be available* for surface transportation projects during the time period covered by the FY 2023-2026 TIP. This financial plan is the section of the TIP documenting the methods used to calculate funds reasonably expected to be available and compares this amount to proposed projects to demonstrate that the TIP is fiscally constrained. The financial plan also estimates the cost of operating and maintaining the transportation system in the Jackson MPO during the four-year period covered by the TIP.

Sources of Transportation Funding

The basic sources of transportation funding in Michigan are motor fuel taxes and vehicle registration fees. Motor fuel is taxed at both the federal and state levels, the federal government at 18.4¢ per gallon on gasoline and 24.4¢ per gallon on diesel fuel, and the State of Michigan at 26.3¢ per gallon on both gasoline and diesel fuel. Michigan also charges sales tax on motor fuel, but this funding is not applied to transportation. These motor fuel taxes are levied on a per-gallon basis. The amount collected per gallon does not increase when the price of gasoline or diesel fuel increases. Over time, inflation erodes the purchasing power of any excise tax, unless the tax adjusted to compensate for inflation.

The State of Michigan also collects annual vehicle registration fees when motorists purchase license plates or tabs. This is a crucial source of transportation funding for the state. Currently, slightly less than one-half of the transportation funding collected by the state is in the form of vehicle registration fees.

Cooperative Revenue Estimation Process

Estimating the amount of funding available for the FY 2023-2026 TIP is a complex process. It relies on a number of factors, including economic conditions, miles travelled by vehicles nationwide and in the State of Michigan, and federal and state transportation funding received in previous years. Revenue forecasting relies on a combination of data and experience and represents a “best guess” of future trends.

The revenue forecasting process is a cooperative effort. The Michigan Transportation Planning Association (MTPA), a voluntary association of metropolitan planning organizations (MPOs) and agencies responsible for the administration of federally-funded highway and transit planning activities throughout the state, formed the Financial Work Group (FWG) to develop a statewide standard forecasting process. FWG is comprised of members from the Federal Highway Administration (FHWA), Federal Transit

Administration (FTA), the Michigan Department of Transportation (MDOT), transit agencies, and MPOs, including JACTS. It represents a cross-section of the public agencies responsible for transportation planning in our state. The revenue assumptions in this financial plan are based on the factors formulated by the FWG and approved by the MTPA. They are used for all TIP financial plans in the state.

Federal-aid surface transportation is divided into two parts: Highway funding, which is administered by the Federal Highway Administration (FHWA) and transit funding, administered by the Federal Transit Administration (FTA). The following sections discuss each separately.

Highway Funding

Sources of Federal Highway Funding

Receipts from federal motor fuel taxes (plus some other taxes related to trucks) are deposited in the federal Highway Trust Fund (HTF). Funding is then apportioned to the states. Apportionment is the distribution of funds through formulas in law. The current law governing these apportionments is the Infrastructure Investment and Jobs Act (IIJA), sometimes also referred to as the Bipartisan Infrastructure Law (BIL). Through this law, Michigan receives approximately \$1.4 billion in federal-aid highway funding annually. This funding is apportioned in the form of a number of programs designed to accomplish different objectives, such as road repair, bridge repair, safety, and congestion mitigation. A brief description of the major funding sources follows.

Surface Transportation Block Grant Program (STBG): Funds construction, reconstruction, rehabilitation, resurfacing, restoration, preservation, and/or operational improvements to federal-aid highways and replacement, preservation, and other improvements to bridges on public roads. Michigan's STBG apportionment from the federal government is split, with slightly more than half allocated to areas of the state based on population and half that can be used throughout the state. A portion of STBG funding is reserved for rural areas. STBG can also be flexed (transferred) to transit projects.

Highway Safety Improvement Program (HSIP): Funds to correct or improve a hazardous road location or feature or address other highway safety problems. Projects can include intersection improvements, shoulder widening, rumble strips, improving safety for pedestrians, bicyclists, or disabled persons, highway signs and markings, guardrails, and other activities. The State of Michigan retains all Safety funding and uses a portion on the state trunk line system, distributing the remainder to local agencies through a competitive process.

Congestion Mitigation and Air Quality Improvement (CMAQ): Intended to reduce emissions from transportation-related sources. There is currently an emphasis on certain projects that reduce particulate matter (PM), but funds can also be used for traffic signal retiming, actuations, and interconnects; installing dedicated turn lanes; roundabouts; travel demand management (TDM) such as ride share and vanpools; transit; and non-motorized projects that divert non-recreational travel from single-occupant vehicles. The Jackson MPO area does not qualify for this measure because the population is less than the 200,000 threshold.

Transportation Alternatives Program (TAP): Funds can be used for a number of activities to improve the transportation system environment, such as non-motorized projects, preservation of historic transportation facilities, outdoor advertising control, vegetation management in rights-of-way, and the planning and construction of projects that improve the ability of students to walk or bike to school. Funds are split between the state and various urbanized areas based on population.

Carbon Reduction Program (CRP): New funding source established in IJJA. These funds encompass various eligible activities aimed at reducing transportation emissions defined as carbon dioxide (CO₂) emissions from on-road highway sources. Funds may also be used to promote sustainable transportation practices. Funds are split between the state and various urbanized areas based on population.

Base and Assumptions Used in Forecast Calculations of Federal Highway Funds

At least every two years, allocations are calculated for each of these programs, based on federal apportionments and *rescissions* (nationwide downward adjustments of highway funding from what was originally authorized) and state law. Targets can vary from year to year due to factors including actual vs. estimated receipts of the Highway Trust Fund, authorization (the annual transportation funding spending ceiling), and the appropriation (how much money is actually approved to be spent). Allocations for FY 2024, as released by MDOT on June 22, are used as the baseline for this FY 2023-2026 TIP financial forecast. The Financial Work Group of the MTPA developed an assumption, for planning purposes, that the amount of federal-aid highway funds received will increase by 2% each year during the FY 2023-2026 TIP period.

Sources of Highway Funding Generated at the State Level

There are two main sources of state highway funding, the state motor fuel tax and vehicle registration fees.

The state law governing the collection and distribution of state highway revenue is Public Act 51 of 1951, commonly known simply as *Act 51*. All revenue from the motor fuel tax and vehicle registration fees is deposited into the Michigan Transportation Fund (MTF). Act 51 contains a number of complex formulas for the distribution of the funding, but essentially, once funding for certain grants and administrative costs are removed, approximately ten percent of the remainder is deposited in the Comprehensive Transportation Fund (CTF) for transit. The remaining funds are then split between the Michigan Department of Transportation (MDOT), county road commissions, and municipalities (incorporated cities and villages) in a proportion of 39.1 percent, 39.1 percent, and 21.8 percent, respectively.

Several years ago, major changes to the State of Michigan's surface transportation revenue collection were enacted. These changes included:

- 1) Increasing the motor fuel tax to 26.3¢/gallon from 19¢/gallon (gasoline) and 15¢/gallon (diesel), effective January 1, 2017
- 2) Raising vehicle registration fees by an average of 20%, effective January 1, 2017
- 3) Transferring \$150 million from the state's General Fund to highways in fiscal year (FY) 2019

- 4) Transferring \$325 million from the state's General Fund to highways in FY 2020
- 5) Transferring \$600 million from the state's General Fund to highways in FY 2021 and subsequent years
- 6) Adjusting the motor fuel tax for inflation by up to 5% each year, starting in January 2022

When these changes took full effect in the 2020-21 state fiscal year, MTF revenues were anticipated to increase to over \$4 billion annually. The financial impact of COVID-19 shutdowns resulted in less than expected collections. MDOT is yet to recognize significant gains from the enacted legislation. Cash receipts in the 2020-21 state fiscal year totaled \$3.412 billion. Cash receipts in the 2021-22 state fiscal year totaled \$3,537 billion.

MTF funds are critical to the operation of the road system in Michigan. Since federal funds cannot be used to operate or maintain the road system (items such as snow removal, mowing grass in the rights-of-way, paying the electric bill for streetlights and traffic signals, etc.), MTF funds are local community and county road agencies' main source for funding these items. Most federal transportation funding must be matched so that each project's cost is a maximum of approximately 80% federal-aid funding and a minimum of 20% non-federal matching funds. In Michigan, most match funding comes from the MTF. Finally, federal funding cannot be used on local public roads, such as subdivision streets, or other roads not designated as federal-aid eligible. Here again, MTF is the main source of revenue for maintenance and repair of these roads.

Funding from the MTF is distributed statewide to incorporated cities, incorporated villages, and county road commissions, collectively known as **Act 51 agencies**. The formula is based on population and public road mileage under each Act 51 agency's jurisdiction.

Base and Assumptions Used in Forecast Calculations of State-Generated Highway Funds

State-generated funding for highways (i.e. MTF funding) only needs to be shown in the TIP if it is in a project that also contains federal-aid funding, or is non-federally funded but of regional significance. Therefore, most state-generated funding for highways that is distributed to MDOT and to the counties, cities, and villages of the state through the Act 51 formulas is not shown in the TIP. The total amount of MTF funding available each year can be projected. As long as the amount of MTF funding for highways shown in the TIP does not exceed the total projected MTF funding available, it is assumed that state-generated funding shown in the FY 2023-2026 TIP is constrained to reasonably available revenues.

State-Administered Programs that Use both Federal-Aid and State Funding

Michigan has two programs that use both state funding and federal funding. These programs are Transportation Economic Development Fund (TEDF) Category C and TEDF Category D. The state money in these programs is separate from the state MTF money that is distributed to the cities, villages, and county road commissions each year. These funds are distributed to urban and rural counties as defined in Act 51. In the JACTS area, the distribution of each funding source is:

- TEDF Category C: Congestion mitigation in designated urban counties. There are no designated urban counties in the JACTS area.
- TEDF Category D: All-season road network in rural counties. In the JACTS area, this is Jackson County.

Four additional TEDF categories (A, B, E, and F) are 100% state-funded programs that are competitively awarded by the state. Projects using these funds do not have to be in the TIP unless they are being supplemented with federal-aid highway funding by the awardee, or the project is considered regionally significant.

Local Bridge is another important program with both federal and state funding components. It is funded through a portion of the state motor fuel tax. It is supplemented with Surface Transportation Block Grant Program (STBG) funding retained by the state. The Local Bridge program is competitive, with funds being awarded by Local Bridge Committees in each of the MDOT planning regions.

Base and Assumptions Used to Forecast Programs with Combined Federal and State Funding

Funding targets for TEDF Category C and Category D funds (both federal and state) for fiscal years 2023 through 2026 were released by MDOT on June 22. TEDF Category C and Category D projects programmed in the TIP are constrained to the targets provided, plus any carryforward of the state portion of these programs (the federally-funded portion does not carry forward).

Since the Local Bridge program is competitively-awarded, only those Local Bridge projects that have already been awarded for use in fiscal years 2023 through 2026 are shown. Therefore, Local Bridge projects are fiscally self-constrained.

Sources of Locally-Generated Highway Funding

Local highway funding can come from a variety of sources, including transportation millages, general fund revenues, and special assessment districts. Locally-funded transportation projects that are not of regional significance are not required to be included in the TIP. This makes it difficult to determine how much local funding is being spent for roads in the JACTS area. Additionally, special assessment districts and millages generally have finite lives, so an accurate figure for local transportation funding would require knowledge of all millages and special assessment districts in force during each year of the TIP period, which is difficult to achieve. It is therefore assumed that locally-generated funding shown in the FY 2023-2026 TIP is constrained to reasonably available revenues.

State Trunkline Funding

The State of Michigan maintains an extensive network of highways across the state and within the JACTS area. Each highway with an **I-**, **US-**, or **M-** designation (e.g. I-94, US-127, M-50), is part of this network, which is known as the **State Trunkline System**. The portion of the State Trunkline System in the JACTS area is comprised of over 500 lane-miles of highway, hundreds of bridges and culverts, signs, traffic signals, safety barriers, sound walls, and other capital that must be periodically repaired, replaced, reconstructed, or renovated. The agency responsible for the State Trunkline System is the Michigan

Department of Transportation (MDOT). MDOT has provided JACTS with a list of projects planned for the portion of the trunkline system within the JACTS area over the FY 2023-2026 TIP period. As a matter of standard operating procedure, it is assumed that the trunkline project list provided to JACTS (and similar lists provided to the other MPOs in the state) is constrained to reasonably available revenues.

Innovative Financing Strategies--Highway

A number of innovative financing strategies have been developed over the past two decades to help stretch limited transportation dollars. Some are purely public sector; others involve partnerships between the public and private sectors. Some of the more common strategies are discussed below.

Toll Credits: This strategy allows states to count funding they earn through tolled facilities (after deducting facility expenses) to be used as “soft match,” rather than using the usual cash match for federal transportation projects. States have to demonstrate *maintenance of effort* when using toll credits—in other words, each state must show that the toll money is being used for transportation purposes and that it is not reducing its efforts to maintain the existing system by using the toll credit program. Toll credits have been an important source of funding for the State of Michigan in the past because of the four highway bridge crossings and one tunnel crossing between Michigan and Ontario. Toll credits have also helped to partially mitigate highway-funding shortfalls in Michigan, since sufficient non-federal funding has frequently been not been available in past years to match all of the federal funding apportioned to the state.

State Infrastructure Bank (SIB): Established in a majority of states, including Michigan. Under the SIB program, states can place a portion of their federal highway funding into a revolving loan fund for transportation improvements such as highway, transit, rail, and intermodal projects. Loans are available at 3% interest with a 25-year loan period to public entities such as regional planning commissions, state agencies, transit agencies, railroads, and economic development corporations. Private and nonprofit corporations developing publicly owned facilities may also apply.

Transportation Infrastructure Finance and Innovation Act (TIFIA): This nationwide program provides lines of credit and loan guarantees to state or local governments for development, construction, reconstruction, property acquisition, and carrying costs during construction. TIFIA enables states and local governments to use the borrowing power and credit of the federal government to fund finance projects at far more favorable terms than they would otherwise be able to do on their own. Repayment of TIFIA funding can be delayed for up to five years after project completion with a repayment period of up to 35 years. Interest rates are also low.

Bonding: Bonding is a form of borrowing where the borrower issues (sells) IOUs for portions of the debt it is incurring, called *bonds*, to willing purchasers of the debt. The borrower is then obligated to repay lenders (bondholders) the principal and an agreed-upon rate of interest over a specific time period. The amount of interest a bond issuer (borrower) will have to pay depends in large part upon its perceived credit risk--the greater the perceived chance of default, the higher the interest rate. In order to bond, a borrower must pledge a reliable revenue stream for repayment. For example, this can be the toll

receipts from a new transportation project. In the case of general obligation bonds, future tax receipts are pledged.

States are allowed to borrow against their federal transportation funds, within certain limitations. While bonding provides money up front for important transportation projects, it also means diminished resources in future years, as funding that could otherwise pay for future projects must instead be reserved for paying the bonds' principal and interest. Michigan's Act 51 law requires that funding for the payment of bond and other debts be taken off the top of motor fuel tax and vehicle registration receipts collected before the distribution of funds for other transportation purposes. Therefore, the advantages of completing a project more quickly need to be carefully weighed with the disadvantages of reduced resources in future years.

Advance Construct/Advance Construct Conversion: This strategy allows a community or agency to build a transportation project with its own funds (advance construct) and then be reimbursed with federal-aid funds for the federal share of the project in a future year (advance construct conversion). Tapered match can also be programmed, where the agency is reimbursed over a period of two or more years. Advance construct allows for the construction of highway projects before federal funding is available; however, the agency must be able to build the project using its own resources up front, and then be able to wait for federal reimbursement in a later year.

Public-Private Partnerships (P3): Funding available through traditional sources, such as motor fuel taxes, are not keeping pace with the growth in transportation system needs. Governments are increasingly turning to public-private partnerships (P3) to fund large transportation infrastructure projects. An example of a public-private partnership is Design/Build/Finance/Operate (DBFO). In this arrangement, the government keeps ownership of the transportation asset, but hires one or more private companies to design the facility, secure funding, construct the facility, and then operate it, usually for a set period of time. The private-sector firm is repaid most commonly through toll revenue generated by the new facility.

Operations and Maintenance of the Federal-Aid Highway System

Construction, reconstruction, repair, and rehabilitation of roads and bridges are only part of the total cost of the highway system. It must also be operated and maintained. *Operations and maintenance* includes those items necessary to keep the highway infrastructure functional for vehicle travel, other than the construction, reconstruction, repair, and rehabilitation of the infrastructure. Examples include, but are not limited to, snow and ice removal, pothole patching, rubbish removal, maintaining rights-of-way, maintaining traffic signs and signals, clearing highway storm drains, paying the electrical bills for street lights and traffic signals, and other similar activities, and the personnel and direct administrative costs necessary to implement these projects. These activities are as vital to the smooth functioning of the highway system as good pavement.

Federal-aid highway funds cannot be used for operations and maintenance. Since the TIP only includes federally-funded capital highway projects (and non-federally-funded capital highway projects of regional significance), it does not include operations and maintenance expenses. While in aggregate, operations and maintenance activities are regionally significant, the individual projects do not rise to that level. However, federal

regulations require an estimate of the amount of funding that will be spent operating and maintaining the federal-aid eligible highway system over the FY 2023-2026 TIP period. This section of the Financial Plan provides an estimate of the cost of operations and maintenance in the JACTS area and details the method used in the estimation.

MDOT University Region estimates that its operations and maintenance costs were approximately \$21,700 per lane-mile in FY 2022. Using the FY 2022 estimate as a baseline, costs were increased 4% per year over the life of the FY 2023-2026 TIP to adjust for inflation (also known as *year of expenditure* adjustment—see **Year of Expenditure (Inflation) Adjustment for Project Costs** section below) to provide a total of \$47.7 million estimated operations and maintenance costs on the state trunkline system in the JACTS area from FY 2023 through 2026.

Local Act-51 road agencies (county road commissions, incorporated cities, and incorporated villages) are responsible for operating and maintaining the roads they own, including those roads they own that are designated as part of the federal-aid system. The main source of revenue available to these agencies to operate and maintain the roads is the Michigan Transportation Fund (MTF). The estimate of available funding is based on the assumption that each lane-mile of road in the system has an approximately equal operations and maintenance cost. There are 501.97 lane miles of locally-owned road on the federal-aid network in the JACTS area. Therefore, applying the per-lane-mile cost of maintenance derived from MDOT University Region’s FY 2022 estimate to the number of lane-miles of locally-owned federal-aid eligible road in the JACTS area yields an annual maintenance cost of \$10.9 million in the base year of FY 2022, or a total of \$47.6 million over the life of the FY 2023-2026 TIP, adjusted for year of expenditure.

Finally, adding together the trunkline and locally-owned per-lane mile costs yields a total of \$16 million in the base year of FY 2022 for estimated operations and maintenance costs on the entire federal-aid system in the JACTS area, or a total of \$68 million over the life of the FY 2023-2026 TIP, adjusted for year of expenditure.

Highway Commitments and Projected Available Revenue

The FY 2023-2026 TIP must be fiscally constrained; that is, the cost of projects programmed in the TIP cannot exceed revenues “reasonably expected to be available” during the relevant plan period. MDOT issued each MPO in the state, including JACTS, a local program allocations table covering the years of the FY 2023-2026 TIP. These allocations specify what is reasonably expected to be available to local agencies in the Surface Transportation Block Grant (STBG)—Urban and –Rural Program, National Highway Performance Program, Transportation Economic Development (TEDF) Category C Program (federal and state), and the TEDF Category D Program (federal and state). Projects using these funds are constrained to the amounts in the allocations table, plus any funding from the *state* portion of the TEDF Category C or Category D Programs (the federal portion of these programs does not carry forward).

Funds for projects that are competitively awarded are considered to be reasonably expected to be available only after they have been officially awarded. This includes all Safety, CMAQ, TAP, and Bridge projects. The only projects using these funds in the TIP are those that have already been awarded. Therefore, these projects are self-constrained to available revenue.

Year of Expenditure (Inflation) Adjustment for Project Costs

Federal regulations require that, before being programmed in the TIP, the cost of each project is adjusted to the expected inflation rate (known as year of expenditure, or YOE) in the year in which the project is programmed, as opposed to the cost of the project in present-day dollars, as mentioned in the section entitled **Operations and Maintenance of the Federal-Aid Highway System**, above. As with the projection of available funding, the projected rate of inflation is determined in a cooperative process between MDOT and the MTPA. All local road agencies use the same 4% annual inflation rate as MDOT to determine YOE costs. As an example, if a project costs \$750,000 in the first year of the TIP, the same project is projected to cost \$843,648 in the fourth year of the TIP, at a 4% YOE rate. This is done in order to provide a more realistic estimate of a project's cost at different points in time. Because of the constant pressure of inflation on all goods and services in the economy, it is preferable to build a project as close to the present day as possible; thus the attraction of bonding as a funding strategy (see the **Innovative Financing Strategies—Highway** section above). This also demonstrates the fundamental problem facing infrastructure funding—the rate of inflation (standardized at 4% for MDOT and local agencies) is higher than the expected growth in tax revenues (standardized at 2%). Transit projects have a different inflation rate that reflects the different goods and services necessary to operate transit systems, as opposed to road networks.

Demonstration of Fiscal Constraint of the FY 2023-2026 TIP—Highway Projects

This financial plan is required to show that the cost of highway projects in the FY 2023-2026 TIP does not exceed the amount reasonably expected to be available to fund those projects. This is known as *demonstration of fiscal constraint*, and is also required for transit projects (see below). Table 11-1 compares the amount of funding from each of the federal, state, and local highway funding sources programmed in TIP highway projects to the amount of each highway funding source reasonably expected to be available in each year of the FY 2023-2026 TIP period. Table 11-1 demonstrates that the FY 2023-2026 TIP is fiscally constrained for highway—the amount programmed using each highway funding source does not exceed the amount reasonably expected to be available from that highway funding source in any of the four years of the TIP.

Table 11-1: Demonstration of Fiscal Constraint - Highway, FY 2023-2026 TIP

Amounts in millions of Dollars.

Funding Source	Funding Level	FY 2023	FY 2024	FY 2025	FY 2026	Total by Source
Congestion Mitigation & Air Quality Improvement Program (CMAQ), Estimated Available	Federal	\$9.90	\$10.10	\$10.30	\$10.51	\$40.80
Congestion Mitigation & Air Quality Improvement Program (CMAQ), Programmed	Federal	\$9.90	\$10.10	\$10.30	\$10.51	\$40.80
National Highway Performance Program (NHPP), Estimated Available	Federal	\$3.50	\$3.57	\$3.64	\$3.71	\$14.43
National Highway Performance Program (NHPP), Programmed	Federal	\$3.50	\$3.57	\$3.64	\$3.71	\$14.43
Surface Transportation Block Grant Program (STBG), Estimated Available	Federal	\$25.62	\$26.13	\$26.66	\$27.19	\$105.60
Surface Transportation Block Grant Program (STBG), Programmed	Federal	\$25.62	\$26.13	\$26.66	\$27.19	\$105.60
Transportation Alternatives Program (TAP), Estimated Available	Federal	\$1.39	\$1.42	\$1.45	\$1.48	\$5.73
Transportation Alternatives Program (TAP), Programmed	Federal	\$1.39	\$1.42	\$1.45	\$1.48	\$5.73
MTF and Other State Funding, Estimated Available	State	\$6.10	\$6.22	\$6.35	\$6.47	\$25.14
MTF and Other State Funding, Programmed	State	\$6.10	\$6.22	\$6.35	\$6.47	\$25.14
Local Funding, Estimated Available	Local	\$5.22	\$5.32	\$5.43	\$5.54	\$21.51
Local Funding, Programmed	Local	\$5.22	\$5.32	\$5.43	\$5.54	\$21.51
Total, All Sources, Estimated Available	N/A	\$51.73	\$52.76	\$53.82	\$54.90	\$213.21
Total, All Sources, Programmed	N/A	\$51.73	\$52.76	\$53.82	\$54.90	\$213.21

Transit Funding

Sources of Federally-Generated Transit Funding

Federally-generated revenue for transit comes from federal motor fuel taxes, just as it does for highway projects. Some of the federal motor fuel tax collected nationwide is deposited in the Mass Transit Account of the Highway Trust Fund (HTF). Federal-aid transit funding is similar to federal-aid highway funding in that there are several core programs where money is distributed on a formula basis and other programs that are

competitive in nature. Here are brief descriptions of some of the most common federal-aid transit programs.

Section 5307: This is the largest single source of transit funding that is apportioned to transit agencies in Michigan. Section 5307 funds can be used for capital projects (such as bus purchases and facility renovations), transit planning, and projects eligible under the former Job Access Reverse Commute (JARC) program (intended to link people without transportation to available jobs). Some of the funds can also be used for operating expenses, depending on the size of the transit agency. One percent of funds received are to be used by the agency to improve security at agency facilities. Distribution is based on formulas including population, population density, and operating characteristics related to transit service. Urbanized areas of 200,000 population or larger receive their own apportionment. Areas between 50,000 and 199,999 population are awarded funds by the governor from the governor's apportionment. In the JACTS area, the Jackson Area Transportation Authority receives Sec. 5307 funding from the state.

Section 5310, Elderly and Persons with Disabilities: Funding for projects to benefit seniors and disabled persons when service is unavailable or insufficient and transit access projects for disabled persons exceeding Americans with Disabilities Act (ADA) requirements. Section 5310 incorporates activities from the former New Freedom program. Urbanized areas in the state with populations over 200,000 receive an apportionment of Sec. 5310 funding directly from the federal government. The State of Michigan allocates funding in remaining areas of the region on a per-project basis. Since there are no urbanized areas over 200,000 population in the JACTS area, all transit agencies receiving Sec. 5310 funds do so through allocations from the State of Michigan.

Section 5311, Non-Urbanized Area Formula Grant: Funds for capital, operating, and rural transit planning activities in areas under 50,000 population. Activities under the former JARC program (see Section 5307 above) in rural areas are also eligible. The state must use 15 percent of its Section 5311 funding on intercity bus transportation. The State of Michigan operates this program on a competitive basis.

Section 5337, State of Good Repair Grants: Funding to state and local governmental authorities for capital, maintenance, and operational support projects to keep fixed guideway systems in a state of good repair. Recipients will also be required to develop and implement an asset management plan. Fifty percent of Section 5337 funding is distributed via a formula accounting for vehicle revenue miles and directional route miles; fifty percent is based on ratios of past funding received. The Detroit Transportation Corporation (People Mover) is currently the only recipient of Section 5337 funding in the State of Michigan.

Section 5339, Bus and Bus Facilities: Funds will be made available under this program to replace, rehabilitate, and purchase buses and related equipment, as well as construct bus-related facilities. Each state receives a fixed amount, with the remaining funding apportioned to transit agencies based on various population and service factors.

Flex Funding. In addition to these funding sources, transit agencies can also apply for Surface Transportation Program and Congestion Mitigation and Air Quality Improvement (CMAQ) program funds.

Base and Assumptions Used in Forecast Calculations of Federal Transit Funds

Each year, the Federal Transit Administration (FTA) issues funding apportionments for states, urbanized areas, and/or individual transit agencies, depending on the regulations for the federal-aid transit funding source in question. Transit agencies use this apportionment information to estimate the amount of federal-aid funding they will receive in a given year, under the general oversight of MDOT's Office of Passenger Transportation (OPT). Current statewide procedures are to consider the federal amounts programmed into the FY 2023-2026 TIP by each transit agency to be constrained to reasonably-expected available revenues.

Sources of State-Generated Transit Funding

The majority of state-level transit funding is derived from the same source as state highway funding, the state tax on motor fuels and vehicle registration fees. Act 51 stipulates that 10 percent of receipts into the MTF, after certain deductions, are to be deposited in a subaccount of the MTF called the Comprehensive Transportation Fund (CTF). This is similar to the Mass Transit Account of the federal Highway Trust Fund. Additionally, a portion of the state-level auto-related sales tax is deposited in the CTF. Distributions from the CTF are used by public transit agencies for matching federal grants and also for operating expenses.

Base and Assumptions Used in Forecast Calculations of State Transit Funds

MDOT OPT provides each transit agency with estimates of how much CTF funding it will receive and specifies the purpose(s) for which it can be used. For example, some distributed funds are used for local bus operating, while others are used to match federal funding, and yet other CTF funds can be used for a variety of other purposes. In keeping with the general procedures for federal transit funds, the state-generated transit funding amounts programmed into the FY 2023-2026 TIP by each agency are considered to be constrained to reasonably-expected available revenues.

Sources of Locally-Generated Transit Funding

Major sources of locally-generated funding for transit agencies include farebox revenues, general fund transfers from city governments, and transportation millages. All transit agencies in Southeast Michigan collect fares from riders. The Jackson Area Transportation Authority has a millage of 2 cents for every tax dollar collected by the City of Jackson. This millage raises \$550,000 annually.

Base and Assumptions Used in Forecast Calculations of Local Transit Funds

Locally-generated transit funding amounts programmed into the FY 2020-2023 TIP by each agency are considered to be constrained to reasonably-expected available revenues.

Innovative Financing Strategies--Transit

Sources of funding for transit are not limited to the federal, state, and local sources previously discussed. As with highway funding, there are alternative sources of funding that can be utilized for transit capital and operating costs. Bonds can be issued (see discussion of bonds in the **Innovative Financing Strategies—Highway** section). The federal government also allows the use of toll credits to match federal funds. Toll credits

are earned at tolled facilities, such as the Blue Water Bridge in Port Huron. Regulations allow for the use of toll revenues (after facility operating expenses) to be used as “soft match” for transit projects. Soft match means that actual money does not have to be provided—the toll revenues are used as a “credit” against the match. This allows the actual toll funds to be used on other parts of the transportation system, thus stretching the resources available to maintain the system.

Transit Capital and Operations

Transit expenditures are divided into two basic categories, capital and operations. *Capital* refers to the physical assets of the agency, such as buses and other vehicles, stations and shelters at bus stops, office equipment and furnishings, and certain spare parts for vehicles. *Operations* refers to the activities necessary to keep the system operating, such as driver wages and maintenance costs. The majority of transit agency expenses are usually operating expenses. This was true for the previous FY 2020-2023 TIP, and is also true of the FY 2023-2026 TIP, where capital expenses are approximately 20% of total anticipated expenses during the four-year TIP period, whereas operations expenses are approximately 80% of total anticipated expenses. As with highway operations, almost all transit operating costs do not have to be in the FY 2023-2026 TIP, so the percentages in this paragraph is not reflected in the TIP project list itself.

Demonstration of Fiscal Constraint of the FY 2023-2026 TIP—Transit Projects

This financial plan is required to show that the cost of transit projects in the FY 2023-2026 TIP does not exceed the amount reasonably expected to be available to fund those projects. This is known as *demonstration of fiscal constraint*, and is also required for highway projects (see above). Table 11-2 compares the amount of funding from each of the federal, state, and local transit funding sources programmed in TIP transit projects to the amount of each transit funding source reasonably expected to be available in each year of the FY 2023-2026 TIP period. Table 11-2 demonstrates that the FY 2023-2026 TIP is fiscally constrained for transit—the amount programmed using each transit funding source does not exceed the amount reasonably expected to be available from that transit funding source in any of the four years of the TIP.

Table 11-2: Demonstration of Fiscal Constraint - Transit, FY 2023-2026 TIP

Amounts in millions of Dollars.

Funding Source	Funding Level	FY 2023	FY 2024	FY 2025	FY 2026	Total by Source
Section 5307 Urbanized Area Formula Program, Estimated Available	Federal	\$12.60	\$12.85	\$13.11	\$13.37	\$51.93
Section 5307 Urbanized Area Formula Program, Programmed	Federal	\$12.60	\$12.85	\$13.11	\$13.37	\$51.93
Section 5310 Enhanced Mobility of Seniors & People with Disabilities, Estimated Available	Federal	\$7.71	\$7.86	\$8.02	\$8.18	\$31.78
Section 5310 Enhanced Mobility of Seniors & People with Disabilities, Programmed	Federal	\$7.71	\$7.86	\$8.02	\$8.18	\$31.78
Section 5311 Formula Grants for Rural Areas, Estimated Available	Federal	\$4.12	\$4.20	\$4.29	\$4.37	\$16.98
Section 5311 Formula Grants for Rural Areas, Programmed	Federal	\$4.12	\$4.20	\$4.29	\$4.37	\$16.98
Section 5339 Bus and Bus Facilities, Estimated Available	Federal	\$2.60	\$2.65	\$2.71	\$2.76	\$10.72
Section 5339 Bus and Bus Facilities, Programmed	Federal	\$2.60	\$2.65	\$2.71	\$2.76	\$10.72
CTF and Other State Funding, Estimated Available	State	\$6.10	\$6.22	\$6.35	\$6.47	\$25.14
CTF and Other State Funding, Programmed	State	\$6.10	\$6.22	\$6.35	\$6.47	\$25.14
Local Funding, Estimated Available	Local	\$5.22	\$5.32	\$5.43	\$5.54	\$21.51
Local Funding, Programmed	Local	\$5.22	\$5.32	\$5.43	\$5.54	\$21.51
Total, All Sources, Estimated Available	N/A	\$38.35	\$39.12	\$39.90	\$40.70	\$158.06
Total, All Sources, Programmed	N/A	\$38.35	\$39.12	\$39.90	\$40.70	\$158.06

Chapter 12

Equity and Environmental Justice

The JACTS 2050 Long Range Transportation Plan must identify and address disproportionately adverse human health or environmental effects that the transportation system programs and policies have on minority and low-income populations. The basic principles addressed by the Environmental Justice analysis are:

- To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

Methodology

The Environmental Justice Analysis is typically performed on improve and expand projects. To ensure the principles are being met, the methodology entails mapping the EJ zones where the low-income (poverty) and minority population concentrations exceed the population averages of these groups for the Jackson MPO, overlaying the improve and expand projects or Jackson Area Transportation Authority (JATA) bus routes, and visually analyzing the potential impacts.

The following methodology is followed to ensure a fair process:

- 1) Acquire the most current population data from the United States Census Bureau and adopt the United States Department of Human Services Poverty Standards as publicized by the department.
- 2) Compute the county average and establish a county baseline threshold for minority and impoverished populations.
- 3) Synthesize the Census data with the Location Quotient statistical method to calculate and compare the shared contribution of an area's local economy to another referenced economy; in this case, Census Block Group data to county-level data.
- 4) Develop sets of thematic maps showing the spatial location of minority and low-income populations at the MPO level.
- 5) Overlay maps of improve and expand projects over the minority and low-income population maps and analyze for intersections on the basis that a project is included or is partially tangential to an EJ zone.
- 6) Overlay maps of the JATA bus routes and ADA corridor over the minority and low-income population maps and analyze for intersections on the basis that the transit

route is included or is partially tangential to an EJ zone.

Location Quotient Statistical Method

Location quotient (LQ) is a sophisticated statistical technique used in calculating and comparing the shared distribution of a local economy, such as an individual county or region, relative to a referenced base economy such as the state. The LQ statistical method strives to show if a local economy has a greater share than expected of a given base economy; the extra contribution marks the additional contribution that such local economy is contributing.

The statistical notation for LQ is:

$$LQ_i = \frac{\frac{x_i}{n_i}}{\frac{x}{n}} \text{ or } \frac{x_i}{x} \times \frac{n}{n_i}$$

Where,

LQ_i = Location Quotient for a local economy

x_i = Total number of EJ identified population groups for a local economy

n_i = Total population for a local economy

x = Total number of EJ identified population groups for a reference economy

n = Total population for a reference economy

The LQ method is used to determine whether or not a particular Block Group in Jackson County has a greater share of its racial and low-income groupings than expected. A Block Group having a LQ value greater than one ($LQ > 1$) will be recognized as an EJ zone within the county. Block Groups with $LQ > 1$ provide evidence that such a racial and low-income group(s) has a population greater than their expected EJ populations. The Block Groups would represent the selection set identified as EJ zones.

Environmental Justice Populations Definitions

Definition of “Minority” for the Purposes of Environmental Justice

According to the U.S. DOT Order 5610.2, the following groups are to be considered when conducting an Environmental Justice Analysis and are defined as follows:

- *Black or African American*: A person having origins in any of the black racial groups of Africa.
- *Hispanic or Latino/a*: A person of Mexican, Puerto Rican, Cuban, Central American, South American, or other Spanish culture or origin, regardless of race.
- *Asian & Pacific Islander*: A person having origins in any of the original people of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.
- *American Indian & Alaskan Native*: A person having origins in any of the original people of North America and who maintain cultural identification through tribal affiliation or community recognition.

According to the 2021 American Community Survey Data, the countywide averages for the minority populations are as follows: African American 8.2%, Hispanic 3.9%, Asian and Pacific Islander 0.6%, and American Indian and Alaskan Natives 0.004%.

Americans with Disabilities Act (ADA) Corridor

ADA requires public transit agencies that provide fixed-route service to provide paratransit service to people with disabilities who cannot use the fixed-route bus or rail service because of a disability. ADA paratransit service must be provided within 3/4 of a mile of a bus route or rail station, at the same hours and days, for no more than twice the regular fixed route fare.

Definition of “Low Income” or “Individuals Living Below Poverty Level” for Purposes of Environmental Justice

The Office of Management & Budget defines low income as a person whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines. The guidelines are used as eligibility criteria for the Community Services Block Grant Program as well as a number of other federal assistance programs. According to the 2021 American Community Survey data, 11.2% of Jackson County’s population falls below the national poverty threshold.

Analyzing Potential Impact Centers

The environmental justice analysis requires analyzing the potential impacts of capacity improvement projects. However, as discussed in Chapter 9, there are no planned or proposed capacity improvement projects in this plan. The ongoing I-94 modernization project has been identified and documented in an environmental reevaluation process. Any environmental impacts will be mitigated according to state and federal laws. The three major areas of concern for capacity projects are provided on the next page for reference.

1) Disproportionately high adverse impact to low-income/minority areas

For any future capacity improvement projects, it is important that these projects don't have an adverse impact to the community, especially for low-income or minority areas.

2) Minimizing/blocking access of low income/minority areas to transportation

Minimizing access can be characterized as the permanent closing of streets or interchanges in order to accomplish capacity improvement projects.

3) Neglect of the transportation system in low income/minority areas

The Jackson MPO is approximately 720 square miles and includes 19 townships and the city of Jackson. The targeted low income (% below the national poverty level) areas mapped cover approximately 20% of the county and the composite minority areas mapped cover almost 60% of the county. It has been determined that there is no neglect of investment in the transportation system in the low-income and minority areas.

Justice40 Initiative

The United States Department of Transportation (USDOT) is in the process of implementing the Justice40 Initiative, which is an all of government approach that sets a goal of 40% of the benefits of certain federal investments flowing to disadvantaged communities. Through Justice40, USDOT will work to increase affordable transportation options that connect Americans to good-paying jobs and improve access to resources and quality of life in communities.

Public Transit Investment

Public transit in Jackson County is provided by JATA. The agency's fixed-route service area includes the City of Jackson and portions of the urbanized area and the Reserve-A-Ride program provides demand response service to all residents of the city and county. Reduced fares are available for the elderly, disabled and student populations. It is important that capacity projects don't restrict the access of residents to the public transit system services. It has been determined that there is currently no neglect, reduction or delay in the receipt of transportation benefits by those residing in low income or minority areas. Maps illustrating how JATA routes serve minority and low-income populations in the Jackson Urbanized Area are provided for review on the next several pages.

Conclusion

The Jackson MPO will continue to update and maintain the public participation mailing list, and continue to improve communication, coordination, education, and involvement activities in order to reach the traditionally disadvantaged populations (including minority and low income) to ascertain and evaluate potential effects or impacts resulting from future projects.

Figure 12-1: Environmental Justice and JATA Routes – Blacks and African Americans

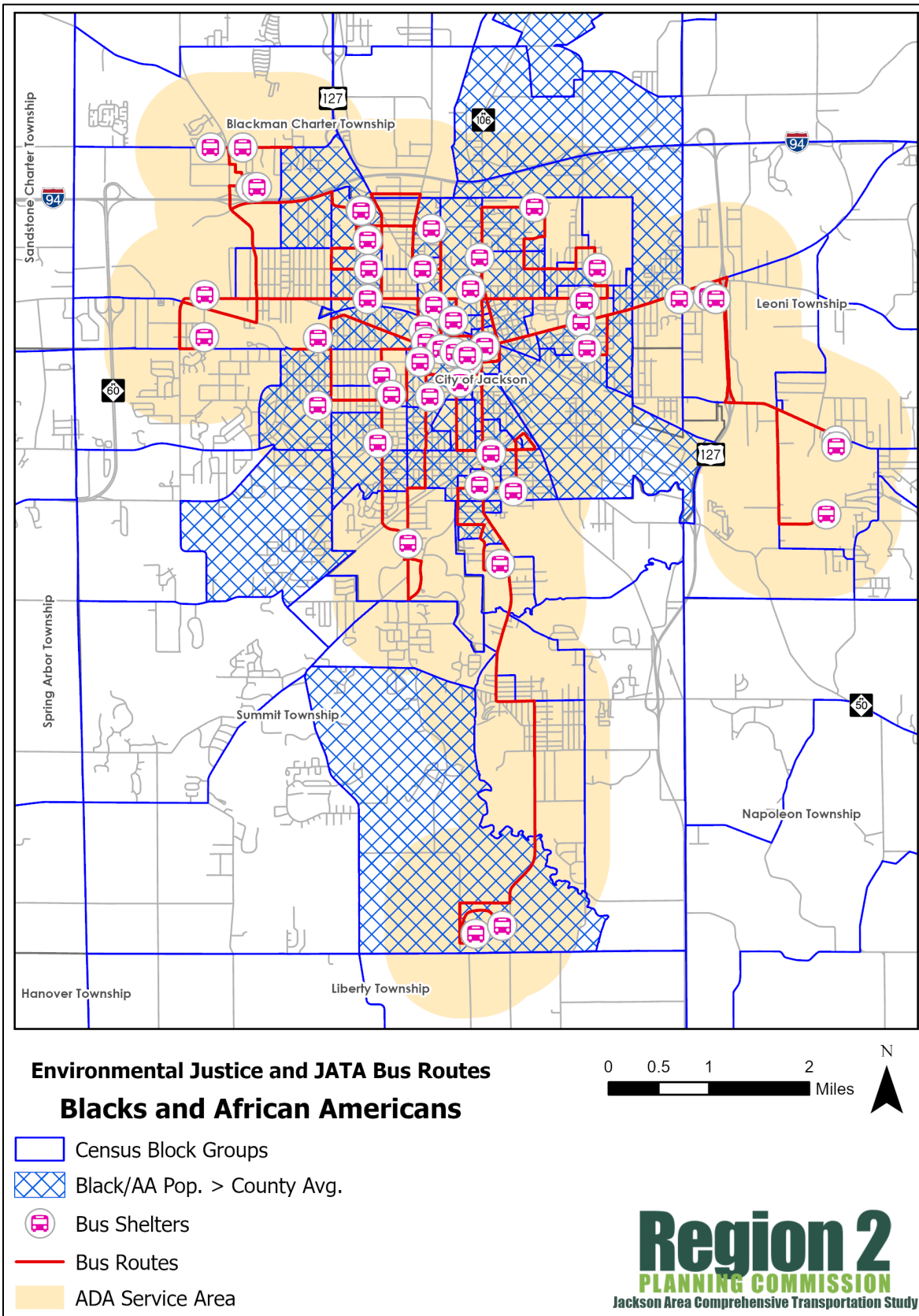


Figure 12-2: Environmental Justice and JATA Routes – Asians and Pacific Islanders

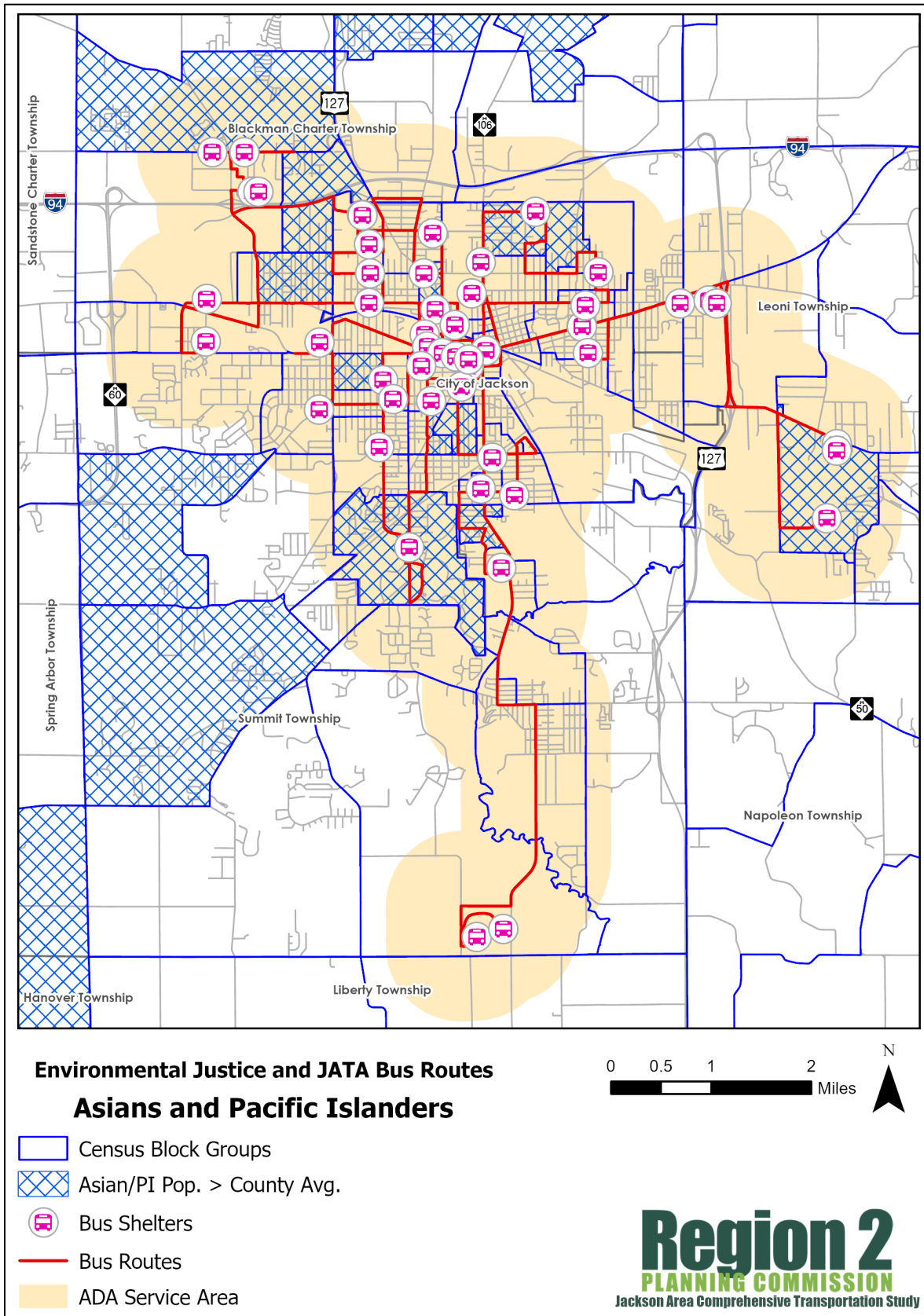


Figure 12-3: Environmental Justice and JATA Routes – American Indians and Alaskan Natives

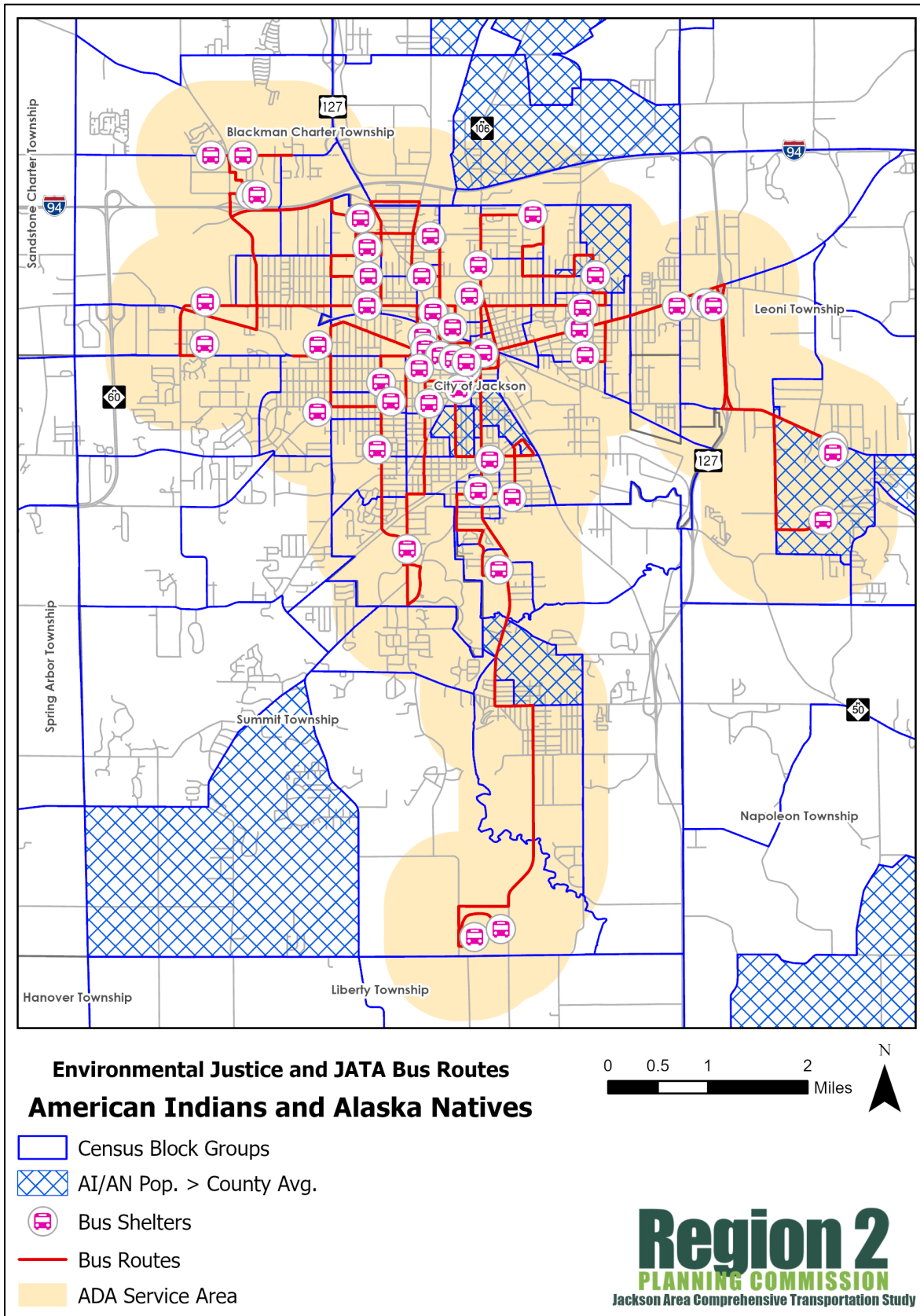


Figure 12-4: Environmental Justice and JATA Routes – Hispanic and Latino/a

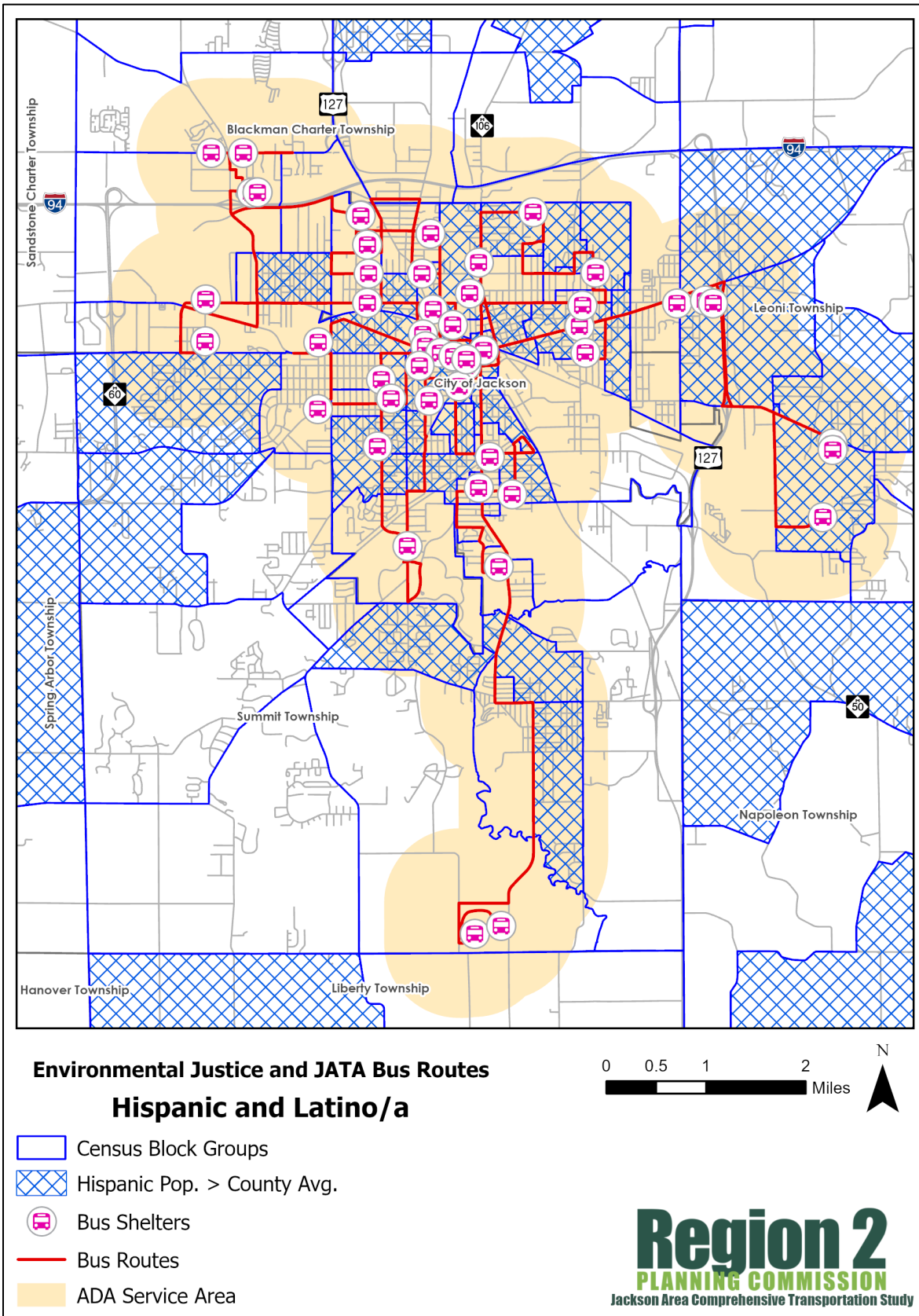
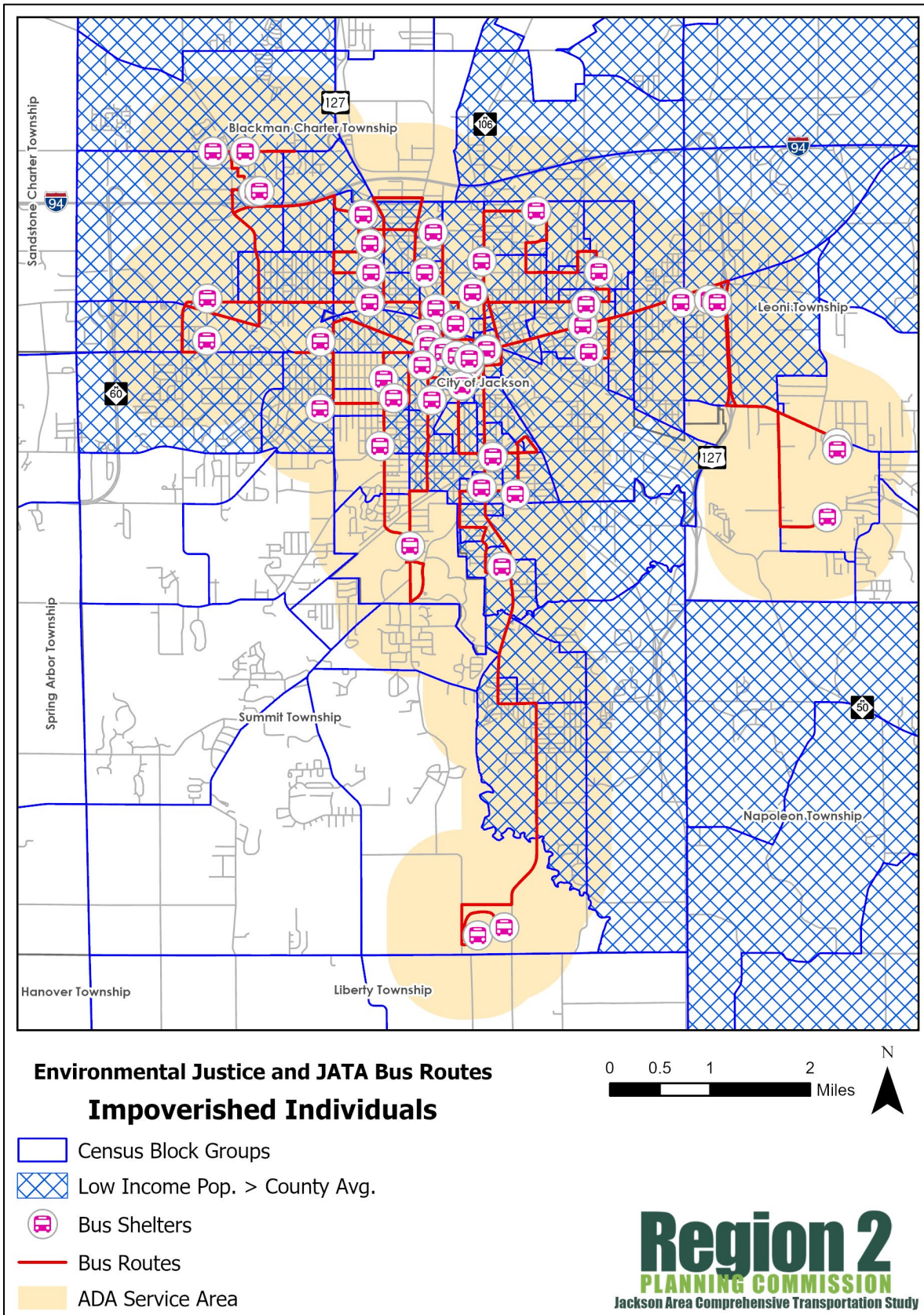


Figure 12-5: Environmental Justice and JATA Routes – Impoverished Individuals



JACTS

JACKSON AREA COMPREHENSIVE
TRANSPORTATION STUDY

Chapter 13

Environmental Mitigation

The transportation system affects and is affected by the natural environment. Beginning with SAFETEA-LU and continuing with the FAST Act, long range transportation plans need to discuss “potential mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain environmental functions affected by the Plan,” in consultation with pertinent wildlife, land management, and regulatory agencies. The purpose of the process is to identify possible impacts of proposed “improve and expand projects” on environmentally sensitive resources, list useful guidelines for mitigating these impacts, and share information with implementing agencies. However, since this plan has no proposed capacity improvement projects, there was no analysis conducted.

The FAST Act requires that the plan also addresses how storm water mitigation is addressed within the transportation system. MDOT, Jackson County, the City of Jackson and Jackson County Airport provided relevant manuals and plans. They are further reviewed in this section.

Figure 13-1
Watkins Lake State Park



Storm Water

Long range transportation plans need to address how communities reduce or mitigate storm water impacts to transportation. MDOT, Jackson County, the City of Jackson and the Jackson County Airport have guidelines for this issue.

Michigan Department of Transportation Drainage Manual 2006

The MDOT 2006 Drainage Manual provides guidance to administrative, engineering, and technical staff and consultants for the design of MDOT drainage facilities. Developed under the guidance of the TEA-21 federal transportation bill and AASHTO’s Model Drainage Manual, Metric Version, 1999, the MDOT manual was developed to give a

design engineer a working knowledge of hydrology, hydraulics, and storm water management. The manual provides general operational guidelines with the flexibility to adapt recommendations to individual project needs.

The manual addresses MDOT's policy, design criteria, design guidance, procedure, and maintenance of the following topics:

- Hydrology
- Natural channels and roadside ditches
- Culverts
- Bridges
- Road storm drainage systems
- Storm water storage facilities
- Pump stations
- Best practices for storm water management

The intent is to give specific guidance that is applicable to most projects, and enable MDOT to practice good storm water management. MDOT University Region engineers use the manual as a starting point to ensure good engineering storm water management practice is used for state projects.

Figure 13-5
Flooded Grand River in Downtown Jackson



Jackson County

The Jackson County Department of Transportation uses the Jackson County Drain Commissioner's Storm Water Management Policy for site development. The policy is as follows:

Retention (adequate outlet not available)

- 100 year frequency storm
- 3 hour duration
- 1.5"/hour rainfall intensity*

Detention (outlet available, but with limited capacity)

- 50 year frequency storm
- 1 hour duration
- 2.5"/hour rainfall intensity

*based upon Grand River Basin intensity-duration frequency curves

Jackson County is part of the Upper Grand River Watershed Alliance, which is a coalition of municipalities, agencies, businesses and individuals dedicated to improving water

quality in the headwater region of the Grand River. The group developed the 2003 Upper Grand River Watershed Management plan, which provided recommendations on how agencies could continue to support the health of the upper Grand River watershed. The 2006 update to the plan is an addendum to fulfill the EPA's Nine Minimum Elements of Watershed Planning and the National Pollutant Discharge Elimination System (NPDES) Phase II requirements. The plan doesn't explicitly address how storm water is affected by and affects the transportation system, however, the following goal and objectives relate to the mitigation of storm water impacts of surface transportation:

Goal: All new development projects are to be water quality friendly.

Objective: Increase regional planning efforts and implementation among local units of government.

Objective: Develop a standards manual which outlines economically viable water quality friendly development practices and requirements.

Objective: Incorporate water quality friendly practices into community development master plans.

These are important measures that the Jackson County Department of Transportation uses to help guide the development of projects, under guidance of the Drain Commissioner. The Jackson County Department of Transportation also uses the MDOT 2006 Drainage Manual.

City of Jackson

The 2012 City of Jackson Storm Water Management Manual provides specific information to the City of Jackson for design standards to address storm water quantity and quality and flood control. The City of Jackson adopted the *Low Impact Development (LID) Manual for Michigan* to guide the design of proposed best management practices. The Department of Public Works reviews all storm water-related projects. The technical guide is used by City of Jackson Engineering in dealing with storm water for all transportation related projects that meet the minimum requirements.

Figure 13-6
An Example of Storm Water Management in the City of Jackson



The previously mentioned 2016 City of Jackson Community Master Plan cites the need to address storm water runoff, especially in the downtown and urban core of the community, which includes maintaining an open and working transportation system. The City of Jackson is also part of the Upper Grand River Watershed Alliance.

Jackson County Airport-Reynolds Field

The Jackson County Airport (JXN) has a Storm Water Pollution Prevention Plan that was developed in 2006 as a requirement under Part I.B of Michigan's National Pollutant Discharge Elimination System (NPDES) general permit for storm water discharges from

industrial activities and in accordance with good engineering practices. The plan describes the facility and its operations, identifies potential sources of storm water pollution associated with industrial activities at the facility, and recommends appropriate best management practices or pollution control measures to reduce the discharge of pollutants in storm water runoff. Additionally, the plan covers all the industrial activities conducted by commercial businesses at the airport including vehicle maintenance, fueling, cleaning, and deicing. Many private hangars exist at the airport owned by private individuals or corporations that are not considered commercial businesses nor industrial related activities, and therefore, are not included in the plan.

The goal of the storm water permit program is to improve the quality of surface waters by reducing the amount of pollutants potentially contained in the storm water runoff being discharged from industrial activities. The objectives of the plan are as follows:

- 1) To identify potential sources of pollution at JXN.
- 2) To describe best management practices which are to be used at JXN.
- 3) To provide other elements such as a facility inspection program and record keeping and reporting program that will help JXN comply with the terms and conditions of their storm water discharge permit.

All future airport facility improvements will be designed and constructed with best management practices that further improve the quality of surface waters around the airport.

Intergovernmental Cooperation

MDOT, County, and City staff typically work together as needed to resolve storm water issues at the site level on a project basis. With Jackson's unique soils and drainage issues, local leaders and staff collaborate to develop cost-effective, environmental-sound solutions using storm water best management practices. There has been talk between the City of Jackson and Jackson County to develop a set of guidelines that are complimentary and/or similar to help with the successful adherence to storm water management policies, standards and guidelines for engineers and developers across jurisdictional boundaries.

Air Quality

On May 12, 2012, the United States Environmental Protection Agency (EPA) revoked the 1997 eight-hour 0.080 parts-per-million (ppm) Ozone standard for the purposes of regional transportation conformity. On May 21, 2012, the US EPA issued designations for the new 2008 eight-hour 0.075 ppm Ozone standard. Jackson is designated attainment under the 2015 standard. Jackson is not required to demonstrate conformity to National Ambient Air Quality Standards (NAAQS) at this time.

Projects included in the Long Range Transportation Plan should be analyzed more closely as they move further into the stages of development to determine whether negative environmental impacts will be realized by the surrounding area. R2PC staff will continue to use the environmental mitigation analysis process and to consult with the appropriate local, state, and federal agencies to minimize the impact the transportation projects may have on the environment.

Planning Guidelines

Regardless of the type of project or the resource that may be impacted, the guidelines deserve consideration during the planning, design, construction, and maintenance of transportation projects. Guidelines developed by the Southeast Michigan Council of Governments (SEMCOG) and AASHTO are presented below for reference. The Jackson MPO can only recommend that these guidelines be followed by the implementing agencies during the project planning and development process. The following “best practice” guidelines will help to ensure good planning practices that will assist in the overall quality of the area’s environment:

Planning & Design Guidelines

- Utilize Context Sensitive Solutions (CSS) throughout the planning and project development process. CSS identifies the physical, visual, and social context in which a project is situated while involving all stakeholders in a collaborative process in developing transportation projects.
- Identify the area of potential impact as it relates to each transportation project, including the immediate project area as well as related project development areas.
- Continue to update the environmental sensitive inventory to determine if any of the identified resources may be impacted by proposed projects.
- Coordinate with the Jackson County Hazard Mitigation Plan.
- Coordinate the transportation projects with local comprehensive and master plans, watershed management plans, recreation and non-motorized plans, etc.
- Prior to project construction, collaborate with local community officials, contractors, and other relevant stakeholders to review and discuss environmental issues and goals.
- If it all possible, avoid impacts to environmental resources through project design and/or through the implementation of all possible mitigation measures.
- Incorporate storm water and erosion control management into the project design.
- Reduce the size and need for culverts when and where possible.

Construction & Maintenance Guidelines

- Include all special requirements that address environmentally sensitive resources into plans and estimates used by contractors and subcontractors. Bring to attention the types of activities that are not appropriate in environmentally sensitive areas.
- Minimize the size of the construction and staging area with clearly marked boundaries using fencing or flagging around sensitive areas as necessary to prevent intrusions.
- Utilize the least intrusive construction materials and techniques.
- Avoid disturbing the construction site as much as possible by:

- Protecting established vegetation and natural habitat. If disruption is unavoidable, replace with native species as soon as possible.
- Implementing sediment and soil erosion control measures as required.
- Not stockpiling materials in sensitive areas.
- Protecting water quality by controlling direct runoff, sweeping streets to reduce sediment, implement salt management techniques, and control storm water drains from construction debris.
- Protecting cultural and historic resources.
- Minimizing noise and vibration.
- Providing for solid waste disposal.
- Conducting on-site monitoring during and after construction to ensure protection of environmental resources as planned.
- Maintaining equipment in good working condition and avoid fueling or maintenance near environmentally sensitive areas.
- Reducing land disturbances through the efficient organization of construction activities.

Conclusion

The purpose of this process is to identify potential impacts the proposed capacity expansion projects may have on the area's environmentally sensitive resources and to provide useful guidelines for mitigating the impacts to the implementation agencies. The projects included in the plan should be analyzed closely as they move further into the stages of development to determine whether negative environmental impacts will affect the surrounding area.

Chapter 14

Emergency Management & Natural Disasters

Current federal legislation requires that the plan must address how agencies are reducing the vulnerability of the transportation infrastructure to natural disasters. Federal, state, and local agencies have been collaborating for years to ensure that impacts to the road network, transit services, railroads, air travel, and non-motorized facilities are reduced when faced with a major event. This chapter addresses how agencies in Jackson have prepared to meet this need.

Existing Services

Michigan Department of Transportation

MDOT has protocols to address incidents that affect the state transportation system, which include events that would occur as a result of a natural disaster. The MDOT University Region Incident Response protocol outlines the specific response for an event that occurs within the University Region. The process, as outlined by MDOT, includes communication with 911 Dispatch through FHWA, if necessary. MDOT staff is primarily responsible for the steps outlined, however, local and federal level agencies are included on an as needed basis. A variety of MDOT staff at the local Transportation Service Center (TSC) Office and at the Lansing Central Office are also involved. Having the process outlined clearly is helpful if a time of need arises.

MDOT also works with the Michigan State Police (MSP) in coordinating road closures by following the Official Order Number 17, Subject: Traffic Enforcement and Local Ordinances document. Having the two agencies work together closely in a time of need can address public safety and reduce stress on the transportation system for state and local governments as well as the public. The relevant departmental policies and responsibilities found in the document are:

- Procedures for Closures of State Highways
- Traffic Law Enforcement Policy and Procedure
- Speed Limit Enforcement and Policy
- Guidance for Loss of Power to Traffic Signals
- Snowmobiles and Off-Road Recreation Vehicles
- Enforcement Policy for Railroad Law
- Railroad Operating in Michigan and Emergency Contacts
- Enforcement of Local Ordinances

Jackson County Sheriff

The Jackson County Sheriff is charged with the formal administration of Emergency Management Division for Jackson County. Emergency Management Division coordinates emergency response agencies who work together to protect the lives and property of the

citizens of Jackson County. They administer alerts related to severe weather and administer the county hazard mitigation plan.

Jackson County Department of Transportation

JCDOT is well connected and resourced to communicate with the public and its partnering agencies to address issues related to natural disasters. Using social media, the department pushes information about construction sites, hazardous weather alerts, and weather-related traffic events, detours, delays, and crashes. For example, when snow plows are deployed, the information is posted on the JCDOT Facebook page.

JCDOT has informal and formal agreements with external agencies to provide mutual aid in times of need. There are written, formal agreements with Calhoun County Road Department that specifically address that the road agencies, with the permission of departmental directors, provide help as needed. Informal agreements exist with other nearby counties, and shared resources are also available through the department's participation with the County Road Association of Michigan (CRA). CRA is a member-driving organization that works with the 83 road agencies within the state on matters of common interest. A list of available shared resources at each road commission is available through CRA. JCDOT and MDOT also have a formal contract agreement to help each other out in addressing matters of emergency management and natural disasters, as it relates to the transportation system. For example, MDOT may ask JCDOT to respond to a state matter because they are closer and can provide a more timely response.

Jackson Area Transportation Authority

JATA can also be affected by weather events. The local transit system has emergency snow routes. The snow routes allow riders to catch the bus in an area where riders can board and exit safely during or after a snow storm. The routes take effect when JATA determines that the road conditions are unsafe. JATA has an email emergency notification system that will notify its recipients of any route alterations or delays, including those related to natural disasters like weather events, flooding, the deployment of snow routes, etc. The service is an important way JATA users can stay informed about the transit system in Jackson.

Existing Plans

Jackson County Hazard Mitigation Plan 2022

The 2022 Jackson County Hazard Mitigation Plan (JCHMP) is a community plan that identifies various potential disasters and actions and activities to implement before a disaster happens for all communities in Jackson County. The JCHMP includes developed strategies and actions to implement prior to the occurrence of a disaster to attempt to minimize the negative impacts associated with each disaster. The plan is administered through the Jackson County Office of Emergency Management and Homeland Security.

The JCHMP includes a list of natural disasters that are known or have the potential to occur within the Jackson area. They include:

- Weather Hazards
 - Hail
 - Lightning
 - Ice and Sleet Storms
 - Snowstorms
 - Severe Wind Events
 - Tornadoes
 - Extreme Temperatures
 - Fog
- Hydrological Hazards
 - Flooding
- Dam Failures
- Drought
- Ecological Hazards
 - Wildfires
 - Invasive Species
- Geologic Hazards
 - Earthquakes
 - Subsidence
 - Space Weather
 - Celestial Impacts

Each of the natural disasters listed could affect the transportation system, however, the impact or likelihood of each of the events is different. The impact to the transportation system would depend on the size, location, and duration of each event. The natural disasters most likely to affect the transportation system are explored below:

Ice and Sleet Storms: In recent history, Jackson County has experienced an ice or sleet storm almost every year.

Impacts to the transportation system could include short term closure of roads and the airport during the storm event and while facilities are cleared, an increased risk in driving on ice-covered roads, biking and walking on non-motorized facilities, and flying in ice storms.

Snowstorms: Jackson County averages more than three snow storms a year. The effects of large snow storms are usually widespread and countywide.

Impacts to the transportation system could include short term closure of roads and the airport during the storm event and while facilities are cleared, an increase in risk in driving on snow-covered roads, biking, and walking on non-motorized facilities. At the airport, impacts could include delays due to the deicing of planes and risks associated with flying in snow storms.

Severe Wind/Tornadoes: Jackson has a history of having tornadoes and severe wind impact the area. The County expects several severe thunderstorms that are characterized by strong winds to occur annually.

Impacts to the transportation system could include short term road, non-motorized facilities, airport and rail line closures due to a tornado and cleanup or traffic and transit disruption as vehicles are routed around affected areas.

Fog: Fog is a common occurrence in Jackson County, and it could occur at almost any time of the year. While it doesn't do any direct damage to anything, it can be a hazard due to decreased visibility.

Impacts to the transportation system include an increased chance of crashes due to decreased visibility of motorists, especially for pedestrians and cyclists who become

increasingly less visible, and delays or cancellations of flights. The rare occurrence of freezing fog could cause slickness on roadways, walkways, bridges, and highway ramps.

Riverine Flooding: With Jackson being the headwater to three major rivers and full of wetlands areas, there is great potential for flooding. A 2009 Flood Insurance Study for Jackson County found that major flooding events have been documented in the area since 1904. Flooding is most likely to occur within the City of Jackson, however, flooding may also occur in areas in Summit Township, the Village of Brooklyn, and areas near the Grand and Kalamazoo Rivers.

Impacts to the transportation system could include long and short term closures of roads, non-motorized facilities, and rail lines due to a flooding event and cleanup or traffic and transit disruptions as vehicles are routed around flooded areas. Each community that has a Flood Insurance Rate Map intends to adopt and enforce the National Flood Insurance Program flood management requirements. Communities where no flooding hazard areas have been identified will monitor conditions and request further analysis as needed.

Wildfires: The combination of Jackson County's forest cover and an increase in exurban development has raised the likelihood for potential loss of life and property, especially in the Irish Hills area in Columbia and Norvell townships and the Waterloo Recreation Area in northeastern Jackson County.

Impacts to the transportation system could include disruptions such as traffic congestion in the event evacuations take place or road, non-motorized facilities, rail line and airport closures due to the wildfire location and smoke drifts.

Earthquakes: There have been no significant events in Jackson County, however there is a small potential that minor ground disturbances could occur.

Impacts to the transportation system could include energy disruptions or fuel price increases, an increase in traffic to accommodate refugees due to the occurrence of a regional event, and the closures of streets, non-motorized facilities, and rail lines to clean up debris from the event. Air travel at the airport may also be temporarily disrupted.

Subsidence: Natural subsidence occurs when the ground collapses into underground cavities produced by the dissolution of limestone or other soluble materials by groundwater. Historical coal mining in the area has left some subsidence vulnerability along parts of I-94 corridor and the local road network. During MDOT pre-construction efforts for the I-94 Modernization Project, professionals found some highway footings were in old coal mining shafts. Since this discovery, MDOT has put significant resources toward addressing the issue.

Impacts to the transportation system could include ground collapses in areas near abandoned coal mines, like along I-94. MDOT has been addressing this issue during the I-94 Modernization Project by procuring special studies, resources, and experts to address the concern for future events.

Goals and Objectives

The following are the goals and objectives for the 2022 JCHMP. While these tend to reference land use planning, they can also be applied to the transportation system.

Goal 1: Promote Life Safety

Minimize disaster-related injuries and loss of life through public education, hazard analysis, and early warning.

- 1.1 Increase public and private sector awareness of hazard related dangers, resiliency principles, and mitigation solutions.
- 1.2 Local units of government should promote high-density compact development which offers an ease in service delivery and the provision of infrastructure and avoids an over-consumption of land.
- 1.3 Promote local early warning systems and capabilities.
- 1.4 Better serve at-risk populations (e.g., the elderly, disabled, limited English)

Goal 2: Reduce Property Damage

Incorporate hazard mitigation considerations into land use planning, resource management, land development processes, and disaster-resistant structures.

- 2.1 Increase knowledge of elected/appointed county/municipal officials and other local leaders about sound land use and development practices that can help reduce long-term hazard risks and vulnerabilities.
- 2.2 Identify appropriate mitigation measures for vulnerable public and private facilities and infrastructure.
- 2.3 Promote and assist with winter weather mitigation projects countywide.
- 2.4 Encourage tree trimming and maintenance in public rights-of-way and utility easements to prevent limb breakage and safeguard utility lines.

Goal 3: Provide Leadership

Provide leadership, direction, coordination, guidance, and advocacy for hazard mitigation.

- 3.1 Educate and inform governmental officials, other local policy-makers, and the public, about resilience and hazard mitigation concepts, programs, and processes.
- 3.2 Promote better information flow/coordination regarding hazard mitigation among units of government, and between public and private entities.
- 3.3 Identify strategies to assist local governments in overcoming obstacles to successfully applying for hazard mitigation grants.
- 3.4 Identify, establish, and promote new partnership opportunities.

Goal 4: Secure Funding

Explore funding options for priority mitigation activities.

- 4.1 Use a cost-benefit review of mitigation activities to evaluate impact feasibility.
- 4.2 Develop public/private partnerships to implement mitigation activities.
- 4.3 Identify preparedness, mitigation, and responses gaps countywide and leverage grant dollars to implement recommendations.

Transportation Accident Mitigation Strategies

The 2022 JCHMP outlines strategies to mitigate transportation accidents in the county. The plan provides nine mitigation strategies ranked by priority as seen in Table 14-1.

Table 14-1
Mitigation Strategies – Transportation Accidents

	Mitigation Strategies	Priority	Time	Funding
1.	Enforce safety regulations.	High	Ongoing	Operating
2.	Improved design, routing, and traffic control at problem transportation areas.	Medium	As needed	Operating, Grants
3.	Develop a nonmotorized network that follows federal and state guidelines that will enhance the development of a resilient and redundant multi-modal transportation system.	Medium	Ongoing	Operating, Grants
4.	Training, planning, and preparedness for mass-casualty incidents involving all modes of the transportation system within the Jackson community.	Medium	Ongoing	Operating
5.	Improvements in driver education, traffic law enforcement, and transportation planning that balance needs of transportation providers with the safety of the general public.	Low	Ongoing	Operating, Grants
6.	Continue railroad inspections and improved designs at problem railway/roadway intersections (at grade crossings, rural signs/signals for RR crossing).	Low	Ongoing, As needed	Operating, Grants
7.	Use of designated truck routes and enforcement of weight and travel restrictions.	Low	Ongoing	Operating
8.	Ensure that there is a realistic, practiced transportation program in place to support the safe movement of vulnerable populations in case of a hazardous event.	Low	Ongoing	Operating
9.	Support the development of a robust, reliable, and resilient transit system and programs that will allow for transportation choice in the event of a hazardous event.	Low	Ongoing	Grants
10.	Support the ongoing need for Jackson County Airport-Reynolds Field maintenance, security, and safety projects and programs.	Low	Ongoing	Operating, Grants
11.	Safety training for transit, airplane, train operators, including simulated response exercises.	Low	Ongoing	Operating, Grants
12.	Using snow fences or "living snow fences" (rows of trees or vegetation) to limit blowing and drifting of snow over critical roadway segments.	Low	As needed	Grants

Conclusion

The JCHMP identified that Jackson County is particularly vulnerable to ice storms, snow storms, and tornadoes. Communities will likely focus on these issues, but should also proceed on disaster preparedness for all natural disasters. The communities within Jackson County should collaborate to ensure that the public, as well as the transportation system, is prepared to respond in the event of a natural disaster. By highlighting the goals, objectives, and strategies in the JCHMP, the long range transportation plan demonstrates a reduction of vulnerability of the transportation system to natural disasters.